



EGI Council Participant: CSIC

Participating in EGI Impact Report: Spain

2024

egi.eu



Table of Contents

04

Infographic

05

Country
Overview

06

About EGI

10

EGI Contribution to the
country excellence in
science

21

Service
Level
Agreements

08

About
Council
Participant

09

Overall EGI
Impact

22

Participated
Projects

28

Infrastruc-
ture
Contribution

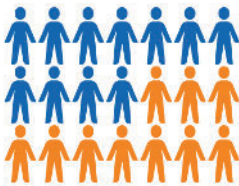
29

Methodology

Infographic

1,730 service users

In 2024, 1,730 researchers from Spanish institutions used the services provided by the EGI Federation



995 publications

The research communities, projects and scientific collaborations from Spain supported by the EGI led to 995 peer-reviewed scientific publications

26 Supported communities

In 2024, the Spanish infrastructure supported 26 research communities in the following disciplines: Agriculture, Climate Research, Health and Medicine, Physics



Projects

Spanish partners participate in 27 collaboration projects.

Compute Delivery

In 2024, the infrastructure providers from Spain federated in EGI delivered 318,750,512 HTC CPU Hours and 21,751,090 Cloud CPU Hours.



Country overview

Number of supported publications 995

Number of total service users 1,730

Scientific Communities supported 27 (Agriculture, Climate Research, Health and Medicine, Physics)

Data Centres contributing to the Federation 14

Collaboration projects 27

Total HTC CPU hours delivered 318,750,512

Total Cloud CPU hours delivered 21,751,090

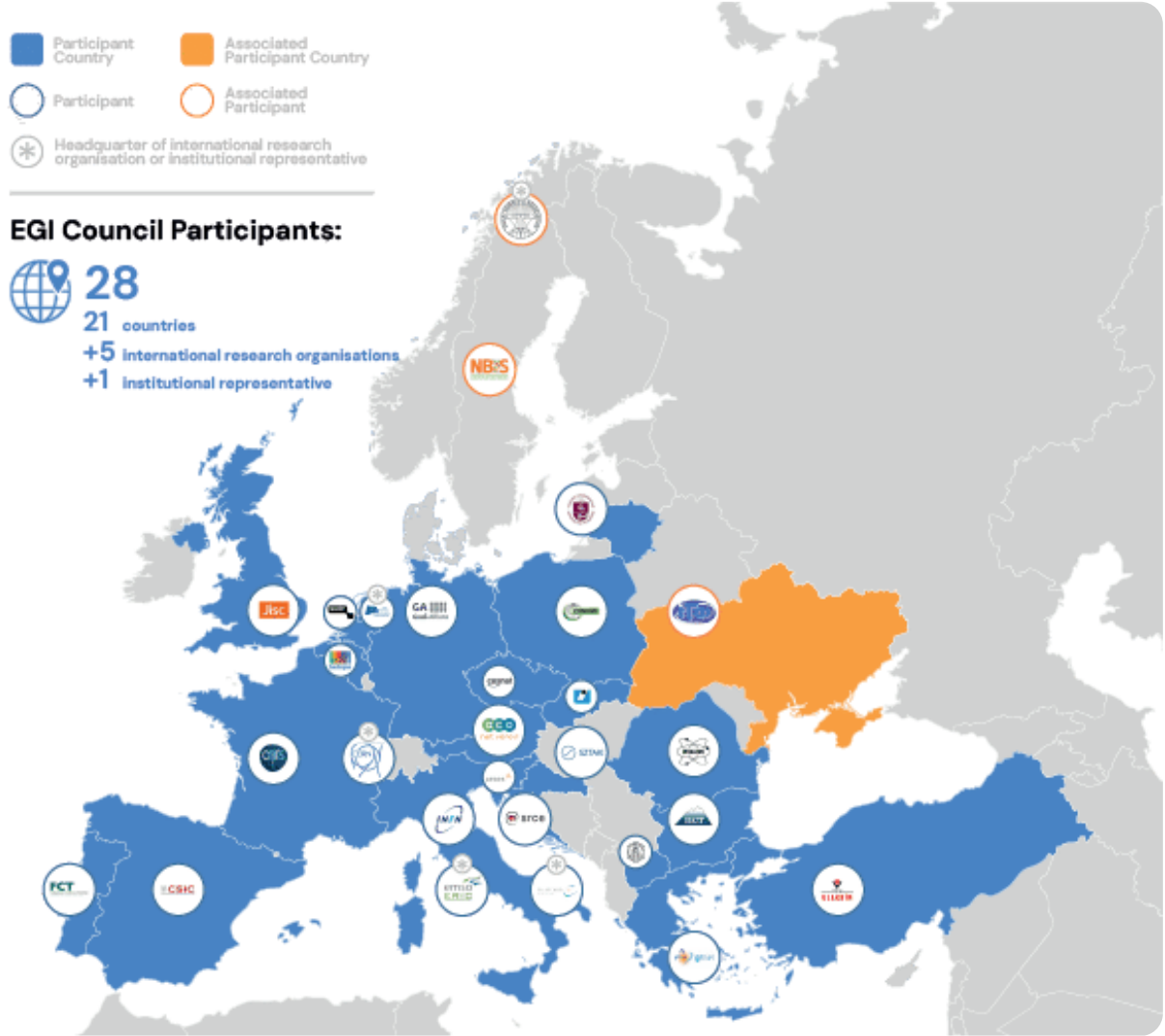
About EGI

EGI is the federation of computing and storage resource providers united by a mission of delivering advanced computing and data analytics services for research and innovation.

The EGI Federation believes that all researchers should have seamless access to services, resources and expertise to collaborate and conduct world-class research and innovation. The EGI Federation is coordinated by EGI Foundation, an organisation with headquarters in Amsterdam. The Foundation offers a service federation and management platform, enabling the data centres to harmonise and integrate their services by connecting to a common hub. Moreover, it engages with international research communities using these services in order to understand and satisfy their demands for advanced computing for research.

The mission of EGI is pursued by coordinating and provisioning an international federated infrastructure that pools together service providers from both the public and private sectors in Europe to develop, integrate and deliver digital services for compute and data-intensive research and innovation. As an open initiative with a global outlook, the EGI Federation also connects service providers beyond Europe, following the collaboration needs of the served communities.

The latest Annual Report provides an extensive overview of the results that have been achieved through our collaborative efforts in 2024.



Approved EGI Council map from 2024



About CSIC

The Spanish National Research Council (CSIC) is a State Agency for scientific research and technological development, with a special legal status, its own assets and treasury, functional and managerial autonomy, full legal capacity and of unlimited duration (art. 1 Statutes – Articles of Association).

Overall EGI impact

ES-NGI coordinates the Spanish participation to the EGI Federation; CSIC represents the National grid initiative for Spain in the EGI Council. ES-NGI promotes the building and operation of a multidisciplinary national Distributed Computing Infrastructure open to all sciences and to developing countries in Spain. This report provides an overview of the activities of ES-NGI in EGI, and the impact that was achieved thanks to this participation.

The annual membership fee contributed by ES-NGI to the EGI Foundation in 2024 was 75,000 EUR. The EGI Federation is composed of e-infrastructure providers from national and community initiatives, forming one of the largest distributed computing infrastructures for researchers in the world, integrating about 1,243,400 CPU cores and over 1,4 Exabyte of storage space from hundreds of data centres.

In 2024, the EGI Federation served around 116,000 users (+23%). EGI users consumed 7,4 Billion HTC CPU hours (+5.7%), 62,7 Million Cloud CPU hours (-23,5%), ran over 402 M computational jobs (+8%) and published over 2,560 open access publications.

As of the previous year, the research community with the largest number of users is Medical and Health Sciences, while the community with most extensive HTC CPU/h consumption is CMS.

From the scientific communities engaged in 2024, the one with most extensive Cloud CPU/h consumption is WeNMR.

Moreover, EGI engaged with a total of 249 scientific communities; 11 SMEs and business pilots, and 2 additional Research Infrastructure included in the ESFRI Roadmap, raising the total of number of ESFRI partners/users of EGI to 25.

EGI contribution to Spain excellence in science

EGI federates hundreds of resource centres that are located at participant countries, organizations and at collaborating e-Infrastructures worldwide. This federated infrastructure supports data- and compute-intensive research across Europe and the world. In 2024, our federation was used by over 260 scientific communities, and has been accessed by around 116.000 users.

Research Infrastructures and multi-national research collaborations are the largest adopters of EGI Services, the main contributors of thematic portals, and operate community-specific compute, storage and data systems based on EGI federation capabilities.

Research Infrastructures and multi-national research collaborations are the largest adopters of EGI Services, the main contributors of thematic portals, and operate community-specific compute, storage and data systems based on EGI federation capabilities.

The services of the EGI federation have been used by 1,730 researchers from Spain in 2024. The estimated annual scientific output in 2024 produced by research communities, projects and scientific collaborations from Spain and supported by the EGI Federation is estimated to amount to more than 840 peer reviewed scientific publications.

The EGI Federation is currently working with over 40 Research Infrastructures, 27 of which include Spanish partners. These EGI-enabled research infrastructures, their Spanish members and their 2024 scientific output (publications) are detailed in the following pages of the report.

Spain research collaborations in EGI

AMS-02 (Particle Physics)

- CIEMAT, Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas
- IAC Canarias & University of La Laguna

ALICE (High-Energy Physics)

- Valencia Polytechnic University, Valencia, Spain
- University of Valencia, Valencia, Spain

ATLAS (High-Energy Physics)

- Institut de Física d'Altes Energies (IFAE), Barcelona Institute of Science and Technology
- Departamento de Física Teórica C-15 and CIAFF, Universidad Autónoma de Madrid
- Instituto de Física Corpuscular (IFIC), Centro Mixto Universidad de Valencia
- CSIC

EGI supported activities and services

The AMS-02 experiment on the International Space Station has been using compute resources from EGI for more than a decade. The services from the EGI federation that AMS-02 uses include:

- EGI HTC services from sites in Italy and CERN
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

ALICE has been supported since 2012 as part of the EGI WLCG collaboration, formally agreed in an MoU. Federated services delivered in the context of the WLCG MoU, including:

- Software support (consultancy to users and system administrators, (software maintenance and validation) Infrastructure and operations Services (infrastructure catalogue, accounting repository and portal, helpdesk, monitoring, operations portal, AAI)
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

ATLAS has been supported since 2012 as part of the EGI WLCG collaboration, formally agreed in an MoU. Federated services delivered in the context of the WLCG MoU, including:

- Software support (consultancy to users and system administrators, (software maintenance and validation)
- Infrastructure and operations Services (infrastructure catalogue, accounting repository and portal, helpdesk, monitoring, operations portal, AAI)
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

Number of scientific papers published in 2024

47

65

126

Spain research collaborations in EGI

EGI supported activities and services

Number of scientific papers published in 2024

AUGER (Astronomy)

- Universidad de Granada and C.A.F.P.E.
- Universidad de Santiago de Compostela

The Pierre Auger Observatory has been using compute resources from EGI partners for more than a decade. The services of the EGI federation that the Auger observatory benefits from include:

- EGI HTC services from 9 EGI participant countries (CZ, DE, IT, FR, ES, NL, RO, PT, SI)
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

12

BELLE (High-Energy Physics)

- Instituto de Física Corpuscular (IFIC), University of Valencia – CSIC

The BELLE experiment has been using compute resources from EGI partners since 2016. The services from the EGI federation that BELLE benefits from include:

- EGI HTC services from 9 EGI participant countries (CZ, DE, IT, FR, ES, NL, RO, PT, SI)
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

9

Spain research collaborations in EGI

EGI supported activities and services

Number of scientific papers published in 2024

CMS (High-Energy Physics)

- Universidad de Oviedo, Instituto Universitario de Ciencias y Tecnologías Espaciales de Asturias (ICTEA)
- Instituto de Física de Cantabria (IFCA), CSIC–Universidad de Cantabria
- Centro de Investigaciones Energéticas Medioambientales y Tecnológicas (CIEMAT)
- Universidad Autónoma de Madrid

CMS has been supported since 2012 as part of the EGI WLCG collaboration, formally agreed in an MoU. Federated services delivered in the context of the WLCG MoU, including:

- Software support (consultancy to users and system administrators, (software maintenance and validation)
- Infrastructure and operations Services (infrastructure catalogue, accounting repository and portal, helpdesk, monitoring, operations portal, AAI)
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

109

CTA (Astronomy)

- Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT)
- Departament d'Astronomia i Meteorologia, Institut de Ciències del Cosmos, Universitat de Barcelona
- Escuela Politécnica Superior de Jaén, Universidad de Jaén
- Grupo de Altas Energías, Universidad Complutense de Madrid.
- Grupo de Electrónica, Universidad Complutense de Madrid
- Instituto de Astrofísica de Canarias + many others

The CTA experiment has been using compute resources from EGI partners for more than a decade. The services from the EGI federation that CTA uses include:

- EGI HTC services from 9 EGI participant countries (CZ, DE, IT, FR, ES, NL, RO, PT, SI)
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

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Spain research collaborations in EGI

EGI supported activities and services

Number of scientific papers published in 2024

DUNE (Astroparticle Physics)

- Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT)
- Institut de Física d'Altes Energies, Universitat Autònoma de Barcelona (UAB)
- Instituto de Física Corpuscular (IFIC)
- Instituto Galego de Física de Altas Enerxías
- Universidad Autónoma de Madrid (Autonomous University of Madrid)
- University of Granada

The DUNE experiment has been using compute resources from EGI partners for more than a decade. The services from the EGI federation that DUNE uses include:

- EGI HTC services from 6 EGI participant countries (CH, CZ, ES, FR, NL, UK)
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

37

ELI-NP (Nuclear Physics)

- Centro de Laseres Pulsados Ultracortos Ultraintensos

ELI has been working with EGI since 2016 on exploring and validating approaches for off-site computing and data management. ELI-NP setup a High Throughput Compute Service on EGI resources and works with EGI providers on:

- Refining the user requirements and translating these to e-infrastructure requirements, and
- Identifying and validating services from EGI that can be relevant for ELI (besides HTC and compute).
- Mobilising already existing HTC compute, cloud compute and storage resources from EGI for ELI piloting and demonstration activities

19

EMPHASIS (Agriculture)

- IRTA, Institute for Food and Agricultural Research and Technology

EMPHASIS has been supported through the establishment of a Data Space in the EGI-ACE project. Since 2017 EMPHASIS using the following services from EGI

- EGI Check-in
- EGI Cloud Compute
- EGI Online Storage
- EGI DataHub
- Technical support
- Software integration and piloting

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Spain research collaborations in EGI

EGI supported activities and services

Number of scientific papers published in 2024

EMSO (Oceanography)

- PLOCAN

The collaboration with EGI started back in 2017 when 4 cloud providers of the EGI Federation agreed to support the EMSODEV project during the design and implementation of the EMSODEV Data Portal.

EMSO-ERIC setup the EMSO ERIC Data Management Platform on the EGI providers in order to harmonize the data sets following Oceansites specifications, FAIR principles, and EOSC guidelines.

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FUSION (Fusion)

- Barcelona Supercomputing Center (BSC)

The Fusion community has been using compute resources from EGI partners since 2018. The services from the EGI Federation used by the community include:

- EGI Cloud Compute
- EGI Online Storage

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ILC (High-Energy Physics)

- CIEMAT
- IFIC – Univ. Valencia + many others

The ILC experiment has been using compute resources from EGI partners since 2004. The services from the EGI federation that ILC experiments uses include:

- EGI HTC services from 27 EGI federated sites from IL, DE, FR, ES, NL, PL, UK
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

75

Spain research collaborations in EGI

EGI supported activities and services

Number of scientific papers published in 2024

INSTRUCT (Structural Biology)

- CryoEM CNB-CSIC
- Instruct Image Processing Center
- Instruct Centre ES

The WeNMR structural biology community is supported by EGI since 2011 and have an Service Level Agreement since 2016. WeNMR is part of INSTRUCT and operates online Virtual Research Environments on top of the EGI services. The EGI Services used by the community include:

- High-Throughput, Cloud + Online Storage services from 23 EGI federated data centres from the Netherlands, Italy, France, Belgiany, UK, Poland, the Asia Pacific region, IberGrid (Spain and Portugal), Italy, the Latin America region.
- EGI Workload Manager
- Trust and identity management with Check-in
- Technical support: WeNMR benefited from continual support through dedicated support activities in various EGI flagship projects: EGI-Engage, EOSC-hub and EGI-ACE.

72

KM3NET (Neutrino Observatory)

- IFIC Instituto de Física Corpuscular (CSIC Universitat de València),
- Laboratori d'Aplicacions Bioacústiques, Centre Tecnològic de Vilanova i la Geltrú (Universitat Politècnica de Catalunya)
- Instituto de Investigación para la Gestión Integrada de las Zonas Costeras (Universitat Politècnica de València)
- Universidad de Granada & C.A.F.P.E.
- Instituto Español de Oceanografía, Unidad Mixta IEO-UPV

The Km3Net experiment has been using compute resources from EGI partners since 2013. The services from the EGI federation that Km3Net uses include:

- EGI HTC services from 2 EGI federated sites from IT and PL
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

25

Spain research collaborations in EGI

EGI supported activities and services

Number of scientific papers published in 2024

LHcB (High-Energy Physics)

- University of Barcelona.
- University of Santiago de Compostela
- IFIC Valencia

LHCb has been supported since 2012 as part of the EGI - WLCG collaboration, formally agreed in an MoU. Federating services delivered in the context of the WLCG MoU, including:

- Software support (consultancy to users and system administrators, (software maintenance and validation)
- Infrastructure and operations Services (infrastructure catalogue, accounting repository and portal, helpdesk, monitoring, operations portal, AAI)
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

49

LifeWatch (Biodiversity and Ecosystem Research)

- CSIC, CIEMAT and the Spanish Institute of Oceanography-IEO and INTA
- The Deputation of Huelva; the City Councils of Sevilla and Malaga-OMA, Port Authorities (Cartagena, Huelva and Seville),
- The Network of River Basin Authorities (led by the Guadalquivir River Basin Authority),
- Scientific, Technological and Innovation Parks (the Extremadura STIP Network one Andalusian STIP),
- Technological Centres (three Andalusian, one Galician),
- Five public-private foundations (including the MITECO Biodiversity Foundation), and a dozen universities and Centres of International Excellence in Andalusia, Cantabria, Extremadura, Madrid and Navarra.

The LifeWatch experiment has been using compute resources from EGI partners since 2018. The services from the EGI federation that LifeWatch uses include:

- EGI Cloud services from 2 EGI federated data centres from ES and PT
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

149

Spain research collaborations in EGI

EGI supported activities and services

Number of scientific papers published in 2024

LSST (Astronomy)

- Barcelona-Madrid Consortium (BCN-MAD),
- Instituto de Astrofisica de Canarias (IAC) restrial Physics (MPE)

The LSST survey federates High Throughput Compute (HTC) resources from France and the UK and run an analysis campaign in 2020 to prepare for the opening of the Vera C. Rubin Observatory. The campaign consumed over 11 million CPU-hour in 2020 to analyse generated images, imitating the telescope images that are expected to become available from 2023. The LSST compute federation benefited from the following EGI services:

- Software support (consultancy to users and system administrators, (software maintenance and validation)
- Infrastructure and operations Services (infrastructure catalogue, accounting repository and portal, helpdesk, monitoring, operations portal, AAI)
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

11

LZ (Physical Sciences)

- University of Valencia (IFIC)

The LZ survey federates High Throughput Compute (HTC) resources from UK. The LZ compute federation benefited from the following EGI services:

- Software support (consultancy to users and system administrators, (software maintenance and validation)
- Infrastructure and operations Services (infrastructure catalogue, accounting repository and portal, helpdesk, monitoring, operations portal, AAI)
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

6

Spain research collaborations in EGI

EGI supported activities and services

Number of scientific papers published in 2024

OBSEA (Oceanography)

- SARTI
- Universitat Politecnica de Catalunya

The collaboration with EGI started back in 2019. The services from the EGI federation that the experiment uses include:

- EGI HTC services from 2 EGI federated sites from ES, IT
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)

4

OPENCoastS (Ocean Engineering)

- UC Universidad de Cantabria

OPENCoastS has been using compute resources from EGI partners since 2018. The services from the EGI federation that OPENCoastS uses include:

- EGI Cloud services from 2 EGI federated sites from ES and PT
- EGI AAI Check-in

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SeaDataNet (Oceanography)

- Agencia Estatal Consejo Superior de Investigaciones Cientificas (CSIC Central Organisation)

SeaDataNet has been supported by EGI partners in the EOSC-hub project in the setup and validation of a data access service on federated cloud resources. Since 2021 the SeaDataNet community is represented in the EGI Council by MARIS, and works with several EGI members in the EGI-ACE Horizon 2020 project. In EGI-ACE, SeaDataNet and EGI partners from Spain are setting up and operating a WebOcean Data Analysis service in the EGI cloud federation, and deliver the service in EOSC

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Spain research collaborations in EGI

EGI supported activities and services

Number of scientific papers published in 2024

SKA (Radioastronomy)

- Ministry of Science, Innovation & Universities

The Square Kilometre Array (SKA) is an intergovernmental radio telescope project being planned to be built in Australia and South Africa. 8 countries that participate in SKA are also represented in the EGI Council (France, Germany, Italy, Portugal, Spain, Switzerland, The Netherlands and the United Kingdom). Between 2017–2019 SKA worked with the EGI federation in the AENEAS Horizon 2020 project. The collaboration resulted in recommendations on how to:

- Organise federated service management within the SKA European Science Data Centre (ESDC) and across multiple SKA Regional Centres to address the management of the SKA community-specific services.
- Federate the ESDC services with existing e-Infrastructure federated services (Identity Provisioning, Authentication and Authorization, tools for federated service management)
- Collect SKA and e-Infrastructures requirements to federate and eventually enhance existing federation services.

91

VIRGO (Astrophysics)

- Departamento de Astronomía y Astrofísica, Universitat de València
- Departamento de Matemáticas, Universitat Autònoma de Barcelona
- Departamento de Matemáticas, Universitat de València
- Institut de Ciències del Cosmos (ICCUB), Universitat de Barcelona
- Institut de Física d'Altes Energies (IFAE), Barcelona Institute of Science and Technology, and ICREA
- Instituto de Física Teórica UAM-CSIC, Universidad Autónoma de Madrid

The Virgo experiment has been using compute resources from EGI partners for more than a decade. The services from the EGI federation that VIRGO uses include:

- EGI HTC services from 8 data centres from France, Italy, The Netherlands, Spain and UK
- Software distribution services (UMC, CMD, operations documentation)
- Operations coordination (middleware deployment campaigns, procedures, innovation of tools)
- Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)
- Since 2021 Virgo works with EGI in the EGI-ACE Horizon 2020 project to evaluate and adopt data analysis, federated authentication-authorisation and data management services for thematic applications.

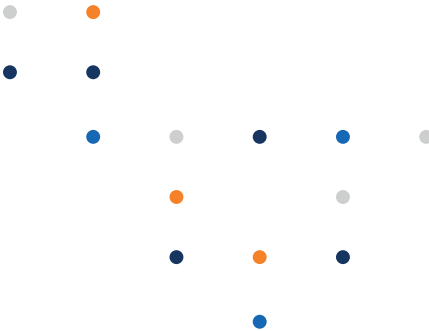
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Service Level Agreements

During 2024, Spanish providers CESGA and IFCA-LCG2 supported 5 Service Level Agreement for international scientific communities via EGI, delivering Cloud Computing, Online Storage, and HTC services.

Community Engagement

During 2024, 20 participants from Spain joined the EGI2024 conference and delivered 4 talks in it. Moreover, one speaker from a Spanish institution delivered the webinar TOSCA-based cloud orchestration and deployment with Infrastructure Manager (IM) (05/06/2024).



Participated projects

The EGI Foundation leads five Horizon Europe Projects, three of which started in 2024:

- iMagine (September 2022–December 2025)
- interTwin (September 2022–August 2025)
- ENVRI–Hub NEXT (February 2024–January 2027)
- EOSC Beyond (April 2024–March 2027)
- SPECTRUM (January 2024–June 2026)

Furthermore, the EGI Federation was involved in 3 additional projects, increasing the innovation potential of its participants.

The EGI Federation participates in Horizon 2020 and Horizon Europe projects together with British institutions to facilitate the uptake and use of e–infrastructure services for science. A summary of these projects, the involved institutes and the scope of the collaboration is provided in the next table.

Project title

Scope of collaboration

Participating beneficiaries from the country



EGI is contributing to the architectural design and implementation of open distributed software to ensure that AI4Europe evolves as a distributed ecosystem. EGI is also providing its expertise on physical resources, usability, development of systems, distributed systems and new technologies to develop mechanisms for the AI tools to deploy/make use of private/public Cloud and HPC resources.

- Instituto Tecnológico de Informatica
- Univerdisad de Zaragoza
- Barcelona Supercomputing Center



EGI is involved in the activities around Cloud-based AI Tools for Citizen Centric & Autonomous Policy, in particular with the Dynamic provisioning of Cloud and HPC. Moreover, it leads the integration of Validated AI-based Applications and Tools, contributes to dissemination and communication, and leads the the business modelling and sustainability planning.

- Universidad Politecnica de Madrid





EGI contributes with the services Cloud computing, Notebooks and Applications on demand, FTS, data archiving. It participates to the EOSC Integration processes and the sustainability business plan.

- CSIC
- LifeWatch ERIC
- Quanta Systems SL
- Science for Change SL
- Marsabased SL
- DRIBBA
- MEDCITIES
- Federacio Catalana de Activitats Subaquatiques




The EGI Foundation delivers a reference architecture for Smart Energy and extend COSMAG specification to enable B2B multi-party data exchange, while providing full interoperability of leading-edge big data technologies with smart grid standards and operational frameworks; evolve and upscale a number of TRL 5–6 technology enablers; delivers a TRL8 open modular big data analytic toolbox as front–end for one–stop–shop analytics services development by orchestrating legacy and/or third party assets (data, computing resources, models, algorithms); validates such framework through the delivery of predictive and prescriptive edge AI–based big data analytics on 13 large scale pilots, deployed by different energy stakeholders.

- Atos Spain
- Cartif Technology Center
- Saint Cugat Municipality
- Veolia

| Project title | Scope of collaboration | Participating beneficiaries from the country |
|---|--|---|
|  | EGI contributes with the services Cloud computing, Notebooks and Applications on demand, FTS, data archiving. It participates to the EOSC Integration processes and the sustainability business plan. | <ul style="list-style-type: none"> SOCIB |
|  | EGI is involved in developing a detailed roadmap, analyzing state-of-the-art technology, and designing a modular architecture framework. Moreover, It works to improve data monetization strategies for EU companies and define KPIs for fair dataset valuation. EGI will help develop business cases for data sharing platforms, explore non-monetary data value dimensions, and prepare pilots for framework deployment. Demonstration and validation tests will be conducted at pilot sites. Additionally, EGI contributes to disseminating results, managing innovation and sustainability, participating in standardization activities, and coordinating with the Data Spaces Support Centre. | <ul style="list-style-type: none"> Instituto Tecnológico de Informatica Fundacion Tecnalia Research & Innovation GIMENO DIGITAL TECHNOLOGIES SOCIEDAD LIMITADA |
|  | EGI, as a very active player in the Data Space landscape in Europe, joined the project as Associated and collaboration Partner and participates in the Strategic Stakeholder Group (SSG) that will act as a think-and-do-tank to support the project in delivering to the policy objectives. | <ul style="list-style-type: none"> ITI Innovaia Association |
|  | EGI works on integrating datasets, tools, and workflows from the broader landscape into ECHOES. It supports the technical framework and infrastructure with a scalable, secure storage and compute infrastructure. Also, EGI provides an authentication and authorisation infrastructure (AAI) for the single entry point in the cloud environment. Last but not least, EGI contributes to the project's long-term sustainability, leverages ECCCH's advocacy and open innovation by engaging with the private sector. | <ul style="list-style-type: none"> Universitat Politècnica de Catalunya RED CRUSOE |

| Project title | Scope of collaboration | Participating beneficiaries from the country |
|---|--|--|
|  | EGI works on the activities related to the SRIA update and technical development, in particular, interacting with the EOSC task forces and liaising with European partnerships and other initiatives. Moreover, EGI works on the sustainability of the EOSC, with specific activities towards the definition of the EOSC rules of participation, the collaboration expansion. | <ul style="list-style-type: none"> CREAF |
|  | EGI contributed to the design, operation and interoperability of EOSC Core services, to running the EOSC Digital Innovation Hub, as well as to resource strategy and the processes for onboarding new groups to EOSC. EGI was responsible for requirements collection and analysis for both the EOSC Back Office and Front Office. It also leads all operational aspects of the EOSC Portal. Finally, EGI played a leading role in developing the EOSC SMS. | <ul style="list-style-type: none"> LifeWatch ERIC |
|  | EGI contributes to the Federation sustainability model and the expansion of the DIH ecosystem. Moreover, it collaborates to the development and maintenance of the service catalogue, to the training programme, and to the dissemination and outreach of the project activities and results. | <ul style="list-style-type: none"> Instituto Tecnológico de Informatica Fundacio Eurecat Instituto Tecnológico de Aragon Zabala Innovation Consulting, S.A. Consultores de Automatizacion y Robotica Sa |
|  | Within the project, EGI will conduct an environmental impact landscape assessment within the EGI federation and in partner ESFRIs to identify best practices and opportunities related to environmental sustainability. The project will develop an environmental metrics publication system for digital service providers and energy-aware brokering logics for scientific workflows running on EGI HTC, cloud, container and AI services. EGI will develop an environmental impact self-assessment questionnaire for Research Infrastructures. Finally, EGI will assist with project communications and will provide consultancy and training for service providers within and beyond EGI on methods and approaches to lower their environmental impact. | <ul style="list-style-type: none"> CSIC |

| Project title | Scope of collaboration | Participating beneficiaries from the country |
|---|---|---|
|  | <p>EGI plays a key role in IRISCC by leading communication, dissemination, engagement, and exploitation efforts (WP1), including stakeholder mapping and promotion of the service catalogue. In WP3, EGI supports knowledge exchange and user training by developing climate risk training modules and providing access to its training and computing infrastructure.. For WP6, EGI helps assess integrated knowledge services by aligning access policies, analysing AAI services, and contributing to FAIR and interoperability frameworks.</p> | <ul style="list-style-type: none"> • CSIC • Fundación Centro de Estudios Ambientales del Mediterráneo – CEAM • Instituto Nacional de Técnica Aeroespacial (INTA) • Universidad de Granada |
|  | <p>In the project, EGI co-designs and deploys AI models on edge resources, enhancing capacity through its federation's computational and storage resources. EGI expands resource allocations, provides a two-tier e-infrastructure for validation and large-scale data processing, and ensures sustainable setups by coordinating national funding. EGI addresses data management challenges, integrates distributed storage solutions, and connects PHENET with the European Open Science Cloud.</p> | <ul style="list-style-type: none"> • IRTA – Instituto de Investigación y Tecnología Agroalimentarias |
|  | <p>The EGI Foundation supports the project in defining interoperability standards among the participating facilities, and with the broader landscape, including EOSC, and leads the design of sustainable services and activities that will last beyond the project. EGI members deliver a federated cloud environment with a cloud-based 'EGI Notebooks' service for the PITHIA e-science centre to offer a scalable and customisable web environment for writing workflows, exchanging workflows, accessing, analysis and sharing of data.</p> | <ul style="list-style-type: none"> • Observatorio del Ebro Fundacion • Universitat Politecnica de Catalunya |
|  | <p>EGI is one of the main contributors to the design and definition of the EOSC architecture and the federated service management framework, and coordinates service pilots participates by the scientific demonstrators. EGI also contributed to the definition of the governance framework and to the works on Rules of Participation. In the project EGI will enhance the SoBigData platform with two services: Jupyter Notebooks and the Workflow manager Galaxy.</p> | <ul style="list-style-type: none"> • Universitat Rovira I Virgili • Barcelona Supercomputing Center • Universitat Pompeu Fabra |

| Project title | Scope of collaboration | Participating beneficiaries from the country |
|---|--|---|
|  | <p>EGI leads the work on Services Provision, which collects information about the services that the RI can provide and creates a plan for a unified single access point RI, including access policies for the distributed resources. EGI also contributes to the development of the financial aspect of the future RI, defines the business cases and the cost book, supports the strategy and enhance the impact of the RI, contributes to the Dissemination and Communication plans (WP5), and to the creation of the Italian central Hub for the preparation phase.</p> | <ul style="list-style-type: none"> • Universitat Rovira I Virgili • Barcelona Supercomouting Center • Universidad Pompeu Fabra |
|  | <p>EGI contributes to the GAP analysis, User needs and requirements, Definition of System Requirements and Technical Specifications, and Security, in addition to the Self-sovereign Identity Management and Dissemination and Communication. EGI coordinates the task dedicated to Policy recommendations on Distributed Infrastructures, Secure Data Exchange & Data Spaces.</p> | <ul style="list-style-type: none"> • ATOS • LSTECH ESPANA SL • Anysolutions • Universidad de Murcia • IDIADA AUTOMOTIVE TECHNOLOGY • CESGARDEN • Playa de Muro |
|  | <p>Unlock the potential for accelerating the deployment of the Cloud-to-Edge-IoT (CEI) computing continuum in Europe by focusing on the demand-side drivers and challenges to identify technology-driven innovation and business opportunities driving demand value chains.</p> | <ul style="list-style-type: none"> • BLUSPECS SL |

Infrastructure contributions

The EGI Federation offers two complementary compute capabilities: the High-Throughput Compute (HTC) federation and the Cloud federation. 15 Spanish data centres contribute to these federations:

HTC Federation:

- CESGA (Centro de Supercomputacion de Galicia)
- CETA-GRID (Resource Center CETA-CIEMAT)
- CIEMAT-LCG2 (CIEMAT)
- ifae (IFAE)
- IFCA-LCG2 (Instituto de Fisica de Cantabria)
- IFIC-LCG2 (Instituto de Fisica Corpuscular, Valencia)
- pic (port d'informacio cientifica)
- UAM-LCG2 (UAM, Madrid)

Cloud Federation:

- CESGA-CLOUD (Centro de Supercomputacion de Galicia)
- BIFI (Instituto de Biocomputacion y Fisica de Sistemas Complejos at Universidad de Zaragoza)
- CETA-GRID (Resource Center CETA-CIEMAT)
- IFCA-LCG2 (Instituto de Fisica de Cantabria)
- NCG-INGRID-PT (Portugal)
- UPV-GRyCAP (Universidad Politecnica de Valencia – Grupo de Redes y Computacion de Altas Prestaciones)

The data centres provided 14 service endpoints and

delivered 318,750,512 CPUhours and 21,751,090 Cloud CPUHours to EGI communities in 2024. The data centres responded to 114 support tickets through the EGI Helpdesk.

The most active international user groups of the Spanish HTC compute resources were:

- CMS 45.06%;
- ATLAS 44.86%;
- LhCB 7.47%;
- VIRGO 1.52%;

The most active international user groups of the Spanish HTC compute resources were:

- AI4EOSC 55.62%
- iMagine 16.19%;
- DELTARES 7.92%
- LAGO Project 5.95%

With the help of the EGI Security Vulnerability Group, the Spanish sites avoided 50 critical vulnerabilities in foundational software systems during 2024.

Methodology

Data for this impact report has been collected from the following sources.

Users

EGI uses the following methodology to capture the number of EGI users who rely on EGI services

- EGI serves users in the form of 'communities', called 'Virtual Organisations' (VO in short). A VO's members can range from one to tens of thousands. Members of a VO benefit from and use EGI services in different ways (e.g., by using Services for Federation or Services for Research).
- EGI establishes knowledge about its VOs as part of the user community support lifecycle; therefore, baseline information about VOs is collected through the Customer Relationship Management process (CRM).

At the end of 2024, there were 135 VOs in EGI.

EGI Virtual Organisations (VOs) can rely on different technical and non-technical mechanisms to manage their own members. Depending on their choice, the EGI Federation coordinator (EGI Foundation) has to follow different, corresponding approaches to know the number of members in a given VO, and to obtain additional information about these members (e.g. their 'country'). The EGI Foundation uses the following mechanisms to obtain information about the VO users:

- Obtain user number statistics from the EGI Operations Portal for VOs, where the members register personally in a 'VO membership management' system that is either operated by EGI or can be accessed by EGI.
- Obtain user number statistics from Community VRE REST APIs for VOs that operate Virtual Research Environments (VREs) on top of EGI resources. Those VREs implement a specific API to report users (e.g., WeNMR, Virtual Imaging Platform (VIP), NBIS).
- Obtain user number statistics from interviews with VO coordinators for VOs coordinated by one person.

Publications

Publications are collected from each community's public repository, if existing. Additional details are checked with the VO coordinators during the interviews to complement this information. EGI also consults OpenAIRE services to countercheck the data. You can check the list of repositories for each VO here (requires login): <https://operations-portal.egi.eu/vo/#collapseVoListOther>.

Institutional members supporting research communities

EGI relies on the information on each community's website to list institutions supporting research communities at the national level. Additionally, EGI appreciates the feedback from its national representatives to refine and improve those lists.



EGI Membership Impact Report

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