Global Communications Newsletter

June 2008

A White Green Scenario for Communications

Juan Hernandez, Chair of the IEEE ComSoc Sweden Chapter

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Some authors have mentioned that communications is the main distinguishing characteristic of human beings in relation to the rest of the animals in the world. Today, it is recognized that animals also have some kind of communications for interchanging information between the members of their species. Nevertheless, we need to recognize that human beings use the most sophisticated language to communicate between themselves. Like other animals, we use different ways of communications to carry out the interchange of information with the members of our Communications Society in the IEEE world. Situated near the Nordic end of the world, we try to put some warmth, in spite of our cold white winter, in our means to better reach our associates. In a very green territory, which is paying attention to societal phenomena like global warming and aging, Sweden's ComSoc Chapter uses its best endeavors to increase our members' benefits from our organization.

Locally, we use some technical events to provide opportunities for our members and colleagues to enhance our knowledge of some specific aspects of our exciting field. Many international scientists have participated and communicated their results. For example, our section has sponsored the 7th Scandinavian Workshop on Wireless Ad Hoc Networks and the 4th Swedish National Computer Networking Workshop, and the following editions of these events in spring 2008.

However, we recognize that our knowledge is not enough, and we are using the resources of ComSoc's Distinguished Lecturers (DLs) to import expertise. During the last years we have been improving the dissemination of knowledge using DLT (T for Tour, because we are not constraining them to one place).

In August 2007 we were pleased to offer our community the possibility to meet with Prof. Moe Win, who gave us an introduction to a new paradigm that will reduce the restrictions in the use of the radio spectrum. Nearly 150 participants, of which about 50 percent are still not IEEE members, had the possibility to ask Prof. Win interesting questions in Stockholm, Gothenburg, Lund, and Aalborg, Denmark.

For 2008 we intend to invite three DLs to at least four universities in Sweden and possibly also some universities in our Nordic-Baltic neighboring countries.

Our board members' ages span from very to less young, adding to the mix recent graduates' needs and experience, which allow us to be in a better position to increase the benefits for our members. We have realized the increasing relevance of the aging phenomenon, and we are aiming to organize a "You and the Future" workshop, a scenario in which to study solutions for our older members.

Our presence at major international ComSoc events like GLOBECOM and ICC was initiated with the participation of Tommy Svensson at GLOBECOM 2007 in Washington, DC, 26–30 November 2007. At the conference Tommy was invited to take part in a panel discussion moderated by Gabriel Jakobson in the Membership Program Development (MPD) meeting together with Chapter board members from the Taipei Chapter, Turkey Chapter, Peru Chapter, Maine Chapter, and Bombay Section. This panel session was a valuable event to share the experience of work done in the different chapters, as well as a possibility to establish a base for possible collaborations on membership development in the future. As part of the panel session, a discussion of the essence of IEEE membership was initiated. A common view could be identified among the delegates: networking. In the Sweden section we have identified the DLT program as an important tool for increasing networking, and we were happy to hear similar opinions among other delegates, as well as the strong support of this program in ComSoc.

We are also aware that our members need support from our organization for elevating their grade. It can be difficult to obtain the three references required to obtain the Senior Member level. We are helping the Sweden Section in organizing an elevation meeting in Linköping in February 2008. We will invite both Senior Member candidates and potential reference Senior Members and Fellows to the elevation meeting. The idea is that the candidates will be given the opportunity to present their qualifications to the Senior Members and Fellows who can act as references.

We also recognize that our contacts with the industry are perhaps not enough, and we are aiming to increase these collaborations. We invite distinguished industrial players to participate in our activities. Traditionally we have always had at least one member from industry on our board. One possible way to make industry somewhat more engaged in IEEE activities could be to let industry also be more active in hosting the DLT. One successful tradition aimed at increasing contacts between industry and academia is the Annual Swedish Workshop on Wireless Systems, which in December 2007 took place for the 13th time.

IEEE GEOSS Workshop IXX

Advanced Communications and Networking Technologies: Saving Lives and Property from Disasters

Albin J. Gasiewski, Adam Livne, and Jay Pearlman, Co-Organizers

The IEEE GEOSS (Global Earth Observation System of Systems) Workshop IXX was held at Hilton Hawaiian Village, Honolulu, Hawaii, on 12 January 2008.

It was opened by Ken Zita, Chair of the Pacific Telecommunications Council, who discussed the importance of emergency communications in the Hawaiian Islands. He pointed to his experience in setting up tsunami warning facilities internationally as an excellent reason for holding the GEOSS workshop in conjunction with PTC 2008. Workshop co-organizer Adam Livne provided a brief welcome to attendees, followed by co-organizer Al Gasiewski, who provided a discussion of IEEE activities in support of GEOSS and workshop objectives.

Prof. Gasiewski continued to provide an overview of GEOSS architecture, including a discussion of the components and services registry, the GEOSS clearinghouse, the GEOSS Web portal, and GEONetCast. He discussed the basic attributes of GEOSS as a system of systems, indicating the importance of interoperability and how the requirement of interoperability drives the design of GEOSS. The central nature of modeling in achieving results in the nine GEOSS societal benefit areas was discussed. It was illustrated that many of the 2006–2007 objectives for implementation of the GEOSS architecture were completed.

Dr. Stuart Weinstein from the Pacific Tsunami Warning Center (PTWC) provided an overview of PTWC warning responsibilities and capabilities. There are three main components to the tsunami warning system: detection, evacuation plans, and education of citizenry. The challenges include determining the likelihood of warnings for nondestructive tsunamis and the possibility of not issuing a warning for underwater landslides. Limitations include use of solely seismic data, sparse sea level data, difficulty in warning, and possibility of underwater landslide-generated tsunamis. Approximately 6 Gbytes of seismic data is downloaded daily from ~175 seismometer sites, although some of this is redundant to ensure continuity of operations in the event of equipment or link failure.

Professor Tim Brown of the University of Colorado at Boulder discussed wireless networking for disaster management. He suggested that wireless networks can play an important role in disaster management, motivating his discussion using an example from wildfire fire management. Both technical and organizational interoperability needs were discussed. As another example, firemen and policemen often have different responsibilities in attending to an accident, and thus often require the same information but cast in different forms. Training the public also becomes part of the solution. He distinguished between networks and links, noting that networks (including the Internet) are a combination of links. Meshing involves peer-to-peer communication by creating networks from a variety of random ad hoc links. Of course, any wireless network is subject to interference, fading, and bandwidth restrictions, but provides untethered operation. Cell splitting in cellular services provide for capacity that grows with density, and includes low initial cost and frequency reuse. Unfortunately, cellular systems do not provide a complete solution since they require significant amounts of fixed infrastructure.

Dr. Eliot Christian presented two talks, one on the GEOSS clearinghouse and a second on the common alert protocol (CAP). His discussion of the clearinghouse provided a clear means of understanding its operation and how a user would access GEOSS data through queries to the clearinghouse. His discussion included reference to a number of URLs for obtaining mapped data for a variety of GEOSS benefit areas. With regard to CAP, he noted that standardization of the alerting protocol was as critical to operation of GEOSS as that of the data. Although a patchwork of warning protocols exist, CAP is the only one preferred for early and/or public warning on a worldwide basis due to its standards-based interoperable format

Dr. Gabriel Jakobson from Altusys Corporation discussed an advanced information architecture for supporting post-disaster medical relief applications. Dr. Jakobson motivated his talk by discussing how the Earth in this century will don an "electronic skin" of sensors, all IP addressable. He discussed how situation management is a synergistic goal-directed process of recognition, control, and prediction of the state of dynamic systems. In this regard sensing and perception are critical to situation management by providing essential information for situational awareness. A key problem in moving from Earth data to Earth knowledge is the increasing volume of data being collected from all sources.

Professor Moshe Guelman of Technion — Israel Institute of Technology prepared a presentation on broadband laser satellite communication links, which was presented by Dr. Livne. The present state of the art in communications systems is often rated according to radio frequency (RF) systems up to ~60 GHz. Laser communication links typically can potentially outperform RF links by approximately one order of magnitude in weight, bandwidth/data rate, power requirements, and size. Optical links are the technology of choice for data rates of ~1 Gbyte/s and higher. Smaller aperture sizes and lower powers are required for geostationary fixed link services.

A prerecorded demonstration of the GEOSS clearinghouse was provided by George Percival of OGC. The OCG demo showed how the clearinghouse could be used to gather disparate data in six societal benefit areas, including African wildfire management, African ecosystems and biodiversity, polar ecosystems and biodiversity, oil spill response, volcano eruption response, and hurricane response. The impressive demo was compiled by OGC to illustrate the steps required to go about gathering specific data from several GEOSS component sources. It was noted after the demo that any of the case studies would have required upward of a year or two of intensive research to perform even a few years ago, but through GEOSS could be performed by a trained operator in a matter of a day. The demo provided an excellent display of the GEOSS architecture in action.

Doug Zuckerman, President of IEEE ComSoc, provided closing comments, noting the high social value of the workshop and reiterating ComSoc's commitment to supporting the goals of GEO. He was especially appreciative of the high quality of the presentations and high level of technical discussion involving engineers and users of GEOSS data.

Open Discussion on GEOSS Emergency Communications and Networking

An open discussion among attendees was focused on the questions posed by co-organizer Gasiewski at the outset of the workshop. These questions, which comprise the goals of the workshop, were:

(Continued page 4)

Electronic Access to Spanish Public Administration is a Right by Law

Felipe Garcia-Sanchez ad Manuel Escudero-Sanchez, Spain

In June 2007 the Spanish government approved the Law for the Electronic Access of Citizens to Civil Services with the consensus of all politic parties. this law gives citizens the right to interact with public administrations via electronic media. In the same way, the different administrations are enforced to offer electronic accessibility to their services by means of interactive systems and different platforms such as THE Internet, mobile phones, digital television, or any other type of future electronic media.

The main objective of this law is to provide a regulation environment for the use of electronic media. It includes asking for information, making diligences or transactions, recurring resolutions and administrative facts, and all future operations that general administration might recognize. The law tries to ensure that all the Spanish administrations (national, regional, and local) have an electronic version for each of their administrative services before December 2009. Currently, 70 percent of the national administration is electronically accessible, whereas the other administrations use electronic media in lower percentages. However, taking into account the difficulties around this project, the law does not describe any penalty if the objective is not completely achieved by the end of 2009.

From now on, citizens will freely select the electronic mechanisms for communicating with their administration (e.g., email, Web, SMS) and follow the state of procedures in which they are involved. Moreover, the administrations must share relevant information about the citizen (e.g., national identity number) in order to avoid having to send redundant information between different administrations, and also to facilitate all procedures for citizens. These operations allow users to resolve their administrative practices in a faster and simpler way.

In addition, the law regulates the improvements public administrations must follow to update their systems. Some of these are aimed to facilitate cooperation among the information systems of all administrations and create a new concept, called the *electronic site*, as the electronic address assumes the same legal recognition as the physical office (citizens may use it for information requirements, civil services, presenting diligences and appeals, and accessing resolutions or communications). Furthermore, the law defines electronic registry offices, where electronic documents may be delivered officially with the same validity as the postal format. It also defines the mechanism to verify the validity of an electronic document (and its legal copies) when it is presented in electronic or physical form.

The law also introduces rules to improve the security of users and administrative transparency. For instance, the creation of a new legal concept, the Defender of Public Administration Users, reveals interest in preserving citizens' rights.

To sum up, this law must provide time and cost savings (a quantity of around €300/person/year is foreseen) by means of favoring their relations with an always available public administration without queues and paper documents. It also means the modernization required for the development of the Information Society, including a fearless deadline to achieve the above mentioned goals. The present law places the Spanish legislation in one of the most advanced positions, similar to that of the United States, Finland, France, Italy, and Austria. It includes €1900 million in investments and becomes a reference for technologically emerging countries.

Report on OFC/NFOEC 2008

Jason Jue, University of Texas at Dallas, USA

IEEE ComSoc Optical Networking Technical Committee, Chair

This February, I had the pleasure of attending the Optical Fiber Communication Conference and National Fiber Optic Engineers Conference (OFC/NFOEC 2008) in San Diego, California. The conference, which was co-sponsored by IEEE ComSoc, IEEE LEOS, and OSA, is considered to be the premier conference in the field of optical communications, and has grown significantly over its 33-year history. This year's conference attracted over 12,000 attendees.

The exhibition hall was bursting with activity, with around 600 companies exhibiting the latest products, including optical components, test equipment, optical systems, and software. The exhibition area also featured the exciting and informative Service Provider Summit and Market Watch events. These events consisted of several panels focusing on various business aspects of the optical communications industry.

The overall tone of industry was very positive, with expected increases in Internet traffic and new applications motivating the need for new equipment and driving new advances in technology. In addition to a trend toward higher transmission speeds, equipment manufacturers and carriers also emphasized the need to transition toward packet-based transport. These themes were highlighted in a keynote talk by Bob Metcalfe, inventor of Ethernet. In his talk Dr. Metcalfe advocated Ethernet as a better alternative to SONET and made an argument for the need for 1 Tb Ethernet technology.

The technical program of OFC/NFOEC featured over 800 papers in 170 sessions covering the latest research on topics such as optical fibers, optical devices and components, optical transmission systems, optical networks, and applications. The program reflected a shift of OFC/NFOEC from its origins as a primarily device- and physical-layer-oriented conference to a conference that also addresses higher-layer issues in optical communications and networking. This shift was particularly evident at OFC/NFOEC in the introduction of a new event, the Future Internet Symposium.

The Symposium featured a number of panel speakers, primarily from academia, who spoke on various topics highlighting the challenges involved in designing the next-generation Internet in such a way as to meet the performance and security demands of emerging applications.

One traditional event of OFC/NFOEC is the post-deadline paper session, which typically highlights cutting-edge research developments and presents the results of heroic experiments. This year's post-deadline session introduced optical communications systems that were capable of carrying in excess of 10 Tb/s of capacity on a single fiber over distances exceeding 1000 km.

OFC/NFOEC 2008 was very successful in providing a synergistic combination of both technical and business events, and the conference provided a great opportunity to learn about emerging trends in the optical industry as well as the latest results in optical communications research.

IEEE Consumer Communications & Networking Conference 2008 Highlights from CCNC 2008

Bin Wei, USA; Bin Wei, AT&T Labs Research, USA; Dave Marples, Technolution B.V. UK; Stan Moyer, Telcordia, USA; and Rob Fish, Mformation Technologies, USA

The fifth annual IEEE Consumer Communications and Networking Conference (IEEE CCNC 2008) was held 10–12 January in Las Vegas, NV. For the full program, see http://www.ieee-ccnc.org.

CCNC is a conference dedicated to research in consumer communications and networking. This is research that can and does influence our everyday life. This influence will increase as technology continues to change and improve. As the technology evolves, so too has CCNC continually evolved its scope. With this in mind, several adjustments were made for CCNC 2008. The layout of the technical tracks was updated, and Communication and Information Security and P2P Networking and Content Distribution tracks were added to encourage submissions in these areas. Second, to meet the needs of fast moving and active research, we started accepting short paper submissions for visionary and early stage work. Short paper presentations were integrated with the relevant technical sessions, providing more opportunities for attendees to think about and discuss active research issues. Finally, a Digital Entertainment and Games workshop was added this year, reflecting the growth of this area.

Despite the content changes to ensure that CCNC remains up to date, the program structure itself was similar to previous years, with keynote speeches, technical paper presentations, technology applications panels, demonstrations, workshops, tutorials, and, of course, our career forum for young researchers.

This year's technical program started with an opening keynote speech by Dr. Henry Tirri of Nokia System Research. Dr. Hosoo Lee, Director of Software Laboratories at Samsung Electronics, provided his vision on next-generation consumer communications in his keynote and the third keynote was provided by Dr. Michail Bletsas, the Chief Connectivity Officer of the One Laptop Per Child program. There were around 200 technical papers presented in the two-day technical program and close to 40 technology demonstrations. On the third day the program consisted of six workshops: Digital Rights Management, Broadband Wireless Access, Multimedia Entertainment, Networked Virtual Environments, Cognitive Radio, and Peer to Peer for Handhelds. Attendees could also select from five tutorials offered: Mobile Online Game Development, IPTV Technologies, Sensor Networks, P2P Technologies, and Fixed-Mobile Convergence.

There were several awards at the conference, including best paper, best student paper, and best workshop papers. This was the first year in which awards were made for the best presentation for each of the six technical tracks. In addition, we were pleased to have Dr. David Tennenhouse and Mr. Rob Rosenberg of New Venture Partners, a well-known VC firm, judge the demonstrations.

CCNC continues to grow each year, and 400 joined us in Las Vegas. Panasonic, Samsung, Nokia, Telcordia, and Technolution kindly provided patronage that helped make the event possible.

The organizing committee of CCNC 2009 has already started the work for next year's CCNC. Come help us make CCNC 2009 bigger and better than ever.

To see more detail on CCNC 2008, including links to some of the keynote talks, please visit our Web site. All of our previous CCNC conferences can be accessed from our homepage (http://www.ieee-ccnc.org) by clicking on Past Conferences. The Call for Papers for CCNC 2009 is also available at the homepage.

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www.comsoc.org/pubs/gcn

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A publication of the IEEE Communications Society

IEEE GEOSS WORKSHOP IXX/*continued*

- What types of communication technologies would be most useful for GEOSS data? How can GEOSS data be distributed in emergency situations?
- Which emergency scenarios admit advanced communications technology solutions?
- How can we make networks (including ad hoc) interoperable to support GEOSS goals?
- How can we ensure interoperability of GEOSS data in emergency situations?

Several important recommendations on emergency communications and networking for GEOSS were made during the open discussion. It is planned that these recommendations (available to be viewed at http://www.ieee-earth.org/ under "conferences") be forwarded for consideration by GEO at their upcoming working group meetings.