Global
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# Distinguished Lecturer Tour in Latin America – October 2008

*By Stefano Bregni, Italy*

The Distinguished Lecturer Program is one of the best initiatives of the IEEE Communications Society. It brings distinguished experts to give lectures at Chapters on all continents. It boosts ComSoc globalization by giving equal opportunities to all Chapters worldwide, since it allows students and professionals to attend open lectures given by world renowned experts in their city. It is a honor and a pleasure to serve as a Distinguished Lecturer.

This was my fifth Distinguished Lecturer Tour (DLT) in Latin America. In the five years I served as a ComSoc Distinguished Lecturer, I visited 17 Chapters in 10 different countries of Latin America, some of them repeatedly. I appreciated the activity and efficient organization of all those chapters, especially the Student Branches, the outstanding commitment and kindness of IEEE volunteers, and — last but not least — the extraordinary beauty of all these places. For this 2008 DLT, a special thank is due to Nelson Fonseca (LA Region Director), the Chapter Chairs, and all the other enthusiastic professors and students for their joint organization effort. Muchisimas gracias a mis amigos y amigas Peruanos, Bolivianos y Colombianos!


*Me (3rd from left), Doris Rojas Mendoza (5th), Fredy Campos (7th), and other volunteers of the Lima ComSoc Chapter after my lecture at Universidad Nacional de Ingegneria, Centro de Tecnologias de Informacion y Comunicaciones, Lima, Peru.*

## Summary of Lectures

My 2008 DLT was one of the longest I ever went on: I visited Lima, Cuzco, La Paz, Medellin, and Bogota from 13 to 27 October 2008. In 14 days eight lectures were given, four days were fully taken by traveling, with only two days left free for sightseeing.

Lectures entitled "Synchronization of Telecommunications Networks," "Synchronization of Next-Generation Networks," and "Introduction to SDH Transmission Systems" were given at:

1, 2) Lima, Peru, Universidad Nacional de Ingegneria (UNI), CTIC, 14 October (two lectures)
3) Cuzco, Peru, ANDESCON2008 Keynote Lecture, 16 October
4) La Paz, Bolivia, Universidad Catolica Boliviana "San Pablo" (UCB), 20 October
5) Medellin, Colombia, Universidad de Antioquia (UDEA), 22 October
6) Medellin, Colombia, Universidad Pontificia Bolivariana (UPB), 23 October
7) Bogota, Colombia, Universidad Distrital Francisco Jose de Caldas (UDFJC), 24 October
8) Bogota, Colombia, Universidad Nacional De Colombia (UNAL), 25 October

## Lima, Peru

My stay and lectures in Lima were well organized by Fredy Campos, Chair of the Peru Chapter. Lectures were given at UNI and Centro de Tecnologias de Informacion y Comunicaciones (CTIC), where I was welcomed by the director Doris Rojas Mendoza. Unfortunately, my stay in Lima was very short and busy, with almost no free time to visit places. I arrived late afternoon on the 13th, gave two lectures on the 14th, and left for Cuzco in the early afternoon of the 15th. Therefore, I had almost no time to visit Lima, which alone would deserve at least one week just to appreciate its atmosphere, people, numerous historical places, and museums. I had only a few hours, on the evening of the 13th and the morning of the 15th before heading to the airport, to walk around the historical center and visit the two main archeological museums.

## Cuzco, Peru

In Cuzco I gave the keynote talk "Synchronization of Next-Generation Networks" at the ANDESCON 2008 conference on the morning of 16 October. I tuned the lecture to a tutorial level, because the audience background was heterogeneous and more oriented to electronic engineering. My stay and lectures in Cuzco were organized by Cesar Chamochumbi, Chair of the Peru Section, and Fredy Campos.

The altitude of Cuzco is 3400 m. At this altitude, in Italy I am used to skiing on glaciers in temperatures as low as –25°C. Cuzco was warm instead. I very much enjoyed this new feeling. The afternoon of 16 October I went to visit the Inca Archaeological Park of Sacsayhuaman near Cuzco, consisting of four sites with temples, buildings, and a fortress, built by Incas before 1500 AD. On 17 October I had a day trip to Machu Picchu. Machu Picchu is a wonder. The magic of the lost city, surrounded by high mysterious mountains and forests, is breathtaking. I walked a lot up and down the site, and followed the two-hour round-trip trail to the Puerta del Sol, the ancient entry gate to the site from the Inca Trail.

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# Ben Arabi, a New Spanish Supercomputer Connected with the World

*By Joan Garcia-Haro and Manuel Escudero-Sanchez, Spain*

During mid-March 2009, a new supercomputer called Ben Arabi, located in the Region of Murcia, Spain, began to serve to research centers and private companies located in the regional and national areas. The name, a little bizarre, comes from a distinguished philosopher of the medieval Kingdom of Murcia who lived around the 12th century.

The Ben Arabi singular computing equipment was added to the Spanish Supercomputer Network (RES). Previously, RES consisted of a network of seven supercomputers: Mare Nostrum (Barcelona), Magerit (Madrid), Altamira (Cantabria), La Palma (Islas Canarias), Picasso (Málaga), Tirant (Valencia), and Cesar Augusta (Zaragoza). In addition, the Ben Arabi supercomputer joins the Ibergrid initiative, which promotes cooperative research projects along the Iberian Peninsula. It is of course also connected to the Spanish Academic and Research network as well as to the HP CAST IBERICA (a proprietary network connecting all HP systems users devoted to intensive scientific computing). Ben Arabi joined the international grid efforts linking the most prestigious supercomputing centers in the world. In any case, the incorporation of Ben Arabi extends the geographical influence of all these networks to the southeast of Spain. Therefore, it is expected that with this high tech investment both the research community and the private sector will be able to take advantage of a first-level computing infrastructure in order to increase their productivity and competitiveness.

Ben Arabi has been installed in the Parque Científico de Murcia, an institution conceived as a space of excellence and innovation encouraging collaboration between academia and industry, intended to revitalize technology transfer and competitiveness in the regional economic system. The Ben Arabi computer was designed and developed by Hewlett-Packard. It has one node (based on shared memory technology) with 128 cores and a set of 816 nodes (of the blade type). It is able to perform up to 10.6 TFLOPS (tera-floating point operations per second). This capacity makes Ben Arabi the fourth most powerful Spanish supercomputer. Since 2 September 2008, Hewlett-Packard Spain along with CD-ROM S.A. (a local company) have taken the responsibility to install and maintain over time the hardware and software required. On the other hand, IBM Global Services has been responsible for deploying the necessary complementary infrastructure (air conditioned, power generator, fire detection system, uninterruptible power supply, etc.) at the supercomputer premises.

*Detail of the Ben Arabi supercomputer.*

Like other European countries, the Spanish productivity sector is being gradually delocalized to Asia or Eastern Europe. For this reason, the Autonomous Government of Murcia has made this technological decision, knowing that the future of the Murcia region must towar the knowledge society.

# IEEE ComSoc's New Certification in Wireless Communication Engineering Technologies

*By Rolf Frantz, Telcordia, USA*

In 2006, responding to the needs of its members who work in industry, ComSoc identified a certification program as a way to help these individuals enhance and demonstrate their knowledge of key technologies. Certification was also recognized as a way to help employers identify employees and job applicants who have the skills and knowledge to succeed. Of the numerous "hot topics" in communications that could have been selected for the first certification program, wireless was chosen because of the rapid pace of technological change. In addition, the tremendous growth of the industry has left employers struggling at times to find qualified employees to design, develop, deploy, and implement new products and services.

The IEEE ComSoc Wireless Communication Engineering Technologies (WCET) certification program awards the IEEE Wireless Communication Professional (IEEE WCP) credential to candidates who pass a rigorous examination. The exam, offered by computer-based testing at centers around the world, covers seven technical areas that span the breadth of wireless communications technology: RF Engineering, Propagation, and Antennas; Wireless Access Technologies; Network and Service Architecture; Network Management and Security; Facilities Infrastructure; Agreements, Standards, Policies, and Regulations; and Fundamental Knowledge. The 150 multiple-choice questions on the exam were created by practicing professionals in the wireless industry. They were vetted by a committee of wireless experts and assembled into an exam focused on testing the practical skills and applied knowledge employers in the wireless industry are seeking. Because the exam content is vendor neutral and trans-national, acquiring the credential can open up opportunities, whether within the same company or in a new company, in new technical areas, or even in other countries.

Candidates who have obtained the IEEE WCP credential report that preparing for the exam helped them learn their strengths and weaknesses. They see the certification as help in finding a better job and providing a level of trust in dealing with customers. One has reported that having the credential was a distinguishing factor in being awarded a consulting assignment. Another has said that he would weigh the IEEE WCP credential as a factor in making hiring decisions.

Potential applicants for the WCET exam have a wide range of resources to assist them, including a free Candidate's Handbook, a free subscription to a bimonthly e-newsletter, periodic free webinars, and free access, via the WCET Website at http://www.ieee-wcet.org, to a glossary of common wireless communications terms, a list of sample references, sample exam questions, and a list of known providers of WCET-focused training. Applicants can also purchase a practice exam, which they can

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# Spectrum Research Collaboration Program

*By Mohd Redza Fahlawi, Malaysian Communications and Multimedia Commission, and Borhanuddin Mohd Ali, University Putra, Malaysia*

The rapid advancement in wireless communications requires ever increasing radio spectrum, and this demand calls for efficient spectrum management. Balancing the spectrum needs of various parties or services based on demands from, for example, defense, government and public safety, private, leisure, and commercial services, is a complex exercise and requires a high level of expertise and foresight.

Realizing this, Malaysia's communications regulator, the Malaysian Communications and Multimedia Commission (MCMC or SKMM in Malaysian) has initiated the Spectrum Research Collaboration Program (SRCP) to invite universities and companies to conduct collaborative research on various aspects of spectrum management. A fund of RM4 million has been allocated, and 11 projects have been awarded as an initial phase. The overall objective of this program is to improve the administrative, regulatory, and technical expertise of frequency management in Malaysia.

Research themes derived from the key focus areas of SRCP have been identified for researchers to formulate their research proposals: emerging wireless technologies, spectrum management, and spectrum and us. A theme may also be adopted from the agenda items of the World Radicommunications Conference (WRC).

Under the theme of emerging wireless technologies, there is a need to study their impact on spectrum use, their compatibility or sharing possibilities, and other constraints. Some examples are high-altitude platform stations, ultra wideband, white space communications, and the use of software, cognitive radios, and other alternative technologies.

In spectrum management, issues unique to the tropical region such as rain fade for frequencies above 25 GHz and the impact of foliage due to the dense tropical forest are studied in order to better handle the constraints and design appropriate mitigation techniques.

Safety of users of mobile phones is another area of interest due to the increasing concern of the public about radio frequency radiation emitted from telecommunications base transmission stations and their own mobile phones. Their concerns stem from frequent reports on the dangers of these radiations emanating from the ever increasing numbers of BTSs in their surroundings. Through emission level studies in our environment, these concerns can be put into proper perspective for the public to understand and be accurately educated on the issues. Regulatory rules can be instituted regarding transmitter placements to ensure compliance with an accepted safety standard.

On the theme of spectrum and us, research addresses the social impact of various communication technologies, whether in urban communities or rural. The findings are of interest to various bodies in addressing the question of digital inclusion. Services can then be rolled out in collaboration with related government departments and stakeholders in order to make sure that takeup is effective and thus contributes to improved living conditions and productivity for the targeted groups.

The findings arising from the research are shared with interested parties, and SKMM launched a Web collaboration portal in 2007 to share and disseminate the knowledge as well as increase networking (http://www.spectrumresearch.com.my). The portal is also meant for conducting online discussion of the research topics, developing new ideas for new research subjects, and also announcing upcoming spectrum related events.

## *Research Projects in 2007*

For 2007, nine different subjects were awarded under five different themes shown in Table 1.

One important precondition for successful consideration of a project is that it needs to be collaborative in nature, involving more than one university, or among universities and industry. Partnerships among universities are best suited when the researchers must be independent with no conflict of interest; one example us the study of radio frequency radiation, which involves three universities and no industry involvement. On the other hand, research that involves testbed implementation is bes conducted in partnership with an industry player that would have appropriate facilities on which to base measurements, thus saving time and costs. One example is the

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| No. | Research subjects | Universities | Collaborative partners |
|---|---|---|---|
| 1 | Impact on the society | Universiti Teknlogi Malaysia (UTM) | University of Sydney, International Islamic Universiti Malaysia (IIUM), University of Kuala Lumpur |
| | | Universiti Kebangsaan Malaysia (UKM) | Universiti Utara Malaysia (UUM) |
| 2 | Radiation hazard | Universiti Tenaga Malaysia (Uniten) | UTM |
| 3 | Spectrum cost vs network cost | Universiti of Nottingham in Malaysia | First Principle Sdn Bhd |
| 4 | Cognitive radio | UTM | Uniten, IIUM |
| 5 | Frequency adaptive HF systems | UTM | Universiti Malaysia Pahang, Malaysian Red Crescent Society, RF Communication (a private company) |
| 6 | Frequency use above 25 GHz | Universiti Putra Malaysia | UTM, Universiti Sains Malaysia, IIUM Malaysia, CRC (Canada) |
| | | Multimedia Universiti (MMU) | Malaysian University of Science and Technology |
| 7 | Spectrum needs for IMT-Advanced | UTM | UKM, Maxis (a mobile operator) |
| 8 | Coexistence in extended C-band | MMU | MIMOS Bhd (a government research institution) |
| 9 | Synergizing 2G, 3G and WiMax | Universiti Malaya | DiGi (a mobile operator) |

**TABLE 1:** *The different research subjects and the universities involved for the first phase in 2007.*

## DISTINGUISHED LECTURE/*continued from page 1*

### *La Paz, Bolivia*

The trip from Cuzco to La Paz took me a good 10 hours, with a six-hour layover in the Lima airport. I thought it was a shame to waste this time in the airport, so I left my luggage and laptop at the airport and went to downtown Lima for a relaxing couple of hours.

Sandra Hidalgo, chair of the Bolivia Chapter, organized my stay and lectures in La Paz perfectly, treating me like one of her family. In La Paz, two lectures were scheduled on 20 October at UCB, but this plan had to be changed. That same day, Bolivia's President Evo Morales organized a mass demonstration of poor campesinos in La Paz. UCB, surprisingly enough, decided to suspend all activities, including my lecture, fearing the possibility of incidents. Actually, they demonstrated noisily but peacefully until late night. We had to move to the public National University: only 20 students were able to attend rather than the more than 100 initially expected.

On Sunday 19 October, Sandra organized a nice tour of Lake Titicaca for me with her family. We spent one hour in a small rowboat on the water, enjoying the warm sun and the clear blue sky at the outstanding altitude of 4000 m. On the afternoon of 20 October after the lecture, I went on my own by taxi to visit the Valley of the Moon, hidden somewhere among the amazing dry mountains around the huge depression where La Paz lies. This park features surprising pinnacles and cavities made of soft white sandstone eroded by rain.

### *Medellin, Colombia*

The trip from La Paz to Medellin was very long: it took me 12 hours including overheads. In Medellin I gave two lectures at UDEA and UPB on 22 and 23 October. I also had an interesting meeting at EAFIT University. The activities of ARTICA, an alliance between the universities of Medellin (UDEA, UPB, Universidad Nacional, EAFIT) and industry, were presented to me.

My stay and lectures in Medellin were organized perfectly by Ana Maria Cardenas, professor at UPB. Medellin is located in wonderful green country and has a mild climate. It is also famous as the city where the artist Botero was born. In the center the nice Plaza Botero features a dozen of his big bronze characteristic statues. The Museo Botero cannot be missed by any tourist with an interest in art.

### *Bogota, Colombia*

In Bogota, I gave two lectures at UDFJC and UNAL on 24 and 25 October. The lecture at UNAL inaugurated the new ComSoc Student Branch. After the lecture, I had the pleasure of toasting the new Branch with numerous students and Zoila Ramos, Coordinator of the Telecommunications Master.

My stay and lectures in Bogota were effectively organized by Carlos Andres Lozano Garzon, Chair of the Colombia Chapter. Former Chapter Chair Jose-David Cely was also always present. This was my second time in Bogota. In the free time after lectures, I enjoyed very much visiting again the Botero Museum and just strolling around the city mixing with the busy crowd.

The full report is posted at http://www.comsoc.org/socstr/org/chapters/LADLT/index.html.

## SPECTRUM RESEARCH/*continued from page 3*

study of spectrum needs for IMT-Advanced.

### *Research Projects 2008*

The second round of research collaboration was opened in July 2008. A total of 31 submissions were received, quite a significant increase from the number received in the first round in 2007. This is a good indication that the SRCP is gaining popularity in the local research community and will further help to grow the number of experts in the spectrum field. Of the 31 submissions, six research proposals were selected to be granted research funds for 2008.

### *Conclusion:*

The indications are that there is a lot of interest in spectrum related research in Malaysia. The rights to the outcome of this research rests with the respective research institutionsm but SKMM reserves the right to utilize them in order to assist it in drafting future policies, drawing suitable guidelines, and responding to WRC questions. Collaboration with overseas partners is also very much encouraged. This will serve to mutually enhance understanding of spectrum issues from a more global perspective.

## WIRELESS CERTIFICATION/*continued from page 2*

take multiple times to help assess their readiness and focus their studies in preparation for the certification exam. Later this spring, the *Wireless Engineering Body of Knowledge*, a book that surveys the seven technical areas covered by the exam, will be available for purchase from ComSoc or Wiley.

The certification exam was first offered in fall 2008. Of the candidates who took that exam, 85 percent passed and were awarded the IEEE WCP credential. The spring 2009 exam was offered in late March, and the results should be available shortly. The application window for the fall 2009 exam opens 6 July, and the exam itself will be administered between 12–31 October. For further information about WCET certification, visit the Website or email any questions to cert@comsoc.org. Members of the team that developed the WCET program are also attending conferences and IEEE meetings around the world. Watch for announcements of presentations or visit the IEEE ComSoc booth in conference exhibit areas for additional information about the benefits of obtaining IEEE WCET certification.


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STEFANO BREGNI
Editor

Politecnico di Milano - Dept. of Electronics and Information
Piazza Leonardo da Vinci 32, 20133 MILANO MI, Italy
Ph.: +39-02-2399.3503 - Fax: +39-02-2399.3413
Email: bregni@elet.polimi.it, s.bregni@ieee.org





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