grnet

Networking Research, Education and Government

National Infrastructures for Research and Technology GRNET S.A.

CORPORATE PRESENTATION 2022



National Infrastructures for Research and Technology - GRNET's mission is to offer an integrated environment of cutting-edge technologies, model digital solutions, infrastructures and specialized expertise which contributes to the modernization and digital advancement of the overall citizen experience in the fields of Public Administration, Education, Research, Health and Culture.





- Design and development of advanced information systems and e-Infrastructures to achieve Greece's Digital Transformation goals
- Design, development and maintenance of advanced information systems, computing- network infrastructures and cloud services
- National Infrastructure Development: 6 data centers
- Operation of the national high performance computing system (HPC-ARIS)
- Operation of GR-IX: The Greek Internet Exchange

- Operation of the national fiber optic network
- Provision of international cross-connectivity through the GÉANT pan-European network
- Implementation and management of European, International and National Projects
- Artificial intelligence: formulating a national strategy
- Development of citizens' digital skills



GRNET at a glance

Develops advanced information systems and e-Infrastructures to achieve Greece's Digital Transformation goals



Develops and operates the single digital gateway

Gov.gr

Skills

Manages a portfolio of 40 advanced Services 45 National and European Projects



Serves hundreds of thousand of users



Operates the optical fiber network 10.000 km



Develops and maintains National Infrastructure

- 6 Data Centers
- National Supercomputing Infrastructure
- National HPC Competence Center
- GR-IX Greek Internet Exchange



Develops lessons and initiatives for the digital skills of citizens



Connects International Research and Academic Communities for the dissemination of research and science



GRNET in numbers

- > 150 universities, research centers, hospitals, cultural centers
- > 15.000 schools
- Nx10 Gbps dark fiber backbone
- Access **1** | | **10 Gbps** per institution
- International connectivity through GÉANT network multiple **10 Gbps**
- 535 TFlops HPC Tier–1 centre, member of PRACE
- 6 DataCenters (EKT, Ypepth-Marousi, Louros Arta, Heraklio Crete), hosting:
 - **134** racks,
 - 2000+ servers,
 - **11.500** Virtual Machines,
 - **3 PB** disk storage,
 - **5 PB** tape









improvement of **citizen's experience in receiving public services** through the implementation of the National Digital Strategy 2020-2025

constitution of a more **extroverted Greek Research and Education community**,



technology enhancement of the Health sector



enhancement of the **educational processes**



creation of **new models of cooperation** amongst public agencies, research and education communities, citizens and businesses.



Serving daily users in the sectors of: Public Administration, Education, Research, Health, Culture

合 grnet@education 🕺 grnet@research 🔬 grnet@health

Organizations and Institutions

Universities

grnet@government

- Research Centers
- Large Research Infrastructures
- Hellenic School Network
- Public Libraries
- Culture Centers
- Content Providers
- Public Administration sector
- Public Health Sector (Hospitals, Blood Donation/Transfusion Services)

Users

 Academic and Research Community users (Students, Professors, Researchers, Academic and Administration Management, Network Operations Centers (NOC), Technical Staff)

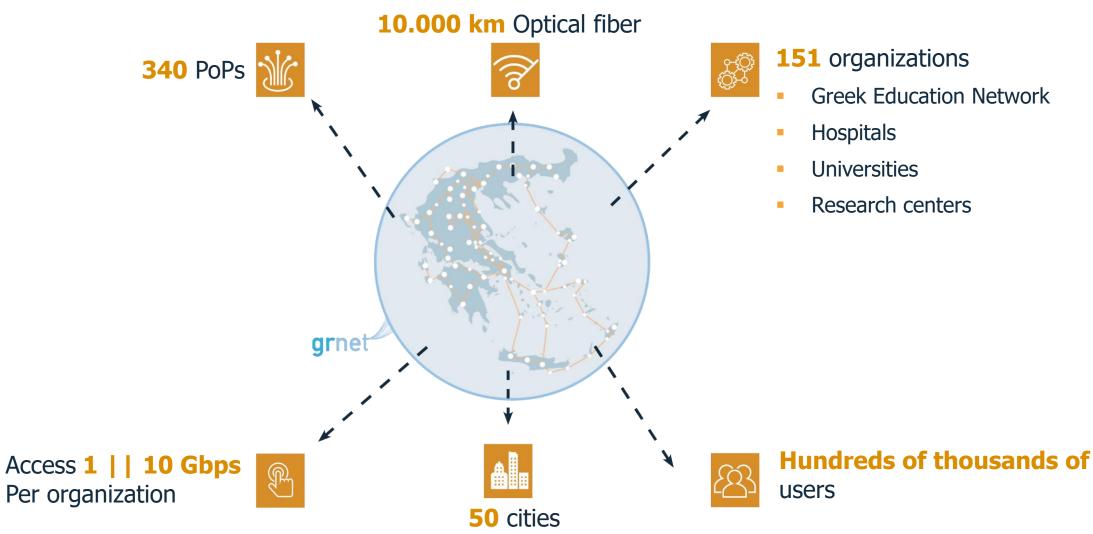
m grnet@culture

- Health Sector users
- Hospital: Doctors, Administration, Management, NOC, Technical
- Blood Donor Volunteers
- Public Administration Officers
- Citizens



Users

Network Connectivity





e-Infrastructures & Services

National optical fiber network

GRNET backbone infrastructure Connection to GRNET Network

GR-IX: National infrastructure

Interconnecting internet companies in Greece: Providers of Internet services, content, cloud services

HPC (High-Performance Computing)

HPC services to the Greek R&E community

- National Supercomputer Infrastructure HPC ARIS
- National Competence Center EuroCC@Greece HPC Hub
- Prace Training Center

e-Infrastructures GRNET

Electronic Infrastructures of high reliability for the Research & Academic community with advanced and environmentally friendly data centers



Computing Infrastructures

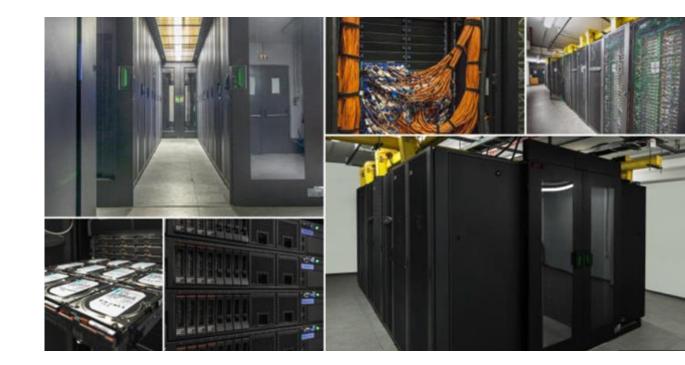
- 33.101 ~okeanos cloud users
- 6 data centers in 3 geographic locations
- 2.000 servers
- **11.500** active VMs
- 5.200 datacenter network ports in total
- 10.000 active cloud users
- An optical network of a maximum capacity of **1** Tbps for the datacenters





National HPC Infrastructure ARIS - HPC

- 5 computational islands, 535 compute nodes
- 2 PB of storage space
- 535 TFlops HPC Tier 1 centre
- 1.100 HPC projects
- 58.200 core Years (510 million core Hours) during the last 7 years
- GRNET is a PRACE Training Center





New National Supercomputer DAEDALUS

- 2024 installation at the Lavrion Technological and Cultural Park
- 33M euros Build Cost (30% EuroHPC, 70% «Greece 2.0»)
- **30** Petaflops power
- Low energy cost of operation (powered by renewable energy sources and cooled by environmental friendly technology)
- Support of scientific research and innovative SMEs/industry with high computational capacity





GR-IX The Greek Internet Exchange

GR-IX is an important national infrastructure that aims to help the growth of the Greek Internet as it interconnects all significant Internet players in Greece.

With four POPs in Athens and Thessaloniki, GR-IX is the only Internet Exchange in Greece, GR-IX customers enjoy:

- Reduced telecommunication costs;
- Improved network connectivity in terms of speed, capacity, stability and resilience;
- Greater proximity to their traffic producers and consumers;
- New business opportunities and enhanced market position.



CONNECT. PEER. EXPAND.

POWERED BY grnet



SERVICES AND PROJECTS

40 Services

- Network and Connection Services
- Computational and Storage Services
- Data Services
- Identification & Security Services
- Sound, Voice and Visual Services

45 National & European Projects

- Digital Governance
- Infrastructures & Services (Network, Computational, Connection, Storage, Cloud, Digital Content)
- Open Science
- Green Actions



SERVICES







GRNET coordinates or actively participates in more than 45 currently ongoing National, European and International projects for the development of infrastructures and services

- **Funding from national resources**, NSRF, RFF (Recovery and Resilience Facility) and European Funds
- Developing partnerships at national and European level. The extroversion of GRNET ensures user access to international research and educational technological infrastructure and services for the utilization of Information and Communication Technologies, with mutually beneficial synergies.
- **International recognition of** GRNET know-how



INTERNATIONAL COLLABORATIONS

GRNET facilitates the evolution and proliferation of research and technology, by offering opportunities to all its users to develop their academic and scientific activities.

Our teams of professionals collaborate with key partners, through national, European and international partnerships, adopt and advance state-of-the-art digital technologies, with the aim to support continuous growth and excellence for the benefit of the Greek society.



INTERNATIONAL COLLABORATIONS



European collaboration on e-infrastructures and services for Research and Education



Federated e-Infrastructure set up for the provision of advanced computing services



European Open Science Cloud



Collects, stores and provides access to data from the Sentinel satellites of the Copernicus Earth Observation program



Partnership for Advanced Computing in Europe



European Technology Platform for High Performance Computing



Integrating existing archeological data infrastructure across Europe to explore research methodologies ePIC

European Persistent Identifiers Service The European Internet Exchange Association for strengthen and improve the Internet Exchange Point (IXP) community

OCIO-IX



Collaborative Data Infrastructure



Advanced e-Infrastructures & Services for Public Administration

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Digital Transformation



Digital Transformation Advisor

- Promotion of the National Strategy for Digital Transformation with emphasis on the Greek Public Administration
- Creating the prerequisites for Research & Development in the field of Digital Governance
- Design of modern interoperable information systems and services
- Development of tool, methodologies and best practices



- Implementation of the Digital Governance Ministry Strategy for Digital Competence Development
- Development of education and training activities
- Development of initiatives for awareness and information

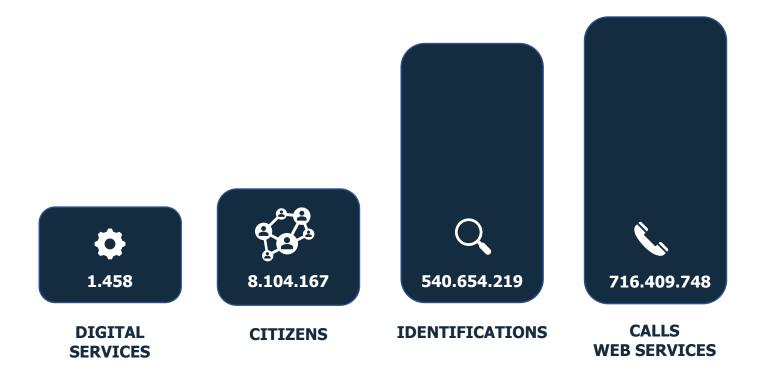


- Drafting the National Strategy on Artificial Intelligence for the Public and Private Sectors
- Development of "Harmoni for Covid" Artificial Intelligence/Deep Learning System for rapid and reliable diagnosis of coronavirus-COVID 19 using medical imaging



Single Digital Portal @gov.gr

Direct service to citizens and businesses in their daily transactions with the public sector



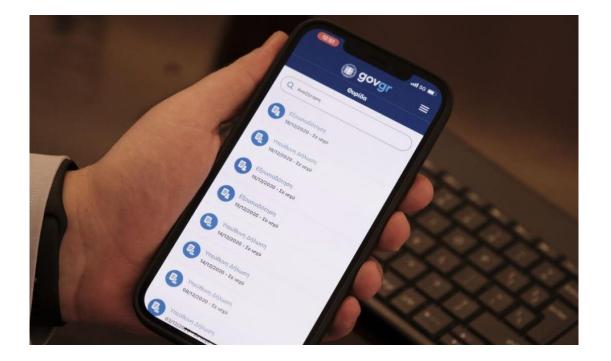
Indicative Services gov.gr

- Formal Declaration
- Authorization Form
- Digital Signature of Private Contracts
- Naming of Minors (registry)
- **EU Digital COVID Certificate**
- Covid Free GR mobile app
- **COVID-19 self-tests declaration**
- Certificates about positive or negative COVID-19 test
- Platform edupass.gov.gr gr for issuing a COVID-19 student card for all public schools and academic entities
- Issuance of citizens' movement official forms during the COVID-19 pandemic
- University admission exams: information about the results by sms
- Digital graduation diplomas for graduates of high schools, lyceums and vocational lyceums



Single Digital Portal @gov.gr

Direct service to citizens and businesses in their daily transactions with the public sector



Indicative Services gov.gr

- Copy of criminal record
- Application for the issuance and control of the validity of e-documents
- Application for issuing and downloading in eform, of temporary driving license
- "MyAuto" service provides real-time access to all vehicle details and Open Car for finding information about vehicles



Applications for citizens

Gov.gr Wallet

- Gov.gr Wallet enables the creation, storage and control of new digital identity cards and digital driver's licenses.
- The new digital identity cards and driver's license are digital documents issued through gov.gr and are fully equivalent to paper documents, for any legal use within Greece.
- Implementation by GRNET, in cooperation with the Ministry of Digital Governance.





Applications for citizens

EU Digital COVID Certificate

- The EU Digital COVID Certificate can be used by citizens as a record of proof for vaccination, a diagnostic test result, or recovery from coronavirus.
- In Greece, the certificate will be issued through the gov.gr portal.
- Implementation by GRNET, in cooperation with IDIKA SA – e-Government Center for Social Security Services and the participation of the General Secretariat of Information Systems for Public Administration.



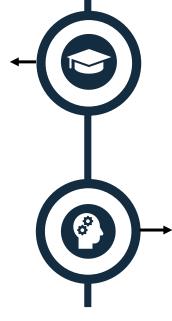


Development of digital skills

GRNET is responsible for the implementation of the Digital Governance Ministry's strategy for the development of citizens' digital skills. The strategy is realized through 2 pillars:

Education and training actions

aimed at developing all levels of digital skills, through the National Academy of Digital Skills



Awareness-raising and information initiatives

aimed at providing opportunities for citizens to participate in training actions according to their needs and interests





Development of digital skills

The National Academy for Digital Skills <u>www.nationaldigitalacademy.gov.gr</u> gathers digital educational content for the development of citizens' digital skills and aims to act as the national portal for digital skills in the country.

Εθνική Ακαδημία Ψηφιακών Ικανοτήτων

299 Available Lessons / 38 Providers

Courses according to the needs, interests and level of knowledge of each citizen through asynchronous education. Use of a self-evaluation tool and suggestions for personalized thematic chapters.

"Digital Citizen" Lessons

Participation in the series of lessons 'Digital Citizen', consisting of five courses for the development of basic digital skills. The courses developed are based on the European Digital Competence Framework (DigiComp).

Initiatives

Participation for citizens in awareness-raising, information and empowerment initiatives to cultivate digital culture and develop computational thinking.



Awareness-raising initiatives

Women



Women in Tech Women in the Technology Sector: Today and in the Future

www.womenintechgreece.gr An initiative that aims to raise awareness, inform and encourage women to pursue a career in the field of technology.

Elderly



3η e-λικία Empowerment of the Elderly

www.3elikia.gr

An initiative that aims to digitally empower citizens 65+. The program was launched in the municipalities of Florina, Kavala, Athinaion, Ioannina, Korydallos.

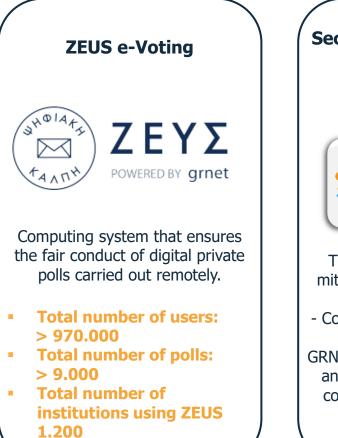


Advanced e-Infrastructures & Services for Education, Research, Health & Culture

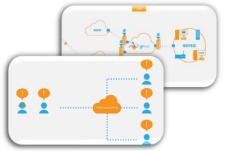
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Services in Research and Education



Security Services- Firewall on Demand (FoD)



The service enables users to mitigate active attacks aimed at their network equipment - Computer Emergency Response Team (CERT) GRNET provides incident response and security services, process, correlate and notify end users



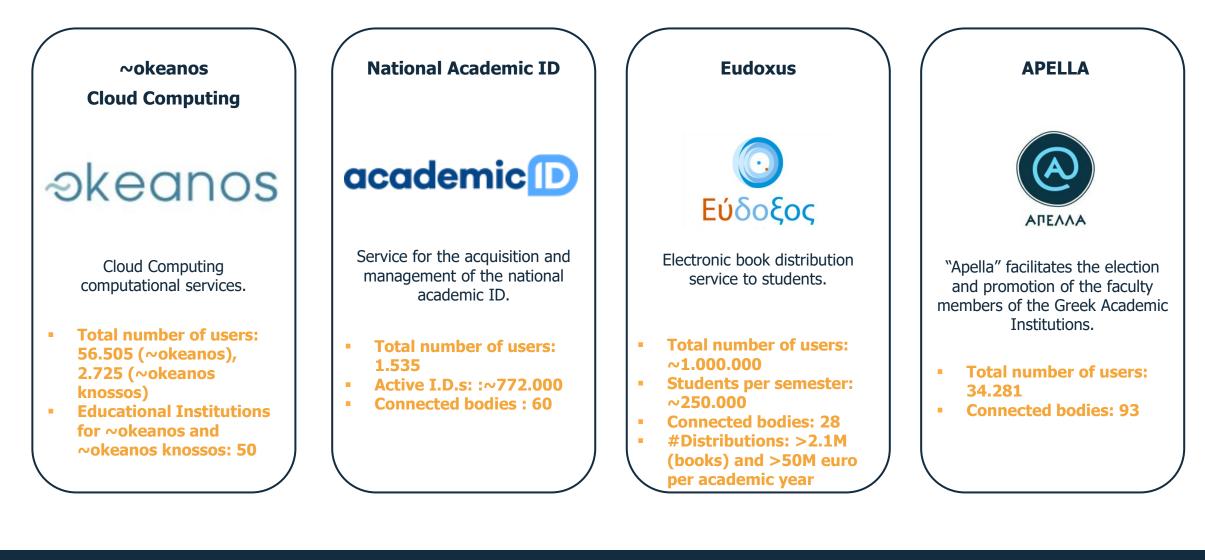
GRNET "Delos" Authentication and Authorization Infrastructure enables cross-institutional services by providing federated authentication and authorization among participating organizations.

DIGITAL CERTIFICATES

Extra security and authentication of people, sites and data transfers

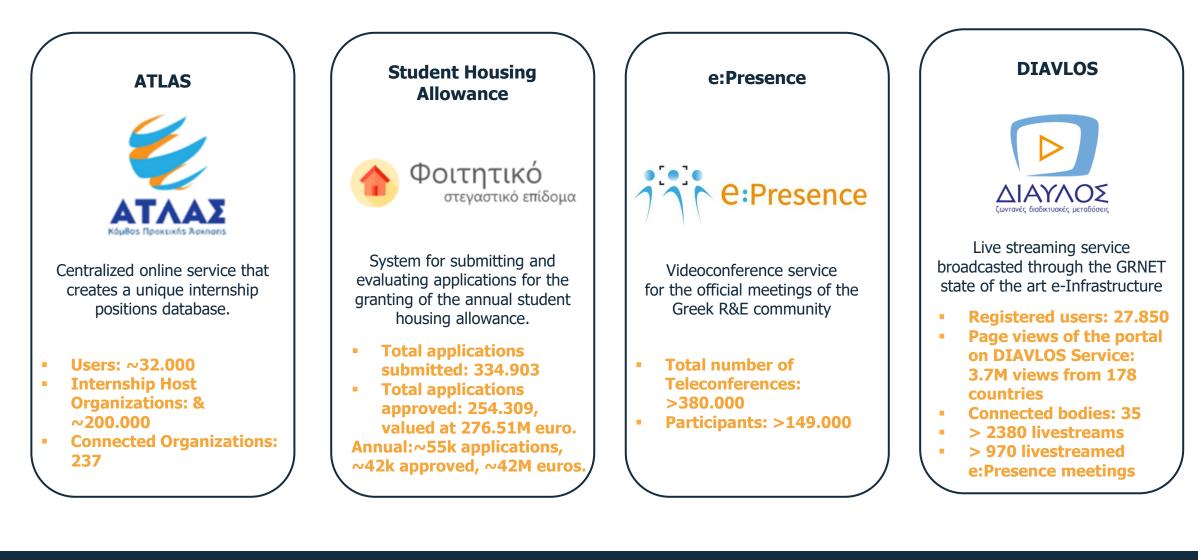


Services in Research and Education





Services in Research, Education and Culture





Services and e-Infrastructures in Health



Central Electronic Management Services for the National Registry Of Voluntary Blood Donors

Managing the registry and issuing volunteer donor IDs through modern, credible and friendly procedures for blood donors, donation services and blood centers in the country.



Harmoni

High-Performance Archiving and Retrieval of Medical On-line Imaging Data.

High-Performance Archiving and Retrieval of Medical On-line Imaging Data.



eduroam

World-wide roaming access service developed for the international research and education community eduroam allows students, researchers and staff from participating institutions to obtain Internet connectivity across campus and when visiting other participating institutions by simply opening their laptop.



DIADOSIS

Inter-loan online library

Electronic system which provides access to all research and medical publication papers via DELOS- Authentication & Authorization Infrastructure service, to all hospital staff



Central Staff Directory Service-DELOS for Hospitals

"Delos" Authentication and Authorization Infrastructure enables cross-institutional services by providing federated authentication and authorization among participating organizations.



National and European Projects



EuroCC

www.eurocc-project.eu

National Competence Centers in the framework of EuroHPC

Funding: HORIZON 2020 Duration: 01/09/2020 - 31/12/2022

A joint initiative between the EU, European countries and private partners to develop a World Class Supercomputing Ecosystem in Europe, which will be reinforced by a European Network of HPC Expertise.



HPC-EUROPA3

www.hpc-europa.eu

Transnational Access Programme Pan-European Research Infrastructure on High Performance Computing

Funding: HORIZON 2020 Duration: 01/05/2017 - 30/04/2022

The main objective of the HPC-Europa3 project is to maintain the high quality of transnational access services to some of Europe's most advanced supercomputing infrastructures in the European community of computer science researchers.

PRACE-6IP

www.prace-ri.eu

Partnership for Advanced Computing in Europe

Funding: HORIZON 2020 Duration: 01/05/2019-31/12/2022

The mission of PRACE is to enable highimpact scientific discovery and engineering research and development across all disciplines to enhance European competitiveness for the benefit of society.



ACROSS



GN4-3 & GN4-3N

www.geant.org/Projects/

Research and Education Networking – GÉANT

Funding: HORIZON 2020 Duration: 01/01/2019 - 31/12/2022

GN4-3N's mission is to deliver unconstrained access at higher minimum capacity thresholds, highest levels of security across the network, and equal access to clouds and other services in the European research area and beyond. It will also increase network footprint, future proof connection speeds and stimulate the market in cross-border communications infrastructure while decreasing the digital divide.

ACROSS

www.across-h2020.eu

Towards user journeys for the delivery of crossborder services ensuring data sovereignty

Funding: HORIZON 2020 Duration: 01/02/2021 - 31/01/2024

The project focuses on the mobility of citizens between EU Member States and aims to support them in aligning and fulfilling their obligations under the Single Digital Gateway Regulation.

EGI-ACE

261-ACE

www.egi.eu/projects/egi-ace/

Advanced Computing for EOSC

Funding: HORIZON 2020 Duration: 01/01/2021 - 30/06/2023

The project aims to implement the European Open Science Cloud (EOSC) Compute Platform and contribute to the EOSC Data Commons by delivering integrated computing platforms, data spaces and tools as an integrated solution that is aligned with major European cloud federation projects and HPC initiatives.





NI4OS-Europe

www.ni4os.eu

National Initiatives for Open Science in Europe

Funding: HORIZON 2020 Duration:01/09/2019 - 28/02/2023

Support the development and inclusion of the national Open Science Cloud initiatives in 15 Member States and Associated Countries in the EOSC governance.



DICE

https://www.dice-eosc.eu/

Data Infrastructure Capacity for EOSC

Funding: HORIZON 2020 Duration: 01/01/2021 - 30/06/2023

DICE aims to enable a European storage and data management infrastructure for EOSC, providing generic services and building blocks to store, find, access and process data in a consistent and persistent way.



C-SCALE www.c-scale.eu

Copernicus - eoSC AnaLytics Engine

Funding: HORIZON 2020 Duration: 01/01/2021 - 30/06/2023

The C-SCALE project aims to federate European EO infrastructure services, such as the Copernicus DIAS and others. The federation shall capitalise on the European Open Science Cloud's (EOSC) capacity and capabilities to support Copernicus research and operations with large and easily accessible European computing environments.



EOSC Future



OpenAIRE Nexus

www.openaire.eu/openaire-nexusproject

Scholarly Communication Services for EOSC users

Funding: HORIZON 2020 Duration: 01/01/2021 - 30/06/2023

The project will provide European advanced communication services, as a means of implementing open science initiatives.

EOSC Future

www.eoscfuture.eu

Funding: HORIZON 2020 Duration: 01/04/2021 - 30/06/2023

EOSC Future aims to promote EOSC portal and unlock the potential of European research via a vision of Open Science for Society. EOSC Future will interconnect and integrate digital infrastructures, Open Science national initiatives and research communities to EOSC, aiming to further enhance the EOSC Portal, EOSC-Core and EOSC Exchange.



COPERNICUS SPACE COMPONENT DATA ACCESS

Funding: European Space Agency (ESA) Duration: 01/02/2021 - 31/01/2022

The project concerns the access of international organizations and users across the globe to the European programme Copernicus data. It aims to provide (a) the continuity of the different data access services currently running in ESA Copernicus operations framework, and (b) expansion of access services.





Synthesis+

www.synthesys.info

Synthesis of systematic resources

Funding: HORIZON 2020 Duration: 01/02/2019 - 31/01/2023

SYNTHESYS aims to produce an accessible, shared, high quality approach to the management, preservation and access integrated European resource to leading European natural history collections for research users in the natural sciences. DCoMex

DCoMEX

www.grnet.gr/dcomex

Data Driven Computational Mechanics at EXascale

Funding: HORIZON 2020 Duration: 01/04/2021 - 31/03/2024

DCoMEX aims to provide unprecedented advances to the field of Computational Mechanics by developing novel numerical methods enhanced by Artificial Intelligence, along with a scalable software framework that enables exascale computing.

ELEDGER

ELEDGER

www.grnet.gr/eledger

Hellenic Distributed Ledger Technology Infrastructure

Funding: Innovation and Networks Executive Agency (INEA), EU Duration: 01/04/2021 – 31/03/2023

The project aims at establishing a solid pillar for the development and spreading of the European Blockchain Partnership (EBP) initiative in Greece and supporting the participation and contribution of Greek stakeholders to the European Blockchain Service Infrastructure (EBSI).





ICT-AGRI-FOOD

www.ictagrifood.eu

Funding: H2020/ERA-NET Duration: 10/01/2019 - 30/09/2024

Supporting the development and implementation of new technologies for a competitive, sustainable and environmentally friendly agriculture.

eSSIF-Lab

NGI

www.essif-lab.eu

Working for development, integration and adoption of Self-Sovereign Identities (SSI) technologies

Funding: H2020/ICT Duration: 01/11/2019 - 30/10/2022

Aims at advancing the broad uptake of Self-Sovereign Identities (SSI) as a next generation, open and trusted digital identity solution for faster and safer electronic transactions via the Internet and in real life.

Skills4EOSC

Skills 4 eosc

www.cordis.europa.eu/project

Funding: Horizon Europe Programme, European Research Executive Agency Duration: 01/09/2022 - 31/08/2025

Skills4EOSC brings together leading experiences of national, regional, institutional and thematic Open Science (OS) and Data Competence Centers from 18 European countries in order to accelerate the upskilling of European researchers and data professionals in the field of FAIR and Open Data, intensive-data science and Scientific Data Management.



NATIONAL PROJECTS



HEPHAESTUS

www.grnet.gr/hephaestus

Funding: NSRF 2014-2020, Operational Program - Competitiveness, Entrepreneurship and Innovation Duration: 01/10/2017 – 31/10/2023

The Hephaestus project provides all Greek academic and research institutions with advanced network e-Infrastructures & Services.

www.grnet.gr/helix/

HELIX

HELIX

National e-Infrastructures for Research

Funding: NSRF 2014-2020 Duration: 01/01/2017 - 31/12/2022

The project aims at expanding / upgrading and making available for use by the national research infrastructures the NNCRI (National Network and Computational Research Infrastructure), OpenAIRE-D and HELNET, as listed under the consolidated title National Digital Infrastructures for Research (HELIX) in the National Roadmap for Research Infrastructures. маснаоп

MACHAON

www.grnet.gr/hospitals/

Provision of advanced network-computing services to hospital units in a cloud computing environment

Funding: NSRF 2014-2020 Duration: 01/07/2020 - 30/06/2023

Machaon aims to support clinical work, strengthen the research work of medical staff and improve the competitiveness of the health sector through the upgrade of the technological infrastructure in 129 public hospitals and health structures in the country.



NATIONAL PROJECTS

Digital Services for the National Blood Donation System

Blood Donor System

www.grnet.gr/grnet_projects/ blooddonorregistry/

Digital Services for the National Blood Donor System

Funding: «REFORMATION of PUBLIC SECTOR» 2014-2020 Duration:26/04/2016 - 30/06/2023

Upgrade of National HPC System "ARIS"

www.grnet.gr/upgrade-of-aris-hpc/

Funding: Operational Program "Attica 2014-2020" and the Priority Axis "Dissemination and Development of Innovative Products and Services of SMEs using ICT" Duration: 01/01/2022 - 31/12/2023

GRNET's existing HPC system will be upgraded with additional high performance computing equipment at the existing Data Center. ARIS HPC will continue to support the scientific applications which have special requirements regarding the speed of executing calculations, the storage space and memory capacity in various scientific fields of the Greek scientific community. Development of a new national HPC system "DAEDALUS"

DAEDALUS

www.grnet.gr/development-of-daedalus/

Funding: Joint Undertaking/ EU / Recovery And Resilience Facility (RRF) Duration:01/06/2022 - 31/12/2029

The "GRNET S.A. Grant for the development and operation of a new national High Performance Computing (HPC) system". DAEDALUS will serve a wide range of Greek and European users of the scientific and academic community, the industry and public sector. Anticipated to boost the development of new applications in a wide range of research fields such as Computational Chemistry, Physics, Biology, Biomedicine, Meteorology, Artificial Intelligence.



NATIONAL PROJECTS

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EVIA SAMOS PASS

www.vouchers.gov.gr/eviasamo spass

Digital debit cards in order to support Tourism in North Evia and Samos areas.

Funding: Public Investments Program Duration: 08/06/2022 -31/12/2022

North Evia-Samos Pass is a project that supports domestic tourism in Samos and North Evia, areas affected by natural disasters. The total budget of the project to support these regions amounted to over 6M euros.

WHITE AREAS

www.white-areas.gov.gr

National Access to TV stations of national coverage for permanent residents of areas without TV coverage

Funding: Public Investments Program Duration: 01/01/2021 - 31/12/2023

The aim of the project is to provide television coverage to households even in the most remote continental and island regions of the country, which have specific geomorphological characteristics.

TRANSPORTATION EQUIVALENT

www.metaforikoisodynamo.gr

Further operations for Development of the Information System for the Implementation of the Transportation Equivalent

Funding: Public Investments Program of Secretariat General for the Aegean and Island Policy of the Ministry of Maritime Affairs, Islands and Fisheries Duration: 12/04/2019 - 31/12/2021



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