e-Infrastructure for Research and Education in Georgia

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Georgian Research and Educational Networking Association – GRENA
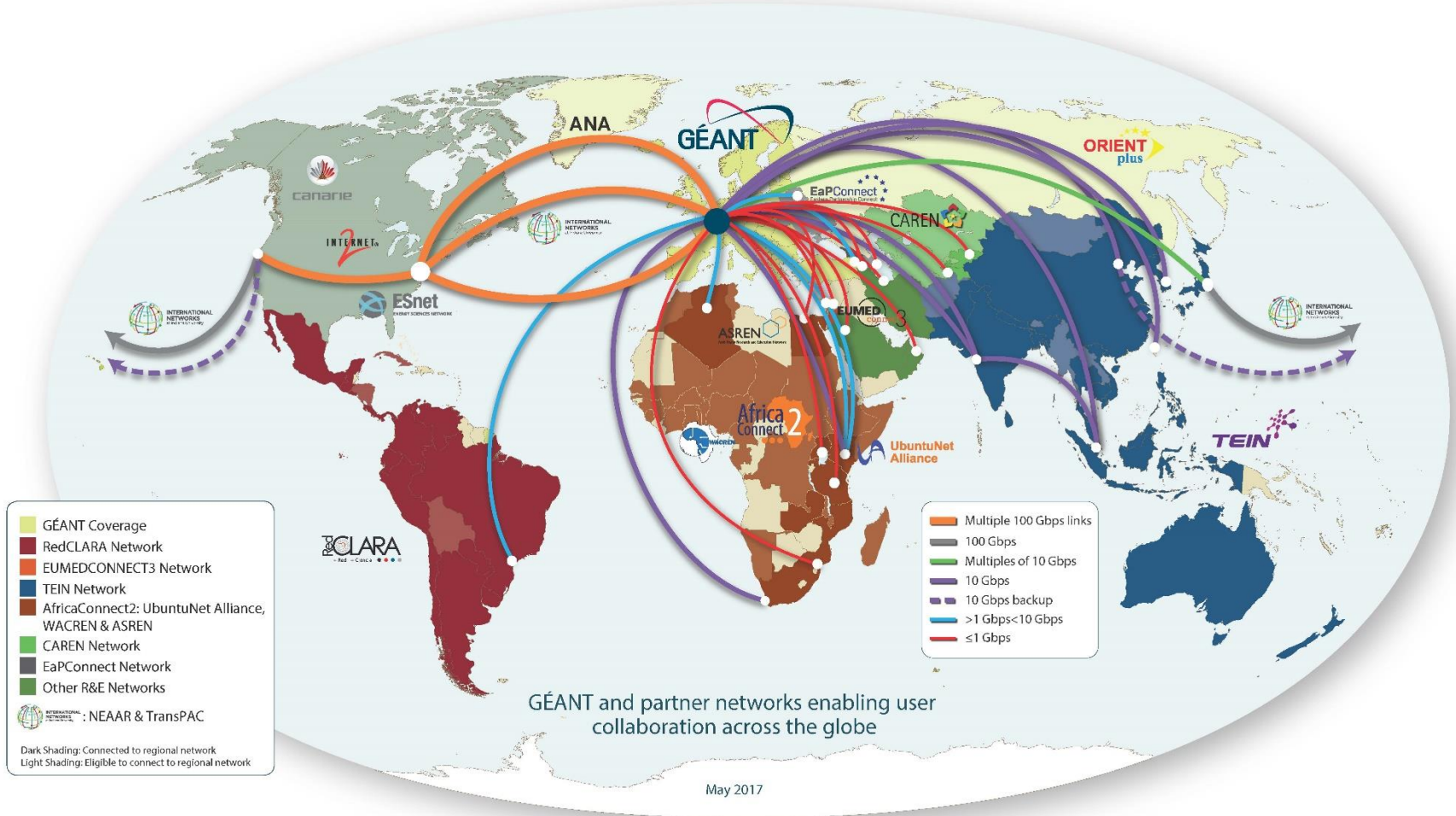
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Content

- ➤ **European research and education network GÉANT**
- ➤ **European Union EaPConnect project**
- ➤ **Georgian Research and Educational Networking Association GRENA**

GÉANT

- European research and education network GÉANT interconnects National Research and Education Networks NRENs
- 41 European and Eastern Partnership countries are GÉANT members
- Serves 50 million users at 10 000 institutions across Europe
- GÉANT reaches over 100 countries worldwide
- GRENA is member of GÉANT since 2013
- GÉANT is supporting by participating countries and European Commission from 2001
- Current GÉANT project: GN4-2 Research and Education Networking – GÉANT. GN4-2 is 32 months project with total budget 77 MEUR, countries contribution is 22 MEUR.
- Services: IP, Point-to-Point, VPN, GWS, eduroam, eduGAIN, security, monitoring, etc.
- Research in development of new and upgrade of existing services (e. g. Software Defined Networks)

GÉANT At the Heart of Global Research and Education Networking

GÉANT and partner networks enabling user collaboration across the globe

May 2017

Legend:
- GÉANT Coverage
- RedCLARA Network
- EUMEDCONNECT3 Network
- TEIN Network
- AfricaConnect2: UbuntuNet Alliance, WACREN & ASREN
- CAREN Network
- EaPConnect Network
- Other R&E Networks
- : NEAAR & TransPAC

Dark Shading: Connected to regional network
Light Shading: Eligible to connect to regional network

- Multiple 100 Gbps links
- 100 Gbps
- Multiples of 10 Gbps
- 10 Gbps
- 10 Gbps backup
- >1 Gbps<10 Gbps
- ≤1 Gbps

GÉANT Networks · Services · People
www.geant.org

Funded by the European Union

VIII International Conference of the Georgian Mathematical Union, September 4-8, 2017, Batumi, Georgia

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EaPConnect

- ➢ **Main objectives of EaPConnect project:**

  - Development of regional e-Infrastructure - high capacity and very reliable Internet network dedicated to research & education in Eastern Partnership countries

  - Implementation of services available at GÉANT network and development of new services

- ➢ **Participants of the project are National Research and Education Networks from Armenia, Azerbaijan, Belarus, Georgia, Germany, Moldova and Ukraine. Project is coordinated by GÉANT**

- ➢ **EaPConnect is 60 months project with total budget 13.7 MEUR, contribution of Eastern Partnership countries is 5%**

EaPConnect

Connection to GÉANT enhances the ability of Eastern Partnership members to:

Collaborate	• Collaborate more effectively with European researchers
Participate	• Participate in EC funded projects
Access	• Access research instruments across Europe • Work on high profile projects which require high capacity
Share	• Receive and offer expertise in computer networking

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About GRENA

Georgian Research and Educational Networking Association GRENA was founded in 1999

- ➢ **Tbilisi State University**
- ➢ **Georgian Technical University**
- ➢ **Ilia State University**
- ➢ **Tbilisi State Medical University**
- ➢ **Agricultural University of Georgia**
- ➢ **Georgian National Academy of Sciences**
- ➢ **Open Society Georgia Foundation**

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GRENA activities

➢ **Providing Information Technology services to users and implementation of new, innovative services**

➢ **IT education**

➢ **Preparation and implementation of research and technology projects**

➢ **Promoting and supporting IT development in Georgia**
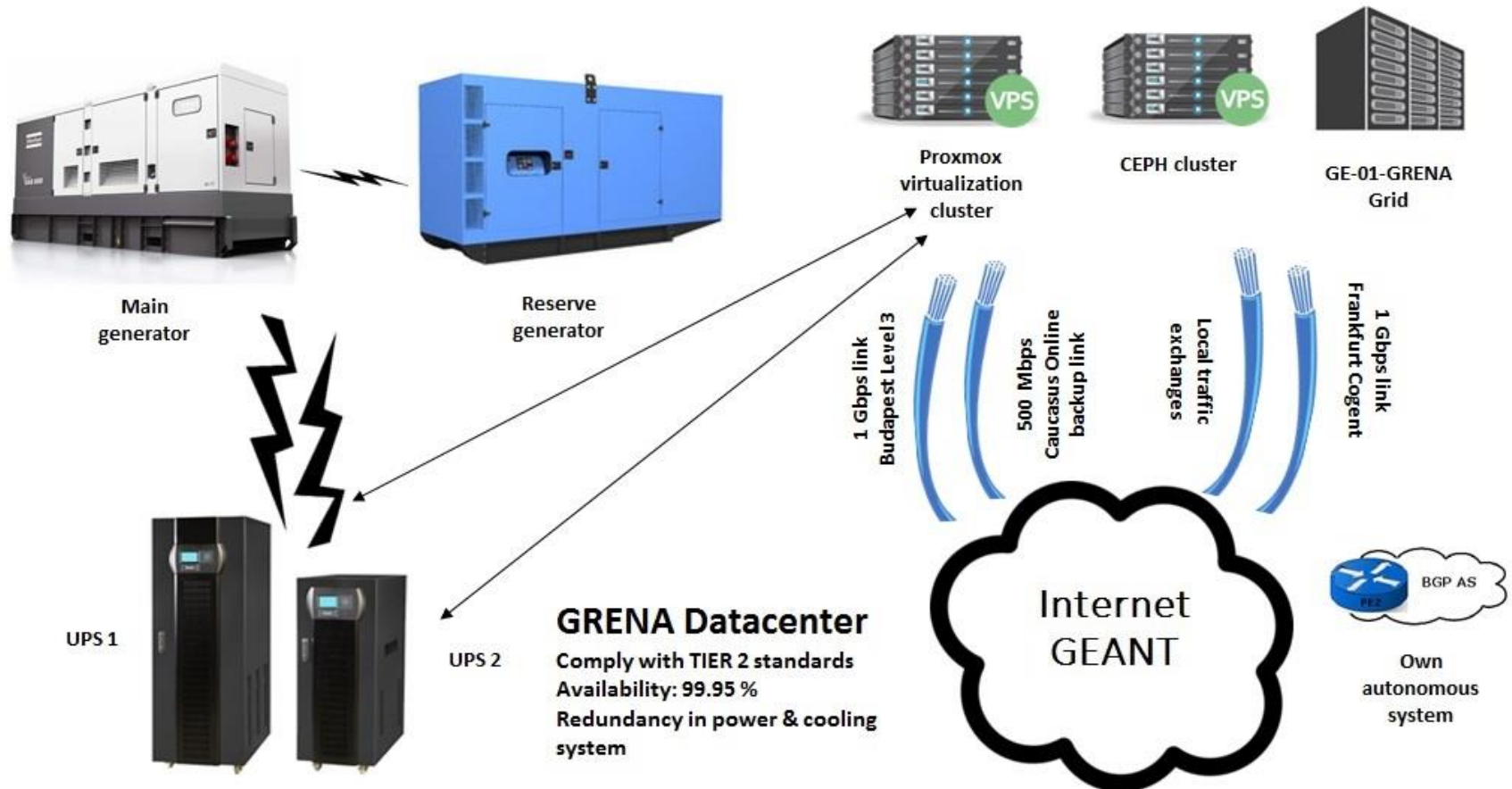
Network services

- **Internet connectivity (Level 3, Cogent, Caucasus Online backup)**
- **European Research Network GEANT connectivity**
- **eduGAIN authentication and authorization http://gif.grena.ge/**
- **eduroam education roaming http://www.eduroam.ge/**
- **Virtual Private Network (VPN)**
- **Network traffic monitoring and analyses (Scrutinizer, Nfsen, Cacti, perfSONAR)**
- **Computer Emergency Response Team – CERT-GE (member of TI)**
- **Initial configuration and/or full maintenance of Intrusion Detection/Prevention systems IDS/IPS**
- **Software licenses** Microsoft SOPHOS eset symantec. AVIRA digicert
- **H.323 based videoconferences (partner of Eyenetwork)**
- **.გე domain registration**

International connectivity
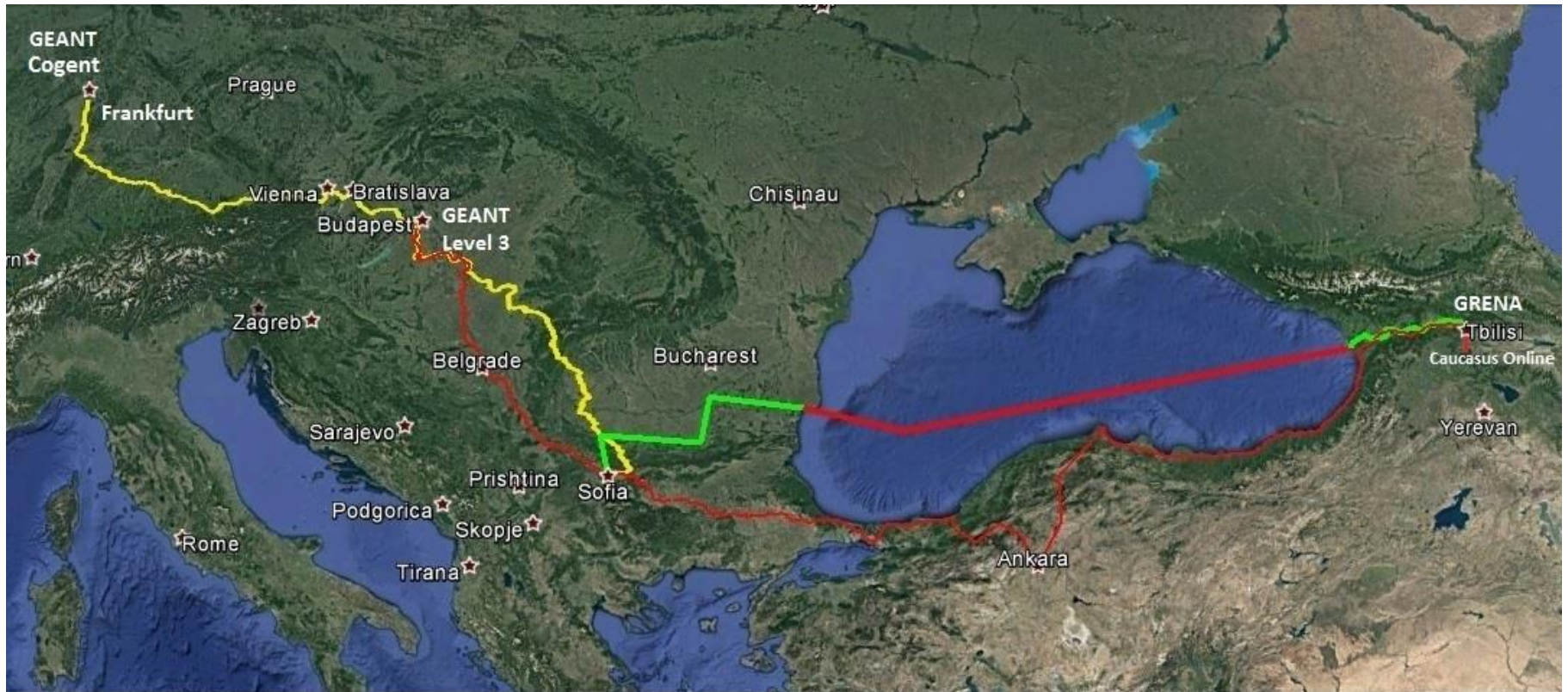
GRENA network in Tbilisi
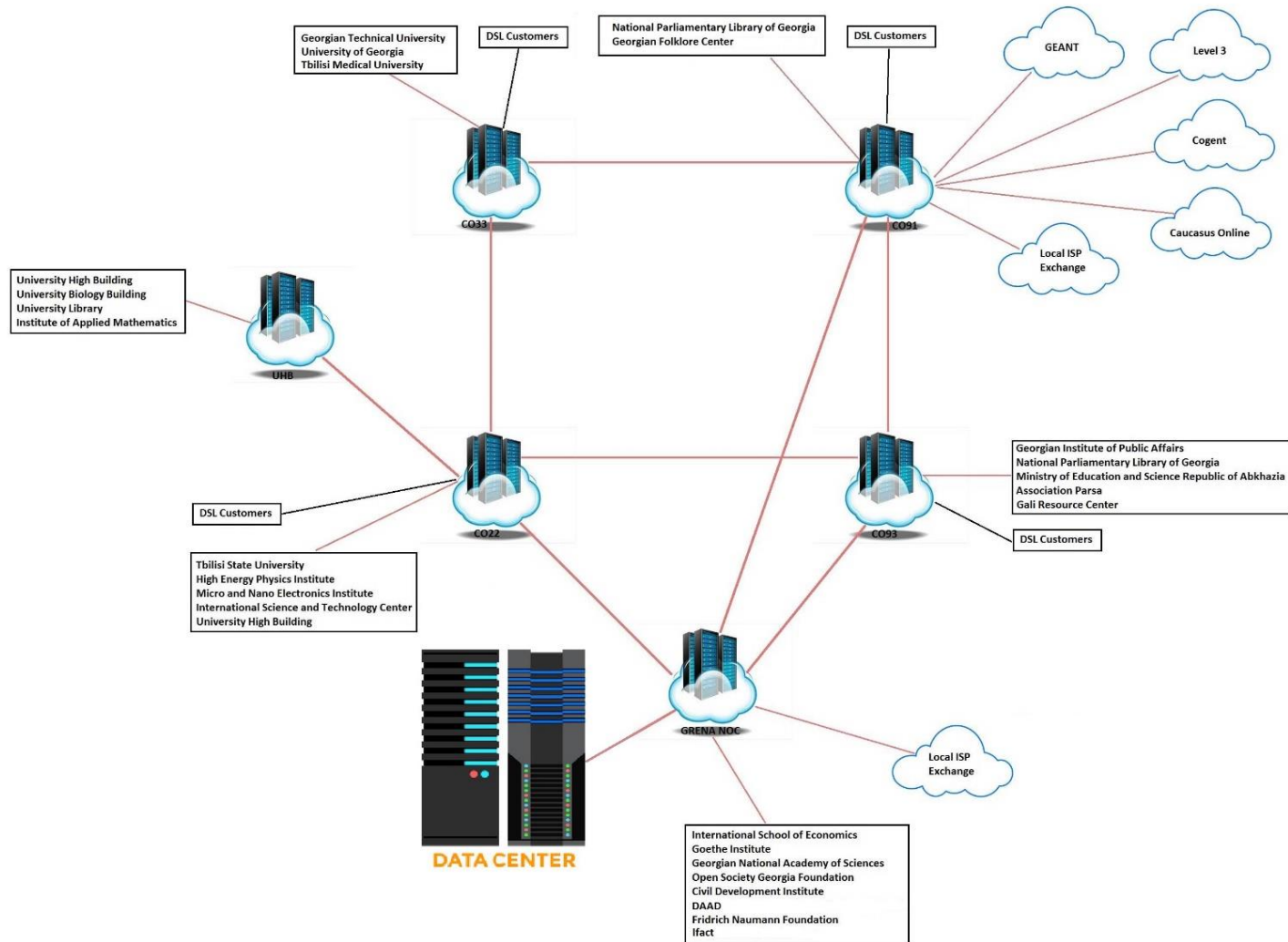
Grid and VPS resources

Number of facilities	Logical CPU	Storage capacity TB	Digital Certificates
2	472	36	CA

- ➢ **GE-01-GRENA Grid site is included in European Grid Infrastructure**
- ➢ **Certification Authority CA together with Tbilisi State University**
- ➢ **Applications in weather forecast, climate modeling, DNA mutation, plasma physics, etc. are using Grid facility**
- ➢ **Virtual Private Servers VPS are used by 85 organizations**
- ➢ **3x10 Gbps connectivity to GRENA network**

Datacenter

Main generator

Reserve generator

Proxmox virtualization cluster

CEPH cluster

GE-01-GRENA Grid

1 Gbps link Budapest Level 3

500 Mbps Caucasus Online backup link

Local traffic exchanges

1 Gbps link Frankfurt Cogent

UPS 1

UPS 2

GRENA Datacenter
Comply with TIER 2 standards
Availability: 99.95 %
Redundancy in power & cooling system

Internet GEANT

BGP AS
PE2

Own autonomous system

Education program

- ➤ **Cisco Networking Academy**
- ➤ **Linux Professional Institute Academic Partner**
- ➤ **Juniper Networks Academic Alliance Member**
- ➤ **Oracle and SQL courses**
- ➤ **e-Learning center based on Math-Bridge and Moodle**
- ➤ **Authorized partner of Pearson VUE for student's certification in IT field**

http://elearning.grena.ge/
http://gtu-mb.grena.ge/

Current EU projects

HORIZON 2020: VRE for regional Interdisciplinary communities in Southeast Europe and the Eastern Mediterranean **(VI-SEEM)**

ENPI: EaPConnect

HORIZON 2020: GN4-2 Research and Education Networking – GÉANT **(GN4-2)**

Conclusion

Support from Georgian Government, European Commission and other donor organizations for the farther development of e-Infrastructure for education and science in Georgia is essential for the integration of scientific potential of country in the European Research Area

Thank you for attention
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Questions ?