
Global Communications Newsletter

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A Message to IEEE and ComSoc Officers from Professor Boris Kapilevich, Novosibirsk (Russia) Chapter

*Foreword by Trevor Clarkson
Vice President/Membership Development
IEEE Communications Society*

A priority for ComSoc in 2002 is to increase activity “on the ground,” which mostly means the Chapters. It was mentioned recently in *IEEE Communications Magazine* that Chapter Chairs and other Chapter officers are sometimes discouraged by the poor response to excellent programs in which they have invested time and effort.

However, this is not always the case. We are pleased to print the letter below in recognition of the long-standing work of one Chapter Chair and also as an encouragement to other Chapter Chairs. If such a strong base of support can be built from very few members and also under severe economic restrictions, then surely this success story could be repeated in Chapters who are in a more advantageous position.

While the Communications Society, together with other IEEE Societies and Region 8, gave some support to the new Chapter over the past five years, the majority of the work has been carried out by Professor Kapilevich and his colleagues, who we applaud. Not only has the Novosibirsk technical community been enriched by the activities of the Chapter, but the whole Communications Society has benefited too.

Dear colleagues and friends,

For more than five years, from May 1996 to October 2001, I served as an elected (and re-elected) chairman of the Novosibirsk Joint IEEE MTT/ED/CPMT/COM/SSC Chapter. All of you have seen the Chapter develop from its initial formation to the present. The Chapter was formed in a very difficult period for local professionals associated with new reforms carried out in the former Soviet Union. Understanding that the income of most individuals is too small, you provided the required financial support by subsidizing newly established chapters, including subscriptions to IEEE publications.

Your active and benevolent position has helped us to consolidate high-tech specialists and create here a real IEEE community. There were only two IEEE members before the formation of a Chapter in Novosibirsk. Now, the Chapter consists of more than 60 members. About 40 percent of all members are self-paying. The Chapter is supported by five professional IEEE Societies: MTT, ED, CPMT, ComSoc, and SSC. As a result, the Chapter grew spectacularly during this period and has become the biggest organization of its kind in the Siberia region.

Many IEEE officers and members have provided support

for our efforts in membership development and improving professional activity. It is a great pleasure for me to record their valuable contributions to the formation of truly professional groups in the Chapter:

- MTT-S: Prof. Rolf Jansen (the Novosibirsk Chapter’s father), Prof. Josef Modelski, Prof. Abbas Omar, Prof. Richard Sparks.
- ED-S: Mr. Van Der Vort, Mrs. Laura Riello, Prof. Ninoslav Stojadinovic.
- CPMT-S: Dr Ralph Russell, Mrs. Marsha Tickman.
- ComSoc: Mrs. Carole Swaim, Mrs. Kathy Worthman, Dr. Ron Horn, Prof. Trevor Clarkson.
- SSC-S: Mrs. Anna O’Neill, Mrs. Linda Barankovich, Prof. Jan Van der Spiegel.
- Dr. Henrich S. Lantsberg, Vice-Chair, IEEE Russia Section, has provided supervision and assistance in forming all professional groups in the Chapter from the date of its approval till present.

Sincere thanks to all of you from the Chapter’s members and myself. Using this opportunity, I would like to record the most remarkable Chapter initiatives of the period: International Conferences on Actual Problems of Electronics and Instrumentations Engineering (APEIE ’96, ’98, 2000), International Conferences on Microwave Electronics: Measurements, Identifications, Applications (MEMIA ’97, ’99, 2001), International Korea-Russia Symposiums (KORUS ’99, 2000, 2001), International Conference on Modern Information Technologies (MIT 2000), regular regional Conferences dedicated to solid state circuits, electronics, communications, and components and packaging. Most of these events have been accompanied by publicizing the official Conference Proceedings, distributed by IEEE Press all over the world.

The Chapter was actively involved in the formation of other Chapters and Student Branches located in the Siberia region such as Novosibirsk LEOS Chapter, Tomsk MTT/ED/CPMT/COM Chapter, ED and SSC Student Branch in Novosibirsk State Technical University, and ComSoc Student Branch in Siberia State University of Telecommunications and Informatics. As a result, the total number of IEEE members including student members is about 150. There is a real opportunity to form the following Chapters here in the near future: Information Theory, Signal Processing, Control Systems, Power Electronics, Joint MTT/COM Chapter in Krasnojarsk, LEOS Student Branch in Siberia State University of Telecommunications and Informatics. Hence, the formation of a Siberia IEEE Section is becoming a reality now.

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COST272: Packet-Oriented Service Delivery via Satellite: Part II

By Erina Ferro, Italy, Gérard Maral, France and Laurent Franck, France

The COST Framework

Founded in 1971, COST is an initiative by the European Commission (EC). The objective of COST is to coordinate nationally funded research at the European level in order to ensure that Europe holds a strong position in the fields of scientific and technical research. As such, COST stands for Cooperation in the Field of Science and Technology. Actions implemented in the COST framework are further categorized in domains, among these the telecommunications domain, to which COST272 naturally relates.

There are about 180 COST Actions currently running, among these 26 in the telecommunications domain. Actions have an average duration of three to four years and are finalized through the delivery of a final report. Yearly reports also enable monitoring of the Actions.

The COST272 Action

COST272, Packet-Oriented Service Delivery via Satellites,

¹ Consorzio Nazionale Interuniversitario per le Telecomunicazioni (National Inter-University Consortium for Telecommunications).

² Centre National d'Etudes Spatiales

started in June 2001. Most of its participants came from two previous Actions: COST252 (Evolution of Satellite Personal Communications from 2nd to Future Generation Systems), and COST253 (Service Efficient Network Interconnection Via Satellites), ended in 2000.

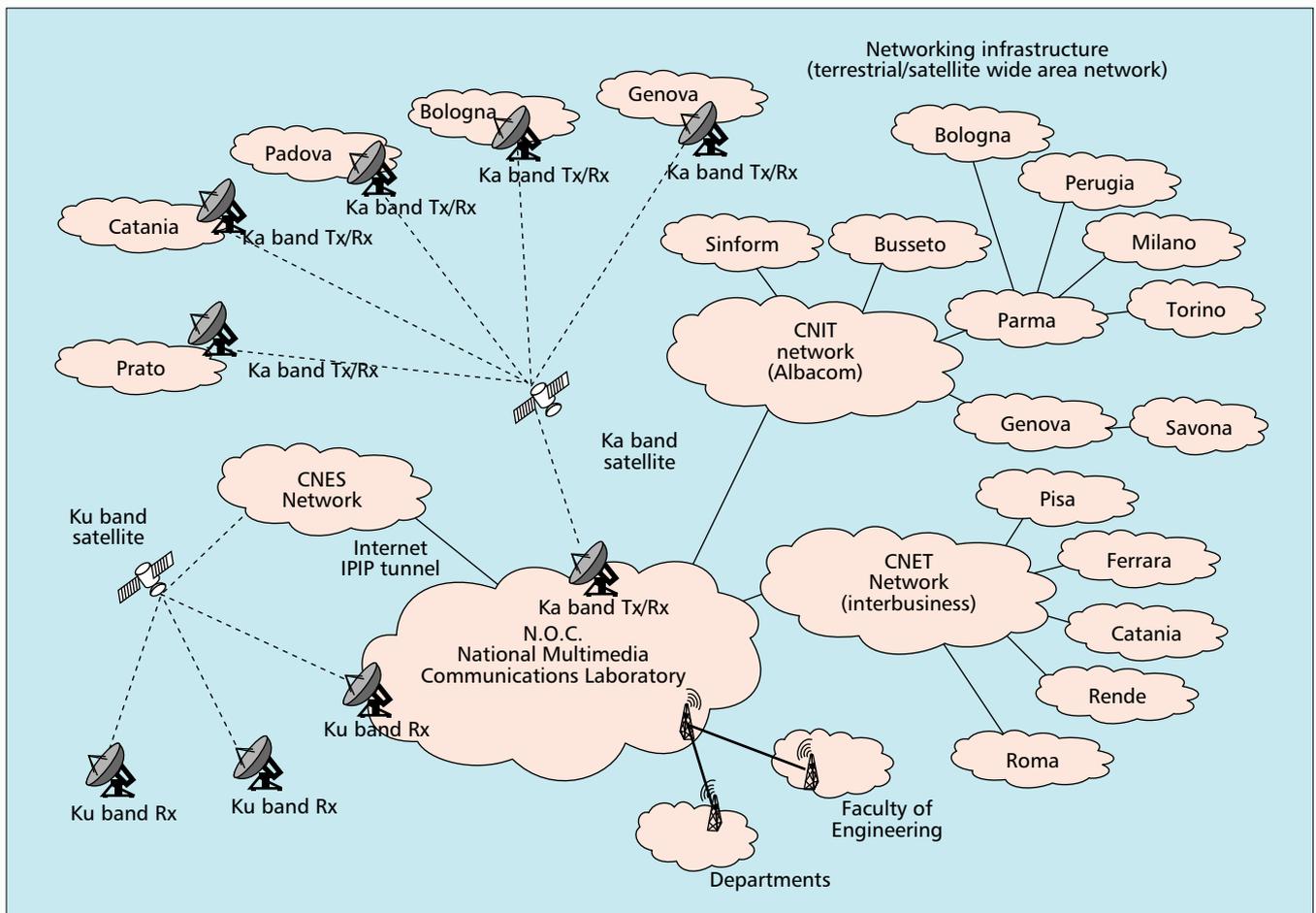
The main objectives of the action are to contribute to the identification of key requirements, analysis, performance comparison, architectural design, and protocol specification of future packet-oriented satellite communication systems, with a clear focus on Internet-type system concepts, applications, and protocols/techniques on the various layers.

After one year of activity, the Action has produced about 40 documents, covering subjects ranging from coding to security for multicast communications. The Action participants also promoted an Expression of Interest (called OSMOSISNET) as a reaction to an EC request in the scope of the FP6 preparation.

Additionally, more pragmatic issues are also addressed: since the Management Committee meets only three times a year, an alternative way to communicate is currently under investigation, in order to set up virtual meeting sessions in between the real MCM meetings. For this purpose an experimental framework has been set up. Two participants (CNIT¹

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■ Figure 1. The CNIT-CNES interconnection.

Africa Strives to be an Equal Player in the Information Society

By Muriuki Mureithi, Kenia

In a conference convened in the Malian capital, Bamako, on 28–30 May 2002, Africa set its sights to be an equal player in the emerging information society. The 51 countries present discussed the challenges and constraints of Africa's entry into the information society and specifically the continued participation in the World Summit on the Information Society process. A crippling lack of information and communications technology (ICT) infrastructure continues to hamper its entry and has to be addressed by acquisition of relevant technology affordable in Africa. This technology is not available in Africa; expertise in the African diaspora identified at similar conferences could play a significant role in overcoming this challenge.

The African Regional Conference, dubbed Bamako 2002, was organized under the patronage of Mr. Kofi Annan, U.N. Secretary General, under Resolution A/RES/56183 promulgated by the United Nations on December 21, 2001 to convene a World Summit on the Information Society (WSIS). The objective of WSIS is to formulate a common vision and understanding of the global information society, and adopt a declaration of principles and an action plan to facilitate effective development of the information society and help bridge the digital gap. Phase 1 will take place in Geneva in December 2003; the second phase will take place in Tunis in 2005. The United Nations selected the International Telecommunication Union (ITU) as the technical agency to lead the WSIS process. Bamako 2002 was therefore a key entry point for Africa into this process with themes based on the information society and Africa: what Africa can get, give, preserve, or benefit from and to the information society.

Mr. Yoshiu Utsumi, Secretary General of ITU, offered a working definition of an information society that will exhibit or experience the following features:

- Freedom from tyranny of distance
- Economy of scale no longer important
- Death of hierarchical distribution of products and services

The dream is enticing for a continent; in particular, sub-Saharan Africa (SSA), with close to 80 percent of the population in rural areas and therefore distant from services, is a daily challenge to development. While Africa was not a participant in the industrial revolution, the leaders at the conference believed that the information society revolution was one in which Africa should not be left behind lest the continent be marginal forever.

However, the existing ICT infrastructure to link Africa and in particular SSA is critically inadequate and will inhibit entry to the information society unless drastic actions are taken to reverse the growth trend and make technology available. As illustrated in Fig. 1, ITU data supplied at the conference projects that Internet access penetration in SSA, which is a key technology for the information society, would barely be 0.6 percent by 2005, while cellular would be the highest at just over 1 percent. Even today, the penetration figures are the lowest of any region of the world. The European region, at one extreme, has a teledensity of 41 percent for fixed lines

This penetration leaves 99 percent without the capacity to participate in the information society due to lack of access technologies. In the last five years, the growth of cellular has been dramatic aided by regulatory reform. That growth is still inadequate, however, and has to be addressed by regulatory and technological solutions.

In a bid to address the challenges, Bamako 2002 came up with a set of recommendations and declarations to overcome the challenges. Among the recommendations with technological implications, Bamako 2002 resolved that it is necessary:

- To provide all citizens with the means to use ICTs as a public service
- To develop databases on experiences with introduction of new technologies that address needs of rural areas and their capacity to pay
- To promote free software
- To use voice and touch applications that enable a greater number of people to participate in the information society
- To establish a high-level scientific committee that will make recommendations to the second preparatory committee of WSIS about the challenges Africans face in the information society
- To study and promote energy solutions for ICT for the African rural environment

A recurring argument at the conference and other venues is the affordability of the technologies for those with low capacity to pay. It is a challenge to bring out technologies that reach out to those with low incomes. Africa is in a rent position for technology, as was argued at the conference, and will not produce technology in the near term. Indeed, according to [1, p. i], in 1999 Africa contributed barely 0.3 percent to world scientific production. It is unlikely that the situation has changed dramatically to contribute substantially to the development of appropriate technologies for Africa and its entry into the fast evolving information society. Much of the capacity to produce technology is outside Africa.

What then for Africa? A number of the conferences organized in Africa, and in particular African Development Forum '99: The challenge to Africa of Globalisation and the Information Age (<http://www.uneca.org/adf99>) and African Knowledge Networks Forum (AKNF) (<http://www.uneca.org/adf99/docs/diaspora®int.doc>), provided a foundation for Bamako 2002 and have shown the large number of skilled workers from Africa in the diaspora, which keeps on increasing. According to [2, p. 38], citing the World Bank report of 1995, between 1960 and 1987 over 23,000 academics and 50,000 managers and executives left the continent yearly. The paper further notes that up to 40,000 African Ph.D. holders were working outside Africa. This is a large number of valuable experts that could make a difference in the role Africa plays in the information society to claim its stake.

Another contradiction cited by Sethi is that there were 100,000 foreign experts working in Africa on development projects for bilateral and multilateral arrangements. In contrast, over 250,000 African nationals were working in the Western Hemisphere. This was nearly half the skilled workforce in Africa (Meera 2000). Brain drain is a major issue in Africa, and the rent position on technology is likely to persist for much longer with dire consequences of Africa missing out on the information society train dreamt by leaders in Bamako. A way out supported by the Economic Commission of Africa (see, e.g., <http://www.uneca.org/adf99/adf99reportannex1.htm>) is to explore ways to tap into the skills within the African diaspora and reach out into their research laboratories and institutions, and in a mutually beneficial way contribute to the development of Africa. In principle, representative groups of the diaspora have accepted the challenge. The intention is to create a virtual forum of African experts in the diaspora to advise African decision makers, exploring modalities of using diaspora expertise to support Africa's interests in global ICT fora that relate to the challenges to the information society. This would be useful in mobilizing support for African ICT development efforts in Europe and North

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COST272: Packet-Oriented Service Delivery via Satellite (cont'd)

in Italy and CNES² in France) already had multimedia transport realities in their own countries: in Italy, the Ka-band satellite networking infrastructure of CNIT, and in France the Ku-band Eutelsat Hot Bird satellite transponder used by CNES to provide DVB-S demonstrations. For this experiment, the Italian and French parties both used a combination of terrestrial and satellite links.

On the Italian site, the satellite network comprises six active Earth stations operating in the Ka-band (20–30 GHz) over the Italsat satellite. Each station is connected to a CNIT laboratory where a number of instruments, PCs, and various network devices are available for traffic emulation and field trials of satellite data services. The CNIT laboratories are also interconnected with high rate digital subscriber line (HDSL) leased lines and to the Internet through routers and dedicated firewalls. Among other applications, a subset of Mbone multicast tools have been long in use over this network, especially to deliver some distance learning lectures, now also broadcast in France.

In France, CNES utilizes PCNS³, an experimental DVB-S European platform. At the moment, PCNS, located in Toulouse, uses a 2 Mb/s space channel over Eutelsat's Hot Bird satellite. The Toulouse uplink site has high-speed connectivity to the Internet (2 Mb/s dedicated to multimedia applications) and some additional interfaces (ISDN, H.320 videoconferencing, PSTN, etc). TV programs (1 channel) and IP multicast services are provided, and can share available satellite bandwidth. They stay in separate constrained DVB subchannels (PIDs) and can simultaneously be active. The interconnection with the PCNS platform has been realized

from the CNIT site in Naples, where an IP-IP tunnel, encapsulating multicast packets, has been opened toward Toulouse by using the "plain" Internet terrestrial network (Fig. 1).

Now that the concept has proven to be workable over point-to-point long distance, it will progressively be extended to other COST272 participants. The experimental platform will use VIC and RAT videoconferencing tools developed during the MICE and MERCI European projects. During the assessment phase, COST272 participants will have opportunities to schedule virtual meetings (through the ground Internet) on a rendezvous point hosted by CNES-Toulouse.

For the time being, the experiment relies on terrestrial links since no satellite is involved and all communications go through the MCU located in Toulouse. A second phase nicknamed the satellite phase will include the two satellite facilities available (HotBird and Italsat) and DVB-S receiver cards. The COST272 participants will take advantage of this setup to regularly hold presentations broadcast all over Europe. Apart from the obvious communication facility, this experiment also provides a testbed for the evaluation of the quality offered by heterogeneous environments in the context of real-time multimedia traffic.

AFRICA IN THE INFORMATION SOCIETY/(Cont'd from page 3)

America through intellectual scientific networks that link the diaspora with Africa.

Without such moves, Africa will continue to be in the rent position and the quest by the leaders in Bamako will be elusive in the emerging information society.

References

- [1] S. Tapsoba et al., Eds., *Brain Drain and Capacity Building in Africa*, ECA/IDRC/IOM, 2000.
- [2] M. Sethi, "Return and Reintegration of Qualified African Nationals," in S. Tapsoba et al., Eds., *Brain Drain and Capacity Building in Africa*, ECA/IDRC/IOM, 2000.

MESSAGE FROM NOVOSIBIRSK CHAPTER I/(Cont'd from page 1)

Following the IEEE Bylaws I have suggested that I should be replaced as Chapter Chair by another IEEE member for the next term. Professor Wjacheslav Shuvalov was elected as the new Chair of the Novosibirsk Chapter at the annual Chapter's meeting held last October 23. He is a high-level professional in the area of communications, having long-term experience in both academia and industry, and can be reached via:

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I have very much appreciated the fruitful cooperation with each of you during my Chapter Chair's service and believe that you will share with all Chapter members our joint achievements in practical realization of the IEEE Globalization Project.

With best wishes,

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³ Plateforme de Communication Numérique par Satellite

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