

# EGI Strategy 2015-2020

Enabling Collaborative Compute and Data Intensive Science

Version 2.14

## Abstract:

EGI is an international collaboration that creates and delivers open solutions for science and research infrastructures by federating digital capabilities, resources and expertise across communities and national boundaries. The overarching long-term goal is to empower researchers from all disciplines to collaborate and to carry out compute/data intensive science and innovation. This document presents the strategy and the set of key actions for 2015-20120.

Date: 30 April 2015

Note: this Working Draft Document is being provided in the process of reviewing and revising the future strategy. It serves as a basis for discussion among members of the community, especially the EGI.eu Executive Board and the EGI Council. This document will be revised following the provided feedback. Upon approval of the EGI.eu Executive Board, a revised version will be submitted to the EGI Council for adoption in May 2015.

## EXECUTIVE SUMMARY

[to be revised]

This document summarises the key elements of the EGI strategy to 2020 for contributing to the development of an Open Science Commons and supporting the implementation of the digital ERA.

## OPEN SCIENCE ACROSS EUROPE: THE POLICY CONTEXT AND OUR RESPONSE

As the EGI Federation, our mission is to enable digital research that supports compute/data intensive science and generates new scientific knowledge and innovation for the benefit of economy, society and environment. We also support an open research system and the adoption of the commons management principle for all resources need to be shared.

→ *We commit to the principles of open science and the development of an Open Science Commons<sup>1</sup>, where researchers from all disciplines have easy, integrated and open access to the advanced digital services, scientific instruments, data, knowledge and expertise they need to collaborate and achieve excellence in science, research and innovation*

→ *We position EGI as federator of digital capabilities, people and knowledge across Europe and worldwide to integrate the best services and resources*

## OUR CUSTOMER SEGMENTS: ENHANCE EXISTING AND FOCUS ON SPECIFIC NEW SECTORS

**Existing EGI User Communities:** For the last decade, our federation has supported a number of large user communities (mainly High Energy Physics, Life Sciences and Earth Science). These communities now expect us to improve service quality while they search for innovative solutions, capabilities and technologies.

→ *For existing communities, we will stress improving service quality and resiliency to support on going and long-term service provision, while we commit to innovate our services for improving their efficiency and capabilities*

**Emerging international research communities:** New research communities from different disciplines are emerging, many driven by the development of research infrastructures. They have diverse needs, compared with existing communities. They demand support for new computing models and data sharing strategies, more effective and agile technologies and simpler solutions. We will identify the most effective sectors to support and we will co-develop solutions with them.

→ *We will target those emerging international research communities where we can add most value and best suits our capability as a federation; we will co-develop solutions with new research infrastructures that are customised for their specific needs, but based upon a consistent re-usable framework; we will ensure there are opportunities and value for EGI participants.*

**The Long tail of science & SMEs:** Both these communities could benefit from digital and open science. However, they are geographically dispersed, they have limited resources and expertise, thus finding difficult to exploit modern computational methods, or share valuable data.

→ *We co-develop an engagement framework for EGI participants to support the needs of the long tail or research and SMEs. These communities will be supported primarily by EGI participants locally.*

Our emphasis will be to support the existing communities and attracting a few new key research communities.

<sup>1</sup> <http://go.egi.eu/osc>

<sup>2</sup> EGI.eu is a not-for-profit foundation established under Dutch law in Amsterdam (The Netherlands) that coordinates the EGI Federation

<sup>3</sup> Open Science umbrella term that refers to the opening of the creation and dissemination of scholarly knowledge

#### OUR SERVICES AND SOLUTIONS

As federator of capabilities, EGI must be able to anticipate technology evolution and offer federated compute clusters, cloud, storage, data, knowledge and human capabilities to support a more effective open science. We have a reliable high-throughput data analysis capability that we plan to make more accessible to individual researchers and small groups. We have a federated IaaS cloud that has demonstrated the capability to attract new and diverse user base.

→ *We will expand our cloud capabilities towards the PaaS and SaaS layer with pre-configured and customisable platforms that can be easily deployed and managed.*

→ *We will integrate an open data platform easy to use that allows users to share, discover, process open data. This platform will also be able to interface with current storage solutions.*

More effective solutions can be created by directly engaging with user communities and involving them to co-develop or integrate the capabilities they need.

→ *We will engage and support user communities with Competence Centres for technical and skills development. This helps us understand communities' problems and define plans to co-develop and/or integrate solutions that will enhance the services.*

#### OUR RESOURCE PROVIDERS AND THE EGI FEDERATION

As a federation, we strengthen our capabilities to collaborate at any level from strategic development to operating distributed services.

→ *We collaboratively and openly discuss about our future strategy, and we rely on distributed human networks at different level to ensure an efficient user engagement and service provision.*

We improve business opportunities for our providers by helping them to better demonstrate the impact of research being supported free at point of use. We also add the 'pay-for-use' option and develop capabilities to jointly bid and so participate in public procurements for cloud services.

→ *We will expand our business models ensuring that we can better demonstrate impact of resources offered 'free at the point of use' while we add the 'pay for use' option and become able to answer tenders for public procurements.*

→ *We improve the overall service quality by developing skills for both service, project and team management across the federation.*

Our federated operations were funded, governed and managed as a series of temporary projects. To provide a sustainable service delivery, we moved the funding of a core set of services to EGI.eu participants fees and in-kind contributions.

→ *We will continue to improve long term financial stability for EGI core services, regularly assess their value and revise the service catalogue.*

→ *We will continue to bid for projects to fund innovations and new developments, and adopt open innovation principles to stimulate ideas from within and outside the federation. We will ensure open participation and distribution of work between the EGI participants, Resource providers and EGI.eu.*

#### OVERALL

Open science is transforming the way research communities operate thanks to the globalisation of research and digitisation of the research process. Europe can best support it by connecting and federating all the capabilities available at the national level and making them accessible to all researchers with no discrimination. This requires a pan-European initiative in order to maximise the investments made by the Member States. EGI has a long tradition in federating distributed capabilities, from technical to human, and is best positioned as a platform that support the integration and efficient operation of the services and resources needed to increase the impact on open science, research and innovation.

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# 1 EGI AND ITS CONTEXT

## 1.1 EGI today

Over the last decade, EGI has built a federation of distributed computing and storage infrastructure to support multi-disciplinary science. This e-Infrastructure has since delivered unprecedented data analysis capability to over 38,000 researchers from many disciplines by federating more than 350 data and compute centres worldwide. EGI provides both technical and human services, from integrated and secure distributed high-throughput and cloud computing, storage and data resources to consultancy, support and co-development.

The research supported by EGI covers areas such as the Large Hadron Collider particle accelerator in CERN that found the Higgs boson, medical researchers finding innovative cures for diseases such as Alzheimer’s, malaria and avian flu as well as the creation of complex simulations to model climate change, among many others. Each of these examples has a direct impact on society at large while employing thousands of scientists and researchers across Europe and beyond.

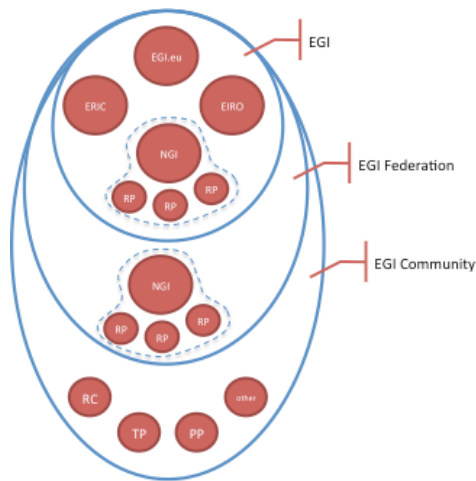
<i><b>EGI in Numbers</b></i>
<i>EGI: XX countries + CERN + EMBL</i>
<i>EGI Federation: 52 countries + CERN + EMBL</i>
<i>Virtual Organisations: 200+</i>
<i>Users: ~38,000</i>
<i>Resource centres: ~350</i>
<i>Federated CPU cores: 500,000+</i>
<i>Federated storage (disk): ~290PB</i>
<i>Computational Jobs: 1,5M/day (avg)</i>
<i>Virtual Machines: Walltime/day (avg)</i>

The benefits of EGI include:

1. Ensuring the uniform and reliable availability of resources to researchers at a local, national and European scale
2. Enabling faster scientific results to be produced through collaboration across organisational and national boundaries due to the federation of national resource provider for the seamless uniform access to services for researchers in Europe and internationally
3. Promoting open and collaborative science ensuring public access to shared resources and expertise for research
4. Allowing researchers to focus on their research rather than managing their e-Infrastructure needs
5. Providing effective utilisation of resources in different administrative domains to ensure the most effective return on infrastructure investments
6. Facilitating the innovation and sharing of solutions by building a thriving ecosystem through community events and other collaborative services.

The organisational and governance structure of EGI comprises national e-Infrastructures (NGIs), European International Research Organisations (EIROs) and associated institutes that not only forms the governing body (EGI Council) and provides the physical resources, but also provides shared services that enable the EGI Federation to deliver, improve and innovate services for the related research communities. Staff at EGI.eu<sup>2</sup> ensure coordination in a number of areas such as overseeing infrastructure operations, coordinating user community support, working with technology providers, steering strategy and policy development, organising flagship events and publicising the community’s news and achievements. EGI.eu provides also a number of federation-enabling technical services delivered in collaboration with its participants.

<sup>2</sup> EGI.eu is a not-for-profit foundation established under Dutch law in Amsterdam (The Netherlands) that coordinates the EGI Federation



Term	Definition
EGI	EGI.eu, the EGI.eu Participants and Associated Participants, their related organisations represented within EGI.eu that contribute to the objective of the foundation
EGI Federation	EGI plus all resource providers (RP) and representing organisations that established an MoU with EGI.eu
EGI Community	The EGI Federation plus the served research communities (RC), the partners in projects (PP), the technology providers (TP) and all other organisations having agreements with EGI.eu

## 1.2 The context in which we operate

Europe's ambition is to create a unified research area, an open space for knowledge, research and innovation. This European Research Area (ERA) will enable researchers, research institutions and businesses to work and co-operate freely across borders.

One of the key actions is the development of international research infrastructures (RIs) that will play a vital role in the advancement of knowledge and technology in various domains. The emerging research communities around these RIs will need access to cooperative computing platforms integrating different types of resources and allowing to access, share and preserve vast data collections.

New scientific processes will be explored that require the support of new computing and data management models and research processes. Virtual research environments (VREs) are becoming the leading access point for researchers to integrate the capabilities and resources they need to collaborate and organise their digital research workflow.

Technologies are evolving and open up new possibilities on how digital research can be conducted, shared and managed. The cloud delivery model has enabled the delivery of infrastructure as a service offering with a higher degree of autonomy from the user perspective to acquire and configure computing resources from a shared pool when needed. On-demand access to configurable resource pools is expanding to different types of resources, not just servers, but also networks, storage, applications and services.

At the same time, the call for a more open science<sup>3</sup> is demanding for broadening the engagement into the scientific process, from production to dissemination. If successfully implemented, open science stimulates broader collaborations and accelerates scientific discovery, ultimately better addressing global challenges and bringing greater benefits for the society.

*"A globally competitive ERA needs more inter-connected and more inter-operable research systems across Member States"*

*"New international research communities are emerging and have diverse needs to develop their own research workflows"*

*"Virtual Research Environments are the key integration point of capabilities and resources for researchers"*

The on-demand access to configurable computing resource pools is expanding to different types of resources

*"Open science is recognised as a leading approach to increase efficiency and effectiveness in the research process"*

<sup>3</sup> Open Science: umbrella term that refers to the opening of the creation and dissemination of scholarly knowledge towards a multitude of stakeholders, from professional researchers to citizens <http://www.openingscience.org/about/>

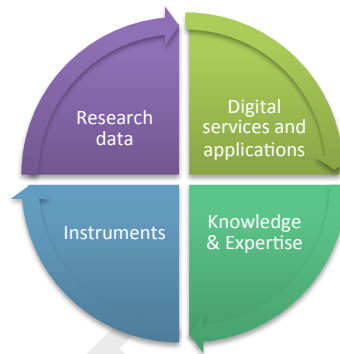
### 1.3 Open Science Commons

Overall, we can see consider open science as a production and dissemination system that needs integrated, easy and fair access to several types of shared resources (physical, digital, intellectual), an engaged communities that contribute to the process and collaborates in the management and stewardship of the resources, a suitable governance with rules to allow/exclude access, to resolve conflicts, and finally financial support for the long-term availability.

As the ultimate goal of open science is to create social value, this can be maximised by managing the infrastructures and knowledge resources as commons<sup>4</sup>. In an Open Science Commons, researchers can easily access distributed sources of knowledge and develop skills; identify and book scientific instruments to conduct experiments, discover and access datasets for analysis and reuse, access computing platforms and capacity to produce new research results.

All these shared resources are managed collectively through multi-level governance (e.g. community-specific, country-specific) that encourage the sharing and promote collaboration. They feel engaged in governing, managing and preserving these resources for everyone's benefit, with the support of all stakeholders.

Developing the Open Science Commons means first of all opening the involved resources and lowering the barrier to access. This step can be achieved by adopting open standards for interfaces or formats, and open licenses for content-related resources. Resources from different domains should be easy to compose and integrate into wider processes. Second, there is need for rules and norms that govern the access to the resources and their management. Such rules and norms can be different for different groups accessing different types of resources, yet they stimulate long-term engagement and stewardship. Third, appropriate business models are in place to ensure preservation of the research results and capacity building to serve the user demand. The contribution of the funding agencies and private sector is essential to ensure a healthy development. Implementing this vision requires all key stakeholders to contribute (e.g., funding agencies, research Infrastructures and e-Infrastructures, knowledge institutions, data archiving organizations, researchers and citizens at large).



*"We call the collection of open resources for science for which engaged community contribute to the management through shared rules and norms the open science commons"*

Sergio Androozzi 30/4/2015 11:08  
**Comment [2]:** Consider keeping open science part here and moving commons under the theme "influence policy"

<sup>4</sup> Commons: institutionalised community governance of the production and/or sharing of a particular type of resource (from natural to intellectual)

## 2 VISION, PURPOSE AND STRATEGIC GOALS

At the core of our strategy, we have shared vision<sup>5</sup> and mission<sup>6</sup> statements that inspire us to contribute to the long-term desired goal and that guide our decisions regarding priorities, actions, and responsibilities.

### EGI Vision

*Researchers from all disciplines have easy, integrated and open access to the advanced digital capabilities, resources and expertise needed to collaborate and to carry out compute/data intensive science and innovation*

### EGI Mission

*Create and deliver open solutions for science and research infrastructures by federating digital capabilities, resources and expertise across communities and national boundaries*

Our main target groups are: 1) research infrastructures and research communities that conduct compute/data intensive science within their research activities; 2) SMEs and industry who could benefit from accessing the digital capabilities or resources available to the research sector to innovate; 3) the policy makers who seek advices on how shape policies on research and that need support for their implementation.

We pursue our mission for our beneficiaries by focusing on the following strategic goals:

Strategic goals	
<b>Federate digital capabilities, resources and expertise</b>	<p>We federate computing clusters, IaaS cloud, storage, data and other types of ICT resources from national and community infrastructures at European scale and beyond</p> <p>We organise network of experts by scientific discipline or technology domain and form dedicated competence centres that are available to support the research communities</p>
<b>Operate services across the federated infrastructure</b>	<p>We operate federation-enabling services for the benefit of the federation members</p> <p>We operate services on top of the federated infrastructures for the benefit of research communities</p>
<b>Co-create and integrate open and user-driven services and solutions</b>	<p>We innovate with research communities and technology providers by co-designing services and co-developing technologies that enables to deliver solutions on top of the federated infrastructure; solutions are open in the sense that open standards are adopted when possible and re-use is facilitated</p>
<b>Be a trusted adviser on computing/data intensive science</b>	<p>We provide expert advices to the policy makers so to help them shaping national and European policies</p> <p>We consult the research communities and connect them to the high quality technical services or expertise they need to speed up their research process</p>

Sergio Androozzi 29/4/2015 11:18

**Comment [3]:** Link strategic themes to strategic goals; explain in the text below

<sup>5</sup> Our vision statement identifies the area of work (*"collaborative compute/data intensive science and innovation"*), aligns with the principles of open science (*"... all disciplines ..."*, *"... open access ..."*), and recognises the importance of both digital and intellectual inputs to the research process (*"advanced digital capabilities, resources and expertise"*). Overall, it well integrates well with the overarching vision of contributing to the development of an open science commons.

<sup>6</sup> Our mission statement clearly states that our focus is both creating solutions (e.g., adding incremental functionalities to existing services or developing new services) and also delivering them (operating reliable services). We focus on research that crosses national borders.



Our offering to our main beneficiaries consist of a range of solutions for that we co-develop and deliver with the members of the EGI Federation, with technology providers, with the research communities, all supported directly or indirectly by the funding agencies.

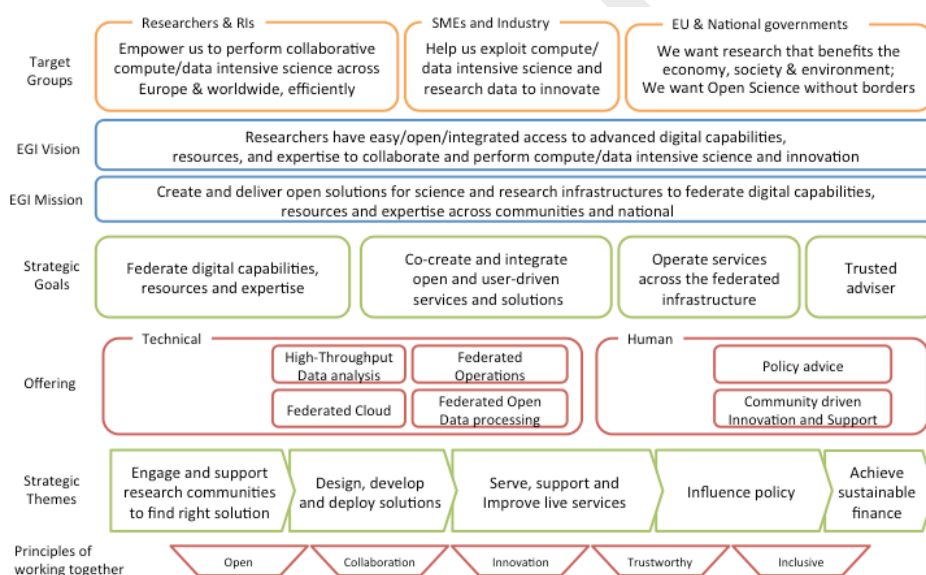
To better explain our strategy, we group our actions following different perspectives:

- Target groups (see Section 3)
- Services and solutions (see Section 3)
- Five strategic themes (see Section 4)

In a federation like EGI, we share a number of principles by which we all agree to work together. They support the vision, shape the culture and are the basis for decision-making. These principles cannot simply be imposed; they must be discovered distilling out from the daily activities of the organisation.

- **Open:** we communicate clearly and with integrity; we have a transparent governance structure; we pursue an open infrastructure through adoption of open standards and open licenses
- **Collaboration:** we strive to provide on-going opportunities to cooperate, communicate and partner with others in the community to advance our organizational goals and objectives
- **Innovation:** we listen to and understand the needs of our stakeholders and users; we look for ways to improve operational performance, processes and services; we have an attitude of continuous learning
- **Trustworthy:** we are good stewards of our resources and uphold the faith and confidence our stakeholders have placed in us
- **Inclusive:** we strive to be inclusive and open to all countries including those with limited resources

The following symbolic strategy map summarises the main elements of the EGI strategy.



Sergio Androozzi 29/4/2015 11:06  
**Comment [4]:** Move to Section 3, make it consistent with Beneficiaries/Target groups with Section 3 (align terminology)

FIGURE 1 - SYMBOLIC STRATEGY MAP FOR EGI

### 3 VALUE PROPOSITION

In this section, we define our target groups as beneficiaries of our services and what we offer to them. We also define the principles for establishing strategic relationships.

#### 3.1 Our target groups

We identify four main target groups to consider in our strategy. Our emphasis will be to support the existing communities and attracting a few new key research communities linked to emerging research infrastructures.

Target group	Key actions
<b>Current EGI research communities</b> <sup>7</sup> (Priority: high)	<b>We will continue to support and enhance current services, propose innovations, and ensure we are seen as a reliable trusted service provider</b> <ul style="list-style-type: none"> <li>⇒ Incrementally improve the service quality of existing services by improving the service standards across the federation and offering SLA-based services</li> <li>⇒ Regularly review their satisfaction, so we can learn and improve our offering</li> <li>⇒ Organise pilot experiments to evaluate innovative services on real use cases</li> </ul>
<b>Emerging research infrastructures</b> (Priority: high)	<b>We engage a good range of research infrastructures within the ERA (e.g. ESFRIs, Flagship projects) supporting them to better serve their research communities</b> <ul style="list-style-type: none"> <li>⇒ We focus on the larger RIs and we establish dedicated competence centres for co-creating solutions and long-term relationship</li> <li>⇒ For research infrastructures wanting to develop services on in-house infrastructures, promote software products developed by the EGI community</li> <li>⇒ For research infrastructure wanting to adopt infrastructure or platform as a service, organise pilots to evaluate their needs and ensure to add capabilities they need</li> <li>⇒ Offer products, services and expertise for federating and operating infrastructures</li> <li>⇒ Promote hybrid model where EGI resources are integrated with in-house resources</li> </ul>
<b>Long tail of Science (LToS)</b> (Priority: low)	<b>Enable the EGI Federation to serve LToS users locally through a common platform and engagement framework</b> <ul style="list-style-type: none"> <li>⇒ Develop a platform for easy authentication and management of users from the LToS (e.g. federated authentication)</li> <li>⇒ Define a general engagement and support framework that the EGI Federation members can adopt locally</li> <li>⇒ EGI federation members to develop capacity to serve the LToS users locally</li> </ul>
<b>SMEs/Industry</b> (Priority: low)	<b>Enable the EGI Federation to service SMEs and industry for research and innovation activities locally</b> <ul style="list-style-type: none"> <li>⇒ Establish a network of contacts among EGI Federation members working with SMEs/industry</li> <li>⇒ Define an engagement framework that considers the legal and organisational barriers to serve the private sector and identifies key services that can be offered</li> <li>⇒ EGI.eu operates as the coordinator for the framework while EGI Federation members engage locally with SMEs</li> <li>⇒ Establish relationships with organisations that have a multiplier effect (e.g., innovation clusters)</li> </ul>

<sup>7</sup> EGI currently serves different types research disciplines (e.g. high energy physics, life science, earth science), and groups (research infrastructures like CERN, research collaborations like WeNMR, long tail of science)

### 3.2 Our offering

We currently aggregate our services into five main solutions. These will be further evolved according needs from our beneficiaries.

Solution	Key actions
<b>High-Throughput Data analysis</b>	<p><b>Maintain existing HTC services with high-level of reliability and improve integration with VREs</b></p> <ul style="list-style-type: none"> <li>⇒ Simplify integration with VREs (technical, processes)</li> <li>⇒ Promote SLA-based resource provision</li> <li>⇒ Support different types of AAI</li> </ul>
<b>Federated Cloud</b>	<p><b>We consolidate the IaaS services and improve the usability. We introduce a key set of PaaS that can be dynamically deployed and operated</b></p> <ul style="list-style-type: none"> <li>⇒ Expand the capabilities supported by the IaaS cloud (e.g., support for Docker, dynamic network)</li> <li>⇒ Integrated a number of PaaS (e.g. genomics, text mining, statistics)</li> <li>⇒ Improve certification of compliance of interfaces to standards</li> <li>⇒ EGI affiliated resource providers to focus on expanding capacity</li> </ul>
<b>Federated Open Data Processing</b>	<p><b>We integrate a generic platform easy to use that allows users to share, discover, and process open data. The platform also allows interfacing current storage solutions.</b></p> <ul style="list-style-type: none"> <li>⇒ Identify a key set of services to support the key research infrastructures and the long tail</li> <li>⇒ Demonstrate scalability and reliability of the selected technology involving user communities</li> <li>⇒ Release the new service as part of the EGI service catalogue</li> <li>⇒ Ensure alignment and integration with capabilities from other e-Infrastructures</li> </ul>
<b>Federated operations</b>	<p><b>We consolidate operational tools, processes and services. We improve user experience. We productize both software and services for external adoption</b></p> <ul style="list-style-type: none"> <li>⇒ Enable operational tools to plug external authentication mechanisms (especially federated authentication)</li> <li>⇒ Define business models and documentation for offering tools and services outside the EGI community</li> <li>⇒ Improve maturity of IT service management across the federation</li> <li>⇒ Introduce a marketplace that enables to promote services and products from EGI and from the supported user communities</li> </ul>
<b>Community driven Innovation and Support</b>	<p><b>We establish thematic competence centres with key user communities as mechanisms to innovate, co-create new solutions and support researchers</b></p> <ul style="list-style-type: none"> <li>⇒ Establish thematic competence centres in collaboration with research communities</li> <li>⇒ Develop training material</li> <li>⇒ ...</li> </ul>
<b>Policy Advice</b>	<b>(To complete)</b>

### 3.3 Our strategic partnerships

(to be improved)

One of the strategic aims of EGI is to bring distributed computing initiatives in Europe and globally into an integrated e-Infrastructure that is able to seamlessly peer with equivalent e-Infrastructures around the world. This ambitious aim requires the close support of external partners, outside the EGI federation, which are equally committed to the development of e-Infrastructures for the benefit of the beneficiaries. For the sustainable operation of EGI, it is crucial to interact with technology and infrastructure providers, as well as with research infrastructures and communities to drive the evolution of our services. To nurture such collaborations, EGI needs to establish and formalise agreements with relevant partners on the European and global level to work together to deliver an Open Science Commons for the ERA.

We aim at establishing strategic partners that can bring exploitable results into EGI or that can be served by EGI. Those alliances have a common strategy and service roadmap that ensures development of complementary capabilities and reuse across e-Infrastructures.

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## 4 STRATEGIC THEMES

### 4.1 Engage and support research communities

A critical part of our strategy is improving the way we understand researchers' needs and translate them into sound projects that will deliver the solutions that will fulfil them. We also need to advise on the best approaches and inform about the latest technologies.

Objective	Actions
<b>Research communities understand the value of EGI</b>	<ul style="list-style-type: none"> <li>⇒ We develop a clear EGI proposition, differentiated from that of other e-infrastructures and commercial providers</li> <li>⇒ We have clear technical and benefits statements for our services and solutions</li> <li>⇒ We train our outreach network on communicating both value and technical features of services</li> </ul>
<b>We have an effective outreach network</b>	<ul style="list-style-type: none"> <li>⇒ We select and identify the right people</li> <li>⇒ We prepare the right information</li> <li>⇒ We ensure appropriate funding</li> </ul>
<b>We create a range of dedicated competence centres</b>	<ul style="list-style-type: none"> <li>⇒ We establish competence centres as mechanisms for long-term engagement with large research infrastructures</li> <li>⇒ ... (to be completed)</li> </ul>

### 4.2 Design, build and deploy new services & solutions

When needs for new features, services or solutions are identified, as a federation, we need to be able to build high quality projects, acquire the appropriate resources and develop in close collaboration with the target users. Involving the key users in the development process is essential to maximise chance for meeting the needs and adoption.

Objective	Actions
<b>We develop professional project and virtual team management skills across the federation</b>	<ul style="list-style-type: none"> <li>⇒ We define a lightweight set of processes for managing projects (small to large) and to efficiently run distributed teams</li> <li>⇒ We organise trainings possibly at EGI community events</li> </ul>
<b>We stimulate innovation from within and outside our community</b>	<ul style="list-style-type: none"> <li>⇒ We organise open innovation campaign that are thematic to stimulate and select best ideas to be implemented</li> </ul>
<b>Research communities contribute to the technical development of new features</b>	<ul style="list-style-type: none"> <li>⇒ We co-develop new features together with research communities, supported by community contributions or EC/national projects supporting new innovations.</li> <li>⇒ We promote agile methodologies for software development</li> </ul>
<b>We promote modular and open</b>	<ul style="list-style-type: none"> <li>⇒ We rely on a clear building block approach to improve sustainability and reusability of software components</li> </ul>

**solutions based on standards** ⇒ We maintain a consistent roadmap across our research communities to minimise duplications

**We provide certified and tested technologies** ⇒ We evaluate the quality of the software components and release them in the UMD repository  
 ⇒ We evaluate compliance to standards

### 4.3 Support, serve and improve live services & solutions

As a minimum our user communities expect our federated services to meet agreed service levels and quality standards. They expect service standards to improve and the range of services to increase. However, service standards, and how services are managed, varies across our diverse federation of NGIs and resource providers. We believe that adopting consistent service management standards across the federation will improve service reliability and quality, and consequently the user satisfaction.

Objective	Actions
<b>We continuously improve the maturity of service management across the federation</b>	⇒ EGI resource providers to implement and use an established service management standard compatible with FitSM (only for those services federated in EGI) ⇒ EGI.eu to include FitSM training, consultancy and auditing in the service portfolio ⇒ Incrementally improve the service quality of existing services by improving the service standards across the federation
<b>We evolve service and solution portfolio in collaboration with the user communities</b>	⇒ We establish an advisory board to streamline and guide evolution of the service and solution portfolio ⇒ Regularly review user satisfaction, so we can learn from them and improve their service

### 4.4 Influence policy

Our first strategic theme is about working with policy makers to support them in shaping policy for the research sector, to ensure that we can promote the needs of research communities and our vision on how e-Infrastructures can serve, and to raise awareness of the value of EGI.

Objective	Actions
<b>We are a trusted source of policy inputs for the EC</b>	⇒ We increase our effort in European lobbying and policy engagement, putting more effort into consultations and meetings/workshops ⇒ We build a deep understanding of the policy and research landscape, so we are clear how to help shape policies
<b>Our federation members are included in national e-Infrastructure roadmaps and supported in participating in EGI</b>	⇒ We provide the research communities with evidence on the value of national e-infrastructures and European level federation so that they champion it with policy makers ⇒ We make it easier for EGI federation members to explain the value of participating in EGI
<b>We raise the awareness on the</b>	⇒ We implement mechanisms for measuring and communicating the monetary value of services

<b>value of provided services</b>	<ul style="list-style-type: none"> <li>⇒ We communicate the value for money of the services we provide to both user communities and funding agencies</li> <li>⇒ We identify a small set of KPIs that are relevant to funding agencies, we measure and communicate them</li> <li>⇒ We organise communication campaign to raise awareness on the importance of linking scientific publications to supporting infrastructures</li> <li>⇒ We ensure scientific publications supported by EGI are explicitly linked in OpenAIRE</li> </ul>
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**Promote the Open Science Commons with policy makers and other key stakeholders** ⇒

## 4.5 Achieving sustainable finance

Objective	Actions
<b>We collaboratively develop the EGI strategy</b>	<ul style="list-style-type: none"> <li>⇒ We develop and implement our strategy together, working on both joint EGI strategy and input to national strategies</li> <li>⇒ We have clear actions and we refine and update the strategy and the actions as we learn from its execution based on clear plans and responsibilities</li> </ul>
<b>Achieve long-term sustainable funding for operating the EGI core services</b>	<ul style="list-style-type: none"> <li>⇒ We raise awareness among funding agencies about importance of longer commitment for operational services</li> <li>⇒ We broaden the number of participants in EGI.eu so to increase our economy of scale</li> <li>⇒ We productise federated operations and promote outside EGI</li> <li>⇒ We consolidate a reserve policy and build up reserves to protect against adverse events</li> </ul>
<b>Attracting funding for innovation</b>	<ul style="list-style-type: none"> <li>⇒ We continue to attract new user communities with challenging requirements and high impact perspective; we develop joint project proposals for innovation</li> </ul>
<b>Differentiating business models</b>	<ul style="list-style-type: none"> <li>⇒ We develop technical and legal framework to handle pay for use</li> <li>⇒ EGI.eu develops skills and capacities to broker services where appropriate</li> <li>⇒</li> </ul>
<b>We learn how to bid collectively</b>	<ul style="list-style-type: none"> <li>⇒ We analyse the barriers and we develop the necessary legal and organizational framework to bid collectively for services</li> <li>⇒ We gather together participants who are interested in, and able to, bid and tender for work</li> </ul>
<b>We make it easy for service providers and consumers to find the best match</b>	<ul style="list-style-type: none"> <li>⇒ We create and operate a marketplace that enables EGI providers to advertise their services and consumers to acquire those services; the marketplace is supported with shared tools to administer the sales process (e.g. contracts, SLAs, invoices, billing)</li> </ul>