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DEVELOPMENT OF EFFECTIVE ACCESS TO THE DISTRIBUTED SCIENTIFIC AND EDUCATIONAL E-INFRASTRUCTURE

РАЗВИТИЕ ЭФФЕКТИВНОГО ДОСТУПА К
НАЦИОНАЛЬНОЙ РАСПРЕДЕЛЕННОЙ НАУЧНО-
ОБРАЗОВАТЕЛЬНОЙ Е-ИНФРАСТРУКТУРЕ

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General objectives

- Development of modern national and regional resources of the electronic infrastructure RENAM and the provision of services focused on supporting scientific and educational communities in Moldova, as one of the six countries of the Eastern Partnership.
- The prospects of creating new optical CBF (Cross Border Fibers) links and other components of the electronic platform RENAM with the support of the EU-funded projects: EaPConnect2, GN4-3, NI4OS Europe.
- Evolution and current trends in the development of computing resources and services in the national network of science and education.

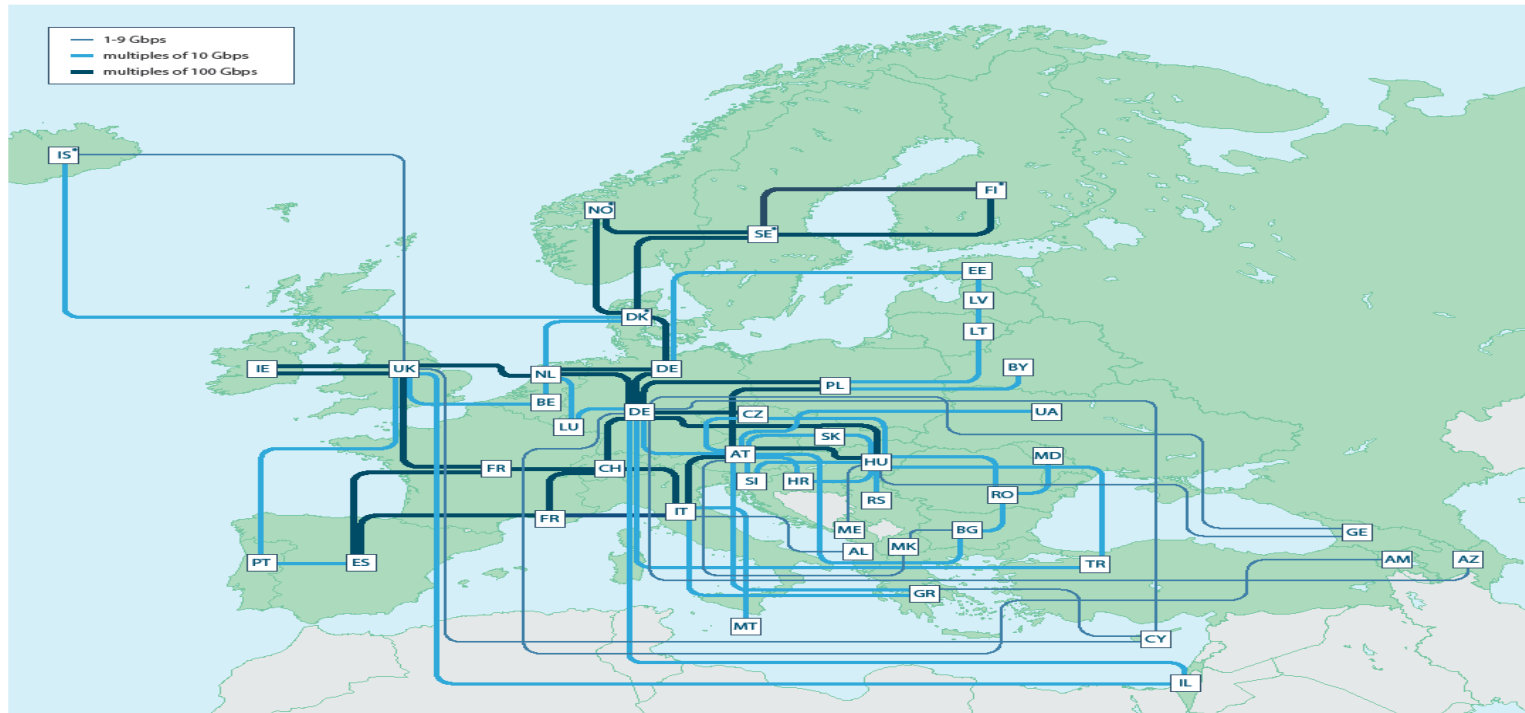
National and regional optical infrastructures of the NREN RENAM network and access channels to the GEANT network



- The operating optical channel: Chisinau (POP GEANT) - Yasi (RoEduNet) - Bucharest (POP GEANT) with a capacity of 10x10 Gbps.
- An optical channel created in 2021 with the support of the EaPConnect2 project: Chisinau (POP GEANT) –Odessa (URAN) –Kiev (POP GEANT) - Poznan (POP GEANT) with a capacity of 100 Gbps.
- In the future, the second channel through the south of Moldova: Chisinau (POP GEANT) - Cahul (RENAM) - Galati (RoEduNet) - Bucharest (POP GEANT)



GÉANT's pan-European **research and education network** interconnects Europe's National Research and Education Networks (NRENs). Together we connect over **50 million users** at 10,000 institutions across Europe.



GÉANT's pan-European network is funded by the GÉANT Project (GN4-2), which received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 731122. Connectivity to the Eastern Partnership countries (AM, AZ, BY, GE, MD, UA) is provided through the EaPConnect project, with 95% funding from the European Commission DG NEAR under grant agreement 2015-356353. The map shows topology as at December 2018. The GN4-2 and EaPConnect partners are listed below.

Albania	Belgium	Cyprus	Estonia	Georgia	Ireland	Lithuania	Montenegro	Norway*	Serbia	Turkey
Armenia	Bulgaria	Czech Republic	Spain	Greece	Israel	Luxembourg	F.Y.R. Macedonia	Poland	Sweden*	United Kingdom
Austria	Belarus	Germany	Finland*	Croatia	Iceland*	Latvia	Malta	Portugal	Slovenia	Ukraine
Azerbaijan	Switzerland	Denmark*	France	Hungary	Italy	Moldova	Netherlands	Romania	Slovakia	

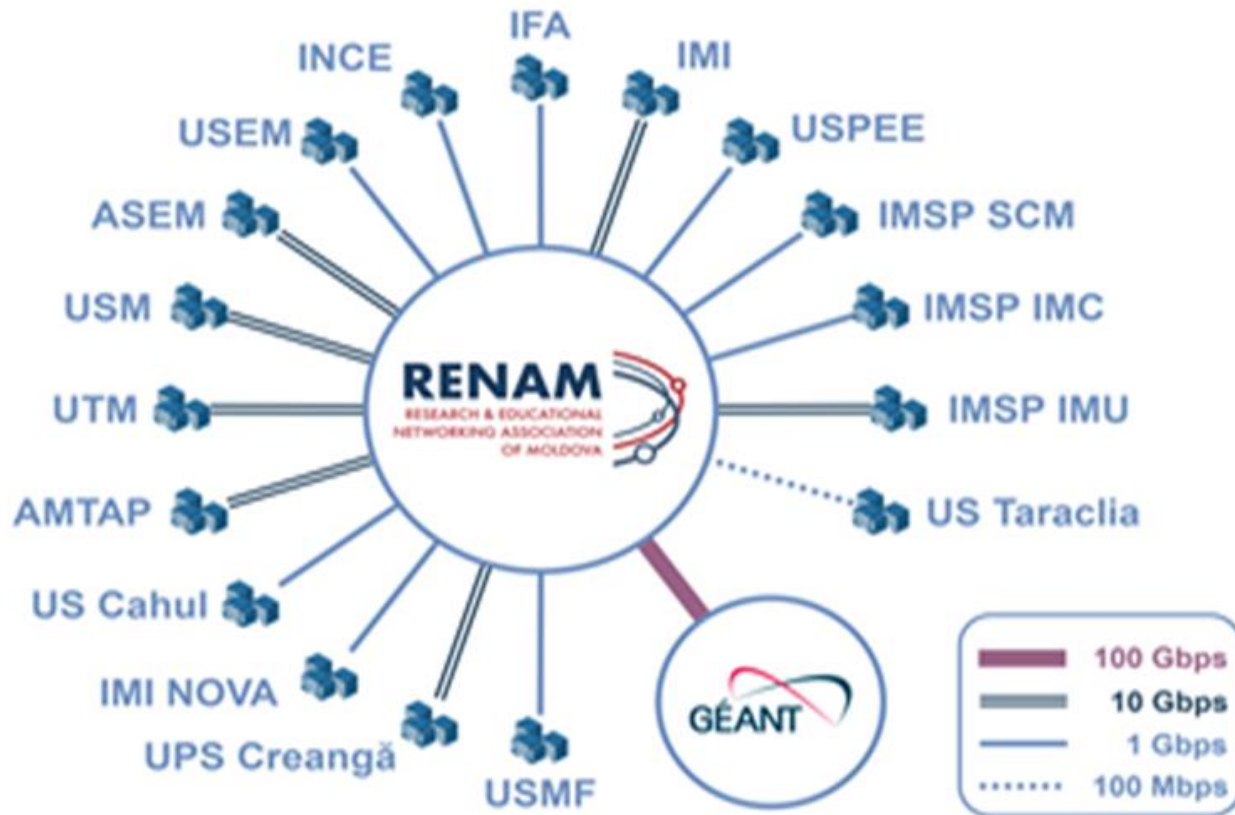
*Connections between these countries are part of NORDUnet (the Nordic regional network)



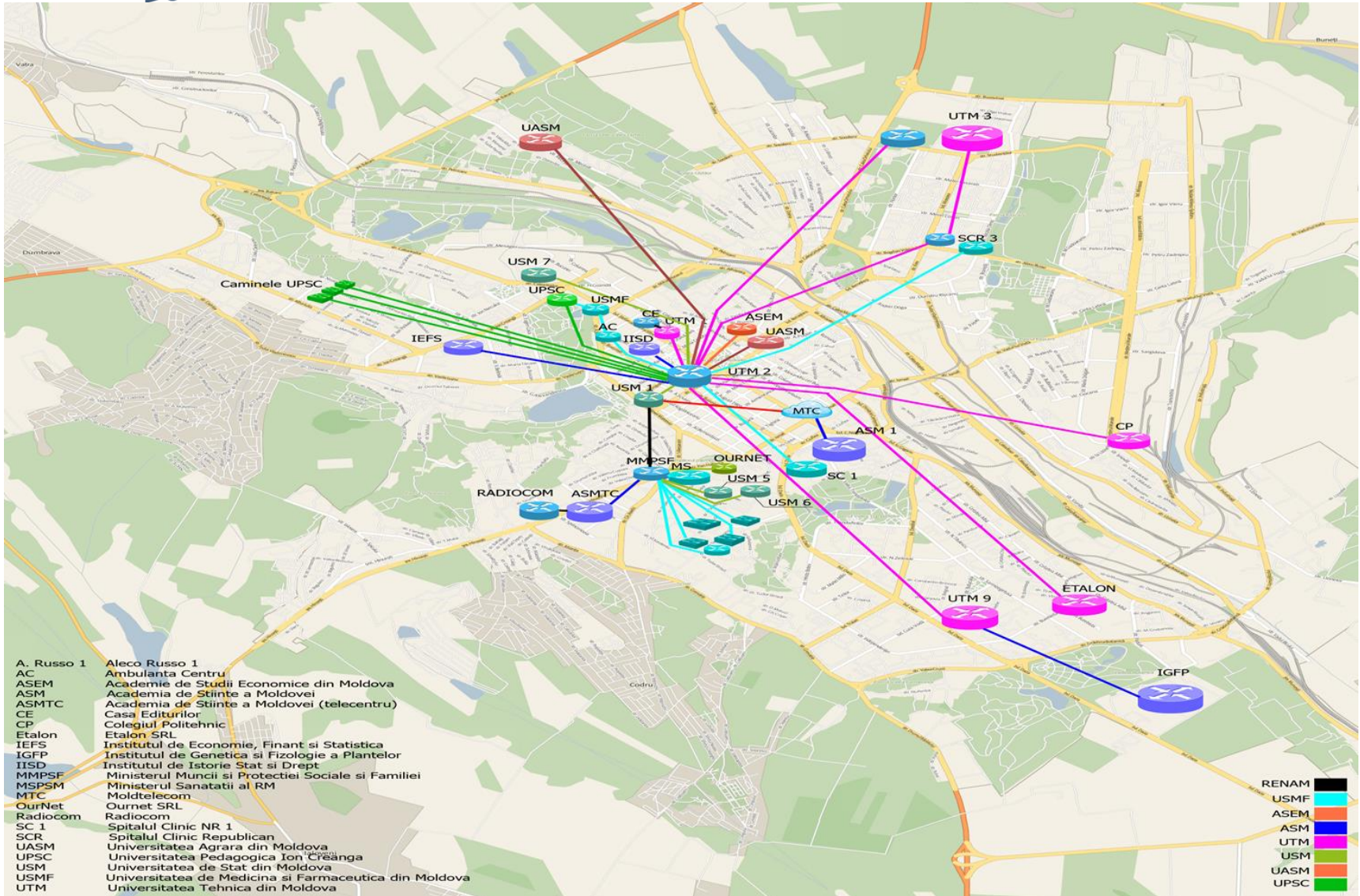
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NATIONAL CONNECTIVITY



Network topology in Chisinau



Connectivity Services

- Access to resources and services of the GEANT platform, as well as to European and global networks and the global Internet through the GEANT network;
- Provision of broadband (high-speed) connections for national research and education institutions ;
- Interconnection of national E & R institutions: UTM, ASEM, ASM, USM, UPSC, USEM, State University in Taraclia, State University in Cahul, AMTAP, USPEE, and others;

Access to GEANT and other internationally available services

- EDUGAIN - Federated Identity Management Service, using the global inter-federation mechanism;
- EDUROAM (WiFi network mobility service) - Secure Wi-Fi network access worldwide;
- Access to HPC resources of European computing infrastructures that available via regional or/and specific Calls organized by EaPConnect project for porting and running of applications for connected to RENAM institutions;
- Access to world-class cloud infrastructure resources (Amazon, Microsoft, CloudSigma, etc.) through the GEANT Framework Agreement to get different cloud resources using Federated Access.

- **HPC** - High-Performance Computing: National level – HPC clusters in USM and IMI ASM; regional level – via regional Calls for access to regional HPC resources (Bulgaria, Greece, Hungary, Romania);

- **Cloud** resources:
 - National – provided by RENAM;
 - Regional – creating by support of EaPConnect project;
 - Global – provided via GEANT Framework Agreement with leading Cloud providers.

Strategy aims of RENAM development in Moldova

- Creation and development of basic infrastructure (nodes and highways) of Nation-wide scientific-educational network and providing a stable access to national and foreign information resources;
- Implementation of new eInfrastructure technologies, services and information resources in order to achieve a high level of investigations and close interaction with the world scientific and educational community;
- Development of communication media for new educational technologies deployment.

Conclusions

Main results:

- It is the only national network connected to the all-European academic network GEANT at a speed of 100 Gbps, which allows the use of modern resources and services by the research and educational (C&E) community of Moldova.
- Based on its own optical infrastructure, PE connects at a speed of 1-10 Gbit / s most universities (14), MECC research institutes, medical institutions, libraries and student residences.

Conclusions

- Provides specific ICT services for the C&E community: expands eduroam service coverage (60 access points), provides remote support during the COVID-19 pandemic by implementing video conferencing systems, issues digital certificates, provides Internet access, etc.
- Promotes the European initiative EOSC (European Open Science Cloud) and open science, development of internal and cross-border optical infrastructure (EaPConnect2 project).

Спасибо!

Thank you!



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