

Report

Eastern Partnership-Platform 4 'Contacts between people' Event

Workshop on e-Infrastructures in Eastern Partnership Countries

11-12 December 2012

Chisinau, Moldova



Supported by:



Hosted by:



Organised by:



TABLE OF CONTENTS

Summary	4
Joint Declaration	5
The Joint Declaration was signed by the following organisations	8
Summary of the Event	10
Opening Session: Importance of e-Infrastructures in Eastern Partnership countries	10
Signing of Joint Declaration on e-Infrastructures in Eastern Partnership Countries	12
Session 2: e-Infrastructures tackling societal challenges and international collaborations	12
Session 3: Requirements of demanding e-Infrastructure & science users in Eastern Partnership countries	13
Session 4: Plans for e-Infrastructures developments 2014-2020	15
Closing Panel: Sustaining e-Infrastructures in Eastern Partnership countries	15
Appendix I Programme of the Event	17
Appendix II Participants	18

Summary

The Eastern Europe Partnership Event was held on 11-12 December 2012 in Chisinau, Republic of Moldova, under the auspices of the European Union's Eastern Partnership Platform 4 'Contacts between People', the Academy of Sciences of Moldova and the Ministry of Information Technology and Communications of Moldova. The event's organisation was also made possible through the work of TERENA and the GEANT Activity to support emerging regions in Europe and RENAM, the Moldovan National Research and Education Network.

The Event focused on the use of ICT e-Infrastructures for supporting research and education. Policy makers and civil servants from governments, ministries and agencies of the Eastern Partnership countries - Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine, met with representatives of international stakeholders and managers of National Research and Education Networks as well as UNESCO.

During the Event, the policy makers and relevant stakeholders from Eastern Partnership countries signed a Joint Declaration that stipulates the importance of the development of e-Infrastructures as a key priority for the Eastern Partnership policy.

On behalf of the six Eastern Partnership's States, the President of the Academy of Sciences of Moldova, Academician Gheorghe Duca sent the Joint Declaration to the High Representative of the European Union for Foreign Affairs and Security Policy, Vice-President of the European Commission, Catherine Ashton, to the Commissioner Stefan Füle and in copy to Vice-President Neelie Kroes.

This report provides the full text of the Joint Declaration and the list of signatories. It provides a summary of the main topics discussed at the event and a full list of participants. The event's programme is provided in the appendix.

Joint Declaration

The members of National Governments, professors from Universities and Academies of Science, and practitioners of research and education ICT infrastructures from the Eastern Partnership countries, as well as representatives of key organisations from the EU Member States, jointly agree on the following declaration...

Taking note of:

- The Warsaw Declaration of the Eastern Partnership Summit – September 2011¹

18. Co-operation and policy dialogue under the Eastern Partnership on education, research, youth and culture should be further enhanced. [...] A Common Knowledge and Innovation Space linked to Smart Growth and the EU innovation agenda will be established in order to give the policy more impact and visibility.

- The conclusions of the UNESCO/ITU Working Group on Broadband and Science – October 2011²

Broadband connectivity facilities are basic infrastructure in a modern society, just like roads, electricity or water; it almost becomes a human right –even more so when it's used for science. E-infrastructures build on broadband to provide online services to science and education communities. Not only have these services become today indispensable, they have also transformed the scientific process by enabling the instantaneous sharing of knowledge, virtual collaborations spanning the globe, and remote access to scientific resources and instruments. E-infrastructures are today one of the main engines of scientific progress and its potential in other social and economic areas is enormous. Developing regions stand to benefit in particular because broadband networks dramatically reduce the barriers of distance and location.

- The conclusions of the “Policies for Development of E-Infrastructures in Eastern European Countries” conference - November 2011³

25. Eastern Partnership participants affirmed that the development of e-infrastructure is a key policy for their countries and therefore, that this should be reflected in the multi-lateral dialogue of the Eastern Partnership, as well as in the bi-lateral one, especially in the context of the renewed interest in the partnership following the Warsaw summit and the perspective of a new roadmap that would specify the objectives, instruments and actions.

Witnessing

- That the rapid development of e-infrastructure in many European countries has brought a high return on investment as well as the possibility to participate in research and development programmes.
- That past and current investments of the EC towards regional cooperation in research and education networking have proved highly successful in South-East Asia (TEIN), Latin America (ALICE), the Mediterranean region (EUMEDCONNECT), Sub-Saharan Africa

1 http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/124843.pdf

2 <http://www.broadbandcommission.org/work/working-groups/science.aspx>

3 <http://www.terena.org/publications/files/20120201-epe-report.pdf>

(AfricaConnect), and the Caribbean region (CARIBnet).

- That aggregation of demand allows research and education networks to achieve economies-of-scale, improve their infrastructure, and in turn stimulate the use of new services and applications.
- How e-infrastructure is essential to knowledge-based societies, innovation, job creation and retention of talent.
- How societal challenges such as climate change, disasters, pandemics and resource management know no borders and need to be addressed through global and regional scientific collaboration.
- How high-capacity e-infrastructures open up greater possibilities in arts and culture through remote performances and teaching.

Agreed that:

- Development of e-infrastructures is a key priority of the Eastern Partnership and requires financial and technical support. The National Research and Education Networks of Eastern Partnership countries in conjunction with the GÉANT network and activities have an important role to play in terms of supporting research and facilitating learning through advanced services and applications.
- Development of e-infrastructures requires ongoing support for research and education networking. EC support for regional initiatives provides a catalyst for improvement, but National Governments should undertake to match this support to ensure that e-infrastructures can be sustained, and there is confidence to invest in new services and applications.
- Cost of connectivity remains a significant barrier to the development of e-infrastructures in the Eastern Partnership countries. National Governments will undertake to continue the process of improving the competitiveness of the telecommunications environments in their countries; specifically with respect to pricing and access to dark fibre circuits.
- National Research and Education Networks play a key role in developing and integrating e-infrastructures in Eastern Partnership countries. As well as connectivity and traditional network services, they also have a role in provision of services such as identity federations, grids and clouds to support end institutions and their users.
- GÉANT plays a key role in linking the e-infrastructures of Eastern Partnership countries and providing connectivity to the rest of Europe and other world regions. National Research and Education Networks should be supported to the level necessary to fully participate in the GÉANT network and activities.
- DANTE, TERENA and EGI.eu and National Research and Education Networks are invited to continue their training of the ICT specialists who are responsible for building and maintaining research and education networks in Eastern Partnership countries.
- Further consideration should be given as to how to retain ICT specialists working on research and education networks. Specialist skills and experience are essential to the development of e-infrastructures in Eastern Partnership countries.



The Joint Declaration was signed by the following organisations

Country	Organization	Function	Name
AM	MINISTRY OF EDUCATION AND SCIENCE, STATE COMMITTEE ON SCIENCE	CHAIRMAN	SAMVEL HAROUTIUNJAN
AM	NATIONAL ACADEMY OF SCIENCES OF ARMENIA	PRESIDENT	RADIC MARTIROSYAN
AZ	AZERBAIJAN NATIONAL ACADEMY OF SCIENCES	PRESIDENT	MUHMUD KARIMOV
AZ	AZERBAIJAN COOPERATION UNIVERSITY	HEAD OF INFORMATION TECHNOLOGIES DEPARTMENT	INGAR MANSIMZADA
AZ	AZERBAIJAN UNIVERSITY OF LANGUAGES	RECTOR	SAMAD SEYIDOV
AZ	AZERBAIJAN RESEARCH AND EDUCATIONAL NETWORKING ASSOCIATION (AZRENA)	DIRECTOR	AZER ALIYEV
AZ	AZERBAIJAN STATE OIL ACADEMY	VICE-RECTOR	RAFIG JAMALOV
AZ	AZSCIENCENET	DIRECTOR	RASIM ALGULIYEV
BY	THE MINISTRY OF EDUCATION, REPUBLIC OF BELARUS	MINISTER	SERGEY A. MASKEVICH
BY	THE STATE COMMITTEE ON SCIENCE AND TECHNOLOGY, REPUBLIC OF BELARUS	THE FIRST DEPUTY CHAIRMAN	LEONID V. DEMIDOV
BY	NATIONAL ACADEMY OF SCIENCES OF BELARUS	CHIEF SCIENTIFIC SECRETARY	SERGEI YA. KILIN
BY	BELARUSIAN STATE UNIVERSITY	RECTOR	SERGEI V. ABLAMEYKO
BY	UNITED INSTITUTE OF INFORMATICS PROBLEMS NATIONAL ACADEMY OF SCIENCES OF BELARUS	GENERAL DIRECTOR	ALEXANDER V. TUZIKOV
BY	UNITED INSTITUTE OF INFORMATICS PROBLEMS NATIONAL ACADEMY OF SCIENCES OF BELARUS, BASNET NATIONAL GRID CENTER	DEPUTY DIRECTOR, GENERAL MANAGER	ULADZIMIR V. ANISHCHANKA
BY	GENERAL INFORMATION AND RESEARCH CENTER OF THE MINISTRY OF EDUCATION OF BELARUS, UNIBEL	DIRECTOR, GENERAL MANAGER	NICOLAI I. LISTOPAD
BY	CENTER FOR INFORMATION TECHNOLOGIES, BELARUSIAN STATE UNIVERSITY, BSUNET	DIRECTOR, GENERAL MANAGER	YURI I. VOROTNITSKIY
FI	CSC	CEO	KIMMO KOSKI
FI	EUDAT/CSC-IT CENTER FOR SCIENCE	EUDAT PROJECT MANAGER	DAMIEN LECARPENTIER
GE	GEORGIAN NATIONAL ACADEMY OF SCIENCES	VICE-PRESIDENT	JUMBER LOMINADZE
GE	TBILISI STATE MEDICAL UNIVERSITY	HEAD OF IT DEPARTMENT	GEORGE DONADZE
GE	EUROPEAN COMMISSION NATIONAL CONTACT POINT ORGANISATION IN ICT- INTERNATIONAL CENTER FOR ADVANCEMENT OF RESEARCH TECHNOLOGY AND INNOVATION	DIRECTOR, EC ICT NCP	GIVI KOCHORADZE
GE	GEORGIAN RESEARCH AND EDUCATIONAL NETWORKING ASSOCIATION -GRENA	EXECUTIVE DIRECTOR	RAMAZ KVATADZE
GE	TBILISI STATE UNIVERSITY	PROFESSOR	ZURAB MODEBADZE
GE	GEORGIAN TECHNICAL UNIVERSITY	HEAD OF COMPUTER NETWORK MANAGANENT CENTER	ZAZA TSIRAMUA
LV	SIGMANET, IMCS UL	DIRECTOR	RIHARDS BALODIS-BOLŽS
MD	THE ACADEMY OF SCIENCES OF MOLDOVA	PRESIDENT	GHEORGHE DUCA
MD	THE MINISTRY OF INFORMATION TECHNOLOGY AND COMMUNICATIONS	MINISTER	PAEL FILIP

MD	TECHNICAL UNIVERSITY OF MOLDOVA, RENAM ASSOCIATION	RECTOR, CO-PRESIDENT	ION BOSTAN
MD	RENAM ASSOCIATION	CO-PRESIDENT	ION TIGHINEANU
MD	ACADEMY (UNIVERSITY) OF TRANSPORT, INFORMATION AND COMMUNICATIONS	RECTOR	DUMITRU SOLOMON
MD	THE STATE UNIVERSITY OF MOLDOVA	RECTOR	GHEORGHE CIOCANU
MD	THE STATE UNIVERSITY OF MEDICINE AND PHARMACY "NICOLAE TESTEMIȚANU" IN CHIȘINĂU	RECTOR	ION ABABII
MD	THE MINISTRY OF INFORMATION TECHNOLOGY AND COMMUNICATIONS	VICE-MINISTER	DONA SCOLA
MD	E-GOVERNMENT CENTER	DIRECTOR	STELA MOCAN
MD	INFORMATION SOCIETY DEVELOPMENT INSTITUTE (IDSI)	DIRECTOR OF IDSI	IGOR COJOCARU
MD	THE INSTITUTE OF MATHEMATICS AND COMPUTER SCIENCE OF ASM	HONORARY DIRECTOR	CONSTANTIN GAINDRIC
MD	THE INSTITUTE OF MATHEMATICS AND COMPUTER SCIENCE OF ASM	DIRECTOR	SVETLANA COJOCARU
MD	THE INSTITUTE OF APPLIED PHYSICS OF ASM	DIRECTOR, FP7 CAPACITIES DELEGATE FROM MD	LEONID KULIUK
MD	THE ACADEMY OF ECONOMIC STUDIES OF MOLDOVA	RECTOR	GHEORGHE BELOSTECINIC
MK	MAKEDONIAN ACADEMIC AND RESEARCH NETWORK (MARNET)	DIRECTOR	SASO DIMITRIJOSKI
NL	TERENA	ACTING SECRETARY GENERAL	VALENTINO CAVALLI
NL	EGI.EU (STICHTING EUROPEAN GRID INITIATIVE)	DIRECTOR	STEVEN NEWHOUSE
NO	THE E-INFRASTRUCTURES REFLECTION GROUP (E-IRG)	CHAIR	GUDMUND HØST
NO	UNINETT	CEO	PETTER KONGSHAUG
PL	CENTRAL AND EASTERN NETWORKING EUROPEAN ASSOCIATION (CEENET)	SECRETARY GENERAL	MICHAL PRYZBZLSKI
RO	AGENCY ARNIET/ROEDUNET	DEPUTY GENERAL MANAGER	OCTAVIAN RUSU
TR	TUBITAK-ULAKBIM	DIRECTOR	AHMET KEPLAM
UA	THE STATE AGENCY OF SCIENCE, INNOVATIONS AND INFORMATIZATION	HEAD OF THE STATE AGENCY	VLADIMIR SEMYNOZHENKO
UA	URAN	HEAD OF BOARD	YURIY YAKIMENKO
UA	UARNET	DIRECTOR	IHOR PROTSYKEVICH
UK	DANTE ASSOCIATION	GENERAL MANAGER	MATTHEW SCOTT

Summary of the Event

Opening Session: Importance of e-Infrastructures in Eastern Partnership countries

The Eastern Partnership Event opened with a session highlighting the importance of e-Infrastructures. Dignitaries from the Republic of Moldova and other countries in the Eastern Partnership region, the European Commission and the chair of the GÉANT Consortium provided evidence of how Information Technology and Communications (ICT) and e-Infrastructures promote the development of civil society, cooperation and economic growth.

Prof. Academician Gheorge Duca, President of the Academy of Sciences of Moldova, opened the event. In his welcome speech Prof. Duca emphasised the driving role of ICT for science, knowledge creation and innovation. Thanks to ICT, the level of knowledge distribution among the younger sector of the population has increased dramatically. ICT has become more relevant in fostering international collaboration with Europe and beyond.

Prof. Duca highlighted the progress made in the Republic of Moldova, from the creation of its first computer centre in 1964, through to the establishment of RENAM in 1999, up to the country's association with the 7th Framework Programme of the European Union (EU) in 2012.

The Moldovan government budget for science as well as for research and education has been reduced. This calls for more efficient use of government spending and increased collaboration with the private sector. Under the "Knowledge Moldova" programme the scientific community is moving towards 2020. This includes investments in e-Infrastructures via the promotion of regional connectivity, access to modern infrastructure, participation in GN3+ - the European Commission project that funds the continuation of GÉANT beyond March 2013 -, as well as regional networking, computing and scientific data projects.

The opening keynote address was given by **Dona Scola**, Deputy-Minister for Information Technology and Communication of the Republic of Moldova.

In the Republic of Moldova, 90% of the telecommunications network infrastructure is based on optical fibre, however, 70% of that infrastructure is not utilised. The government considers education a key growth factor and is optimistic about the increasing number of Moldovan citizens who wants to stay in the country. The government is keen on supporting and empowering them and has plans to invest in knowledge, with the conviction that this will generate a virtuous circle with great impact on the economic and societal development of the Republic of Moldova. The government M-Cloud initiative - of which the first phase will be inaugurated in February 2013 - is an example of such an investment that makes use of public and private funding.

The ICT market in the Republic of Moldova represents 10% of the country's gross domestic product (GDP). Unfortunately, the country's competitiveness is two times lower than the

region's standard. Development of ICT and e-Infrastructures for science research and education is key and in order to boost economic growth and competitiveness the Moldovan government has developed the "Digital Moldova 2020" strategy.

Kostas Glinos, European Commission, Head of Unit CONNECT/C1 e-Infrastructure, highlighted the motivations for e-Infrastructures and the benefit of scientific development for the competitiveness of Europe. He provided an overview of the successful penetration of e-Infrastructures in Europe, in particular in the Eastern Partnership region, and showed the way e-Infrastructures will be developed in the Horizon 2020 Programme. Kostas Glinos' presentation demonstrated the extensive degree of international collaboration within Europe and with other world regions, and finally zoomed in on cooperation with Eastern Partnership countries.

In his closing remarks, Kostas Glinos emphasised the essential role played by national investment in e-Infrastructures to increase the performance of research and innovation within a country as well as for its integration in the European/global ecosystem. He stressed that European programmes, particularly Horizon 2020 and the Eastern Partnership Programme - both its bilateral dimension and the multilateral dimension through Platform 4 - should be considered for supporting some of the required activities. Important elements to be addressed in order to progress faster in the region are coordination of policies and funding streams as well as sustainable and clear funding models. Action on the telecommunications regulatory framework is also very important for e-Infrastructures in the region to become more affordable.

Dorte Olesen, Chair of the NREN (national research and education networking organisation) Policy Committee, presented GÉANT, the network, its associated services and use cases. Besides stressing the importance of cross-border collaboration to advance scientific research, share facilities and retain talent, Dorte Olesen quoted facts and figures about the deployment of GÉANT and its services as well as its international reach - 64 NRENs outside Europe. In the region, several cross-border links to GÉANT exist: Belarus and Ukraine connect at 1Gbit/s to Poland, whilst the Republic of Moldova connects at 10Gbit/s to Romania. In the South Caucasus, lower capacity links procured via the EU funded HP-SEE project connect Armenia and Azerbaijan to GÉANT. The eduroam service is available, although not yet extensively deployed, in four of the Eastern Partnership countries. Since the previous event held in Bucharest, Romania, in 2011, significant progress was made in the region, but developments in connectivity and services today are still very limited.

Stela Mocan, Executive Director at the e-Government Centre of Moldova, illustrated the agenda for the Moldovan governmental e-Infrastructure. The key points are the importance of using ICT and a plea for "real-time" government.

The Moldovan government set up a strategic program "e-transformation 2020" to modernise the country's 560+ public services. This strategy is being implemented through the development of G2C/G2B web services which also aim to remove barriers between government departments. A mobile-platform extension was deployed in partnership with the private sector, leveraging the good mobile coverage available in the Republic of Moldova. M-Cloud, a government cloud initiative, is being tested since November 2012 and

will officially be launched in February 2013. This initiative will be key to rationalise public-service IT platforms, including education. The Moldovan government has recently launched an initiative to support “big data” by opening 400+ governmental databases to the public.

Vyacheslav Artamonov, from the State Agency of Science, Innovations and Informatization of Ukraine, emphasised the importance of building e-Infrastructures for research and science in Ukraine as well as for society at large. e-Government and e-Health projects are being promoted under the “Open Government” initiative. Overall, the presentation made the case for faster execution and increased collaboration in research and science in the context of shrinking budget.

Vyacheslav Artamonov presented the status of e-Infrastructures in Ukraine. Two networks (UARNET and URAN) are together currently serving 50 research institutes from the Academy of Sciences, 40 universities and 80 research institutes in Ukraine. Collaboration with CERN in the area of high-energy physics is critical in shaping the e-Infrastructure landscape in Ukraine, both for the network and the Grid (The Ukrainian National Grid was established.); access to scientific content is essential but still very limited today. Synergies need to be sought between e-Infrastructures and e-Government for faster and more efficient development.

Interconnection of e-Infrastructures within Eastern Partnership countries is very important to foster regional collaboration. Cloud computing is a growing area also seen by the Ukrainian government as a great opportunity to reduce costs, increase support for e-services and increase energy/carbon efficiency. Ukraine wants to establish “big hubs” of services to reduce the number of data centres and servers. At present, the Ukraine’s broadband system is limited to big cities only due to lack of investments.

Signing of Joint Declaration on e-Infrastructures in Eastern Partnership countries

Immediately after the opening session a ceremony was held in which **Prof. Ion Tigineanu**, Deputy-President of the Academy of Sciences of Moldova, presented the Joint Declaration, in which key governmental institutions and stakeholders from the six Eastern Partnership countries as well as Member States and European/International organisations, set their agreement to support e-Infrastructures for research and education in the region.

The Declaration, first signed by the Moldovan Authorities, was handed out to the European Commission, represented at the Event by Kostas Glinos. At the time of the ceremony a few Eastern Partnership countries had not yet materially signed the Declaration yet. The process that started in Chisinau, Republic of Moldova, was completed in early February 2013, when the Joint Declaration, officially signed by all six countries was sent to the High Representative of the European Union for Foreign Affairs and Security Policy/Vice-President of the European Commission, Catherine Ashton, to Commissioner Stefan Füle and in copy to the Vice-President of the European Commission, Neelie Kroes.

Session 2: e-Infrastructures tackling societal challenges and international collaborations

Jean-Luc Dorel, European Commission, Unit CONNECT/C1 e-Infrastructure, chaired a panel discussion with representatives of NRENs from Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine: **Hrachya Atsatryan**, National Academy of Sciences of Armenia; **Azer Aliyev**, AZRENA; **Uladzimir Anishchanka**, Belarus Academy of Sciences; **Ramaz Kvatadze**, GRENA; **Peter Bogatencov**, RENAM; **Vyacheslav Artamonov**, State Agency of Science, Innovations and Informatization of Ukraine.

In addition to briefing the participants on the development of e-Infrastructures in their respective countries, the members of the panel reflected on the role of e-Infrastructures in tackling societal challenges in the countries concerned, and discussed the required developments to ensure that e-Infrastructures can properly support cross-border international collaboration in the region and within the European Research Area.

The following key findings were highlighted during the session.

- There is a strong demand from *research and education communities* for more e-Infrastructures; examples were given in disciplines such as health, biology, high-energy physics, plasma physics, quantum chemical, weather, astronomy, agronomy, biodiversity.
- *Education* is a high priority in the political agenda of all countries and e-Infrastructures are perceived as key enablers. The use of e-Infrastructures to support *culture, the arts and humanities* is just starting but promising.
- Plans for research and education are part of larger strategies concerning the rationalisation of national capacity under *e-Government policies*. Shrinking budgets trigger changes towards rationalisation and efficiency; there is a trend across the whole region towards common infrastructures and integration into cloud services.
- *Skills* are scarce all over the region; EU projects are important to retain talents inside countries.
- *High telecommunications prices* are a serious impediment to full scale exploitation of e-Infrastructures; regulation is much needed, notably in the dark fibre market, which is critical for e-Infrastructure development.
- Research and education networks offer *much more than Internet service provider (ISP)-like services*; thanks to abundant bandwidth and added-value services they are essential to support the requirements of scientists and researchers. Advanced services, which are part of the GÉANT portfolio, in the area of mobility (eduroam) and identity federations (eduGAIN) are essential; they have only started to be deployed in some countries and additional investment, as well as increased engagement with user institutions, are required.
- *Scientific Research Data* - in particular access to publication - and high performance computing (HPC)/distributed computing are of growing importance; collaboration with EU e-Infrastructures in this area is seen as essential.
- *Regional integration is minimal*; coordination and collaboration in the area of research and education is seen as a key stabilising factor for the region; e-Infrastructures operators are openly contributing to this effort.

Session 3: Requirements of demanding e-Infrastructure & science users in Eastern Partnership countries

This session, chaired by **Valentino Cavalli**, acting Secretary General of TERENA, focused on key European e-Infrastructures as well as on specific experiences from the region. These experiences are examples of good practice in collaboration between researchers in Eastern Partnership countries and their peers in the wider European Research Area. Excellence in all areas exist in the region due to continued support from EU projects and the impact of GÉANT and European Grid Infrastructure (EGI); however, the future challenges and key developments leading to 2020 provide evidence that the national stakeholders and the EU need to increase the support for e-Infrastructures in the region.

HPC across the Eastern Partnership region is fairly developed, thanks to a series of EU funded projects, the most recent being the HP-SEE project - coordinated by GRNET (Greece) – which also supports network connectivity in the South Caucasus to GÉANT. **Hrachya Astsatryan**, from the National Academy of Sciences of Armenia, presented these developments mentioning a total 120Tflops aggregate computing capacity and two BlueGene machines available to the scientific community in the region. Resources are offered by project partners in Bulgaria, Romania, Serbia, Hungary and the Former Yugoslav Republic of Macedonia. At present, HP-SEE supports 26 applications in three Virtual Research Communities. A bridge to PRACE is envisaged, whilst the feasibility of setting up a Joint Operations Centre is currently being investigated.

With plenty of applications in several key scientific disciplines, HPC in the region is a driver of e-Infrastructure developments. Key benefits for the region are mutual support in HPC technology, exchange of know-how in operation and procurement, as well as for national-level organisational models, integration of regional user communities and entry-level for PRACE. In addition, the initiatives described in the presentation support regional resource sharing by government agencies, provide support for hosting agencies and stimulate national-level projects.

The broader European perspective was addressed in a talk by **Steven Newhouse**, Director of EGI.eu, who focused on the role of EGI in linking digital resources across Eastern Europe for European science and innovation.

Steven Newhouse explained what Digital Research Infrastructure (DRI) is, by giving a number of key examples in several research disciplines and environments. Extracting knowledge from a deluge of data is a challenge for many modern scientific disciplines and requires a digital infrastructure to share services and tools personalised to individual research communities. Steven highlighted the key elements of the next generation DRI, which includes sustainable baseline activity supported by consumers and project-based funding for new innovation, integrated e-Infrastructure service delivery and support for European Research Infrastructures such as ELIXIR and SKA. Steven explained the EGI vision and strategy for 2020 by focusing on specific developments and activities across the Eastern Partnership region. Armenia, Belarus, Georgia and the Republic of Moldova are integrated EGI-InSPIRE partners and EGI council members, whilst Ukraine is an (integrated)

external resource provider and Azerbaijan an internal/external resource provider (being integrated). Following a presentation about the EGI federated Cloud and the EGI plans for increased capacity and capability, Steven concluded with a view on the future of the DRI.

The perspective from an established large-scale collaboration in the area of biodiversity was presented by **Volodymyr Rizun**, from the State Museum of Natural History, National Academy of Sciences of Ukraine, a regional partner in the EU PESI project - A Taxonomic Clearinghouse for Virtual Communities. PESI is concerned with data integration of three main taxonomic information registers in Europe: the European Register of Marine Species, the “Fauna Europaea” register and Euro+Med PlantBase. PESI works on raising all three regional databases to a common standard of accessibility over the Internet, through a dedicated PESI Portal that, once completed, will support interlinked regional and national checklists, species distributions, legal status, vernacular names, and socio-economic importance.

Session 4: Plans for e-Infrastructures developments 2014-2020

NRENs from all six countries in the Eastern Partnership region participate as full partners in the GN3+ project proposal. However, due to various reasons it is envisaged that they will not subscribe to the GÉANT network from day one. As it became apparent from Dorte Olesen’s presentation, existing cross-border fibre links and the HP-SEE network in the South Caucasus, as well as the limited deployment of GÉANT user services, such as eduroam and eduGAIN, are significant steps towards the development of e-Infrastructures in the region. However, this development is still limited and far below the level of neighbouring GÉANT countries, leaving the Eastern Partnership region on the low side of the digital divide that exists among e-Infrastructures in Europe.

In this panel session, **John Chevers**, Chief Business Development Officer at DANTE, discussed with **Octavian Rusu** from RoEduNet (Romania) and with **Miroslav Milinovic** of SRCE (Croatia), leader of the eduroam Operational Team, the opportunities, feasibility, options and obstacles to establishing an inclusive regional network infrastructure to connect to the GÉANT network in the future.

Cross-border connections with the NRENs of Poland and Romania were recognised by the panellists as a good way to address the challenge to collaborate in the region and a key enabler for establishing a regional infrastructure across the whole region, although the situation in the South Caucasus is more complicated at present. A feasibility study for the establishment of a regional network connecting all Eastern Partnership countries is being considered as a follow-up to the discussion.

Closing Panel: Sustaining e-Infrastructures in Eastern Partnership countries

The closing panel, chaired by **Dorte Olesen**, addressed the issue of funding, especially public funding, but also the interaction of public and private funding, for e-Infrastructures. Panelists **Jean-Luc Dorel**, European Commission, **Octavian Rusu**, RoEduNet, **Leonid Culiuc**, Moldovan FP7 Capacities Delegate and **Iurie Turcanu**, CTO and Deputy-Director

of the e-Government Center of Moldova reflected on three questions: 1) What are the key sustainability issues for e-Infrastructures? 2) How should e-Infrastructures ideally be funded - how do you see the role of government funding? 3) How do you see the interplay between the public and the private sector in e-Infrastructure provision?

According to Jean-Luc Dorel the key element for e-Infrastructures to be sustainable in the long-term is their ability to provide added-value and respond to user needs. Added value can consist, for instance, in advanced services, higher capacity or costs reduction through aggregation of demand.

While EU project funding, via GN3+, other programs for HPC and Grid, etc., is an important element, it is also necessary to complement this with national funding.

Focusing on sustainability of the network component, Octavian Rusu remarked that to provide added value NRENs must offer more than just Internet access. They need to identify the needed services and be able to offer them at more affordable price than is available on the market. Octavian Rusu added that as RoEduNet is funded entirely from the state budget, it cannot earn profits on selling services. In general, Octavian argued in favour of a mixed funding scheme where central public funding covers the investment needed for innovation and upgrade, whilst revenues from customer fees pay for the operational and running costs.

Examples of Public-Private Partnerships (PPPs) exist in the region. For some time RoEduNet had not been able to collaborate with the private sector – at least not with Telcos – but a good opportunity was provided by the creation of the cross-border fibre link between Romania and Moldova. Another good example of PPPs is the M-Cloud initiative in the Republic of Moldova.

Leonid Culiuc said e-Infrastructures are absolutely necessary for research in many disciplines today as they match the requirements of high-demanding, highly qualified researchers. The availability of powerful e-Infrastructures has visible effects on the amount and quality of scientific achievements. As an example, an exponential growth in publications took place in Romania since the country joined the EU and RoEduNet became a GÉANT partner and created one of the most powerful dark-fibre network infrastructure in the region. Reversing the brain drain process in Moldova may not be possible in the short-medium term, but a lot can still be done if the Republic of Moldova gets a state-of-the-art e-Infrastructure.

Iurie Turcanu commented on the Moldovan government commitment towards e-Government and the plan of implementing all public services as e-Services. As a result of rationalisation, the number of services relying on paper would be more than halved. Networking usage in households ranks high in the Republic Moldova and ranks around number 25 worldwide. However, developments are not as good as far as data centres, identity management, cybersecurity and other essential elements of e-Infrastructures are concerned. There is a risk that with one or more of the crucial services missing, the whole e-Transformation agenda could fail. Intelligent investment in ICT and consolidation of existing services should be key in the “digital Moldova 2020” agenda.

Appendix I Programme of the Event

Tuesday, 11 December 2012

10:30-12:30

Session 1: Importance of e-Infrastructures in Eastern Partnership countries

Welcome - Prof. Academician Gheorghe Duca, President of the Academy of Sciences of Moldova
Opening Keynote - Dona Scola, Vice-Minister for Information Technology and Communications of the Republic of Moldova

EC support of e-Infrastructures - Konstantinos Glinos, European Commission

GÉANT support for e-Infrastructures - Dorte Olesen, NREN Consortium Chair

Moldovan Governmental e-Infrastructure - Stela Mocan, Executive Director at the e-Government Center of Moldova

Ukrainian eSciences initiatives - Vyacheslav Artamonov, State Agency of Science, Innovations and Informatization of Ukraine

12:30-13:00

Signing of Joint Declaration on e-Infrastructures in Eastern Partnership Countries

13:00-14:00

Lunch

14:00-15:30

Session 2: e-Infrastructures tackling societal challenges and international collaborations

Chair - Jean-Luc Dorel, European Commission

Armenia - Hrachya Astsatryan, National Academy of Sciences of Armenia

Azerbaijan - Azer Aliyev, AZRENA

Belarus - Uladzimir Anishchanka, Belarus Academy of Sciences

Georgia - Ramaz Kvatadze, GRENA

Moldova - Peter Bogatencov, RENAM

Ukraine - Vyacheslav Artamonov, State Agency of Science, Innovations and Informatization of Ukraine

15:30-16:00

Coffee break

16:00-17:30

Session 3: Requirements of demanding e-Infrastructure & science users in Eastern Partnership countries

Chair - Valentino Cavalli, TERENA

Helix Nebula: Meeting the needs of Science in the cloud - Robert Jenkins, CloudSigma*

HP-SEE - Regional e-Infrastructure Development for South East Europe's Research - Hrachya Astsatryan, National Academy of Sciences of Armenia

EGI - Steven Newhouse, EGI.eu

PESI - A Taxonomic Clearinghouse for Virtual Communities - Volodymyr Rizun, State Museum of Natural History, National Academy of Sciences of Ukraine

18:30-21:00

Social Event

Wednesday, 12 December 2012

9:00-10:30

Session 4: Plans for e-Infrastructures developments 2014-2020

Chair - John Chevers, DANTE

Niels Hersoug, DANTE*

Artur Binczewski, PSNC*

Octavian Rusu, RoEduNet

Miroslav Milinovic, SRCE

10:30-11:00

Coffee break

11:00-12:00

Panel: Sustaining e-Infrastructures in Eastern Partnership countries

Chair - Dorte Olesen, NREN Consortium Chair

Artur Binczewski, PSNC

Jean-Luc Dorel, European Commission

Niels Hersoug, DANTE*

Robert Jenkins, CloudSigma*

Octavian Rusu, RoEduNet

Leonid Culiuc, Moldovan FP7 Capacities Delegate

Iurie Turcanu, Chief Technology Officer, Deputy Director at the e-Government Center

12:00-12:30

Summary & Conclusions

Rapporteur - Valentino Cavalli, TERENA

12:30

Event ends

* Due to unforeseen circumstances the speaker was unable to attend the event.

Appendix II Participants

Name	First name	Organisation
Alguliyev	Rasim	ANAS
Aliyev	Azer	AZRENA
Anishchanka	Uladzimir	VIIP NASB/ BASNET
Artamonov	Vyacheslav	State Agency of Science, Innovations and Information
Astsatryan	Hrachya	IIAD NAS RA
Balmus	Ion	Technical University of Moldova
Bogatencov	Petru	RENAM
Boris	Varzari	RENAM
Bors	Iurie	Orange Moldova
Bostan	Ion	Technical University of Moldova
Braescu	Mariana	ANRCETI
Burlacu	Oleg	StarNet
Cavalli	Valentino	TERENA
Chevers	John	DANTE
Chirev	Pavel	Assoc. of IT Professionals from Moldova
Chirita	Ana	Moldovan Association of PrivateICT Companies
Ciubotaru	Tudor	State University of Moldova
Cojocaru	Igor	MTIC, Academy of Sciences of Moldova
Cojocaru	Svetlana	IMI ASM
Cosuleanu	Ion	Ministry of Economy of Moldova
Cruselnițchi	Ghenadii	State University of Medicine and Pharmacy
Culiuc	Leonid	Academy of Sciences of Moldova
Dorel	Jean-Luc	European Commission
Duca	Gheorghe	Academy of Sciences of Moldova
Gaindric	Constantin	IMI ASM
Glinos	Konstantinos	European Commission
Goncearuc	Anatolie	RENAM
Grama	Vasile	Academy of Sciences of Moldova
Secieru	Grigore	RENAM
Hancu	Boris	State University of Moldova
Hasanova	Sabina	Azerbaijan Government
Hersoug	Niels	DANTE
Horvath	Gyongyi	TERENA
Igor	Cojocaru	Information Society Development Institute
Kochoradze	Givi	ICARTI
Kvatadze	Ramaz	GRENA
Machedon	Alexandru	StarNet
Marin	Grigore	UASM
Mihalachi	Svetlana	Information Society Development Institute
Milinic	Miroslav	SRCE
Mocan	Stela	Government of Moldova
Musayev	Vugar	ANAS
Newhouse	Steven	EGI.eu
Nistor	Stela	MTIC
Noise	Stefan	PNUDSC
Olesen	Dorte	DTU
Petrenko	Anatolii	National Technical University Kiev
Popa	Gheorghe	State University "A. Russo" Balti

Przybylski	Michal	Central and Eastern European Networking Association
Railean	Elena	Radio Moldova
Redkovskiyi	Andrii	State Agency of Science, Innovations and Information
Rizun	Volodymyr	National Academy of Science of Ukraine
Rosati	Matteo	UNESCO
Rosca	Pavel	RENAM
Rosioru	Alexandru	Ministry of Health of Moldova
Rusu	Octavian	RoEduNet
Sahakyan	Vardan	SCS
Schiopu	Andrei	BAS System
Scola	Dona	Government of Moldova
Secrieru	Grigore	RENAM
Secrrieru	Nicolae	Technical University of Moldova
Serotila	Igor	Academy of Sciences of Moldova
Tofan	Eugenia	Media Centre of the Academy of Science of Moldova
Turcanu	Iurie	Government of Moldova
Valle	Yolande	UNESCO
Vardan	Sahakyan	SCS RA
Willis	Jessica	DANTE
Zamsa	Elena	Centre for Funding Fundamental and Applied Research

