Global
Communications
Newsletter

November 2005

Distinguished Lecturer Tour in New Zealand

By Andrzej Jajszczyk, Poland

It took more than 30 hours to get from Poland to New Zealand, including two stops at transit airports in Frankfurt and Singapore. We landed in Auckland on Sunday morning, August 21. We were mentally prepared for winter, but sunny skies and pleasant temperatures, close to 20°C, clearly revealed that "kiwi-style" winter is something different than what we have in central Europe. We took a taxi and soon arrived at the nice Airedale Hotel in downtown Auckland. The newly renovated building in art deco style used to be the tallest structure in the city, but now, obviously, it is dominated by modern skyscrapers and the impressive Sky Tower. In the hotel I was soon contacted by Professor Nurul Sarkar of Auckland University of Technology, the local ComSoc chapter chair.

Since my lecture was planned for Tuesday, my wife and I decided to fight our 10-hour long jetlag by intensive sightseeing. On Monday we decided to visit two beautiful islands located in the Hauraki Gulf, just north of Auckland. The first one was Rangitoto, a volcano that erupted out of the sea only 800 years ago. It is covered with native pohutukawa forest and large patches of old lava. We climbed to the summit, enjoying magnificent panoramic views. On our way back we explored an easily accessible cave. The second island, Waiheke, was something very different: beautiful beaches, picturesque vineyards, as well as restaurants and cafes.

Next day, in the morning we went to an observation deck in Sky Tower, which is the tallest tower in the southern hemisphere. Views of the city and harbor were spectacular! In the afternoon I met Prof. Sarkar. We briefly visited Professor Felix B. Tan, Head of the School of Computer and Information Sciences at Auckland University of Technology, and then went to an auditorium at Auckland University. My lecture, preceded by a reception with a variety of food and drink, was entitled "Nonblocking, Repackable, and Rearrangeable Switching Networks." Although the number of participants was not impressive, the dozen people who did attend were quite active in asking questions and discussing my talk.

On Wednesday, August 24, we visited Auckland Art Gallery, which has interesting collections of colonial landscape paintings and early images of Maori. However, the next stop, at the Auckland War Memorial Museum, was even more attractive. We were especially impressed by a rich collection of traditional Maori art exhibited at He Taonga Maori, the Maori Treasures Gallery, including wonderful carvings and a huge war canoe. Before leaving Auckland we climbed Mt. Eden, one of several dormant volcanic cones in Auckland. This was also one of the most picturesque viewpoints in the city.

In the evening we flew to Palmerston North, a small city located in the heart of the Manawatu District in central New Zealand (Aotearoa). It is known as "Knowledge City" due to its high concentration of academic institutions. Professor Richard Harris of Massey University picked us up at the airport and drove us to Harringtons Motor Lodge, conveniently located midway between the university and the city center.

The next day I delivered my lecture on the same topic as in Auckland. I was introduced by Professor Janina Mazierska, head of the Institute of Information Sciences and Technology at Massey University and incoming IEEE Region 10 Director. The lecture was attended by 35 people, including faculty members as well as postgraduate and undergraduate students. The lecture was followed by an interesting discussion. Then a group of professors and I had lunch in a beautiful garden of the Faculty Club, full of blossoming shrubs and flowers. In the evening we enjoyed a supper, again with our hosts, in a stylish restaurant in the city.

On Friday morning, August 26, we began our tour of the North Island in a rented car. After some hours of driving I managed to adjust to the lefthand side traffic. During the extended weekend we visited several beautiful places, including Tongariro National Park, now probably better known as Mordor of the *Lord of the Rings* movies, Lake Taupo, and Rotorua. In Tongariro we reached the snowy slopes of Mt. Ruapehu, a magnificent volcano and renowned ski resort. Lake Taupo is New Zealand's largest lake and crater, resulting from a violent volcanic activity. The major attraction of the Rotorua area are geothermal sites, including Wai-O-Tapu (Sacred Waters) with its colorful lakes, mud pools, water, and steaming fumaroles. In the Rainbow Springs Nature Park we saw native birds, such as kea, tui, paradise duck, and, of course, kiwi. Saturday evening we enjoyed a Maori cultural performance with traditional dances and songs. The next day, the major attraction was a visit to Hobbiton, near Matamata, a beautiful, hilly sheep farm with hobbit holes from *Lord of the Rings*.

Monday, August 29, we flew to Christchurch, the largest city of the South Island. At the airport we met Professor Kris Pawlikowski of the University of Canterbury. We were hosted by him and his lovely wife, Barbara, in their beautiful home. In the evening I had my first lecture at the Department of Electrical and Computer Engineering, attended by about 15 participants, mainly IEEE members from industry. The title of the lecture was "Architectures of Intelligent Optical Networks." The next lecture, held on Tuesday morning at the Department of Computer Science and Software Engineering, was entitled "Control Plane for Intelligent Optical Networks." It attracted about 20 participants, mostly faculty members and students of the university. Both lectures triggered interesting

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A New Focus for New Conditions

Mostafa Hashem Sherif, AT&T

The literature dealing with the emerging service-oriented economy rarely considers telecommunication services explicitly. Global telecommunications and information infrastructure are typically viewed as a way to gain a competitive advantage through round-the-clock operations. Yet the multiplication of telecommunication services and their incompatible delivery mechanisms underline the need for seamless integration. Unfortunately, without technical contributions on the subject, many faulty assumptions will remain unchallenged. Perhaps the severe crisis that befell the communications industry since 2000, which is forcing a reexamination of the IEEE portfolio, would also encourage a fresh look at the content of applied technical conferences.

Successful service delivery requires not only networking technologies, the traditional focus of our conferences, but also support systems for operations, administration, and maintenance as well as efficient methods and procedures to manage the workflow. In the past, all these elements were bundled together. Today, telecommunications offers are no longer vertically integrated, with functions split among several groups of independent service providers, as shown in Figure 1. Infrastructure providers offer basic connectivity independent of network providers. Virtual operators or low-cost alternatives buy connectivity using long-term contracts or on the spot marketing and then resell that capability to content providers. These, in turn, handle call centers, electronic commerce, news distribution, and entertainment. Contents can also be packaged through portals and aggregators. On a grander scale, projects for intelligent cities (http://www.intelcitiesproject.com) that integrate many streams of information create a slew of additional problems not only with respect to the user interface, but also regarding maintenance, diagnostics, and repair.

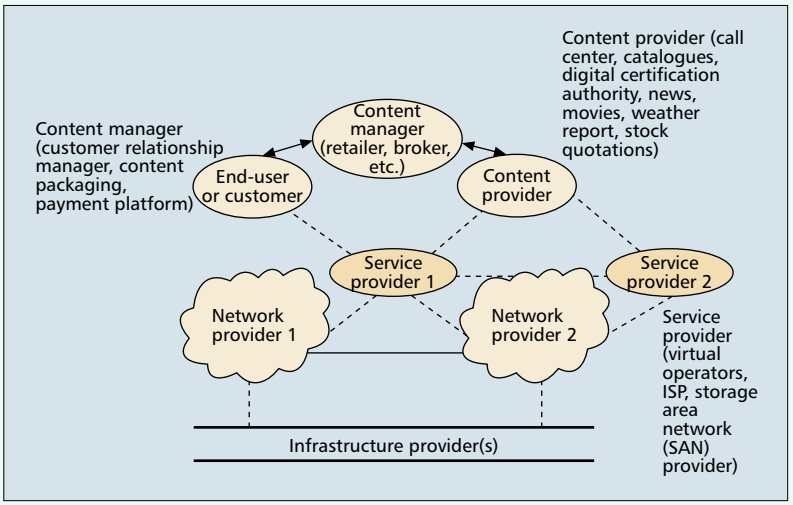

Figure 1. *Current architecture of telecommunications services.*

Despite the complexity of this picture, the focus of many technical conferences does not go beyond the network. It is true that network elements lay the foundation, but, as indicated above, successful service delivery requires considerably more than that foundation. The trend of "zero provisioning" initiatives to automate the relevant processes points to many technical problems that need to be addressed. Our typical conferences focus on the technologies of successive network elements and give little attention to the problems of large-scale deployment of these network elements within the current service architecture, or to operations support system (OSS) automation and interoperability across networks. These issues appear late in the technology life cycle when most of our attention would have switched to another networking technology. This is illustrated in Figure 2. In addition, there is a phasic relation between the deployment of equipment and service introduction that should also be considered.

Figure 3 shows the evolution of revenues for X.25 networking technology during its obsolescence. The first observation is that the revenues from X.25 services exceeded those from equipment sales. Also, the peak of equipment revenues preceded that of service revenues by about three years in the United States and six years worldwide. The most probable explanation for the earlier peak in the United States is that the switch to frame relay was faster in the United States because X.25 public data networks were less common.

A similar trend can be observed with frame relay. Figure 4 depicts revenues from the sale of frame relay equipment and

This paper is based on a presentation made ISCC2004, Alexandria, Egypt, June 29-July 1, 2004.

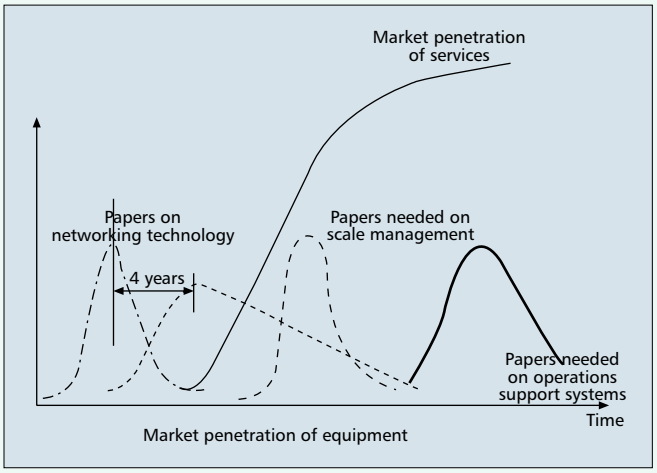

Figure 2. *Additional areas of focus that need to be addressed.*

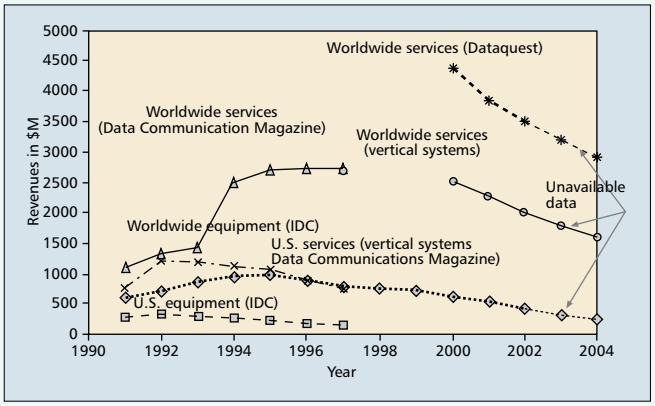

Figure 3. *Revenues for X.25 networking technology during obsolescence (dotted lines represent extrapolated data).*

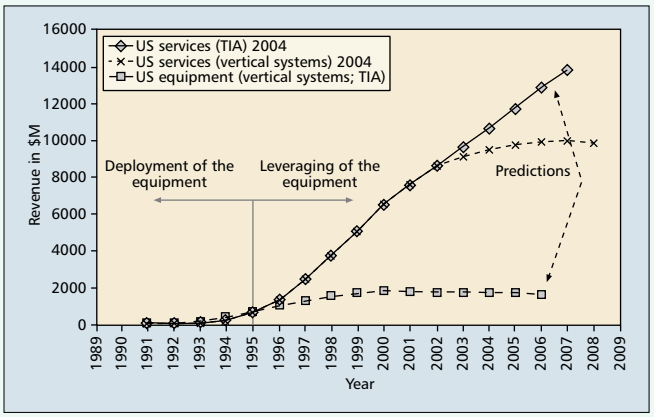

Figure 4. *Revenues for frame relay technology in the US.*

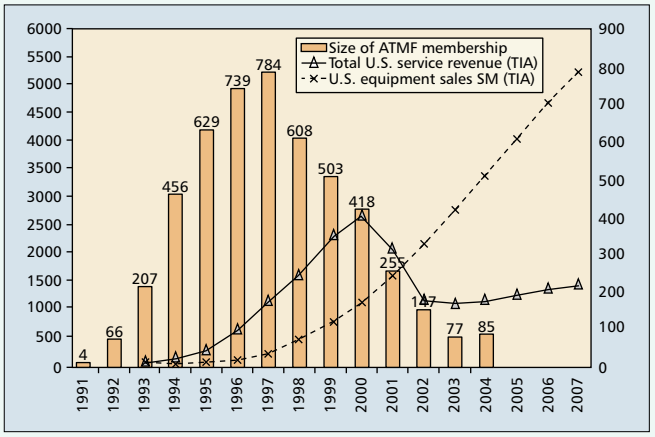

Figure 5. *Evolution of the membership in the ATM Forum and the sales of ATM equipment and services in the US.*

the revenues of services offered on public data networks in the United States. From 1995 on, service revenues exceeded equipment sales and continue to rise even though revenues from equipment saturated around 1999.

Clearly, equipment vendors and network operators have different time references for a substantial period of the technology life cycle. This is why network element manufacturers flock to a different technology as soon as the services for a given technology become established. Figure 5 displays the dramatic decline in the membership of the ATM Forum in parallel with the collapse of the ATM equipment market in the United States even though service revenues continued to grow. In other words, interest in a networking technology wanes after it is deployed, even though there are many issues that arise during the remaining life of a technology.

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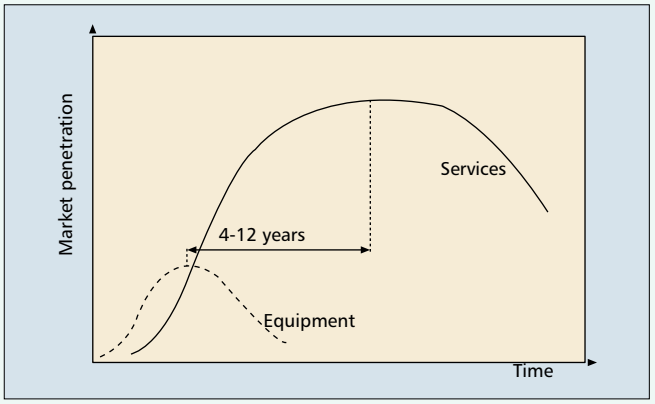

Figure 6. *Evolution of equipment and network services.*

Call for Submissions

IEEE Global Communications Newsletter (*GCN*) seeks original papers of general interest in the field of communications and related areas. Topics include, but are not limited to:

- National and regional developments in communications technologies, services, markets, and standards
- Pilot experiences in communications
- Communications research and development
- Reports on national and international large-scale projects (e.g., NSF, EU IST)
- Telecommunications convergence, regulatory, and legal matters
- Information and knowledge society
- New applications of communications in politics, health, education, commerce, security and defense, surveillance, agriculture, standard of life, handicapped people care, industry, tourism, space, transportation and navigation, environment, sustained development, globalization, and so on
- Research trends
- Market trends
- Historical perspectives in communications
- Education in communications
- Reports on key workshops or conferences
- ComSoc chapter activities

Authors willing to present research results in communications are encouraged to avoid exhaustive or theoretical descriptions and focus on the general interest of their work. In that case, they should cite the sources (project URLs, journals, conference proceedings) where detailed descriptions can be found.

Authors willing to submit reports on workshops or conferences are especially encouraged to do so for IEEE-backed ones, although *GCN* is open to disseminate the conclusions of any event in the field of communications.

Please check previous issues in *IEEE Communications Magazine* or contact Joang.Haro@upct.es or javier@det.uvigo.es if there are any questions about the suitability of a paper.

Prospective authors should prepare their manuscripts preferably in plain ASCII or MS Word format, with a maximum length of 1200 words, and send them to either of the submission addresses below. MS Word files may have pictures and tables embedded (subtract 200 words per each figure or table). Alternatively, provide them as separate files using any standard coding. Only send screen dumps if strictly necessary, since they will be subjected to a minimum resolution of 300 dpi in the final version.

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Joint Symposium: A Sister Society's Activity
By Dr. Jacob Baal-Schem - Israel

A Symposium on Personal Area Communications and the Smart Home was held in Tel-Aviv, Israel, on June 1–2, 2005 with more than 120 participants. This Symposium was the first event in a series of Consumer Communications and Networking Symposia, Israel (CCNSI) planned to be held yearly in conjunction with the Sister Societies Agreement signed between the SEEEI and ComSoc in 2004. The Symposium was organized by the SEEEI (in agreement with the Israel IEEE Communications Chapter) and received technical co-sponsorship of the Communications Society. It was co-chaired by Jacob Baal-Schem (SEEEI) and Alex Gelman (ComSoc), and enjoyed the presence of ComSoc President Curtis Siller and CCNC Steering Committee Chair Robert Fish.

The idea of holding a series of joint Symposia was brought up during the signing ceremony of the Sister Societies agreement renewal, held during the IEEE Israel 50th Anniversary Convention in 2004. The Society of Electrical and Electronics Engineers in Israel is a "young" national society, which has split recently from the AEAI (Association of Engineers and Architects in Israel) and conducts many professional activities, including conferences with large audiences. CCNSI is scheduled to become a "daughter symposium" of ComSoc's yearly CCNC.

The Symposium Opening Session included greetings by the ComSoc President and SEEEI President, a Keynote Lecture on "Pervasive Peer-to-Peer Consumer Communications" by Dr. Alex Gelman of Panasonic Labs. and a Guest Lecture on "Using Personal Communications to close the Digital Gap" by Mr. Hanan Achsaf, former vice president of Motorola Inc.

The Keynote Lecture of the Plenary Session on the second day was presented by Dr. Stefano Galli of Telcordia and dealt with "Recent Results on the Modeling of the Indoor Power Line Channel." Both keynote lecturers, sponsored by ComSoc where well received and their presence enabled information exchange and discussions on methods and applications of Personal Area Communications.

Lecturers from Israel academic institutions and industrial companies presented visions and applications for the Smart Home and Smart Car, by wireless and power lines as well as control systems of buildings and highways. In general, it was felt that this was a good outcome of the Sister Societies program.

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DISTINGUISHED LECTURE TOUR/*(cont'd from page 1)*

and stimulating discussions. They were continued at lunch with the members of the IEEE local section at the Staff Club.

On August 31 we boarded the "Tranz Scenic" train, crossing the South Island from Christchurch at the Pacific Ocean to Greymouth at the Tasman Sea coast. The views of mountains we crossed were spectacular! In Greymouth we stayed in the Kia Ora Homestay run by Ashley and Linda Marley. This was a warm and home-like place. The same day we went to Punakaiki, and then walked down through a subtropical rainforest to the famous Pancake Rocks at the sea coast. Next day we made a full day trip to the Franz Josef Glacier. Equipped with crampons, we climbed its spectacular front. On Friday, September 2, we visited Shantytown, a replica of an 1860s West Coast gold mining town. Definitely, the most important attraction was successful gold panning! Later the same day, we took a coast-to-coast bus, and via Arthurs Pass we returned to Christchurch.

The last day in New Zealand was devoted to the city itself. Barbara drove us to beautiful spots overlooking the Pacific Ocean. Then we visited the spectacular new building of the Christchurch Art Gallery. Several exhibitions of contemporary art were quite impressive. Something more to remember, especially since the next day we had to leave this beautiful and well organized country. I feel really grateful to all my hosts in Auckland, Palmerston North, and Christchurch for their hospitality and assistance as well as to Fanny Su and Serena Dhing of the IEEE ComSoc Region 10 Office in Singapore for their perfect, as usual, organization of my tour.

NEW FOCUS FOR NEW CONDITIONS/*(cont'd from page 2)*

One reason for the time lag between equipment and service sales is the significant amount of effort needed to procure, test, and deploy the networking infrastructure in public telecommunications networks. The process may take up to 12 to 18 months in the case of a new technology. In addition, migration of a large network to a new technology requires extensive preparation. Similarly, in the case of private line services, the peak revenues for telecommunications services lag peak equipment revenues by anywhere from four to 10 years.[1] This inherent asynchrony between the development of equipment and network services is sketched in Fig. 6.

Clearly, the evolutions of networking technology and services are out of phase. The implications of all these observations have to be taken into account, not only in investment decisions but also on the management of technology and of course technology conferences. It seems to me that the technical community should pay closer attention to the complexities of telecommunications services over the entire life of a given technology with the objectives of resolving the technical problems and assisting decision makers in grasping the overall picture.

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[1] McCalla C. and W. Whitt (2002). A time-dependent queueing network model to describe the life-cycle dynamics of private-line telecommunication services. Telecommunications Systems 19: 9-38.