

Report on the NATO/ISOC Workshop in Yerevan, Armenia, Nov. 12-14, 2007

The NATO/ISOC workshop “Armenian National Research and Education Networks: Achievements, Problems and Solutions” took place in Yerevan, Armenia on November 12-14, 2007. Co-directors of the workshop are Dr Jacek Gajewski and Dr Yuri Shoukouryan. The programme of the workshop is in the Appendix 1.

International Organizing Committee included:

Jacek Gajewski (CEENet)
Yuri Shoukourian (NAS RA)
Igor Mkrtumyan (AUA/ISOC-AM)
Oliver Popov (CEENET)
Ramaz Kvatadze (GRENA)
Jacek Kosiec (CEENET)

Local Organizing Committee included:

Andranik Aleksanyan
Vladimir Sahakyan
Narine Derdzakyan
Grigori Saghyan
Arthur Petrosyan
Robert Tadevosyan
Armen Nazaryan

The Scientific Content of the Workshop

Armenia currently experiences rapid growth in the field of Computer Sciences and Networking. Regional networking is vital for areas such as science and education and provides flexibility and large opportunities for research even on remote sides.

Each of the currently existing Scientific and Educational Networks in Armenia (such as ASNET-AM, ARENA, LibraryNet, UniversityNet and others) were developed separately. There is therefore a need for coordinated and integrated network management policy and implementation of regional research and educational high-speed interconnection infrastructure to ensure flexible and secure data exchange.

There is also need to develop a common approach to the integration with NRENs from nearby and other countries (GEANT2) via high-speed distributed optical gateway planned by PortaOptica and BSI projects. Such integration will dramatically increase the collaboration between scientific, research and educational organizations of European countries and countries of Southern Caucasus.

The goals of the workshop were to:

- estimate the present state of the Armenia national research and education network (AM NREN),
- plan the future development of the AM NREN,
- show the role of ISOC, ISOC Chapters and other international organizations in the development of RENs of Armenia and find out the ways they can be helpful in further advance of AM NREN,
- substantiate the need of high-speed interconnection between RENs, high-speed access to the fast computational resources and to the Pan-European REN.

In their welcome addresses Dr. Arman Kirakosyan, Deputy Minister of the Foreign Affairs of the Republic of Armenia (MFA RA) and Director of the Armenian Development Agency (ADA) Dr. Tigran Davtyan, emphasized the importance of the information technology and the fast connection with the European research and education network for boosting research and science in Armenia. They also underlined the importance of integration of Armenia into the European organizations and structures.

The 1st session of the workshop was dedicated to the present state of the Armenian research and education networks, which was reflected in the presentations of V. Sahakyan (ASNET_AM), A. Markosyan (Open Society Institute (OSI), ARENA), T. Zargaryan (Library Network (LIBNet)).

ASNET-AM is the largest academic research network connecting all research institutes of the National Academy of Sciences (NAS), high-speed calculation cluster and many research institutes like Institute of Microbiology, Geology, Byurakan Astrophysical Observatory, having great demand for high-speed calculations and exchange of high volume of information with GEANT.

LIBNet is the network of the Consortium of Electronic Libraries of Armenia connecting many libraries including the library of the National Academy of Sciences of the Republic of Armenia (NAS RA) and other major university libraries.

ARENA is the Armenian Research and Education Network Association. It has done a considerable work to improve connections between universities and libraries. International donor organizations helped in creating research and education networks in Armenia. It is NATO with its Silk Way satellite connection project that provided free access to Internet during many years, OSI and CRDF that financed fiber optic connection between libraries and universities, UN that created Armenian Freenet now handed to ISOC AM for management.

G. Babayan reported about the 1GB fiber optic network being created with the grant of NATO, OSI and UN aiming to connect Yerevan city universities with the existing ARENA infrastructure and provide access to Internet through the Silk Way satellite.

T. Zargaryan presented the Library network that provides access to a unified digital library catalogue and Internet resources.

Yerevan Physics Institute network is a representative of independent research networks with their peculiarities and demands that was reflected in the presentation of S. Mkoyan.

The 2nd session of the workshop was devoted to the plans of development of Armenian NREN. In his presentation the Vice-President of NAS RA Yuri Shoukourian formulated the tasks standing before the Armenian RENs:

- establishment of a high-speed interconnection between research and education institutions of Armenia,
- high-speed connection to the Pan European research and education network (GEANT) and
- provision of access to the high-speed calculation resources of NAS RA.

He also told that a Consortium of AM RENs (CAMREN) was announced with open membership for better implementation of the project of high-speed connection to the Pan European research and education network. CAMREN will be responsible for maintaining a vital data link to European REN (GEANT), the optimization of links within the country and the cooperation of already existing sub-networks.

His last proposal was opposed by ARENA representatives claiming that ARENA should be the single representative of AM RENs and play the major role in the implementation of the project.

Then the representative of NAS RA R. Tadevosyan presented the project of the High-speed (10G) interconnection of Research and Educational networks within Yerevan/Armenia.

The report caused a question: whether the projects presented by R. Tadevosyan and A. Babayan have something in common and whether they can be combined, at least partially. It was decided to form a technical group to study the problem and come to a decision. The group was formed including representatives of NAS, ARENA and the provider (ARMINCO) who is passing the fiber optic cable for ARENA project. It included R. Tadevosyan, A. Markosyan, G. Saghyan and R. Perlman as a moderator. It was decided that the group would report the results for the discussion on the round table of the 3rd day of the workshop.

A. Petrosyan reported about the policy development for provision of services on the high-speed NREN network.

H. Astsatryan reported about the high performance computing resources (ArmCluster/Grid) in Armenia, their past, present and future.

The 3rd session of the workshop was dedicated to International Organizations and their role in NREN development. The main part of it was dedicated to ISOC and its role in the development of national network and particularly ISOC Chapters activity. It started with the presentation of Sabrina Wilmot, Manager of Chapters & Individual Members of the Internet Society, “ISOC and its role in the Internet Development” and Igor Mkrtumyan, Chair of ISOC-Armenia Chapter, “ISOC-Armenia Chapter”. Mrs. Wilmot presence greatly added to the value and success of the workshop especially in the ISOC Chapters part of it and gave a good impulse to the further development ISOC Chapters and formation of new ones. In her presentation Mrs. Wilmot reported about the ISOC Chapters activity and benefits of being in the family of ISOC Chapters.

Igor Mkrtumyan described the activity of ISOC Armenia chapters, its participation in the national Internet development and its role in the Porta Optica Study (POS) and Black Sea Interconnection (BSI) projects aiming establish a high-speed connection (34Mbps) with GEANT. He underlined the main goals of the Chapter are: to serve the Internet community and to serve the country in creating the Information Society. He also emphasized the advantages of belonging to a family of ISOC Chapters stressing the following ones:

- Being well informed due to the subscription to Chapters’ mailing lists and participation in discussion forums,
- Intellectual power of the world ISOC activists,
- Financial support when implementing programs having national value,
- Coach-type help from advanced Chapters’ representatives (Anne Lord, Jacek Gajewski, Veni Markovski).

Igor Mkrtumyan stressed the neutrality of ISOC AM Chapter, which is sometimes playing a role of moderator intermediating relationships between different country networks trying to settle conflicts and taking the role of their representative in the international bodies whenever necessary. He also underlined the role of Dr Jacek Gajewski in creating new Chapters and carrying other new initiatives in post-Soviet countries.

Other presentations during that session were: “The Role of NATO and CEENet in the development of regional NRENs” by Dr J. Gajewski, “The Role of OSI in the development of Armenia NREN” by A. Markosyan (OSI) and “EU programmes and their role in the advance of research and education in Armenia” by L. Aslanyan (NAS RA).

It is necessary to emphasize very active and fruitful participation of former ISOC Vice-President for conferences Richard Perlman in moderation of disputes, technical group meetings as well as moderation of ISOC Chapters’ meetings and videoconferencing. His huge experience very often helped to direct discussions in the fruitful channel and find the best solution.

Representatives of Tajikistan’s ISOC, Asomudin Atoev and Muhammadi Ibadulloev were present at the workshop. ISOC TJ is a potential ISOC Chapter, very close to filing the application. They are undergoing the process of re-registration of the organization (a demand of the government to all organizations) and will file the application as soon as they finish the process. They got responses to all their questions clarifying the process of application and registration. They were promised further consultations and other help as well as letters of support.

Videoconferencing sessions were carried out with two other potential ISOC Chapter from Kirgizstan (Elena Anisimova) and Belarus (Vyacheslav Sidorenko). Elena Anisimova from Kirgizstan is very knowledgeable Internet activist widely known for her activity. There was the lack of information about ISOC Chapters application documents and procedures that prevented her from filing the application. Her case confirmed the necessity of the coach-type relationship between the advanced and newly ejecting Chapters. Mr. Gajewski had already formulated a proposal for creating a task force aiming helping the process. All participants supported the idea.

The second potential chapter is Belarus. Vyacheslav Sidorenko informed us about their intentions and we were glad to know that they are pretty close to filing an application.

The second day of the workshop (4th session) was devoted to the BSI and GRID projects. First Piotr Turowicz (Poland) reported the Porta Optica Study results, then the President of GRENA (Georgian RENs), Ramaz Kvatadze, described the Black Sea Initiative and regional cooperation. Murat Soysal, representative of TUBITAK/ULAKBIM (Turkey), manager of the BSI project) described the present state of the BSI project and link to the outside (GEANT2). George Gotoshia (Georgia Railway Telecom reported about the Georgia international connectivity. Claire Milne (UK) described the Implications for NRENs of e-comms regulation, and universal Internet access in Armenia.

The 5th session was dedicated to the participation in the EU projects. Ognjen Prnjat (GRNET) described the EEGRID, SEEREN and SEEGRIDSCI projects. After that the participants moved to the videoconferencing site of the American University of Armenia and had a videoconferencing session with GEANT. John Chevers (DANTE) made a presentation: “GEANT2 – Exploration in the Eastern Countries of Europe”.

The concluding 6th session of the third day of the workshop was also dedicated to the participation in the EU projects. The representative of GRNET Ognjen Prnjat reported about the GRID project and regional cooperation in GRID, Arsen Hayrapetyan – “Armenian e-Science Foundation Certification Authority: a courtesy service of the issuance of digital certificates for national networks”, A. Boyajyan (IMB NAS RA) – “High speed interconnection with GEANT as a prospective tool encouraging R&D in Life Sciences in Armenia”, H. Babayan (IGS NAS RA) – “Trans-border networks for geological, geodynamic and seismological observation for natural hazards assessment”, H. Harutyunian (BAO NAS RA) – “New Scientific Ideas Through New Technologies and New Opportunities”, J. Gajewski – “CLOSER and other EC projects”. The session showed the great needs of Armenian researchers and scientists, mainly working in NAS RA, in fast access to the high-speed calculation resources and to the European REN.

The round table discussion mainly concentrated on the question who should represent Armenia in the BSI project.

The BSI and the preceding POS project were done by NAS RA and ISOC AM and EU FP7 programme approved the project with NAS RA as an Armenian partner in the project. ARENA didn't show any interest in the project when it was announced in 2004 and unexpectedly claimed its willingness to be the main participant from Armenia. Although some of the round table participants supported the idea the others strongly opposed that for several reasons:

1. ARENA didn't show any interest in the project when it was announced,
2. NAS RA participated in the project from the very beginning and had done a lot of research work in the POS and BSI projects,
3. EU had already approved the participation of NAS in the project,
4. NAS RA has the high-speed calculation resources (Armcluster) and is the major participant in the GRID project, which is one of the most important components of the BSI project,
5. The project is science oriented and major consumers that will benefit from the project are the research institutes of NAS RA,
6. NAS RA proposed to create a consortium of all interested parties (without any limitation) that are interested in the fast connection to GEANT and invited ARENA to join it,
7. ARENA should continue its activity and NAS RA, as an ARENA board member will support any other initiative of ARENA.

It was also stressed by John Chevers from DANTE, manager of the BSI project Murat Soysal and Dr J. Gajewski that the BSI project is science and research oriented and aimed to provide fast access to GEANT resources first of all to research and scientific community. It will not provide general Internet. The nature of the traffic will be strictly controlled by GEANT. While the aim of Silk Way project was to provide Internet access to NRENs, BSI project is quite different. It provides access to GEANT and its resources including high-speed calculation for scientific collaboration. Having this in view it is natural

that NAS RA with its 40 research institutes and great demand for high-speed interconnection with GEANT took part in the BSI project. There is no universal approach to that. Some countries like Georgia might be represented in the BSI project by NREN because of the strong ties with National Academy and delegation of representation to NREN, the others like Armenia can be represented by Academy itself.

However to guarantee the fair usage of GEANT connectivity by all parties Dr. J. Gajewski proposed to develop a joint AUP, which should be compliant with GEANT AUP. The proposal has been discussed and OSI agreed to host this activity.

The other project proposed by NAS RA, i.e. the development of the high-speed (10Gb) interconnection between Armenian RENS, which will be sent to the NATO. However it was recommended by the workshop to study the possibility of combining (at least partially) two projects, the university fiber optic network made by ARENA and the project of high-speed (10Gb) interconnection between Armenian RENS proposed by NAS RA. According to the recommendation the group of technicians from all RENS was formed and worked on the proposal and on the common technical solution under the moderation of Richard Perlman. It was agreed that the group would present the results as soon as possible. The group had several meetings before R. Perlman's departure and continued the discussion by e-mail under R. Perlman moderation.

During the workshop there were many bilateral and multilateral meetings that might have an impact on the development of research and education networks in the region.

The workshop provided the exchange of experience and transfer of knowledge from experts of advanced countries to the regional specialists to perform more precise identification of priority areas and preferred solutions in network management and high-speed interconnection deployment.

The mechanism of the workshop, based on the active involvement of all the participants, principal lecturers, as well as round table discussions, was very productive.

Major Lectures and Presentations

Welcome address and the Programme of the Workshop by Dr. Yuri Shoukouryan,
Welcome address by Dr. Arman Kirakosyan, Deputy Minister of the MFA RA,
Welcome address by Dr. Radik Martirosyan, President of the NAS RA,
Welcome address by Dr. Tigran Davtyan, General Director of the ADA,
Welcome address by Professor Ramaz Kvatadze, President of CEENet,
Welcome address by Dr. Jacek Gajewski, Co-director of the Workshop.

Social and Cultural activities

During the Workshop, the following excursions were organized:

- Around the Yerevan city, where the participants had the opportunity to see the night Yerevan
- To the Saint Echmiadzin, the cradle of the Armenian church,
- To Garni, ellinistic temple of the IIIrd century, and Geghard monastery carved in rocks

On the first evening there was a reception dinner in the national style restaurant with national folk music orchestra playing on national musical instruments.

Media Coverage

Both the printed and the electronic media in Armenia extensively covered the NATO Advanced Networking Workshop.

There was a post-workshop press conference organized by the NATO Yerevan Office. The press conference took place at the Yerevan NATO Office with the presence of the most important media houses in Armenia and the daily newspapers and lasted for more than an hour. At the press conference co-directors of the Workshop Dr. Jacek Gajewski and Dr. Yuri Shoukouryan with contributions of NATO Yerevan Office Director Mr. David Alaverdyan and Deputy Director Ara Tadevosyan gave most of the information.

Since the ANW was under the patronage of the National Academy of Sciences and its President, Mr. Radik Martirosyan, there was also rather wide media coverage of the whole event, particularly the Opening session, which was recorded by the Armenian TV channels. Later after the conclusion of the opening, Deputy Minister of the Foreign Affairs of Armenia Dr. Arman Kirakossyan and the President of NAS RA Dr. Radik Martirosyan had ten-minute interviews for Armenian TV channels and newspapers. The same day, on November 12, 2007, the report from the Workshop opening session, the major address and the excerpts from Dr. Radik Martirosyan interview were given in the evening prime time news on all of the major television stations. The next day there were articles and short reports of the event taking place in Yerevan in all the media present at the press conference.

The web site of the ANW was developed and all materials were put there <http://asnet.am/anw2007>.

Financial report worksheet and bills/invoices are attached.

Appendix 1.

**The Programme of NATO Advanced Networking Workshop
Armenian National Research and Education Networks: Achievements, Problems and
Solutions
November 12-14 , 2007
Yerevan, Armenia
Aniplaza hotel**

DAY 0 November 11, 2007 Arrivals

DAY 1 November 12, 2007

9:00 – 9:30 Registration

Opening and welcome addresses

9:30-10.30	President of NAS RA Prof. Radik Martirosyan Deputy Minister of Foreign Affairs A. Kirakossian General Director of Armenia Development Agency T. Davtyan NATO and International Organizing Committee – Dr. Jacek Gajewski CEENet – Prof. Ramaz Kvatadze
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10:30 – 10:45 Coffee break

10:45 - 11:40

Session 1: The structure of Armenian NREN

Chair: G. Evoyan

10:40-11.10	Academic scientific network (ASNET-AM) – V. Sahakyan
11:10-11:40	Armenian research, education and cultural organizations network infrastructure: a view from the libraries (LIBNET) – T. Zargaryan
11:40-12:10	ARENA, Silk project and University Network – G. Babayan (ARENA)
12:10-12:40	YerPhi network overview - S. Mkoyan (YerPhi)

12:40 - 15:20

Session 2: Planning the future developments of Armenian NREN

Chair: I. Mkrtumyan

12:40-13:00	The vital needs of the Armenian National Research and Education Network - Yu.Shoukourian (NAS RA)
13:00-13:45	Lunch
13:45-14:15	High-speed (10G) interconnection of Research and Educational networks within Yerevan/Armenia - R. Tadevosyan (ASNET-AM)
14:15-14:45	Introduction of advanced services in Armenian high-speed Research and Education interconnection backbone– A. Petrosyan (ASNET-AM)
14:45-15:15	High Performance Computing Resources in Armenia: Past, Present, Future – H. Astsatryan (ASNET-AM)

15:15 – 15:30 Coffee break

15:30 - 17:40

Session 3: International Organizations and their role in NREN development

Chair: J. Gajewski

15:30-16:00	ISOC and its role in the Internet Development, ISOC Chapters – Sabrina Wilmot
16:00-16:20	ISOC-Armenia Chapter - I.Mkrtumyan (ISOC AM Chapter/AUA)
16:20-16:40	The Role of NATO and CEENet in the development of regional NRENs – J. Gajewski
16:40-17:00	The Role of OSI in the development of Armenia NREN - A. Markosyan (OSI)
17:00 – 17:20	NFSAT's role in regional and international cooperation– H. Karapetyan (NFSAT)
17:20 – 17.40	EU programmes and their role in the advance of research and education in Armenia - L. Aslanyan (NAS RA)
17:40 – 19:30	Videoconferencing of ISOC Chapters

19:45 Reception dinner

22:00-24:00 Tour around the night Yerevan

Day 2, November 13

9:00-11:00

Session 4: Cooperation between regional NRENs (Porta Optica Study and Black Sea Initiative projects)

Chair: R. Kvatadze

9:00-9:30	Porta Optica Study results – Piotr Turowicz (Poland)
9:30-9:40	Black Sea Initiative and regional cooperation - R. Kvatadze (GRENA)
9:40-10:10	Present state of the BSI project and link to the outside (GEANT2) – M. Soysal (TUBITAK/ULAKBIM)
10:10-10:35	Georgia international connectivity – George Gotoshia (Georgia Railway Telecom)
10:35-11:05	Implications for NRENs of e-comms regulation, and universal internet access in Armenia – Claire Milne (UK)

11:00–11:15 Coffee break

11:15-13:15

Session 5: Participation in the EU projects

Chair: M. Soysal

11:15-11:45	SEEGRID, SEEREN and SEEGRIDSCI projects – Ognjen Prnjat (GRNET)
11:45-12:00	Moving to the VC site
12:15-13:15	Videoconferencing session with GEANT: GEANT2 – Exploration in the Eastern Countries of Europe – John Chevers (DANTE)

13:15-14:00 Lunch

14:00-18:00

Excursion: Garni-Geghard

Day 3, November 14

9:00-10:45

Session 6. Participation in the EU projects

Chair: O. Prnjat

9:00-9:30	Regional cooperation in the GRID project – Ognjen Prnjat (GRNET)
9:30-10:00	Armenian e-Science Foundation Certification Authority: a courtesy service of the issuance of digital certificates for national networks - Arsen Hayrapetyan
10:00-10:30	High speed interconnection with GEANT as a prospective tool encouraging R&D in Life Sciences in Armenia – A. Boyajyan (IMB NAS RA)
10:30-11:00	Trans-border networks for geological, geodynamic and seismological observation for natural hazards assessment – H. Babayan (IGS NAS RA)
11:00-11:30	New Scientific Ideas Through New Technologies and New Opportunities - H. Harutyunian (BAO NAS RA)
11:30-12:00	CLOSER and other EC projects – J. Gajewski

12:00 – 12:15 Coffee break

12:15-14:00

Panel discussions on scientist requirements toward Armenian NREN
(moderated by Yu. Shoukourian)

Panel discussion on Consortium of Armenian RENs – CAMREN
(moderated by J. Gajewski)

Workshop wrap up (J. Gajewski)

Closing (Yu. Shoukourian)

14:00-14:45 Lunch

Day 4 Departures