

Global Communications Newsletter

December 1999

Sister-Society Cooperation Agreements Signed in Germany, Israel, and Russia

By Tom Plevyak, President, IEEE Communications Society

On October 15, 1999, at VDE-House in Frankfurt, Germany, Dr. Hans Schubler, President of Verband der Elektrotechnik Elektronik Informationstechnik Vorsitzender der Informationstechnischen Gesellschaft im VDE(ITG), and VDE leaders Dr. Hermann Lang and Dr. Friedrich Dankward Althoff, joined me in signing the first IEEE Technical Societies/VDE(ITG) General Agreement and IEEE ComSoc/ VDE(ITG) Side Letter on Publications (see photograph A). Presidents of the IEEE Information Theory Society and Circuits and Systems Society had previously signed the General Agreement. The IEEE Signal Processing and Solid State Circuits Societies are reviewing the General Agreement for likely participation. Among other provisions, the General Agreement allows members of the participating IEEE Technical Societies and VDE(ITG) members to register at each other's conferences at member rates and the Side

Letter on Publications offers ComSoc magazines and journals to VDE(ITG) members at significant discounts off non-member rates. Hans Schubler and I noted the long-sought and historic nature of these Agreements and predicted effective and productive cooperation between the participating professional organizations.

While in Germany, I was a guest of the Eduard Rhein Foundation (ERF) at their awards ceremony and banquet in Munich on October 16th. ERF is a highly prestigious awards organization, recognized around the world. Many distinguished contributors received awards, including Dr. Vladimir Kotelnikov of Russia for fundamental contributions in the field of information theory. ComSoc has had an Agreement of Affiliation in place with ERF since June 1999. Among other provisions, the Agreement places a ComSoc representative on the ERF Board of Curators and an ERF representative on the ComSoc Awards Committee.

Nomination of candidates will occur for each other's awards. Dr. Horst Bessai, ComSoc's Regional Director for Europe, Africa, and the Middle East (EAME), was instrumental in creating the Agreement of Affiliation and is the ComSoc representative to ERF. For further details, see the article by Horst Bessai in this issue of GCN.

On October 21st, in Tel Aviv, Israel, Dr. Eli Cohen-Kagan, Director General of the Association of Engineers and Architects in Israel (AEAI), and Dr. Ady Siedman, Chairman of the IEEE Israel Section, joined me in signing the first ComSoc/AEAI (Communications Group) General Agreement and Side Letter on Publications. Dr. Cohen-Kagan affixed the signature of Dr. Jacob Hai, Chairman of AEAI. Among other provisions, these historic Agreements provide the same conference and ComSoc publications benefits described above as well as discounted availability of the English-language *AEAI Journal* to ComSoc members. ComSoc's Dr. Jacob Baal-Schem was instrumental in bringing about these Agreements (see photograph B). Eli Cohen-Kagan and I

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*Photo A: (left to right)
Hermann Lang, Tom
Plevyak, Hans Schubler,
Friedrich Dankward
Althoff.*



*Photo B: (left to right)
Jacob Baal-Schem, Ady
Siedman, Tom Plevyak,
Eli Cohen-Kagan*



*Photo C: (left to right) Alex Gel-
man, Henrich Lantsberg, Tom
Plevyak, Yuri Gulyeav, Jacob
Baal-Schem.*

First IEEE/Popov Internet Workshop: A Technical Success

Jacob Baal-Schem, IEEE Region 8 Communication Chapters Coordinator

The First IEEE/Popov Workshop on Internet Technologies and Services was held on October 25–28, 1999, at the Congress Center of the Finance Academy of Russia. This first joint technological activity between the IEEE Communications Society, IEEE Region 8, and the largest Technical Society in East Europe — the Russian Popov Society for Radio Engineering, Electronics and Communications — was an important step in the sharing of scientific information between two of the largest professional societies in the western world.

The subject of the workshop, Internet Technologies and Services, was chosen due to the large interest it raises among the global communication community, and the Technical Program Committee succeeded in setting up a high level set of tutorials, keynotes, and presentations, by lecturers from all around the world.

Participants in the workshop came from nine countries (U.S., Sweden, Austria, Finland, Germany, Hungary, Canada, Israel, and Russia) and the Russian participants themselves arrived from 10 different cities. The lower than expected number of participants (50 in total) was due both to the economic situation in Russia and to technical problems (visas, etc.) for foreign attendees.

The workshop opened with two tutorials presented by Prof. Roch Guerin of the University of Pennsylvania on the subject of “Internet Routing and QoS.” Prof. Schulzrinne, who was scheduled to present one of the tutorials, was unable to attend due to visa problems.

Prof. Yuri Gulyaev, President of the Russian Popov Society and Chairman of the IEEE Russia Chapter, opened the First Workshop Day by greeting the participants and thanking IEEE ComSoc and Region 8 for their cooperation. Tom Plevyak, ComSoc President, mentioned that the sister agreement between ComSoc and the Popov Society was to be renewed that same day for three additional years. Jacob Baal-Schem, representing Region 8, mentioned the importance of

cooperation between IEEE and National Societies and presented the greetings of Dr. Remshardt, Region 8 Director. Steve Weinstein, who was the initiator of this workshop, Henrich Lantsberg, who served as liaison between the IEEE Russia Section and the Popov Society, and Celia Desmond (ComSoc Director of Conferences) brought their greetings.

The main keynotes were presented by Christian Huitema from the U.S., on “Challenges of the Next Generation Networks,” and by Andrei Zotov from Russia, on “Internet Business in Russia.” The insider perspective of Zotov gave all attendees a glance of the actual Internet activity in this huge country, while Huitema opened a window to the future.

The social events of the workshop provided a good occasion for contacts between the Russian participants and their peers from abroad. A welcome party gave attendees the opportunity to make acquaintances, while at the workshop banquet mutual toasts were exchanged. Foreign participants also had the opportunity to attend ballet performances of the highest level.

All attendees of this first workshop mentioned the high level of the presentations and there was a general feeling that this type of activity must be continued. Members of the Steering Committee, who met at the end of the workshop, decided to hold a second event in Moscow in 2001, with the general theme of “e-Business,” and to involve both academics and Internet providers and practitioners.

The workshop also provided an opportunity for close contact between the three Communications Society chapters in Russia — Moscow, Novosibirsk, and St. Petersburg — and their two parents, ComSoc and IEEE Region 8. Representatives of the Chapters presented their activities in recent years and mentioned especially the difficulties of getting IEEE technical publications for their scientific activities. This again showed the importance of technical contacts between Russian professionals and their peers worldwide.

1999 Awards Presentation of Eduard Rhein Foundation

By Horst Bessai, Germany

Since June of this year, ComSoc has had an Agreement of Affiliation with the Eduard Rhein Foundation (ERF), an internationally renowned awards organization. IEEE ComSoc is entitled to submit nominations of appropriate and qualified candidates for ERF’s awards programs which include, among others, the Basic Research Award and the Technology Award. Our Society is actively represented by a voting Member on ERF’s Scientific Advisory Board (Board of Curators). Conversely, ERF is entitled to nominate a delegate to ComSoc’s Awards Committee.

The Foundation, named after the late Eduard Rhein (inventor, author of many non-fiction books, and Editor-in-Chief of a famous German magazine), currently has assets of 17 million German marks. Funds for awards are available to the amount of half a million German marks per year.

The 1999 ERF Awards were presented on October 16th, during a ceremony held in the Hall of Fame of the Deutsche Museum, Munich, Germany. The awards were presented by Dr. Edmund Stoiber, Minister President of the German Federal State of Bavaria.

Professor Vladimir A. Kotelnikov, Member of the Russian Academy of Sciences, was awarded the 1999 Basic Research Award for his pioneering work on sampling of signals, specifi-

cally his 1933 paper published in the proceedings of a Soviet conference. The citation reads as follows: “For the first theoretically exact formulation of the sampling theory.” For a detailed discussion about the origins of the sampling theorem, interested readers are encouraged to consult H. D. Lueke’s article in the April 1999 issue of *IEEE Communications Magazine* (pp. 106-108).

The 1999 Technology Prize was split between two outstanding Italian researchers, Dr. Leonardo Chiariglione, “for conceiving and gaining acceptance for the MPEG standards to jointly encode moving pictures and associated audio signals, especially the digital TV standards MPEG-2, acknowledged worldwide,” and Professor Fabio Rocca, “for his invention of motion compensation in the framework of coding concepts for moving pictures and for his fundamental contributions to hybrid coding enhanced by estimation.”

Following the awards ceremony, an awards banquet was held in the Munich City Hilton Hotel. Among the 150 invited guests were two Nobel Laureates and many leading representatives from politics, industry, research institutions, and universities. In his brief talk, IEEE ComSoc President Tom Plevyak welcomed the new affiliation agreement and emphasized its importance in the context of ComSoc’s globalization efforts.

The Internet2 Project: An Overview

By Paul Love, U.S.A.

The Internet, born as a research project, has been a roaring success. But with its transition from an academic and government research effort to a very successful commercial enterprise, it was no longer a place for research into either new applications or the technologies to support them. Nor was it useful for the massive amounts of data that researchers sometimes needed to exchange.

With this in mind, a series of academic workshops in the United States during 1995-96 asked the question, "Are our research and education needs being met by the commercial Internet?" The answer was No. As a result, 34 universities and colleges formed Internet2, a research and development project that today includes more than 160 universities, 50 corporations, and 25 affiliated organizations.

Led by universities, Internet2 has three main goals:

- Enable a new generation of Internet applications.
- Re-create leading edge research and education network capabilities.
- Transfer technology and experience to the global commercial Internet.

Each member university is committed to three essential items:

- Providing end-to-end high-performance connectivity, including WAN Campus through to the desktop of the researcher.
- Development of high-end applications.
- Retaining their commercial Internet connectivity.

Internet2 identified four areas where primary technical innovations were needed: multicast, quality of service (QoS), IPv6, and support for large delay-bandwidth products. An Internet2 Working Group is leading efforts in each of these areas. For multicast, most major U.S. R&E networks have agreed upon, and already begun to deploy, a common set of protocols (PIM-SM, MBGP, and MSDP) for smooth interoperability. Efforts are now focused on campuses and the points of interconnection. Implementing a testbed for QoS based on the IETF's differentiated service (DiffServ) model is the focus of QoS efforts. More than 15 major national, regional, and international networks are participating in this testbed, called the QBone, which is in final call for its architecture. The IPv6 effort is working on being able to move v6 traffic over the networks involved and in promoting the use of v6.

Finally, support for the large delay-bandwidth product, typical in very high speed, transcontinental and trans-oceanic IP networks, is being addressed by a combination of efforts within Internet2 and the U.S. government's Next Generation Internet initiative. These include the NSF funded National

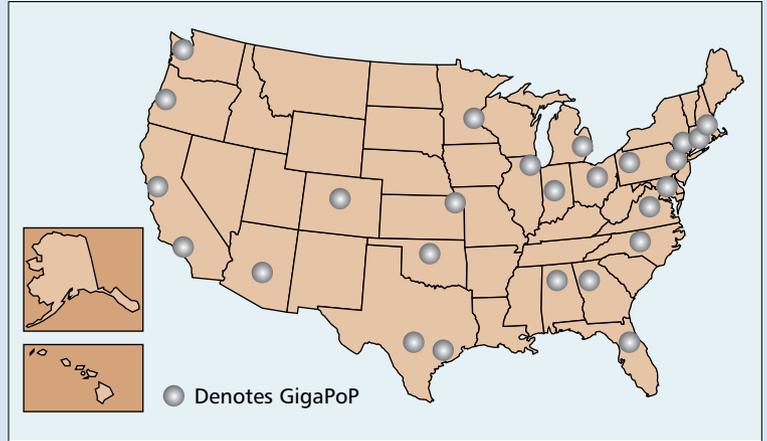


Figure 1. Gigapops in Internet2.

Laboratory for Advanced Internet Development (NLNAR) Engineering Services located at Carnegie Mellon University and the Pittsburgh Supercomputer Center.

The primary motivation for implementing these technologies is to support advanced networking applications. These applications either do not run reliably or do not run at all on today's commercial Internet because they require high bandwidth, low latency, low jitter, or a combination of these attributes. These applications include:

- Interactive research collaboration and instruction.
- Real-time access to remote scientific instruments.
- Large-scale, multi-site computation and database processing.
- Shared virtual reality.
- Digital video and audio libraries.

Some examples are:

- The nano-manipulator in North Carolina.
- Music archives at Indiana University.
- TV news archives at Vanderbilt University.
- Space Physics and Aeronomy Research Collaboratory at University of Michigan.
- Tele-immersion and collaborative virtual immersive environments.

A hierarchical engineering model is being used to develop the networks needed to support these applications. It has three layers: multiple high-performance backbones, regional aggregation points, and campus networks.

Currently, there are two backbones deployed. The very high performance Backbone Network Service (vBNS) (<http://www.vbns.net/>) is funded by the NSF under a co-operative agreement with MCIWorldcom and was in place and operational when the Internet2 project was born. The vBNS served as a "proof of concept" of Internet2's goals and as a model for growing from five sites in 1995 to 104 connected today. The vBNS has a backbone primarily of OC12c links using IP over ATM. It has just begun to deploy OC48c, using IP over SONET. The agreement under which it operates concludes in April 2000.

The second Internet2 backbone, the Abilene network (<http://www.internet2.edu/abilene/>) was built by Qwest Communications, Cisco Systems, Nortel Networks, Indiana University, and NLNAR Engineering Services under the aegis of the University Corporation for Advanced Internet Development, the organizational home of the Internet2 project. It is designed to be an IP only bearer service network, currently using IP over SONET on a backbone composed of an OC48c transcon-

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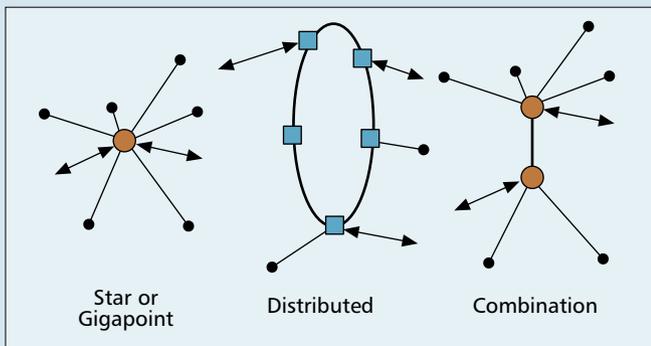


Figure 2. Some topologies used in Internet2.

tinental path with additional paths at OC12c. Abilene has 44 participating institutions; another 25 are in process. Both backbones are connected to a number of international research and education networks through the NSF-supported STAR TAP (<http://www.startap.net>)

Regional aggregation points, or gigapops, are operated by a variety of organizations, primarily by academic institutions. Nearly 30 are in operation in the US today (see Fig. 1.). Three architectural models (see Fig. 2) are in use:

- Star, or gigapoint.
- Distributed.
- Combination.

An example of the gigapoint is the Southern Crossroads (SoX) in Atlanta supporting much of the Southeastern US. The two CalREN gigapops covering California exemplify the distributed design. The Great Plains Network covering the North-central US exemplifies the combination model. The trade-offs in these three architectural choices are the costs of the circuits from a gigapop member to the gigapop's location(s) balanced against the potential of a bottleneck in the gigapop's own circuits linking multiple locations together, and the costs of inter-gigapop link(s) large enough to avoid those bottlenecks.

To make use of these high-performance WAN capabilities, Internet2 universities are deploying 100Mb/s to the desktop, though perhaps not yet everywhere on campus. Universities typically maintain one or more commodity Internet connection in addition to high-performance R&E WAN connections ranging from DS3 to OC12c (STM-4) to the campus. These may be provided through a single circuit to the gigapop.

These high-performance networks are enabling prototype

research applications among Internet2 members today. However, corporate participation is crucial to the ultimate goal of incorporating new technologies into the commercial Internet. Just as the past partnership among academia, industry, and government spawned the Internet of today, we expect Internet2 and partner initiatives to drive new capabilities for the Internet of tomorrow. The latest information and more detail about Internet2 can be found at <http://www.internet2.edu/>

SISTER SOCIETY AGREEMENTS/(Continued from page 1)

noted the importance and historic nature of these Agreements and looked forward to productive cooperation and interaction.

On October 27th in Moscow, Russia, Dr. Yuri Gulyaev, President of the Russian Popov Society, and I, signed a renewal of the existing ComSoc/Popov Society General Agreement, originally signed in September 1996 by Dr. Gulyaev and then President of ComSoc, Dr. Steve Weinstein. Among other provisions, these Agreements provide the same conference and ComSoc publications benefits as above. The *Russian Popov Society Journal*, translated into English and published by Alerton Press Inc. under the title *Radio & Communications Technology*, is available to ComSoc members at a rate comparable to ComSoc member rates. Dr. Henrich Lantsberg, member of the Popov Society's Central Board and Chairman of its Professional Communications Section, was closely involved in developing the renewal Agreements (see photograph C). Yuri Gulyaev and I noted that this renewal of existing ComSoc/Popov Society Agreements signals an increase in confidence that cooperation between these two great professional organizations is effective, productive, and, in fact, necessary.

The first IEEE/Popov Society Internet Workshop was held in Moscow on October 25–28, 1999. Sponsored by the Russian Popov Society, IEEE Region 8, and the IEEE Communications Society, this important event was well conducted, of good quality, and will definitely lead to an IEEE/Popov Society Internet Conference in 2001. Henrich Lantsberg, IEEE Region 8 Chairman, and ComSoc's Alex Gelman, Jacob Baal-Schem, Celia Desmond, and Steve Weinstein made this Internet Workshop happen. For further details, see the article by Jacob Baal-Schem in this issue of GCN.

Dr. Tetsuya Miki, ComSoc's Vice President of Societal Relations, and Dr. Trevor Clarkson, ComSoc's Director of International Society Relations, played key roles in developing all the above cooperation agreements.

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