Global
Communications
Newsletter

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– Chapters Report –
The Communications Society's Malaysia Chapter: Marching into the Next Millennium

Borhanuddin Mohd Ali, Malaysia

Malaysia is entering an exciting new era. The new Multimedia and Communications Act has replaced the old Telecommunications Act, as of 1 April, 1999. The new law attempts to address the convergence paradigm experienced by the telecommunications, computer and broadcasting industries. A new body called the Multimedia Commission now takes over from the Telecommunications Department as the sole authority to administer the new industry, filling most of the roles of the previous department but also addressing the emerging issues arising from convergence.

The Communications Society's Malaysia Chapter believes that we could play an important role in helping those who work in the telecommunications industry at various levels to stay informed about the current challenges arising from convergence and seize the opportunities that abound.

This Chapter was only formally established in 1998 after its first Annual General Meeting. Nevertheless, the Chapter has been active since the IEEE Malaysia Section was established in the early 1990s.

From a humble beginning of a dozen members or so it now enjoys the support of approximately 180 members comprising people from the various industries, academia, and students. We aim to keep this figure rising despite the economic turmoil that has beset this country over the past couple of years. This is shown by the 20 percent membership increase in 1999. Even though we are quite happy with the performance so far, we believe that there are still plenty of avenues for improvement, especially when we note that not many of the present members come from telecommunications companies despite the fact there are so many telcos and vendors operating in this country. This is one of the weaknesses we aim to remedy.

The present executive committee elected during the first General Meeting in 1998 are as follows:

Chair: Borhanuddin Mohd Ali, Universiti Putra Malaysia
Vice Chair: Jaafar Mohd Abu Bakar, Ericsson Academy
Secretary: Mahamod Ismail, Universiti Kebangsaan
Treasurer: Wan Hassan (Petronas)
Members: Deepak Kumar (Insitute of Technology Mara), Razif Ramli (Times Telecoms)

One of our earliest intiatives was the formation of the Malaysia International Conference on Communications (MICC). This was recognized as an important milestone for the chapter and has since gained international recognition from various countries in the region and around the world. The lack of such a conference has hindered local researchers from presenting their research works to the research community while sharing experiences with their counterparts from other parts of the world. We see this as a vital element in promoting research and global understanding.

The first MICC was held in Kuala Lumpur in 1993, attended by approximately 60 people. The following conference, which attracted 120 participants, was held on the legendary island of Langkawi off the north coast of Peninsula Malaysia. In 1997 it returned to Kuala Lumpur, in a venue very close to the Petronas Twin Tower, now the tallest building in the world. That conference was jointly held with ISPACS (Intelligent Signal Processing and Communication Systems), a conference organized by Comsoc Region 10. Turnout improved to 150 people, and 180 papers were presented.

Even though the economic crisis started to besiege this country in 1997, the Chapter determined to weather the storm and persevere. After much soul searching, the Chapter strengthened its resolve and went on to organize the next MICC, to be held in the historic city of Melaka, in mid November 1999 (http://www.eng.ukm.my/ micc99).

This time we are fortunate enough to have as a partner the International Symposiums on Consumer Electronics (ISCE 99), sponsored by the Region 10 Consumer Electronics Society. With the help of attractive locations that offer plentiful tourist attractions, especially those historical relics dating back to the era of Portuguese occupations in the 15th century, we hope to draw more overseas participants this year, the economic turmoil notwithstanding.

In between the MICC, we have sponsored the National Conference on Telecommunications Technogy (NCTT). Although this conference has been mainly restricted to Malaysian presenters, we have had high quality research papers comparable to many international conferences. The inaugural NCTT in 1996 was held in Kuching, Sarawak, a city in the northern part of the fascinating Borneo island, home to some of the awesome wonders of nature, one notable example being the biggest limestone cave network in the world. Approximately 50 people attended this conference. The second NCTT was held in Universiti Putra Malaysia, just south of Kuala Lumpur, located within the MSC area. Approximately 75 people attended and 50 papers were presented.

There have been other programs that have been held in between these major events.

Comsoc has an important role to play among the communications and multimedia companies in Malaysia. The Multimedia Super Corridor, which aims to propel Malaysia into the

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– Distinguished Article Series –
The Future of Wireless Telecommunications in Europe

Prof. Andrzej R. Pach
Poland

Currently, data traffic exceeds voice traffic on many wireline networks. It is rather obvious that the same trend will be observed for mobile networks in the near future, caused by the proliferation of third-generation (3G) services. personal Internet and Personal multimedia will be driving forces in the next five years. However, in order to achieve success, significant work needs to be done by operators and vendors in the areas of standardization and new technologies. 3G will not only lead to enhanced quality, but also transform the ability of operators to create new mobile services. This will bring a great enhancement of person-to-person, business-to-consumer and intra-business communications. These areas hold great challenges for content and service providers to increase bandwidth as well as revenues. This is the basis for the birth of a wireless information society.

The key issue is the choice of technological platform. Network operators with a license for Universal Mobile Telecommunications System (UMTS) technology will find that wideband code division multiple access (WCDMA) will be suitable for mobile multimedia. Implementation of WCDMA will be evolutionary rather than revolutionary, made in consecutive phases. WCDMA will provide a better quality of transmission and increased spectral efficiency. This, in turn, will lead to higher capacity, larger coverage and lower energy consumption. Since WCDMA is suitable for all environments, it is possible to design an efficient system for interfrequency handovers. This will allow us to build multilayer networks able to cover both urban areas and indoor environments. From the users' side, visual information is of particular interest, so it is a real challenge for the industry to develop service and terminal platforms. The first step in ensuring information compatibility for mobile multimedia services is the creation of a common information format and a standardized communications protocol, such as the Wireless Application Protocol (WAP). WAP has been defined in such a way as to fit different services of portable devices and designed so that all types of applications can be easily created. For example, if an application is put on the Internet, it is available to all mobile users through WAP. Future developments of WAP will include image file formats, allowing the transmission of still or moving pictures.

In order to ensure rapid development of services, a common platform for applications residing on terminals is indispensable. So in the near future, much work should be devoted to developing an operating system suitable for mobile multimedia terminals. In particular, this operating system should allow JAVA applications to be downloaded and run. In Europe, Nokia, Alcatel, Siemens, and Ericsson, as well as leading network operators, will play the main roles in the future wireless information society. However, it is assumed that significant innovation will be done in the framework of the 5th Framework Programme of EU RTD (as defined in the Commission's proposal for creating a user friendly information society). For example, an emphasis was put on new-generation telemedicine services. The work should include development of medical digital assistants integrated with dependable mobile and wireless information and communication services, including satellite-based services. The RTD is expected to provide tools for distributed health care services and to support access to care 24 hours a day across borders and for people in remote and isolated areas. A modern wireless infrastructure is necessary to achieve this ambitious goal.

Another target defined in Key Action I: "Systems and Services for the Citizen" is intelligent transport infrastructure and mobility management. The objective of this action is to develop intelligent infrastructures for data capture, processing, exchange, and distribution covering all transport modes to support traffic and demand management, collective and individual transport, fleet and freight operations for the whole logistics chain, and integrated sustainable transport operations in cities, rural areas, and trans-European networks. Emphasis is placed on the enhancement of terrestrial and satellite communication, positioning and observation infrastructures (including UMTS and GNSS2) in view of their adaptation for traffic surveillance and control, tracking and tracing, telepayment, and guidance. Priority will be given to media-independent and open architectures adapting mobile network intelligence and terminals for optimal use in transport.

The essential emphasis on the development of 3G wireless systems was put on Key Action IV.5, entitled "Mobile and Personal Communications and Systems," including satellite-related systems and services. According to the 1999 work program, the activities should focus on the move to an integrated seamless network that ensures global personal connectivity and enables access to broadband wireless multimedia communications and services by anyone, from anywhere, at any time. The prospective work includes four research areas: reconfigurable radio systems and networks; terrestrial wireless systems and networks; integrated satellite systems and services; and advanced tools and technologies for wireless communications.

The goal of work in the area of reconfigurable radio systems and networks is to lay the foundations for allowing the radio network, including terminals and base stations, to adaptively/automatically adjust to traffic and user requirements. Architectures enabling the user to transparently access customized services over heterogeneous (terrestrial and satellite) networks operating across different frequency bands are to be developed and validated. Particular emphasis will be placed on the design and development of advanced reconfigurable terminals and base stations, as well as on the appropriate download mechanisms.

Work in the area of terrestrial wireless systems and networks is intended to investigate, develop, test, and validate advanced terrestrial wireless systems and architectures and their interworking and interoperation, in particular with fixed broadcasting networks. This work spans broadband wireless access and distribution systems, as well as backbone wireless alternatives supporting interactive (quasi) real-time and bandwidth-on-demand services. It covers network planning, resource management techniques, flow control, signaling, quality of service focusing on managing complexity and on wireless-optimized protocols, security, intelligent roaming and handover schemes, and user/service profiling, notably for integrated communication and navigation/positioning systems.

In the area of integrated satellite systems and services, work is intended to develop, trial, and validate novel technologies, architectures, and innovative broadband services in the context of satellite-based communication systems capable of providing access to low- or high-mobility users and interworking with other infrastructures. The work ranges from technology developments to architectures and service trials and validations exploiting new spectrum frontiers. It covers

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Now Crossing the Border to the New Millennium

Byeong Gi Lee, Director of the Asia Pacific Region

We have crossed the border into the new millennium. Did we prepare ourselves well enough to comfortably cross the border? The economic crisis that many Asia-Pacific countries faced during the past two years seems to be abating, which makes us feel much more comfortable. Even under economic hardship, the technical activities in the Asia-Pacific region have been continuously increased, and this indeed promises a bright future. To focus on the activities in the Asia Pacific Board, we find ourselves standing on much firmer ground now than two years ago, so we can say we are well prepared to enter the new millennium. I would like to take this opportunity to acknowledge all APB staffs for their dedicated contributions that made this possible. In the following, let me review what has been accomplished in this past two years and note new activities that have taken place lately:

APB Organization

We have established a new structure for the APB, which consists of a director, two vice directors, two secretaries, a treasurer, five committees (TAC, MCC, ISC, MDC, and CCC), and a support office. The five committees (and the chairs) are Technical Activities (Koichi Hagishima), Meetings and Conferences (Dan Keun Sung), Information Services (Iwao Sasase), Membership Development (Hyeong Ho Lee), and Chapters Coordination (Kwang Cheng Chen). Each committee has its own charter and is managed by the chair, two or three vice chairs, and a secretary.

APB Charter

We have established a new APB Charter, which consists of six chapters and 19 sections with an appendix. While the new Charter is based on the past Asia Pacific Committee Charter, it is much more diversified and comprehensive. It describes in detail the responsibilities of each constituent unit of the APB, including the director and chairs. In the appendix it specifies the nomination and election procedure for the director.

APR Homepage

We have installed, by renovating the Web page of the APC, a new Asia Pacific Regional Homepage at the URL http://www.fujitsu.co.jp/hypertext/flab/APR/ The new homepage is linked to the ComSoc homepage. It was developed under the guidance of the homepage vice chair, Hideo Kuwahara of the Information Services Committee, who maintains the page by himself.

AP Newsletter

We have improved the *AP Newsletter* under the leadership of Mr. T.K. Tan, the newsletter vice chair of the ISC. It is published biannually and distributed at ICC and GLOBECOME. Several past issues are also posted in the APR homepage. Recently, editor T.K. Tan and associate editor Chee Cheon Chui stepped down due to overwhelming responsibilities. Iwao Sasase, the ISC chair, and Tomoaki Ohtsuki, ISC secretary, have taken over the job.

AP e-mail Network

We have set up an AP e-mail network among all AP regional ComSoc members. It contains a variety of groupings, including country-based and committee-based lists. The work was done by the Membership Development Committee under the leadership of the chair, Hyeong Ho Lee. The e-mail network has contributed much in connecting all members for the distribution of information and services, but its use has been carefully controlled in order to minimize disturbing the members.

APCC-APB Best Paper Award

We have established the APCC-APB Best Paper Award, a joint award of ComSoc APB and Asia Pacific Conference on Communications (APCC) Steering Committee, thanks to the great efforts of Dr. Hagishima, the Technical Activities Committee chair, and his committee members. It is awarded to the best paper selected among all papers submitted to APCC each year. It consists of a certificate and a check of US$500 equally contributed by ComSoc and APCC. This award is the first of a series of awards planned by APB, including similar awards for the OECC, ISPACS, and APNOMS conferences that APB officially supports. The first award was presented to Junbiao Zhang and Maximilian Ott of C&C Research Lab., Princeton, NJ, USA, for the paper entitled: "ANSWER: Information Routing Based on Active Networks".

APB Logo

We have designed an official APB logo through a design contest. In the contest conducted last year, Tesuo Tsujioka at NTT, Japan, won the first prize for the design that adopts the ComSoc logo as the substrate on which the letters A and P are placed. Further professional refinement was arranged by APB vice director Naohisa Ohta of Sony Corporation, Japan. The AP logo now appears in all APB materials, including the *AP Newsletter*, APB Award, and APR homepage.

APR Chapter Chairs Meeting

We have organized, under the leadership of Kwang Cheng Chen, the CCC chair, the first AP regional chapter chairs meeting. The meeting was held in Beijing in October during the APCC Conference. Five chapter chairs and delegates from 18 chapters participated in the meeting. While participation was somewhat lower than expected, the meeting was highly received among the participants. It was commonly perceived that such a meeting contributes significantly to exchanging experiences among chapters in more direct and effective ways, so it was proposed unanimously that we hold such a meeting at every APCC conference in the future.

Conferences Supported by APB

We have formally established that the APB support the following international conferences: APCC, ISPACS (Intelligent Signal Processing and Communication Systems Workshop), OECC (OptoElectronics and Communications Conference), and APNOMS (Asia Pacific Network Operations and Management Symposium). The four conferences are well established international conferences with significant contributions being made by AP regional members in a balanced manner. Under consideration for future support are ICACT (International Conference on Advanced Communication Technology) and WPMC (International Symposium of Wireless Personal Multimedia Communications), but subject to evaluation by a procedure to be established by MCC.

Others

We have also made much effort to promote ComSoc's Distinguished Lecturer Program and Student Travel Grant Program. In recent years we have had DLT visits to several Chapters by Manu Malek and Nelson Sollenberger. The STG is a student members' favorite program, through which many student authors receive support to travel to ComSoc's major conferences, including ICC, GLOBECOM, INFOCOM, WCNC (formerly ICUPC), NOMS and IM.

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LEO Satellite for R&D in Singapore
K. R. Subramanian, Singapore

Nanyang Technological University (NTU) of Singapore, together with the University of Surrey in the United Kingdom, launched successfully on 21 April 1999 a mini-satellite, the largest launched by any educational institution in the Asia-Pacific region.

Recognizing the importance of deploying satellites for information gathering and dissemination in today's global and highly linked economy, the School of Electrical and Electronic Engineering (EEE) of NTU is focusing its R&D work in both the space and ground segments of satellite systems, particularly low earth orbit (LEO) satellite systems. It collaborated with the University of Surrey in the design and development of the Merlion communication payload for the UoSAT-12 mini-satellite.

The S$15.5 million satellite blasted off on a Dneper launcher, a converted inter-continental ballistic missile, at the Russian launch site of Baikonur in Kazakhstan. The 350-kg satellite is now in orbit 650 km above the earth, circling the globe once every 90 minutes. It is expected to have an operating life span of about five years.

The satellite will allow researchers to find faster ways of moving data with less distortion. It is equipped with powerful cameras that can zoom in on the earth to take pictures of objects no bigger than 10 m. The launch of the satellite has marked NTU's entry into the next phase of the satellite activity that aims to fully design and build a satellite entirely by NTU researchers and students.

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MALAYSIA CHAPTER REPORT/*(Continued from page 1)*

big time players of the new and emerging technologies, play hosts to large numbers of talents from most major IT companies in the world. It is from this pool of talent that the Malaysia Chapter hopes to draw its future membership, with the mission to help them keep informed about the fast moving world of anything multimedia.

ASIA PACIFIC REPORT/*(Continued from page 3)*

Listed below are several major operational items planned for the year 2000.

Shape up the AP region by managing/conducting:
- APB meetings (May at ICC 2000, and November at GLOBECOM 2000).
- APB steering officers meetings (May at ICC 2000, and November at GLOBECOM 2000).
- AP office visit: December (AP Director).
- Article contributions to *Global Communications Newsletter* (AP director's reports, AP office reports).

Promote ComSoc membership (Sec/MDC):
- STG program support.
- AP e-mail network update and maintenance.
- Membership statistics collection/analysis.

Strengthen technical activities (TAC/MCC)):
- Enhancing and expanding the APB Best Paper Prize program.
- Technical session arrangements in ICC, GLOBECOM, etc.
- Reviewers' list update/maintenance.
- Promotion of AP regional conferences: APCC, ISPACS, OECC, APNOMS.
- Conference statistics collection/analysis.

Improve member services (ISC):
- AP region homepage improvement and maintenance.
- Publication of *AP Newsletter (*May and November).
- Other information distributions to members.

Activate chapters coordination functions by supporting:
- AP regional chapter chairs meeting (May or November).
- DLT program coordination.
- Executives' chapters visit promotion.

THE FUTURE OF WIRELESS IN EUROPE/*(Continued from page 2)*

spectrum/power-efficient access schemes, support of packet-based services, integration of satellite and terrestrial networks, global network management, seamless service provisioning, and the integration of navigation and communication systems and services.

Efforts in the area of advanced tools and technologies for wireless communications are intended to investigate, develop, integrate, and validate advanced, innovative tools and wireless technologies that are necessary to facilitate a mass-market adoption of diversified wireless terminals, networks, services, and applications, while maximizing spectral efficiency and allowing in particular for the exploration of new spectrum frontiers. Such tools and technologies will address the needs of wireless terrestrial and satellite systems and networks operating in a broad range of frequencies. Particular emphasis is placed on the integration of such technologies in future-generation broadband systems and networks, from cellular to broadband fixed radio access and broadband wireless local area networks.