Distributed Competence Centres

**Call for Participation**

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# Introduction

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.

To support the uptake of distributed computing services within European research communities, EGI operates a Distributed Competence Centre (DCC)[[1]](#footnote-2). The DCC integrates user-support personnel and technical assets across multiple National Grid Initiatives, projects, user communities and technology providers to support research activities with distributed computing services from EGI.

EGI now would like to evolve the current Distributed Competence Centre (DCC)[[2]](#footnote-3) into a network of thematic Competence Centres (CCs), each built around technological platforms and/or user communities with common technical requirements and/or shared objectives.

**EGI will select these competence centres through an open call that launches on the 1st of May 2014**. Competence Centres together with their projects and sustainability plans will be subject to peer review. Each Competence Centre needs to meet the requirements specified in Section 3 “Activities and services of the CC”.

The selected Competence Centres will become partners of the EGI-Engage EC project proposal for Call “European research infrastructures (including e-Infrastructures)” of the Horizon2020 (work programme 2014-2015), EINFRA-1 Topic, Activity 6[[3]](#footnote-4):

*“(6) Support to the evolution of EGI (European Grid Infrastructure) towards a flexible compute/data infrastructure capable of federating and enabling the sharing of resources of any kind (public or private, grid or cloud, etc.) in order to offer computing and storage services to the whole European scientific community. The proposal will address operations for supplying services (IaaS, PaaS, SaaS) at European level, engagement of and tailoring of services to new user communities and dissemination activities.”*

# Role of the Competence Centre

The CC allows EGI to better serve the European Research Area by providing advanced, domain specific support to research communities. Through the CC adoption of existing services and their innovation can be accelerated. By supporting user-orientated development projects the CC facilitates:

* the integration of community-specific virtual research environments with the Core Infrastructure Platform of EGI, which includes services, information discovery, accounting, monitoring, security and federated clouds;
* the extension of the Core Infrastructure Platform with the development of new services as requested by research communities;
* the integration of community-specific virtual research environments with the Grid and Cloud Platform by adapting virtual research environments to the Grid/Cloud User Interfaces;
* the extension of the EGI platforms by developing/integrating new services (IaaS, PaaS, SaaS) that will be co-developed with users and provided operationally by the EGI collaboration;
* the integration of EGI platforms with services provided by other e-Infrastructures in Europe and worldwide.

The CC mobilizes specialized expertise already available in the EGI Collaboration and makes it easily accessible to user communities.

Each Competence Centre will contribute to the implementation of the EGI strategy as follows.

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| **EGI Strategic objective addressed** | **Competence Centre activity** |
| Develop the service portfolio through user-centric innovation and co-development | User communities and technological partners will participate to the Competence Centre by defining requirements and by contributing directly to service development and integration activities. |
| Technical innovation | The Competence Centre provides the technical expertise necessary to understand user requirements, translates these into ICT needs, identifies existing solutions available and the integration/development activities needed and engages in testing of new technologies.  Purpose of the Competence Centre is not to perform research, but to reuse existing technology and integrate it, or to implement extensions in order to make it usable by the user Virtual Research Environments and turn it into EGI services. |
| Easy to use virtual research environments tuned to the needs of specific research communities | EGI will facilitate the development of these services through the CCs, by bringing together research communities, technology experts and service providers to co-develop the services that researchers need.  EGI can provide a mechanism to sustainably operate those services that enter widespread use within the ERA and evolve the service offering to meet the needs of those that use them during Horizon 2020 and beyond. |
| Development of the human capital | Through the CCs the human networks based in the member states through the NGIs, research disciplines experts from the technology teams that produce the software used by EGI, can be developed and strengthen by providing the grounds for the development of a collaborative environment built around a common technical roadmap. |
| Development of the skills needed by a member states researchers’ to access and effectively use the new technologies needed to exploit the data emerging from the excellent science being undertaken nationally as part of the ERA | The CC will provide consultancy, hand-on training, and will be engaged in porting of existing applications to the new virtual research environments that are developed |

# Activities and services of the CC

The CC allows EGI to better serve the European Research Area by providing advanced support to researches and services providers. Through the CC research can more easily benefit from the EGI e-Infrastructure services, and by supporting user-orientated development projects the CC facilitates the integration of virtual research environment with the core e-Infrastructure services of EGI, and by promote innovation by technically evolving them.

Each CC mobilizes specialized expertise already available in the community and makes it easily accessible to users and service providers by providing a clear contact point in various thematic areas.

The CC can be either technological or user-driven.

* **Transversal**: the CC is built around specific ICT services from the EGI core infrastructure platform, the EGI Cloud Infrastructure Platform and the High Throughput Data Analysis Platform. Transversal CCs can focus on specific topics like security, big data analytics on grid and cloud, interoperability between e-Infrastructure services, etc. All user communities benefit from the innovation and support services provided by transversal CCs.
* **Thematic**: a thematic CC is implemented to support communities in a specific disciplinary area (addressing specific application domains such as medicine, life science, energy etc.) and focuses on user-driven projects aiming at adapting community virtual research environment to EGI platforms or at innovating by developing new general-purpose platforms for deployment in EGI. Research communities play a decisive role in the projects to be developed by a user-driven CC and in its governance. The projects of a user-driven CC these have to benefit multiple user communities and facilitate multidisciplinary science.

The CC engages in the following activities and services.

## Projects

The CC will engage with scientific research groups from academia and industry, technology providers and service providers to conduct projects, balancing short-term results and the development of longer-term objectives, through a portfolio of 2 to 4 projects of different duration, including larger projects and shorter path-finding projects which address immediate technological goals or investigate the potential to initiate full projects.

* Each CC will be responsible of the management of the associated projects including status reporting, collection of metrics and management of the exploitation plan of the project output.
* CCs are encouraged to cooperate on common horizontal projects to better address the needs of multidisciplinary science.
* The CC is responsible for supporting the developed innovation for a minimum of two years after the main release of the product – ensuring improvement of the software, operability and installability over time, evolution of the documentation, proactive maintenance, bug fixing, support through the EGI incident management system and coordination with other technology providers. The CC is responsible of the long-term sustainability of the project outputs and of defining the necessary business model to ensure this.

The software developed by the CC is open source, needs to comply to the EGI quality criteria[[4]](#footnote-5), software validation and verification procedures and is made publicly available for installation through the Unified Middleware Distribution repository[[5]](#footnote-6), which also provides a community-specific repository.

Areas of development to be supported include:

* The **EGI Core Infrastructure Platform**, consisting of services that are necessary to establish and operate a federated, distributed computing and data infrastructure, which can be extended for
  + new and low cost hardware and resources available as a distributed federated service,
  + open permanent digital objects discoverable and accessible,
  + an extended Authentication and Authorization and Identity management system,
  + services for the resolution of digital objects permanent identifiers,
  + <expand>.
* The **EGI Cloud Infrastructure Platform** with new services at the IaaS, PaaS and SaaS levels for the extension of the federation by providing
  + adaptors to extend the IaaS federation to new proprietary cloud stack user interfaces, software-defined networks,
  + infrastructure brokering and service composition,
  + services for permanent identifier resolution,
  + services for data and visual data analytics, cloud secure storage, platforms for custom distributed data processing and management,
  + services for data lifecycle management including acquisition and sensing, cleaning, categorizing and sharing,
  + services for crowdsourcing,
  + <expand>.

The EGI Cloud Platform provides a federation of Clouds deployed in the EGI ecosystem. Integrated with the EGI Core Infrastructure Platform, it provides consistent and standardised access to virtualised compute, storage, data and networking resources.

* Enhanced and/or new **Community Platforms, including the grid High Throughput Data Analysis Platform.** These platforms consist of services that are specific to or preferred by a wide group of communities, including
  + data mining, data analytics, data and information visualization,
  + services for data dissemination,
  + virtual laboratories,
  + community specific platforms on the cloud for metadata extraction, visualization and discovery,
  + <expand>.

Community Platforms may be deployed on top of the EGI Core Infrastructure Platform, or on top of the EGI Cloud Infrastructure Platform.

## Technical support user communities

In addition to the projects, the CC provides on-demand support to the EGI Collaboration at large (including current and prospective user communities, technology providers, service providers) about the topics in the area of expertise of the CC. This technical support activity is guaranteed to promote the existing services and solutions that are available for deployment and to promote the exploitation and uptake of the new services being developed through the projects

## Training and technical seminars

The CC organizes technical seminars and training to help research groups keep up to speed on emerging technologies, best practises and new approaches in implementing large-scale data processing solutions.

At least two training events per year for user communities and technology providers are organized which are co-located with major user conferences and EGI events.

Additional ad-hoc events are organized according to the needs; the costs of these events are self-sustained by the CC by recovering costs through participants’ subscription fees, which have to be kept to a minimum to encourage participation.

## Service provisioning

The CC facilitates the deployment of the innovative services implemented through the projects by partnering with service providers (publicly funded and commercial) that commit resources for the development, testing, pre-production deployment and final deployment of the services requested to support user communities.

Through its service providers and during the entire duration of the EGI-Engage project, the CC collectively offers a minimum of 10,000 CPU cores and 500 TB, which are made available either through the High-throughput Data Analysis solution[[6]](#footnote-7), or through the Federated Cloud Solution[[7]](#footnote-8), or both, to support experimental activities and pre-production activities. After successful pre-production, these resources will be available to the ERA accessible through peer review, pay-for-use or free at point of use models to undertake excellent science.

The developed services and platforms for the support of multiple communities will be offered by EGI as production services in collaboration with its partners and will extend the solutions and platforms available in EGI. These will be operated professionally following service management standards, by establishing service level agreements with customers and the sustainability will be ensured through a support fee scheme that allows the recovery of operational costs.

# Partners of the Competence Centre

* National Grid Initiative user support teams, to ensure continued support to users, to coordinate their activities with other CCs, to engage in hand-on training events and to manage the testing and exploitation phase of the services developed through the CC projects. Participation of user support teams from other e-Infrastructures (peer and integrated) is encouraged to ensure horizontal support to user communities removing silos.
* International research user communities from academia and/or industry, to contribute requirements and participate to CC projects in user-driven co-development, and to support users in user-specific technological and disciplinary areas,
* Technology providers, to made their expertise available to support integration activities and allow the reuse and extension of EGI platforms, and their integration with community-specific virtual research environments,
* Service providers, to ensure the long-term provisioning of the platforms as services offered to customers, to provide resources for testing, pre-production and the following production phase. Participation of peer and integrated e-Infrastructures (Open Science Grid, is encouraged to ensure that the platforms offered are interoperable and can support the needs of international user communities.

# Coordination and cooperation

Collaboration between CCs on common projects, sharing of expertise across CC and collaboration with existing national e-Science centres are expected.

EGI.eu will promote the activity of the CCs, attracting user communities and creating opportunities of new collaborations. EGI.eu is responsible for coordinating the CC activities to ensure that CCs can effectively share activities, share best practices, and work in a coordinated fashion. EGI will provide

* collaborative tools and services to support the daily work of the CC.
* tools, processes and manpower for the validation, verification and deployment of the software produced by the CC,
* GGUS as EGI incident management tool to provide support to end-users,
* RT to track requirements,
* the Unified Middleware Distribution repository for the distribution of the software,
* events for the delivery the training programme,
* communication channels to disseminate and promote the activities of the CC.

# Requirements

To ensure sufficient resources, critical mass and sustainability, the CC needs to meet the following requirements:

* The CC involves support teams and resource providers from at least four organizations affiliated to the EGI council (NGIs, EIROs), providing sufficient expertise, offering distributed geographic coverage and a mix of different size providers levering the best expertise available in the EGI Collaboration.
* Users from at least 3 Research Infrastructures (RIs, ESFRIs, …) contribute to user-centric innovation conducted in the CC.
* Funding will support the development of general-purpose services and platforms that can benefit multiple user communities (including the long tail of science, research groups and large scale user communities) and have a potential to turn into EGI production services. Funding will also support the adaptation of existing customer-specific virtual research environments that will benefit from such platforms and services.
* The CC is engaged in a minimum of 2 to maximum of 4 development EGI funded projects, including short term path-finding projects and longer-term development actions.
* The CC can involve partners from other e-Infrastructures, participation of e-Infrastructures who are already partners of EGI through MoUs or who are collaborating with EGI in projects is strongly encouraged[[8]](#footnote-9).
* In-kind contributions to the CC are expected from service providers to provide resources that will allow the testing, adoption and productization of the innovation developed by the CC. The CC needs to present a business plan to demonstrate the sustainability after the project of the activities, services and developed products. The services which can be developed from the innovation delivered by the CC will be operated and promoted by EGI.eu through its partners. Software support, training, user support are additional assets to be sustained. EGI will offer its core services to support the activities of the CC.
* Collaboration between the CCs through joint projects and between the CC and existing national e-Science centres is encouraged to develop synergies, ensure reach to national user communities, and avoid duplication.

# Call for Competence Centres

EGI will launch an open call for Competence Centres in April 2014. Competence Centres together with their projects and sustainability plans will be subject to a peer review. The selected Competence Centres will become partners of the EGI-Engage project.

Consortia of partners are welcome to participate to the call.

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| 01/05/2014 – 08/06/2014 | Open call for EGI Competence Centres |
| 22/05 meeting at EGI Community Forum | Concertation meeting hosted by the EGI Council Workshop: presentation of CC projects and discussion |
| 09-30/06 | Peer Review |

1. http://go.egi.eu/dcc [↑](#footnote-ref-2)
2. <https://wiki.egi.eu/wiki/Distributed_Competence_Centre> [↑](#footnote-ref-3)
3. <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/2137-einfra-1-2014.html> [↑](#footnote-ref-4)
4. <https://wiki.egi.eu/wiki/EGI_Quality_Criteria_Dissemination> [↑](#footnote-ref-5)
5. <https://wiki.egi.eu/wiki/UMD_Release_Schedule> and <http://repository.egi.eu/download/> [↑](#footnote-ref-6)
6. <http://www.egi.eu/solutions/htc/> [↑](#footnote-ref-7)
7. <http://www.egi.eu/solutions/fed-cloud/> [↑](#footnote-ref-8)
8. <http://www.egi.eu/infrastructure/resource-providers/index.html#integrated> [↑](#footnote-ref-9)