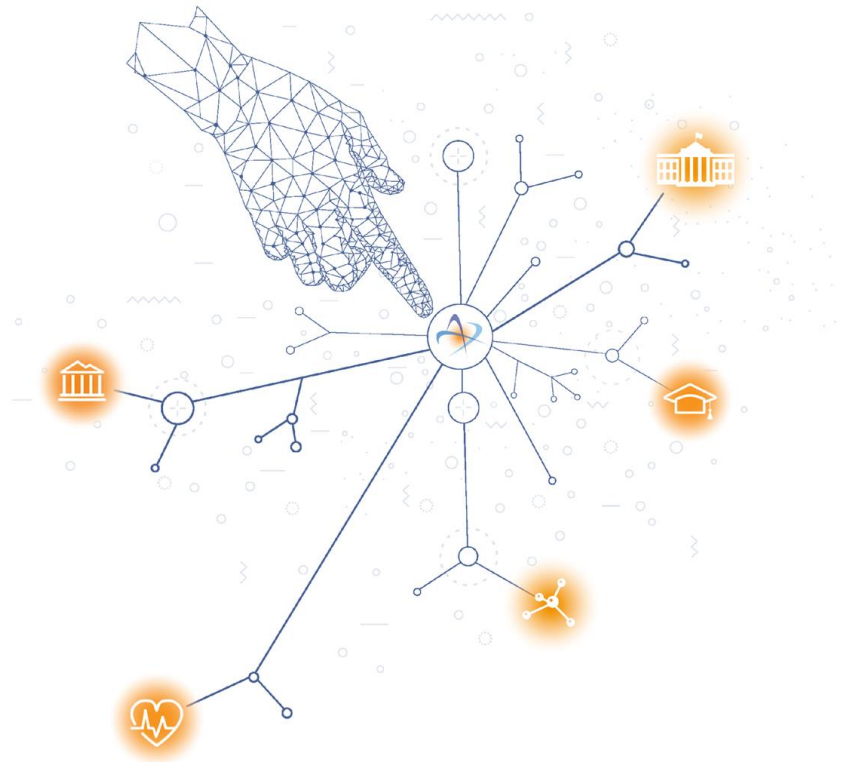


GRNET: Integrated service provisioning for national and pan-European user communities

Themis Zamani GRNET,
Head of Implementation Unit
European Infrastructures and Pro
Directorate



National Infrastructures for Research and Technology - GRNET

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 Education, Research, Public Administration,

Health and Culture.



GRNET - Role

GRNET provides networking, cloud computing, HPC, data management services and e-Infrastructures and services to academic and research institutions, to educational bodies at all levels, and to all agencies of the public sector.

Promotes and implements the strategic goals of the Ministry of Digital Governance, designs and develops advanced information systems and e-Infrastructures to achieve Greece's Digital Transformation goals.

Provides international interconnection through the pan-European GÉANT network, and is the National Research and Education Network (NREN).

Offers an integrated environment of cutting-edge technologies and provides infrastructural and technology support to academic and research institutions, educational institutions at all levels, and to all public sector agencies and organisations.

It manages the Greek Internet Exchange (GR-IX), that interconnects the most important internet companies in the country



GRNET - Role

Develops, operates and promotes the **National initiative and portal for digital skills in Greece**. A pilot project for the development of digital competencies and a central reference point for digital education.

Carries out **technological research and development** on telecommunications networks and computing services.

Advises and supports the Greek State in **designing advanced information systems and infrastructures**, designing & maintaining advanced computing & network infrastructures and services, data centers, high performance computing system (HPC-ARIS, Deadalus), and the fiber optic network.

It is the **main infrastructure/service enabler for Open Science in Greece** and leader in a coordinated effort for development of electronic infrastructures and services in Southeast Europe and the wider region.

It is involved in the formulation of the **National Artificial Intelligence Strategy**. Also, it is the Euro QCI (Quantum Communication Infrastructure) national representative.



GRNET - Interconnects

Universities, Ecclesiastic Academies

Educational Institutions

Research Institutions and Centers

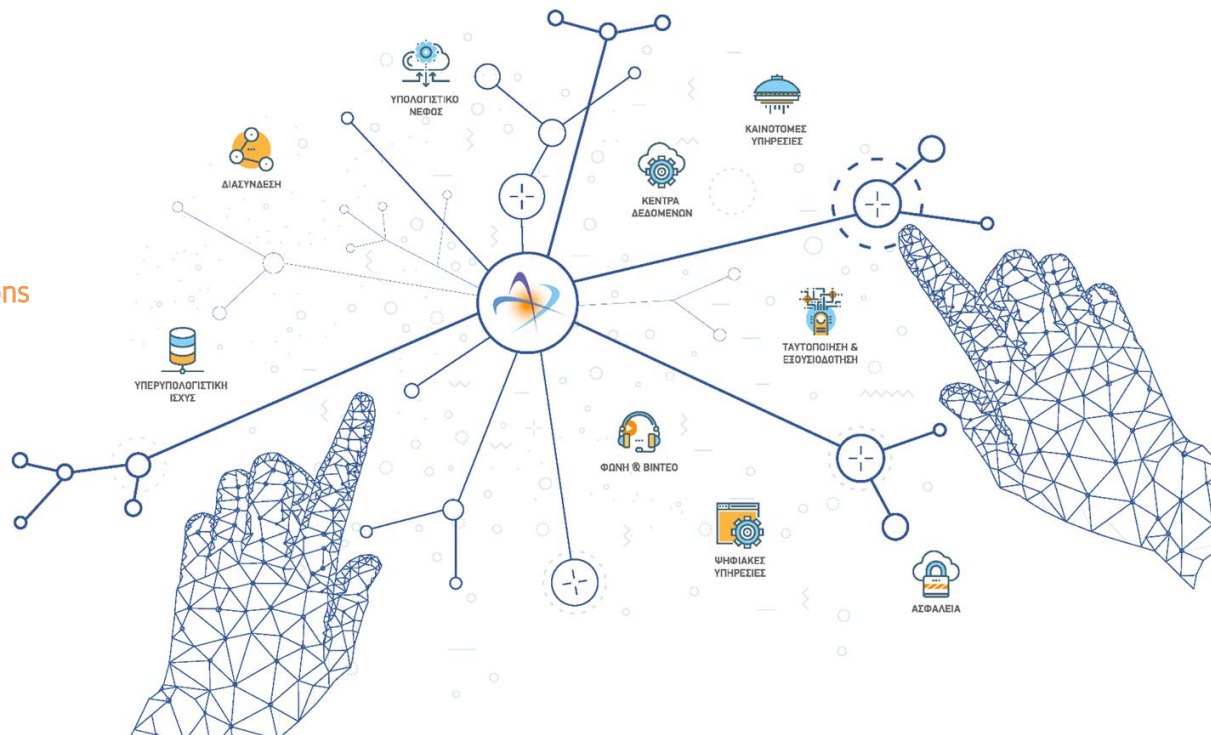
The Pan-Hellenic School Network

Content Agencies

Museums, Libraries and other Cultural Institutions

Public hospitals

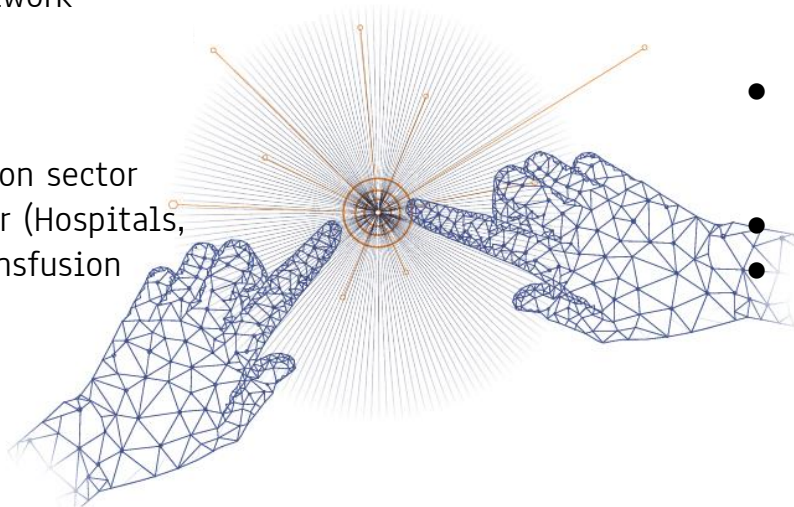
Public Administration



Communities, Users @ Sectors

Types of Organizations

- Universities
- 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)



Types of Users

- Academic and Research Community users
Students, Professors, Researchers,
Academic and Administration Management,
Network Operations Centers (NOC),
Technical Staff
- Health Sector users Hospital: Doctors,
Administration, Management, NOC,
Technical Blood Donor Volunteers
- Public Administration Officers
- Citizens

Network connectivity offering

GRNET covers the needs for connectivity and computer system operations for Education, Research and Health Organisations offering:

- Internet protection services
- Intercampus connectivity for multiple institution sites
- Connectivity with R&E Institutions in a) Greece, b) Europe, c) Worldwide
- 6 GRNET data-centers in separate locations



10,000 km Optical fiber

500K Users

340 PoPs

50 Cities

6 Data Centers

151 Connected
Institutions



GRNET Fiber optic Footprint

35 PoPs

10,000km fibers (IRU)

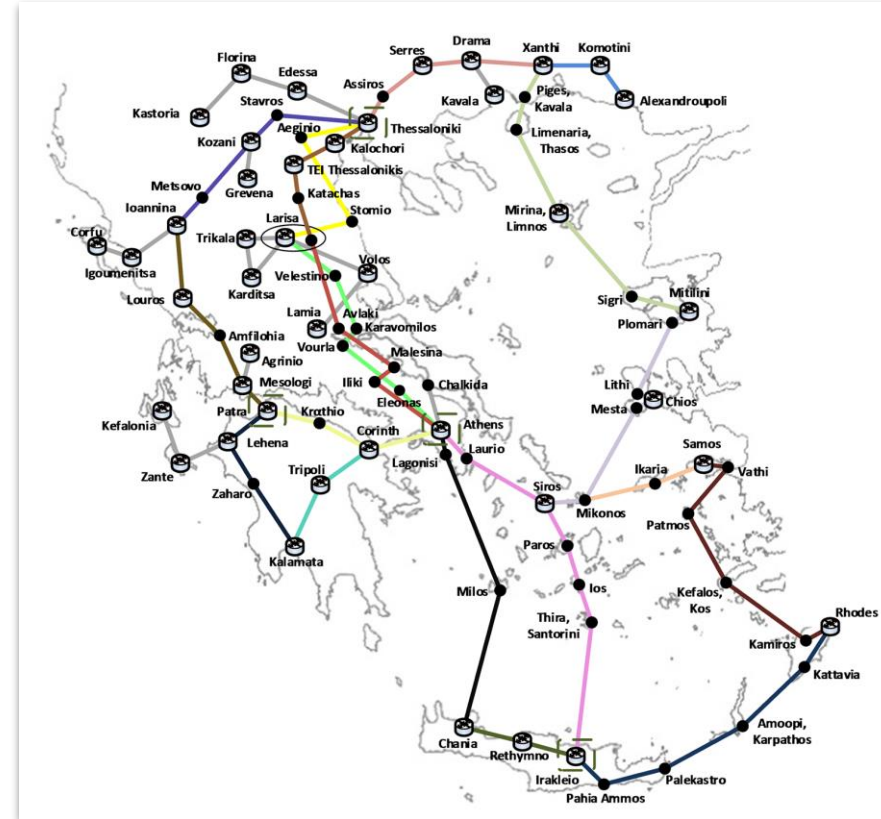
- MANs Attiki &
- Thessaloniki DF loops 50 cities

Single-mode fiber pair

15-years IRUs



Availability > 99%



Cloud Computing / Storage

GRNET provides a variety of key computing services. Secure high-speed inter-network, cloud computing and storage resources.



6 Data Centers

GRNET has the **central role of coordinator of all digital infrastructures** for Education and Research and constitutes the national representative of the research and technological community in the research infrastructures of the EU

Computing, Networks and Storage for all: (Universities, Research Centers, Institutes, Laboratories, Classes, Students, Researchers)

GRNET manages the Government Cloud of the Research and Education Sector (**RE-Cloud**). Currently planning a major renewal/extension of its infrastructure and migration to OpenStack IaaS Framework (currently investigating a hybrid model for the provision of cloud services)

Public Cloud (~oceanos - over 400,000 virtual machines spawned)

HPC Computing / Storage

GRNET provides high performance computing resources to the Greek and international scientific and research communities in order to conduct scientific research and especially to support extremely demanding scientific applications.



ARIS (Current HPC System)

- First Installation: 180 TFlops ,#468 in Top500
- Expansion June 2016: 444 TFlops, Incl GPU, Xeon Phi, Large Memory nodes
- Expansion Sept. 2018: 535 Tflops, 8x V100 GPUs, 512 GB
- Expansion (planned for 2022): 1+ Pflops

New HPC System Daedalus

- Max performance 30PFlops
- Total budget 28,5 M€ (65% Greek RRF + 35% EuroHPC JU)

EuroHPC: in-kind contribution from Cyprus, N. Macedonia and Montenegro

Location: Technological and Cultural park of Lavrion (TCPL)



EuroQCI / HellasQCI

GRNET coordinates the HellasQCI Initiative that will deploy the first long-distance national QCI systems and networks in Greece and is appointed as the National Technical Representative to EuroQCI

HellasQCI



DEP topic 2: “Deploying advanced national QCI systems and networks”

GRNET is the **coordinator of HellasQCI** following the appointment by the Ministry of Digital Governance. (technical representative of Greece at the **EuroQCI initiative**)

HellasQCI is building its **QCI backbone network in 3 test-sites**. Athens (central Greece and Greece’s capital), Thessaloniki (in the northern Greece) and Heraklio in Crete’s island (in the southern Greece).

ORGANISATION/ ASSOCIATION / FOUNDATION MEMBERS



interconnects research, education & innovation communities with secure, high-capacity networks.



e-Infrastructure for advanced computing for research



Data Infrastructures



European Internet Exchange Association



Partnership for advanced computing in Europe



European Technology Platform (ETP) for High-Performance Computing (HPC)



European Open Science Cloud



Persistent Identifiers for eResearch



Integrating existing archeological data infrastructure



Collects, stores and provides access to data



Services for Education and Research



GRNET provides a variety of key computing and networking services. Secure high-speed networking, cloud computing and storage resources, cloud computing infrastructures, IaaS public cloud, and high-performance computing system to support extremely demanding scientific applications.



- Computing, Networks and Storage for all:
 - Universities, Research Centers, Institutes, Laboratories, Classes, Students, Researchers
- The possibility to supply a full computer operating system and network in seconds
- Development of Information Systems at minimum time, dynamic allocation in real time Distribution through the Internet (Amazon style-IaaS)
- Online file storage and syncing

Services for Education and Research

 grnet@education
 grnet@research

e-Presence:
Videoconference



Diavlos:
Live streaming



Eduroam:
Roaming service



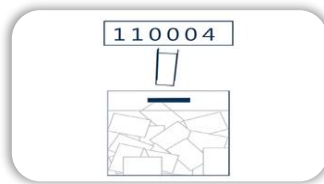
Eudoxos:
Book distribution



APELLA:
Election of faculty



ZEUS:
ZEUS eVoting



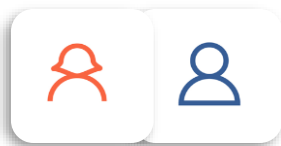
Atlas:
Internship positions



Delos:
AAI



Academic-ID:
Based on DELOS



Security:
Mitigate active attacks



Digital Services and e-Infrastructures

GRNET acts as an advisor to the Ministry of Digital Governance in the implementation of Digital Transformation Strategy for the Greek Public Sector.



Βρείτε τη δημόσια υπηρεσία που
θέλετε **εύκολα** και **γρήγορα**

Αναζητήστε εδώ ...



Κατηγορίες Υπηρεσιών

11 κατηγορίες με 1184 υπηρεσίες για να βρείτε ακριβώς αυτό που ψάχνετε.

- Conducts analyses, studies and provides standard solutions for the achievement of interoperability
- Organises workshops and hackathons, is active in the production and application of(service design tools, specifications, and implementation of medium-term and short-term activities)
- Implementation of the Ministry's Unified Digital Portal gov.gr,
- Implementation of a series of Services

Implementation of Digital Services @gov.gr

Covid-19

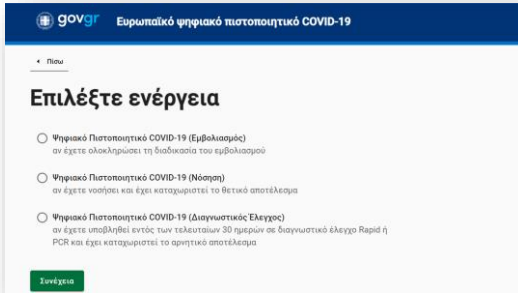
- Issuance of citizens' movement official forms during the COVID-19 pandemic: <http://forma.gov.gr>
- EU Digital COVID Certificate: <https://eudcc.gov.gr/start/> & Covid Free GR mobile app
- COVID-19 self-tests: <https://self-testing.gov.gr/>
- Certificates about positive or negative COVID-19 test: <https://www.gov.gr/ipiresies/ugeia-kai-pronoia/koronoios-covid-19>

OTHER Digital Services

- University admission exams: information about the results by sms: [URL]
- TV coverage in "White areas": [URL]
- Citizen's box: [URL]
- Digital graduation diplomas for graduates of high schools, lyceums and vocational lyceums: [URL]
- Copy of criminal record: [URL]
- E-applications for vacancies in mobile Health Units and the Regional Health agencies: [URL]
- Application for the issuance and control of the validity of e-documents. [URL]
- Temporary driving license [URL]

Implementation of Digital Services @gov.gr

EU Digital COVID Certificate



<https://covidhackgr.gov.gr/>



<https://howto.gov.gr/>



A central reference point for digital education . Developing digital skills for all:

<https://nationaldigitalacademy.gov.gr/>

Εργαλείο αυτοαξιολόγησης

Αξιολογήστε τις γενικές ψηφιακές δεξιότητές σας κι αναγνωρίστε το επίπεδό σας με βάση το DigComp.

Ενισχύστε τις γενικές ψηφιακές σας δεξιότητες

Αναζητήστε μαθήματα με βάση τις δεξιότητες που χρειάζεστε ως πολίτης.

Εμπλουτίστε τις εξειδικευμένες ψηφιακές σας δεξιότητες

Αναζητήστε μαθήματα με βάση τις δεξιότητες που χρειάζεστε ως επαγγελματίας.

Federation and e-Infrastructure Services



RCIAM: Identity Access Management for Research Communities - Authentication and authorization for members of interdisciplinary scientific communities.



ARGO Monitoring : a lightweight service for Service Level Monitoring designed for medium & large sized e-Infrastructures.



ARGO Messaging: A Publish/Subscribe Service, which implements the Google PubSub protocol.



AGORA/SPMT : A tool aimed at facilitating service management in IT service provision, including federated scenarios.

PiD **PID SERVICE**
: Persistent Identifiers Service

GRNET EID PROXY

A proxy that is used to easily connect a service with other networks (eIDAS network)

ACCOUNTING SERVICE

A service that acts as an aggregator of accounting data.

ESEAL SERVICE

e-Sealing digital signature service



Advanced e-Infrastructures & Services for Health



Network: fiber optics



1/10Gbps
*Secure and fast
processing of medical
and research data*

Wi-fi: Access



Remote access service
in all hospitals
Fast access to all
hospital services for
staff and customers

Datacenter: Medical data



Effective, fast, secure
storage and retrieval
of medical data

EMA: Donors Registry



Managing the registry
and issuing volunteer
donor IDs for blood
donors, donation services
and blood centers.

Harmoni: On-line Imaging Data



High-Performance Archiving
and Retrieval of Medical
imaging Data.

Diadosis: Inter-loan library



Access to all research and
medical publication papers
via DELOS

Delos: AAI



Advanced e-Infrastructures & Services for Culture



Diavlos: Live streaming



Access to live and recorded digital webcasts of lectures, seminars, artistic and other events

Eduroam: roaming service



Offers to selected historic and cultural venues wireless infrastructure

THANKS!

Do you have any questions?



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