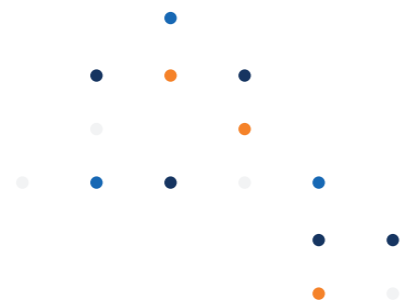# EGI Services

Discover the Power of Our
Large–Scale Computing and
Data Analytics Solutions

egi.eu   February 2024

Table of Contents

About EGI

EGI – Advanced computing for research

At EGI, we firmly believe that research is the driving force behind human progress. We aim to empower data-intensive research by providing a comprehensive suite of advanced computing services. Our offerings encompass high-throughput and cloud computing, storage and data management, analytics, consultancy and support, as well as training and co-development opportunities. Through continuous innovation, we enhance our services and technology, fostering international collaborations, sharing knowledge, and creating avenues for professional growth and acquiring expertise.

Our Guiding Principles

Vision

EGI

All researchers should have seamless access to services, resources and expertise to collaborate and conduct world-class research and innovation.

Mission

EGI Federation

Deliver open solutions for advanced computing and data analytics in research and innovation.

EGI Foundation

Enable the EGI Federation to serve international research and innovation together.

Services for Research

Compute

Cloud Compute
Run virtual machines on demand with complete control over computing resources

Cloud Container Compute
Run Docker containers in a lightweight virtualised environment

High-Throughput Compute
Execute thousands of computational tasks to analyse large datasets

Software Distribution
Publish and access software efficiently across multiple sites

Compute Orchestration

Workload Manager
Manage computing workloads in an efficient way

Infrastructure Manager
Use cloud orchestrator to deploy and configure complex virtual infrastructures

Storage & Data

Datahub
Access key scientific datasets in a scalable way

Data Transfer
Transfer large sets of data from one place to another

Online Storage
Store, share and access your files and their metadata on a global scale

Training

FitSM Training
Learn how to manage IT services with a pragmatic and lightweight standard

ISO 27001 Training
Learn how to manage and secure information assets

Training Infrastructure
Dedicated computing and storage for training and education

Applications

Notebooks
Create interactive documents with live code, visualisations and text

Replay
Reproduce and share research on a notebooks-based platform

Security & Identity

Check-in
Login with your own credentials

Secrets Store
Easily retrieve, manage, and rotate credentials, API keys, and other secrets through their lifecycle

Our large-scale computing and data analytics services are designed to help researchers to make breakthroughs faster than ever before. With EGI, you can expect the following key features and benefits:

- **Innovative technologies:** Our services are provided by many leading cloud providers and data centres, mostly from publicly funded organisations, ensuring that you have access to the latest and most powerful computing resources available.
- **Speed and efficiency:** Our services are designed to help you accelerate the process leading to research outputs. With EGI, you can expect faster simulations, higher-quality data analysis, and more accurate results.

- **Openness:** Our services can be requested by any scientists or businesses involved in academic research, regardless of their location or field of study. EGI can help you achieve your research goals. The services are based on open source software, open standards and protocols.
- **User support:** Our services are run and supported by experts with knowledge of the research landscape and experience with the specific needs of the research communities.
- **Federated approach:** Our resource providers are geographically distributed and federated, thus increasing optimal use and improving opportunities for co-location of compute and research data.

You can read in detail about all the services on our website[2].

Access policies to our services

We strive to lower the entry barrier to access high-end services and professional support to all researchers. Thanks to the capability of integrating national and European investments, we can optimise the use of financial resources across borders and among disciplines. In most cases, we offer services free at the point of use and when it is not possible, we revert to paid access. For special needs, we can also channel community funding to our providers. Our ultimate goal is to lower the financial barrier to use the services for end users while ensuring that involved professionals and deployed computing infrastructures are compensated.

Sponsored Access

EC funding

- **WHAT:** Virtual access to EGI services, support or co-development
- **ACCESS POLICY:** Free at the point of use
- **REQUIREMENT:** Relevance to scope of the project
- **SUSTAINABILITY:** Post-project support possible | subject to negotiation
- **HOW:** Use cases submission to open calls, project partnership

In-kind support on the national level

- **WHAT:** Access to EGI services, support or co-development
- **ACCESS POLICY:** Free at the point of use thanks to national funding
- **REQUIREMENT:** Alignment to national roadmaps and priorities
- **SUSTAINABILITY:** Depending on the national or institutional priorities
- **HOW:** Memorandum of Understanding with the EGI Foundation facilitating the matchmaking

Paid Access

Direct charge

- **WHAT:** Access to EGI services, support or co-development
- **ACCESS POLICY:** As defined in the contract
- **REQUIREMENT:** Mutual interest
- **SUSTAINABILITY:** As defined in the contract
- **HOW:** Direct contract

Long Term Partnership

EGI Federation membership

- **WHAT:** Access to EGI services for research & services for federation
- **ACCESS POLICY:** Services for federation as defined in the open Service Level Agreements | Services for research are subject to negotiation
- **REQUIREMENT:** Organisations with established legal entity
- **SUSTAINABILITY:** Long-term support and collaboration
- **HOW:** By joining the EGI Federation as Participant or Associated Participant
- **MORE INFORMATION:** https://go.egi.eu/join

Compute services

EGI compute infrastructure provides fast and flexible compute capacity to fit any research need, from Cloud compute to Cloud Container compute, and High-Throughput compute. Our Software Distribution enables users to publish and access software across multiple sites.

Our Compute Services are the perfect choice for researchers who demand the best in performance, flexibility, and ease of use.
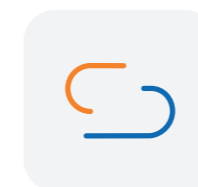
Since 2009, we have delivered more than

7B CPU Hours

through the EGI High-Throughput Compute platform and over

3 Million

Virtual Machines serve the Cloud Computing needs.

Cloud compute

Run virtual machines on-demand with complete control over computing resources

With Cloud Compute, you can deploy and scale virtual machines on-demand. This means you'll have guaranteed computational resources at your fingertips in a secure and isolated environment.

Plus, with open API access, you can enjoy all the benefits of virtualisation without the overhead of managing physical servers.

Here are a few ways you can use Cloud Compute to enhance your workflow:

- Execute compute- and data-intensive workloads (both batch and interactive) with ease
- Host long-running services like web servers, databases, or application servers
- Create disposable testing and development environments on virtual machines and scale your infrastructure as necessary
- Select virtual machine configurations (CPU, memory, disk) to suit your needs
- Manage your Cloud Compute resources in a flexible way with integrated monitoring and accounting capabilities

With EGI Cloud Compute, you can easily select pre-configured virtual appliances from our extensive catalogue, which is replicated across all EGI cloud providers. This means you can access a wide variety of computing resources without having to worry about maintenance, upgrades, or hardware failures. You can also scale up or down your computing resources based on your research needs, without disrupting your workflow.

SUCCESS STORY

Riding the waves of success: How OBSEA leveraged EGI Cloud Compute

OBSEA is a cutting-edge underwater observatory that revolutionises the exploration and comprehension of seas and oceans. As oceans are intricate and dynamic systems, a thorough understanding of their complexities is essential. OBSEA's innovative approach involves gathering a high-resolution, multidisciplinary, long-time-series collection of environmental variables that sheds light on the complexity of these vast bodies of water. The EGI Cloud Compute service plays a crucial role in ensuring scientific excellence by providing the necessary infrastructure to deploy data acquisition and data visualisation services. Consequently, the combination of OBSEA and EGI Cloud Compute service represents a significant advancement in oceanic research, providing invaluable insights into the mysteries of the world's oceans.

Service providers: Service providers: This service is offered by providers of the EGI Federated Cloud Platform

🔲 Click to open link

Order the service on EOSC Marketplace

Read the **full success** story on our website

Cloud Container Compute

Run Docker containers in a lightweight virtualised environment

EGI Cloud Container Compute is a complete solution for anyone looking to use containers for applications with ease and at scale. With multiple service options – a fully-managed service where you just have to bring your container images, or a self-managed service with on-demand provisioning of the necessary compute resource – this service offers both ease of use and advanced customisation, as well as unique features that make it ideal for anyone needing a reliable and efficient container platform. Our secure and isolated environment ensures that your containers are protected from external threats and with standard API access, you can easily manage and monitor your containers without any additional overhead. The result is improved performance, ideal for development work.

Here are some of the key benefits and advantages of our Cloud Container Compute:

- Based on de facto industry standards: Kubernetes and OCI container images
- One-click deployment of applications based on Helm charts
- Centralised management of multiple Kubernetes clusters
- On-demand provisioning for ultimate flexibility
- Standard interface for easy multi-cloud deployments
- Interoperability and transparency for a hassle-free experience
- Removal of friction between development and operations environments.

SUCCES STORY

Empowering big Geoscience data analytics with EGI's Cloud Container Compute

Pangeo is a global community-centric, open, scalable and collaborative ecosystem that supports big geoscience data analysis. Designed for scientists, developers, and research software engineers, Pangeo enables collaboration on Big Data Geoscience research problems. Its versatility extends beyond Geoscience applications, offering support for diverse scientific contexts such as bioimaging.

With the potential to become the "reference" open science gateway, the platform leverages various infrastructures and data providers across the scientific community. Pangeo@Europe, with EGI's support, has enabled researchers to onboard on the Pangeo EOSC infrastructure. EGI's Cloud Container Compute has been particularly helpful in deploying Pangeo on top of different cloud providers, expanding its reach and usability. Pangeo represents a significant step forward in scientific research, and its continued development promises to have a far-reaching impact on scientific breakthroughs across various disciplines.

Service providers: This service is offered by providers of the EGI Federated HTC Platform

Order the service on EOSC Marketplace

Read the **full success** story on our website

High-Throughput Compute

Execute thousands of computational tasks to analyse large datasets

With High-Throughput Compute you can run computational jobs at scale, tapping into the immense power of the EGI infrastructure to process large datasets and execute large batches of computing tasks. The service is provided by a distributed network of computing centres, giving you access to a massive amount of computing power via a standard interface and membership of a virtual organisation. With over 1 million cores of installed capacity, EGI can support over 1.6 million computing jobs per day, making it one of the most powerful and versatile compute solutions for research and innovation.

Benefits of High-Throughput Compute:

- Access to high-quality computing resources that help you achieve your research goals
- Integrated monitoring and accounting tools that provide you with information about availability and resource consumption
- Workload and data management tools that enable you to manage all your computational tasks with ease
- Large amounts of processing capacity over long periods of time
- Faster results for your research
- Collaborative research by enabling users to share resources among themselves.

SUCCES STORY

OpenCoastS+ leverages EGI HTC for reliable coastal forecasts in 30 countries

OpenCoastS+ is an open-source platform that offers an efficient and cost-effective way to develop hydrodynamic and water quality forecast systems on demand. It provides users with advanced features that allow them to simulate hydrodynamics affected by tides, winds, and river flows while also considering the interactions with waves and stratification effects. The success of OpenCoastS+ relies on the computational infrastructure of the EGI Federation. The EGI High-Throughput Compute service guarantees the timely delivery of multiple and simultaneous simulations with dozens or a hundred thousand model grid points. This technology supports platform usage in 30 countries with nearly 9000 computing hours daily. By leveraging this advanced technology, OpenCoastS+ users can develop highly accurate and reliable coastal forecast systems tailored to their specific needs.

Service providers: This service is offered by providers of the EGI Federated Cloud Platform

**Order the service** on EOSC Marketplace

Read the **full success** story on our website

Software Distribution

Publish and access software efficiently across multiple sites

Our innovative service allows research communities and infrastructures to deploy software on a worldwide distributed computing infrastructure, making it easier and more efficient than ever before.
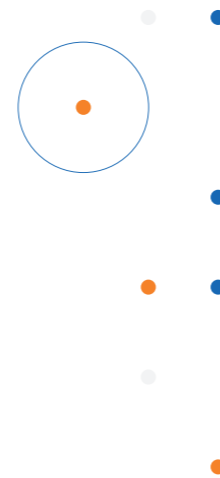
Here are the key features and benefits of the Software Distribution:

- Centrally Managed: Software Distribution allows for centrally managed software distribution across federated environments
- Scalable and Reliable: With Software Distribution, you can deliver content with a scalable, reliable, and low-maintenance software and data delivery

system, which makes it easy to manage and deliver software to users across distributed infrastructures

- Flexible: Software Distribution also allows you to make content available as a user-space read-only file system

SUCCES STORY

EGI's support elevates Biomed's VIP with a smooth distribution of its software

Biomed is an international Virtual Organisation that supports the Life Sciences community, particularly medical image analysis, bioinformatics, and drug discovery. Its flagship science gateway, the Virtual Imaging Platform (VIP), offers researchers access to multiple applications and vast storage and computing resources. VIP has over 1300 registered users who can access 20 different applications, making it a flexible data processing, analysis, and storage platform. VIP relies on the EGI Software Distribution as part of its production environment to distribute the software needed to process experiment data flexibly, reliably and efficiently.

Service providers: This service is offered by multiple providers from the EGI Federation

Order the service on EOSC Marketplace

Read the **full success** story on our website

Compute Orchestration

Compute Orchestration is designed to give you complete control over your computing resources across the EGI distributed infrastructure. Our services maximise the efficiency of your computing operations, streamline your workload management, and boost your productivity.

Our Workload Manager ensures the computing tasks are managed and distributed efficiently while maximising the use of resources. During the last 12 months

12.5 Million

 jobs were running in total with peaks of more than

12,400

concurrent jobs.

EGI Services

Workload Manager

Manage computing workloads in an efficient way

The Workflow Manager is the ultimate solution for managing and distributing your computing tasks efficiently. With this service, you can maximise the usage of computational resources and save time and effort. The Workflow Manager is powered by cutting-edge DIRAC technology, making it the perfect solution for users who need to exploit distributed resources in a transparent way.

Here are some of the key features and benefits of the Workflow Manager:

• Efficient job submission management and workload distribution
• Maximisation of computational resources by optimising your workflow
• Seamless integration with cloud and grid capacities
• Easy-to-use interface that doesn't require technical expertise
• Open architecture that allows easy extensions for the needs of specific applications via APIs.

SUCCES STORY

EGI's Workload Manager enhances WeNMR's computational capabilities

WeNMR is a global Virtual Research Community focused on structural biology and life sciences, supported by EGI. It offers researchers worldwide a platform to gain insight into biological macromolecules' structural and dynamic properties at atomic details, which is critical for understanding most cellular processes. To ensure efficient and cost-effective distributed execution of its valuable tools, WeNMR uses a suite of services based on a front-end web page with a backend consisting of various software and scripts. Now available on the EOSC Marketplace, these services have continuously evolved to simplify access, increase throughput, and ensure access to sufficient computational resources through several agreements with service providers worldwide. By relying on the EGI Workload Manager service, WeNMR can ensure the seamless delivery of its capabilities, allowing researchers to carry out their research quickly and easily.
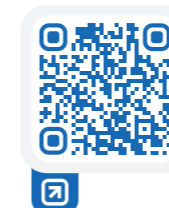
Service providers: This service is offered by multiple providers from the EGI Federation

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egi.eu

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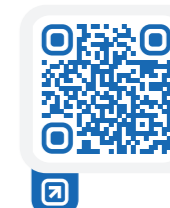
Infrastructure Manager New

Use cloud orchestrator to deploy and configure complex virtual infrastructures

Infrastructure Manager (IM) revolutionises infrastructure deployment by offering an open-source solution for creating complex and tailored virtual infrastructures across multiple clouds. With IM, the time-consuming and error-prone manual processes are automated, enabling seamless deployment, configuration, software installation, monitoring, and updates of virtual infrastructures. IM is designed to be versatile, supporting a wide range of public and on-premises cloud back-ends. This cloud agnostic approach ensures that user applications can be deployed effortlessly regardless of the underlying cloud infrastructure. Incorporating DevOps capabilities based on Ansible, IM takes infrastructure management to the next level. Users can easily install and configure their required applications, creating a fully functional infrastructure that meets their specific requirements.

So, what are the benefits of using IM for infrastructure management?

- Simplified deployment of complex, well-known application architectures on virtual infrastructures with ease, all through a user-friendly web interface
- Scalability: more advanced users can rely on IM's cloud orchestration APIs to deploy TOSCA topologies on top of EGI Cloud Compute resources.

- Seamless integration of DevOps principles enhances efficiency, collaboration, and scalability, enabling users to unlock the full potential of their infrastructure.

SUCCES STORY

Empowering success: EGI Infrastructure Manager unleashes ENES Data Space for seamless computing capacity allocation

ENES is a European network of 50+ partners collaborating to accelerate climate progress, Earth system modelling, and understanding. They support global/regional climate simulations, adhere to Earth System Grid Federation data standards, and play a crucial role in IPCC assessments and EU policy climate projections.

ENES, with its complex models and evolving computing platforms, tackles challenges through a distributed e-infrastructure of shared components, tools, and data. The Coupled Model Intercomparison Project (CMIP) generates multi-model climate projections crucial for EU policies. ENES CMIP project alone has produced 10M+ datasets, with 500M+ global downloads. The EGI Infrastructure Manager has been used by ENES to automate the deployment and configuration of the ENES cloud instance atop EGI Cloud Compute providers. Furthermore, the IM also enabled the elastic management of the virtual infrastructure adding or removing working nodes when there are changes in the system workload.
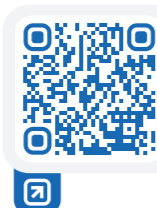
Read more about the service on our website

Read the **full success** story on our website

Storage & Data

Do you need reliable services for storing and transferring your data across international research teams? With three specialised services to choose from, we have everything that users and service providers might need to store, share, and transfer their valuable data in a reliable and efficient way.
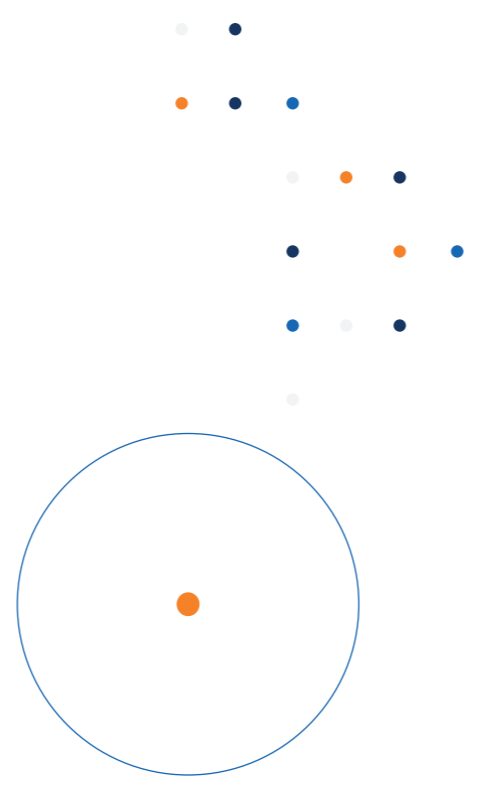
Over

580 PB

online storage capacity is offered by HTC and Cloud storage providers.

EGI Services

Online Storage

Store, share and access your files at a global scale

Our online storage service is designed to provide you with a high-quality environment to store your data and share it with distributed teams. Your data can be accessed through different standard

Here are three service offerings and key benefits of our Online Storage service:

- **Block Storage:** Our block-level storage is the perfect solution for durable data that doesn't need to be shared beside a single virtual machine (VM). This means you can attach our block storage to your VMs as volumes, making it easy to access your data whenever you need it.
- **Grid Storage:** Our file storage for High Throughput Compute (HTC) and/or High Performance Compute (HPC) scenarios is perfect for those who need to store and access large amounts of data

quickly. With our grid storage, you won't have to worry about latency or downtime, ensuring that you can access your data when you need it most.
- **Object Storage:** Our object storage is ideal for cloud-native applications, archiving, or when data is shared between different VMs or multiple steps of processing workflows. With our object storage, you can store and access data structures easily and efficiently.

SUCCES STORY

EGI and EMSO ERIC: Partners in environmental data excellence

EMSO ERIC stands at the forefront of addressing the critical need for curated data and top-notch services in the realm of environmental research. Scientists, industries, institutions, and policymakers all benefit from its mission to deliver scientific data that drives the formulation of impactful environmental policies.

Central to EMSO ERIC's success is its scalable and flexible data platform, meticulously designed to cater to a wide range of disciplines. In this remarkable endeavour, EGI plays a vital role,

operating key EMSO ERIC services, notably the data portal, which has garnered thousands of visits from users across different countries. At the core of this infrastructure lies the EGI Online Storage and EGI Cloud Compute services, empowering EMSO ERIC with 1.2TB of RAM and 10TB of block storage, backed by 512GB of RAM and 600GB HDD for reliable data backup. This robust support facilitates seamless data ingestion, consolidation, processing, and archiving, while harmonising data management architectures across distributed EMSO nodes.

Service providers: This service is offered by multiple providers from the EGI Federation

Order the service on EOSC Marketplace

Read the **full success** story on our website

Data Transfer

Transfer large sets of data across storage platforms

Experience the power of our Data Transfer service, revolutionising file transfers with its efficient and tailored web interfaces. Enjoy real-time statistics and effortless management of network resources at your fingertips. Say goodbye to slow, unreliable transfers and hello to lightning-fast and secure data transfers.

Here are just a few advantages of our service:

- Asynchronous transfer for lightning-fast speeds
- Ideal for very large files and large amounts of files
- Automatic retry mechanisms for seamless transfers
- Real-time statistics and network management interfaces
- Complete control over your data transfer process

DataHub

Access key scientific datasets in a scalable way

DataHub allows you to bring data close to computing to exploit it efficiently, and to publish a dataset and make it available to a specific community, or worldwide, across federated sites. DataHub is based on the Onedata technology.

With EGI DataHub, you'll enjoy a range of unique benefits:

- Discover data with ease: Our central portal makes it simple to see the datasets that are available for exploitation and request access to it, saving you time and effort.
- Customisable access: Whether you require unauthenticated open access, user registration, or restricted access for members of a Virtual Organisation, we've got you covered.
- Multiple access options: Access data via GUI, POSIX or REST API, depending on your needs.
- Resilient replication: Our platform is built to ensure maximum uptime and availability by replicating data from providers on-demand or automatically.
- Authentication and Authorisation Infrastructure Integration (AAI): The integration with EGI Check-

in seamlessly links EGI DataHub with other EGI components and with user communities existing infrastructure to ensure secure and convenient access to data.
- Metadata and Shares Management: EGI DataHub simplifies the process of managing metadata and shares, saving you time and effort.
- Data Import and Caching: Our platform uses file popularity to cache data, ensuring quick and easy access for users.
- Multiple Backend Support: With support for CEPH, S3, GlusterFS, POSIX, and more, EGI DataHub is truly versatile and convenient.

SUCCES STORY

Pioneering together: EGI and WLCG pushing boundaries in High-Energy research

WLCG, the international collaboration that led to the discovery of the Higgs Boson in 2012, is a global initiative with more than 170 computing centres across 42 countries. Its primary goal is to provide computing resources to store, distribute, and analyse data generated by the high-energy physics experiments conducted by the Large Hadron Collider (LHC) at CERN. The detectors installed in the LHC generate a massive amount of data that must be processed, distributed and analysed by thousands of scientists across hundreds of

scientific institutions worldwide. EGI Federation's services are crucial in enabling such an exascale, distributed computing infrastructure like WLCG. CERN utilises the FTS service, which underlies EGI Data Transfer, to distribute the LHC Data to the WLCG infrastructure. This technology facilitates data transfer of over 80 Petabytes monthly, allowing to run on the WLCG infrastructure around 700 million computing jobs annually, consuming approximately 5 billion CPU hours.

SUCCES STORY

LAGO: Unleashing astroparticle research in Latin America with EGI

LAGO is a collaborative organisation of Ibero-American institutions operating the Latin American Giant Observatory. The observatory is a network of astroparticle detectors used for high-energy astrophysics, and space weather phenomena research across 10 Latin American countries. Facing data management and resource sharing challenges, EGI stepped in with a combination of services,

including the EGI DataHub that empowered LAGO researchers to store, publish, and access crucial data and metadata. The service enabled them to access a 15TB cloud-stored library containing the expected flux of signals produced by more than 1013 cosmic rays showers. This service has been crucial in ensuring the continuity of research programmes in Latin America.

Service providers: This service is offered by multiple providers from the EGI Federation

Order the service on EOSC Marketplace

Read the **full success** story on our website

Service providers: This service is offered by multiple providers from the EGI Federation

Order the service on EOSC Marketplace

Read the **full success** story on our website

Security & Identity

Our "Security and Identity" service category offers a comprehensive suite of tools designed to fortify your organisation's defences while simplifying access management across diverse environments. From enabling seamless single sign–on through EGI Check–in, which acts as a central hub connecting federated Identity Providers to multiple services, to our newly introduced Secrets Store, facilitating easy retrieval, management, and rotation of critical credentials and API keys, we provide essential services to safeguard your digital assets and streamline operations.

EGI Check-in serves as a seamless bridge, enabling more than

17,500

registered users to access 150+ services effortlessly, using their own institutional identity providers and community AAI services.

Check–in
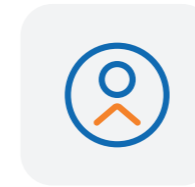
Login with your own credentials

With EGI Check–in, you get a centralised solution that seamlessly connects various Identity Providers with EGI service providers. You can quickly and easily select your preferred Identity Provider and gain access to a wide range of EGI services without any hassle.

Are you a community manager or service provider? Our check–in solution allows you to manage your users and enable multiple federated authentication sources using different technologies.

Here are some of the key features and benefits of EGI Check-in:

• With multiple authentication sources available, you can ensure increased security without compromising productivity
• Federated in eduGAIN as a service provider: You can rest assured that our service provides top–notch security that is trusted by the European research and education community.
• REFEDS RnS and Sirtfi compliance: We understand the importance of compliance, which is why we make it a priority to adhere to the highest standards

• User registration portal: Our user registration portal allows accounts-linking, making it easier than ever to manage multiple user accounts
• Transparent user attribute delivery: The EGI Check–in combines user attributes from various sources, including Identity Providers and attribute provider services, and delivers them to connected EGI service providers in a transparent way.

SUCCES STORY

EGI Check-in empowers EISCAT's data exploration

EISCAT is a scientific organisation that operates radar antenna sites across Finland, Norway and Sweden, all north of the Arctic Circle. The EISCAT_3D radar system supports research in various fields, but handling the vast amount of data generated poses significant challenges. The EISCAT Data Access Portal offers authentication and authorisation features via the EGI Check-in service. Authorised researchers can browse metadata, select applications, visualise or download analysis results, and analyse data using cloud resources or their own software through online computing. The EGI Check–In allows for user registration, authenticated and authorised access to the EISCAT Data Access Portal, and access to the underlying distributed computing infrastructure, including embargoed data. Overall, EGI's contribution enables EISCAT to meet the challenges of handling large-scale experimental data and advancing research in the fields of atmospheric and ionospheric studies.
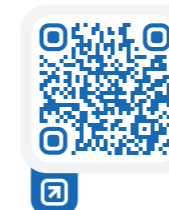
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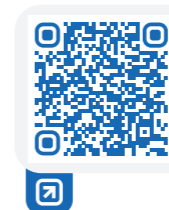
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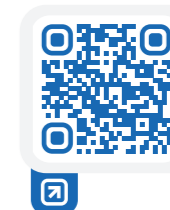
Read the **full success** story on our website

Secrets Store New

Easily retrieve, manage, and rotate credentials, API keys, and other secrets through their lifecycle

Unlock the potential of your applications and services with our Secrets Store—a robust solution designed to safeguard the secrets crucial for accessing your resources. Whether it's database credentials, API keys, certificates, or other sensitive information, the Secrets Store empowers you to effortlessly manage, rotate, and retrieve secrets throughout their lifecycle and share them with your team securely.

Key features and benefits of Secrets Store:

- Enhanced security without compromise: Leverage multiple layers of security for increased protection without sacrificing productivity. Our Secrets Store ensures that your secrets remain confidential and guarded against potential threats
- Seamless integration with applications and workloads: Stay agile and responsive to evolving security requirements. The Secrets Store allows you to update (rotate) credentials without the need to modify your application or workload code, providing a hassle-free experience.
- Audit trail for usage and breach assessment: Gain insights into secrets usage and proactively assess potential breaches. The Secrets Store offers a comprehensive audit trail, enabling you to track and analyse your stored secrets' access and usage patterns.
- Lifecycle management made easy: Simplify the management of secrets throughout their lifecycle. From easy retrieval to seamless rotation, our Secrets Store streamlines the entire process, ensuring that your secrets are always up-to-date and secure.
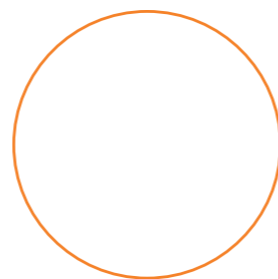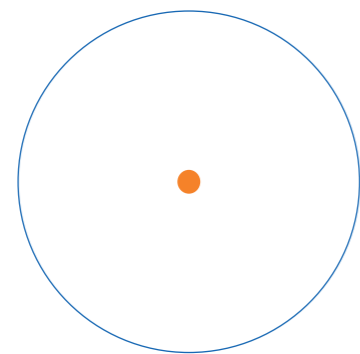
Applications

With EGI Applications, you can gain access to online applications, application-hosting frameworks, and a browser-based tool for compute-intensive data analysis. Our innovative services offer a range of features and benefits that will transform the way you work with data.

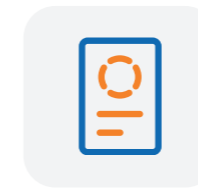**Every month, more than**

200

registered users from

32

countries make use of our Notebooks in over

100

sessions.

Notebooks

Create interactive documents with live code, visualisations and text

Are you looking for a powerful and innovative tool for data analysis? EGI Notebooks is the perfect solution. This browser-based tool is designed to make interactive data analysis easy and accessible using EGI storage and compute services. With EGI Notebooks, you can combine text, mathematics, computations, and their rich media output using Jupyter technology.

Here are just a few reasons why EGI Notebooks is the best choice for all your data analysis needs:

- Multiple Programming Languages: EGI Notebooks supports multiple programming languages, including Julia, Python, R, Octave, and MATLAB
- Cloud Compute Service: EGI Notebooks can scale to multiple servers and users with the Cloud Compute. This means you can work on large datasets and complex computations with ease without worrying about server capacity
- Easy to Use: You don't need any specialised knowledge to use the service

- Two options to choose from: Whether you're an individual researcher or a scientific community, EGI Notebooks has you covered. Our basic instance is an open service that anyone can access. And for scientific communities, we offer customised instances hosted on special hardware (for example, with fat nodes and GPUs), and custom libraries, data import/export, and user authentication systems.

SUCCES STORY

EGI boosts D4Science's data infrastructure with advanced analysis solutions

Since 2014, D4Science has been at the forefront of providing robust data infrastructure, connecting thousands of scientists worldwide and integrating diverse data sources. With a staggering capacity of over 3,650 CPU cores and a thriving user base of 18,000 scientists from 50 countries, D4Science has fostered over 175 Virtual Research Environments (VREs) for scientific communities across the globe. In this remarkable journey, EGI has played a pivotal role, supporting D4Science researchers with specialised data analysis solutions through EGI Notebooks. Powered by Jupyter technology, EGI Notebooks seamlessly blend text, mathematics, computations, and rich media output, enabling scalability across multiple servers and users. The collaboration with D4Science has provided EGI with valuable input from scientific communities and driven the technological evolution of the EGI Notebooks service. Today, it is one of the most demanded EGI services, providing advanced data analysis capabilities.
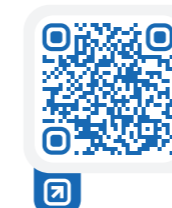
Service providers: This service is offered by multiple providers from the EGI Federation

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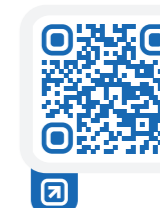
Read the **full success** story on our website

Replay New

Reproduce and share research on a notebooks-based platform

This service allows you to reproduce and share custom computing environments effortlessly. With Replay, you can replicate the execution of your analysis in a notebooks-based platform, ensuring that others can easily access and interact with your content. Our platform is based on Binder technology, which builds your environment on the fly from a code repository that contains the code you'd like to run, as well as a set of configuration files that determine the exact computing environment to run it. But that's not all – Replay also generates shareable links for others to interact with your content from any browser. This means other researchers can easily reproduce your analysis and access data available in EGI's infrastructure, making it easier than ever to collaborate and share your work with others.

In summary, Replay offers the following benefits:

- Simplicity: you won't need to operate or manage the service. Simply access it via your browser and enjoy the benefits
- Significantly larger resource limits than other alternatives
- Better integration with the European Open Science Cloud ecosystem, providing a seamless experience that enables you to share and reproduce research with the EOSC community
- Customisable for communities to integrate specific features such as GPUs, specific data stores, and more.

SUCCES STORY

Supporting reproducible science in Earth Science communities

The RELIANCE project provides innovative services to help manage the research lifecycle for Earth Science communities and Copernicus users. This extends the capabilities of EOSC. EGI supports RELIANCE by implementing the research lifecycle management ecosystem called ROHub, which relies on RO-crate-based research objects (ROs) and integrates several services, including the newly launched Replay. With Replay, researchers can easily reproduce their notebooks and their run-time environment. This service automatically opens and loads Jupyter notebooks, allowing researchers to reproduce their computing environment, including input datasets, directly from their ROs in ROHub.
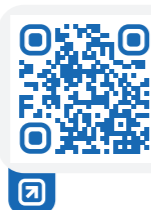
Read more about the service on our website
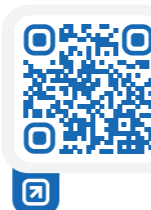
Read the **full success** story on our website

Training

At EGI, we believe in empowering scientific communities through professional development and the acquisition of knowledge. We offer a wide range of training and consultancy services to help you make the most of our cutting–edge EGI services. Our team is also dedicated to increasing the quality of work of our service operators, ensuring that you receive the highest level of support possible. With our help, you can unlock your full potential and confidently achieve your scientific goals.

In 2022, EGI captivated over

500

attendees with a series of eight engaging webinars and nine comprehensive training sessions. Our training programme enabled over

1000

individuals to attain FitSM certifications.

FitSM Training

Learn how to manage IT services with a pragmatic and lightweight standard

FitSM is a lightweight standard for IT service management. It brings order and traceability with simple, practical support and provides a common conceptual and process model setting out realistic requirements. With FitSM Training you will learn the fundamentals of IT service management and how to implement FitSM in your organisation through a combination of lessons and examples. FitSM professional training is certified by internationally recognised authorities. By implementing FitSM, you can improve your organisation's IT service management processes and increase efficiency. Our training programme is structured in three levels: Foundation, Advanced and Expert. Each level builds upon the previous one, allowing you to increase your expertise to become an expert in the field. By completing our FitSM Training programme, you'll also receive a recognised certification that will raise your professional profile and make you stand out in the industry.

Here are a few benefits of choosing FitSM Training:

- Learn the fundamentals of IT service management in a structured and comprehensive programme
- Implement the FitSM standard in your organisation to improve IT service management processes, especially in federated environments
- Receive a recognised certification to raise your professional profile and stand out in the industry
- Access a combination of lessons and examples to ensure practical and hands–on learning
- Take advantage of our in–house training for multiple staff members. We offer the flexibility to customise the training date and location to align with your team's needs.

Certification body and accreditation: APMG International

> The FitSM Foundation course allowed me to formalise and correct some of the "common sense" procedures I used in my day-to-day service management and I became more proactive in my federated collaborations. As a service manager, I find FitSM principles useful for any size of collaboration since they offer an easy-to-follow guide that can be adapted for smaller collaborations but should be taken as it is in large federated ones

Gino Marchetti

Informatics/Bioinformatics engineer at CC-IN2P3
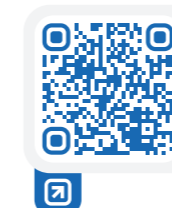
Service providers: This service is offered by multiple providers from the EGI Federation
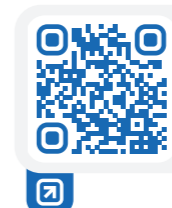
Order the service on EOSC Marketplace

ISO 27001 Training

Learn how to manage and secure information assets

ISO/IEC 27001 is an international standard to manage information security. This comprehensive program equips you with the essential skills to implement an Information Security Management System (ISMS) within your organisation. You'll learn how to create a secure environment for critical data by combining people, processes, and IT systems. ISO 27001 offers a systematic approach to protect various forms of information, including intellectual property, financial data, personal records, and entrusted third-party data. Our training program consists of two levels: Foundation and Professional, leading to formal ISO 27001 certification upon successfully completing a final exam.

Through ISO 27001 Training, you'll gain the ability to:

- Effectively manage and prioritise security risks
- Safeguard your organisation against information security threats and vulnerabilities
- Secure data entrusted to your organisation
- Ensure legal compliance and fulfil your responsibilities
- Instill confidence in your organisation's information security practices.

At EGI, we offer two types of training options tailored to your needs:

EGI offers two types of training:
- **Open Registration:** Join our pre-scheduled sessions at specified dates and locations, perfect for individuals seeking professional development opportunities.
- **In-House:** If your organisation requires training for multiple staff members, we offer the flexibility to customise the training date and location to align with your team's needs.

> Certification in ISO 27001 helps me to reassure our existing and prospective customers that security and data protection is one of our highest priorities. EGI offered a high-quality course delivered by qualified professionals and I would highly recommend them to anyone interested in the topic.
>
> **Christine Toneatti**
>
> Quality and Risk Assurance Manager, ECRIN (European Clinical Research Infrastructure Network)
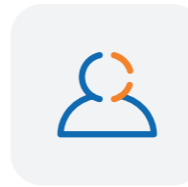
Service providers: This service is offered by multiple providers from the EGI Federation

Order the service on EOSC Marketplace

Training Infrastructure

Dedicated computing and storage for training and education

Designed to support a wide range of training and educational events, this cloud-based platform offers a seamless environment for onsite tutorials, workshops, online courses, and self-paced learning.

With the Training Infrastructure, trainers can effortlessly deploy custom virtual machine images tailored to their specific training needs. This flexibility empowers educators to create immersive and engaging training environments for their students. Additionally, the community benefits from the ease of deployment and the ability to reuse course materials, promoting collaboration and knowledge sharing.

Harnessing the same high-quality computing and storage environment that EGI provides to researchers, the Training Infrastructure ensures optimal performance and reliability.

Its main characteristics include:

- Targeted courses and added value for scientific communities, fostering specialisation and innovation.
- Easy-to-use, on-demand access, enabling trainers to enhance their training offerings and meet evolving demands.
- Streamlined deployment of courses and materials, promoting efficiency and maximising resource utilisation.
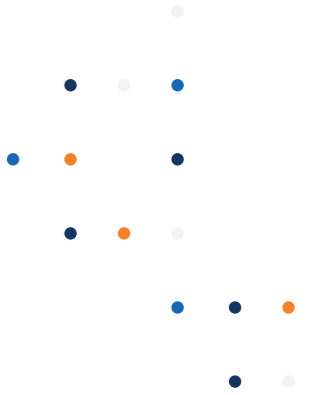
SUCCES STORY

EGI Training Infrastructure fuelling D4GEN Hackathon success

The EGI Training Infrastructure played a pivotal role in enabling multiple editions of the D4GEN hackathon in France. This immersive event centred around harnessing the power of Artificial Intelligence to unravel the intricacies of ecosystems, extract invaluable insights, delve into biological diversity, and model the diverse processes shaped by living organisms. In the 2022 and 2023 editions, 16 research teams, consisting of approximately 50 participants, embarked on this scientific adventure. Leveraging the robust capabilities of the EGI Training Infrastructure, these teams consumed over 200K CPUh, utilising cutting-edge resources to push the boundaries of knowledge and innovation.

Service providers: This service is offered by multiple providers from the EGI Federation
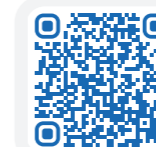
Order the service on EOSC Marketplace

Services for Federation

Coordination

Operations Coordination and support
Coordinate activities to ensure seamless operations

Community Coordination
A joint approach to user engagement

Strategy and Policy Development
One federation, one vision, one strategy

Project Management and Planning
A joint approach to planning and management

ITSM Coordination
Ensures professional service management for EGI IT services

Security Coordination
Enhance local security for a safer global infrastructure

Techincal Coordination
Progress and innovation through collaboration

Communications
Share your successes at a larger scale

Operations

Operational Tools
Integrate resources and operations in a federated ecosystem

Accounting
Track and report the usage of your services

Validated Software and Repository
Benefit from a repository of high–quality software validated for the EGI infrastructure

Collaboration Tools
IT tools for better coordination

Service Monitoring
Monitor the performance of IT services

Configuration Database
Manage the configuration information of federated e–infrastructure assets and their functional relations

Helpdesk
Your point of contact to ask for support at EGI

Security

Check–in
Login with your own credentials

Attribute Management
Manage memberships and groups in communities and virtual organisations

You can read in detail about all the services on our website:

https://www.egi.eu/services/federation/

Services for Business

Our business engagement programme is organised within EGI DIH, a virtual space where companies and technical service providers meet to test solutions before investing.

Test before you invest
EGI DIH helps and supports companies in adopting, testing, and validating advanced computing technologies to help the digital transformation and enhance productivity and competitiveness.

Find Funding & Investment
EGI DIH facilitates access to funding opportunities and investment mechanisms to sustainably support innovation.

Build a Network & Community
EGI DIH brings SMEs and companies in contact with the EGI community to facilitate interaction and open new market opportunities.

Get Consultancy & Training
EGI DIH provides knowledge on the technical offer through webinars and consultancy services.

You can read in detail about all the services on egi.eu/egi-dih/

SUCCES STORY

Empowering Private Sector Innovation: Binare's Success Story

Binare Oy, a cybersecurity startup from Finland, partnered with EGI and obtained support from EGI DIH within the scope of EGI–ACE and EUHUBS4Data projects. Binare's goal with these projects was on addressing cybersecurity challenges in the Internet of Things (IoT) domain encompassing billions of devices and and a significant market value.

From 2021 to 2023, EGI provided extensive support to Binare, managing projects and offering computing & storage resources. With EGI's technical expertise and network of computing centers across Europe,

Binare could concentrate on their project's core challenges rather than on troubleshooting and resource management. As a result, Binare highly recommends EGI as a reliable partner for anyone involved in computing–based innovation.

Binare would like to express their gratitude to EGI for their exceptional support and looks forward to future collaborations with EGI and its partners to address current and future cybersecurity and IoT challenges.

Participants of the EGI Council

Austria
Participant
ACOnet

Represented entity:
aconet Association

Belgium
Participant
Belspo

Represented entity:
BEgrid

Bulgaria
Participant
IICT

Represented entity:
NCHDC

Croatia
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SRCE

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Romania
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NGI-RO

Slovakia
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IISAS

Represented entity:
SlovakGrid (NGI-SK)

Slovenia
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SLING

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Represented entity:
ES-NGI

Turkey
Participant
TÜBITAK – ULAKBIM

Represented entity:
ULAKBIM members

United Kingdom
Participant
JISC

Represented entity:
JISC Members and
UKRI Councils

International
Participant
EMSO ERIC

Represented entity:
EMSO ERIC members

International
Participant
CERN

Represented entity:
CERN

International
Participant
MARIS BV

Represented entity:
SeaDataNet

International
Participant
CMCC

Represented entity:
IS-ENES

Participant
SZTAKI (Hungary)

Represented entity:
SZTAKI

Associated Participants

Participant
NBIS (Sweden)

Represented entity:
NBIS

Participant
BITP (Ukraine)

Represented entity:
UNG

Participant
EISCAT (International)

Represented entity:
EISCAT Council
Members

Participant
EnhanceR (Switzerland)

Represented entity:
EnhanceR members

Participant
UKIM (Macedonia)

Represented entity:
MARGI

Acknowledgements

We would like to extend our heartfelt appreciation to all EGI Federation data centers and service providers. Their unwavering commitment to excellence, constant innovation, and tireless efforts have significantly contributed to the continuous growth and expansion of EGI service portfolio. Through their expertise and dedication, the EGI Federation has been able to meet the evolving needs of our user community and provide cutting-edge solutions for data-intensive research.

We would also like to express our gratitude to the European Union for their invaluable support and funding, which has been instrumental in enabling us to deliver high-quality services and drive research advancements.

Lastly, we would like to extend our sincere thanks to our user community. Their trust in our services, engagement in collaborative projects, and valuable feedback have been integral to shaping and refining our offerings. Their steadfast support and active involvement have truly made a difference in our collective pursuit of scientific excellence.

The content of this publication is correct as of February 2024.