Global
Communications
Newsletter

November 2001

A Report on Roberto Saracco's Latin America Distinguished Lecturer Tour

By Roberto Saracco, Italy

The Distinguished Lecturer Tour is one of the greatest ComSoc programs; it promotes the visit of a ComSoc distinguished lecturer to a ComSoc region so that members of the region can benefit from the lecturer´s views and experience.

Roberto Saracco visited the Bueno Aires Chapter and the Cordoba Section in Argentina, the Rio Chapter and the Bahia section in Brazil, and the Lima Chapter in Peru. Below is a report on Saracco's DLT Tour as well as some of the content addressed in his talk.

Nelson Fonseca

The topics I addressed seemed to be of interest to the various audiences, as I gauged from their questions. Depending on the audience, I stressed one aspect or another; I think that was appropriate since I was confronted with different people. In Buenos Aires they were mostly engineers (on the experienced side) and the focus lingered on telecommunications technology and related business. In Cordoba it was still engineers (experienced) but from computer fields, and I explored some aspects of distributed processing. In Rio it was definitely a student audience, probably because the talk took place at PUC University, so we spent time on service creativity and entrepreneurship. In Salvador it was a mixture of senior and junior technical people with interests varying from electrical power lines to computers with a sprinkle of telecommunications, and the talk provided some bridges across the various market and technical areas.

In Lima the lecture was hosted by the organization in charge of statistics on the use of information technologies, and the talk indulged in computers, their evolution, promises, and challenges.

Aside from the different flavors the talk was divided into two different but related topics. The first was a walk into the future of the future. New technologies, today available in labs, may move in coming years to the road, the office, and the home. They may change the way we use today's things, allow us to do more and in less time, to enjoy better our life.

On the way there are a number of stumbling blocks, and the lecture touched on some of them; but its main goal was to stimulate creative thinking. What would it be like to live in such an environment? What would it mean in my specific field, in my own township, in my country? Is there any new business I can create?

By the type of comments I received I think the objective was met.

The second topic was the evolution of telecommunications in the network economy. This is an important aspect because, as I said at the lecture, the impossible is easy (as the technological marvels keep proving to us); it is the anti-economical that causes problems.

The fundamentals of economy are still here in spite of the Internet revolution. We have witnessed the bubble grow and then deflate. What went wrong? Are we back to square 0?

I don't think so: the Internet is here to stay, and it has changed something about business, but not the fundamentals of business or the needs of people. This is important to recognize if we want to reap the benefits of the Internet and have our business thrive in the Internet age. I am pretty sure of this; one reason is that most of this presentation was prepared in 1999, before the bursting of the Internet bubble. I didn't need to change anything because what I was saying at that time is still valid today. I am not referring to any wizardry on my side in being able to look into the future. Had I been able to predict the inflation and deflation of the bubble now I would be around just doing DLTs rather than squeezing one into my business schedule. I am just highlighting the fact that the economy is not new or old. The Internet has added something: the fast triggering of network value in goods and services.

Telecommunications are changing not because of the Internet but because they have evolved to the point of making the Internet a worldwide reality.

What are the disruptive technologies that are going to reshape telecommunications architectures? What is the business of telecommunications? What is the business in a wireless world? Is there any business for a telecommunications company as the margin shrinks and competition gets global?

Well you won't get the answer here, but I think I pointed out to a number of ways to address these issues in my talks.

Some of the chapters visited are planning to put up the lecture material and even some videotapes of the lectures on their Web sites, so you can click and take a look.

Anyhow, I would like to share with you three basic issues I shared with them; issues that go across different areas, are important to each of us as "users," and have some deep implications for business and telecommunications.

The Myth of Convergence

Convergence has been the talk of the town for many years. Too many, probably. We should start to wonder whether it is for real or just a figment of somebody imagination. I'll vouch for that. I believe the myth of convergence derives from the drive of technical people to see the world as just an extension of what they are doing. Whatever they do is so nice that

(Continued on next page)

A Report on Roberto Saracco's Latin America Distinguished Lecturer Tour (cont'd)

everything should be a subset of it, and anyone should be using it. In the 1980 convergence had a name: ISDN; the most important part of it was the I: Integrated. It didn't turn out that way. In the following years we saw the emergence of a number of networks (wireless, frame relay, Internet, home networks, PANs, etc.). And it has just started.

We had the PC and we tried to put everything on the PC, squeezing it to fit different needs. And then cell phone organizers, PDAs, and game stations came and claimed their place in the world.

I challenged the people at the lectures, and I do the same to you: do you have a cell phone? If the answer is yes let me ask you a second question: do you wear a watch? Your answer, I am pretty sure, will be yes. So let me ask you a final question: why do you wear a watch since your cell phone can give you the time?

You see the point: technical people and engineers love to cram their "toys" with all imaginable features, but users just like to have things whose form and shape is just right for the function.

Hence my belief that the future will bring more and more divergence in terms of things we use. This divergence is powered by the ingenuity of many many people around the world creating new things and by the basic need of users to "keep it simple."

The Myth of "Broadband"

We have been pushing technology well beyond any imaginable limit. It just makes sense to us to move from narrowband to broadband networks. However, we forget that the narrowband network was created for voice, which is a narrowband streaming service and will remain so. When we increase the network capacity we use the same paradigm of voice. The problem is that capacity as such is becoming very, very cheap, but streaming — ensuring continuous transport capacity without any glitch — is not.

I don't believe that the future of our networks is to provide huge bandwidth for streaming. I think most of the services we can think of, including video, just need a high-capacity network able to transport data in burst. Forecasts indicating that the market for streaming video will rise a hundredfold in the next four years is looking at a potential demand from the user side. But video can be transformed into burst provided you have local storage capacity to spare. And pretty soon we are going to have plenty.

This is my scenario. I am driving home from the office and from my car I dial the video service provider to request a movie, indicating I will want to watch the movie starting at 9 o'clock tonight. Now it is 6 p.m., so the service provider has three hours to find the best time to download the movie on my video recorder. I don't care whether the download is going to take 10 seconds or two hours as long as I have the movie available by 9. The service provider just needs a (cheap) high-capacity network and will transfer the movie to my house in bursts of data.

In addition to voice I see very little need for a streaming network (some telesurgical operation ...). This view is consistent with an IP-based network and with the run for the cheap.

Transport capacity is already overshooting needs. We have 600 fibers connecting Frankfurt, Amsterdam, London, and Paris; as of today only 50 are in use. Even more interesting, British Telecom Ignite is offering 2.5 and 10 Gb/s channels; the nice part is that they are offering this transport capacity to operators who own fibers but are finding it cheaper to rent capacity than to illuminate and maintain fibers.

Storage is already on the order of tens of dollars per gigabyte. Having a hard disk in a video recorder is likely to add less than $50 to the price within two or three years, including the MPEG decoder; and I could have sufficient space to store 10 movies.

There is also another "twist" we should consider before falling in (unconditional) love with broadband: the wider the band, the less money you can make out of it. Ever considered how much a megabyte costs? For 1 Mbyte of Short Message Service (SMS) in Europe operators charge something like $1000; one Mbyte of voice over a cell phone is charged around $1, while 1 Mbyte of voice over a fixed phone goes for 10 cents. And if you wonder about television's megabytes, well, they go for a fraction of a cent.

The Myth of Wireless

The license race has ruined many and it was triggered by the idea that the future is in both data and wireless.

I believe it will be mostly voice and fixed line. Don't shoot at me. Let me explain.

A research study[1] released by Berkeley early this year has indicated that voice on the telephone is by far the king of information produced in 2000. Human beings talk long before being able to read and write, and they love to talk. Consultants and industry experts have declared that data has overcome voice, but this is just because they measure the number of bits vs. analog signals. Today almost everything is coded and transmitted in bits in telecom networks. But if you look at the edges of the network where your modem and your ears are, you see that the ear (and tongue) is leading the game. In the future we are going to have much more information on the Web and many more ways to access it, from PDAs to information appliances. Among these I suspect we will see a lot of access taking place using voice browsing and voice responses. And voice is eating up a lot of bandwidth (all together). Progress in voice syntheses and recognition has led to voice platforms such as the one proposed by Loquendo[2] that are both flexible and cheap. Moreover they bridge the convenience of companies to connect their information systems to the internet for an immediate access by clients to the easiness of use clients are looking after.

We will also see a tremendous increase in machine chatting, such as in the localization area, but this requires very short messages.

The basic line is that voice will continue to be a tremendous source of revenue in the years to come.

Let's come to the wireless part. Air spectrum is a precious resource for physical reasons. Optical fibers provide almost unlimited capacity. Put the two together and you see where we are likely to go.

However, ask anyone in 10 years time what kind of telecommunications network they use, and everybody will tell you: why, of course, the wireless network!

The point I am making is that everybody will feel like they are using wireless since they will no longer see any wires dangling from whatever they use to connect. But this wireless connection in most cases is likely to be just a few meters long, connecting their device to a wireless LAN that will hook onto a fixed network. We already have technologies like IEEE 802.11, UWB, and Bluetooth. We will see more coming. Cell networks are likely to be used for special purposes (e.g., when rapidly moving) or for areas with limited traffic.

---

[1] *http://www.sims.berkeley.edu/how-much-info/internet.html*

[2] *http://www.loquendo.com*

Malaysia: Telecommunications at a Crossroad

By Naim Yunus, Malaysia

The global excitement over the prospects of the implementation of the much-hyped 3G (IMT-2000) services does not spare Malaysia either. The Communications and Multimedia Commission (CMC), the regulatory authority of the nation, got the ball rolling by issuing a discussion paper in November 2000 which attracted numerous responses from the operators, vendors, interest groups and private individuals.

The prevailing thinking is that CMC should award three 3G licenses via a "beauty contest" or maybe a hybrid of a beauty contest and an auction. The mechanism is yet to be disclosed by CMC who seems to be taking its time in deliberating the process, hopefully aided by the 3G submissions mentioned above. This is a good sign since much turbulence is happening in the Asian 3G and economic scenes, that it would be prudent for Malaysia to wait and see where the dust settles. Incidentally Malaysia is in luck that the present five 2G operators are all adopting the GSM standards, and hence the natural migration path to 3G would seem straightforward via the W-CDMA path.

Telekom Malaysia, the nation's biggest carrier, is the best bet to win a 3G license. The second license will probably be offered to a consortium of existing 2G operators; the third license (if at all necessary) to a newcomer.

It also makes sense for Malaysia to adopt the interim 2.5G technologies, especially GPRS, as a precursor to the eventual full- fledged 3G services. Furthermore, the current 2G operators haven't really recovered the investments worth billions of dollars they sunk into their GSM networks; hence, the GPRS route is a less costly approach. In fact, some cellular operators are already having GPRS trials (the lack of handsets is not deterring them) to test the technology out. However, with the limited number of 3G licenses to be issued, some of the current 2G operators will have no choice but to use GPRS to enhance their services. They would then have to be creative in offering new services on the GPRS platform, and this could be a major differentiator between GPRS operators and 3G operators in the future.

Telekom Malaysia now has 4.6 million fixed lines, comprising the lion's share of the fixed line business and 70 percent of all Internet subscribers. At present Malaysia, with a population of 23 million people, has 20 direct exchange lines per 100 people and 6.5 Internet users per 100 people.

On the cellular front, there are now approximately 5.8 million subscribers (equivalent to 25 subscribers per 100 people), with Celcom and Maxis leading the pack with roughly 1.6 million subscribers each. New subscriber registrations stand at about 120,000 per month, and this has been aided significantly by the popularity of prepaid services. In fact, some cellular operators have more prepaid users than postpaid. It is also interesting to note that wireless penetration has now exceeded fixed line penetration.

Foreign interests in Malaysian telcos have been high with the presence of British Telecom, MediaOne International, Deutsche Telekom, and Telenor. However, there are signs that the European telcos are refocusing their strategies, which could lead to their withdrawals from the Malaysian companies. In the event this occurs, it is envisaged that their places will be taken up by Asian or Australian telcos. Participation from foreign companies is vital to Malaysia since they bring with them much needed capital, technologies, and innovations. The impressive growth in cellular subscribers is attributed to this.

IEEE History Center Organizes Telecom History Conference

By Michael N. Geselowitz, Director, IEEE History Center

On 25–27 July 2001, the IEEE History Committee held the fifth in its biennial series of history workshops. The theme of this installment, held in St. John's, Newfoundland, Canada, was "The History of Telecommunications," and was organized by the IEEE History Center on behalf of the Committee. The goal of these biennial conferences is to explore in workshop fashion the history of recent technology by bringing together the rare individuals who have a hand in both history and engineering, engineers with an in interest in history, and some historians who will benefit from exposure to the engineering perspective while also bringing a more purely historical analysis to the table for the benefit of the engineers. This conference was by all measures and accounts a great success. Some 47 individuals from eight countries attended, with a balanced mix of historians and engineers. All of the 32 papers were well received, and the setting was superb. First, 12 December 2001 will be the centennial of Marconi receiving the first transatlantic radio transmission at Signal Hill, St. John's. The Province of Newfoundland and Labrador is celebrating the event all year, and our conference served as part of the festivities. Second, the last day of the conference was the 135th anniversary of the landing of the first transatlantic telegraph cable at Heart's Content, Newfoundland, a site that is now a museum. The conference included excursions to both landmarks (both of which are also IEEE Milestones in Electrical Engineering and Computing!).

This year's conference was made especially enjoyable by the inclusion of the IEEE student members. Engineers usually grow more interested in history later in their careers. In the past, young engineers have therefore not been a presence at these functions. This time, however, the IEEE Foundation supplied a grant to fund for this conference a worldwide papers competition among the IEEE Student Branches and offer the winner in each of the 10 IEEE Regions an opportunity to present his or her winning paper at this conference. Students were encouraged to research their own local history of telecommunications for their submissions. The goal was to raise interest and awareness among students concerning the history of engineering in general and in their home regions in particular.

In all, five Regions submitted papers, and all five Regional winners were able to attend the conference and present in a special poster session. The students were also invited to a reception at the official residence of the Lieutenant Governor of Newfoundland and Labrador, A. Maxwell House, and Dr. House gave the keynote address at the awards luncheon on the last day of the conference. The students got a rare opportunity to meet with senior IEEE members as well as historians interested in them and their regions. They also were exposed to IEEE's historical activities, and several have already said that they will become involved in IEEE Milestones activities back home. As one student emailed soon after the conference, "the conference and the time that I spent with my fellow students and with all of you was great!"

Report on ICATM '01

By Pascal Lorenz, France

The Joint 4th IEEE International Conference on ATM and High Speed Intelligent Internet (ICATM '01) was held at Seoul, Korea, on 22–25 April 2001 and we were pleased that Korea has the honor of hosting such an important international event. The objective of the conference is to (1) promote ATM-related research and development activities for the new millennium within the world and (2) encourage communication between researchers and engineers throughout the world whose work is related to advanced ATM, Active & Sensor Networks and Next Generation Internet. In this way, colleagues from academic and industrial ATM research communities have had an ample of opportunities to exchange their ideas and opinions, and stimulate their needs during the conference. The overall theme of ICATM 2001 is Intelligent Networks and Quality of Services.

The combination of five Tutorials on Sunday (22 April) and Tuesday (24 April) was successfully provided to introduce and convey state-of-the-art technologies in intelligent Internet and quality of services, followed by a short welcome reception on Sunday (22 April) evening to be socialized with other participants. Two Plenary speeches on Monday morning (23 April) were given to address Advances in Transport Network Technologies presented by Dr. Sato (NTT, Japan) and Optical Network Innovation toward Next Generation Internet presented by Prof. Minho Kang (ICU, Korea), respectively. Both speeches were well matched to the ICATM '01 theme and enjoyed by all participants. We had one industrial session and eight technical sessions in parallel with six invited papers. Four companies — HiCHIPS, LG, Marconi, Nortel, and Unisphere Networks —participated in the industrial session, which surprisingly attracted many participants with active Q&As in the practical sense. For the technical sessions, there was abundant interest in the fields of ATM and Internets from 16 countries around the world, and many papers addressed MPLS, Internet QoS, ATM QoS, ATM switching, and wireless networks.

A banquet was served to the attendees on Tuesday evening (24 April), and most participants enjoyed informal chatting and issues on Korean culture until late, although many participants already explored Korea during the conference.

Global
Communications
Newsletter
www.comsoc.org/pubs/gcn

Nelson L. S. da Fonseca
Editor

Institute of Computing
State University of Campinas
P.O. Box 6176
13083-970 Campinas SP, Brazil
Tel: +55-19-7885878
Fax: +55-19-7885847
E-mail: nfonseca@dcc.unicamp.br
gcn@comsoc.org

Algirdas Pakstas, Associate Editor
Kenzo Takahashi, Chapters Corner Editor

Regional Correspondents
Hossan Afifi, France • Abraham Alcaim, Brazil
Borhanudin Mohd Ali, Malaysia • Phan Anh, Vietnam
Jacob Baal-Schem, Israel • Dinko Begusic, Croatia
Paulo de Sousa, Belgium • Khaled Fuad Elsayed, Egypt
Joan Garcia-Haro, Spain • Voula Georgopoulos, Greece
Silvia Giordano, Switzerland• Ram G. Gupta, India
Carlos Hirsch, Mexico • Henrich S. Lantsberg, Russia
Marie-Jose Montpetit, United States • Nicolae Oaca, Romania
Pawel Oleszak, Poland • Giancarlo Pirani, Italy
K. R. Subramanian, Singapore •Tomohiko Taniguchi, Japan

A publication of the
IEEE Communications Society

Report of ICN '01

By Pascal Lorenz, France

The International Conference on Networking (ICN '01) took place from 9–13 July 2001 in Colmar, France. It gathered approximately 220 participants originating from 35 different countries (see http://iutsun1.colmar.uha.fr/ICN01.html)

ICN '01 has been very well perceived by the international networking community. A total of 300 papers from 39 countries were submitted, from which 168 have been accepted. (Percentage of papers accepted from individual countries: France — 10 percent; Europe — 30 percent; Asia — 25 percent; North America — 25 percent; others — 10 percent)

The program covered a variety of research topics of current interest, such as mobile and wireless networks, Internet, traffic control, QoS, switching techniques, voice over IP (VoIP), optical networks, differentiated and integrated services, IP and ATM networks, routing techniques, multicasting and performance evaluation, testing and simulation, and modeling.

Three tutorials were presented:

- Mobile and Wireless Internet: Protocols and Services from G. Omidyar, Computer Sciences Corp., USA and P. Lorenz, University of Haute Alsace, France
- MPLS VPNS from M.V. Hegde, Celox Networks, USA
- Evolution of 3G Packet Radio Networks (GSM/GPRS/EDGE) from P. Stuckmann, Aachen University of Technology, Germany

Four keynote speeches:

- The Future on Networking: Convergence from S. Ritzenthaler, Alcatel, France
- Adding Interactive Services in a Video Broadcasting Network from Dr. R. Jager, BetaResearch, Germany
- Internet: Heal Thyself! From F. Engel, Concord Communications Inc., USA
- Real World VPN Deployment Issues from I. Singh, Enterasys Networks, USA

The technical presentations addressed the latest research results from the international industries and academia and reports on findings from mobile, satellite, and personal communications on third- and fourth-generation research projects and standardization.

The 14 best papers were selected for consideration in a special issue of the journal *Telecommunication Systems.*

We would like to thank the scientific program committee members and the referees. Without their support, the program organization of this conference would not have been possible. We are also indebted to many individuals and organizations that made this conference possible (Association "Colmar-Liberty," GdR CNRS ARP, Ministère de la Recherche, Université de Haute Alsace, Ville de Colmar, France Telecom, IEEE, IEE, IST, WSES). In particular, we thank the members of the Organizing Committee for their help in all aspects of the organization of this conference.