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The Slovenian Sister Society EZS - SIKOM

By Marko Jagodic, Slovenia

The Cooperation Agreement between the Communications Society (ComSoc) of the Institute of Electrical and Electronics Engineers, Inc. (IEEE) and the Slovenian Society for Electronic Communications of the Electrotechnical Association of Slovenia (EZS-SIKOM), was renewed on March 31, 2009. The formal signing of the renewed agreement took place in Dresden, Germany, at the International Communications Conference ICC 2009 (Fig. 1).

The Slovenian Society for Electronic Communications EZS - SIKOM was established four years ago as a specialized society within EZS taking care of the activities related to the area of ICT. One very important activity of EZS - SIKOM is the preparation and organization of workshops and conferences concentrating on the currently relevant ICT topics. During the last 12 months we organized four events, the following two being the most outstanding.

The 16th International Symposium on Intelligent Transport Systems ISEP 2008 was held in October 2008 in Ljubljana in the English language. The event included Ph.D. Research Day in cooperation with the European Research Area and attracted 92 participants from 10 countries.

The 22nd VITEL Workshop "Convergence Services in Mobile and Fixed Networks," organized in cooperation with the Slovenian ComSoc Chapter, was held at the Conference Center Brdo-Kranj in April 2009, in Slovenian and the English language. The workshop was attended by 130 participants from five countries.

At the moment we are also engaged in preparing two well known international conferences. The first one is the ITU World Telecom 2009 Forum, taking place in Geneva at the beginning of October, where we are very active in the Forum Advisory Committee. The other one is ICIN 2009, "Beyond the Bit Pipes," in Bordeaux at the end of October, where we have members in the International Advisory Board as well as in the Technical Program Committee.

In addition to preparing and organizing workshops and conferences, the members of EZS - SIKOM are also directly involved in the work of many important international and national institutions and organizations working in the area of Information and Communication Technologies (ICT).

One of them is the European Scientific Cooperation (COST) run by the European Science Foundation (ESF) covering different scientific domains. Members of EZS - SIKOM are involved in the evaluation process of proposed and accepted research actions in the ICT domain and also representing Slovenia in the ICT Domain Committee.

Figure 1. *The renewed agreement is signed at ICC 2009. From left to right: Roberto Saracco, Director - Sister and Related Societies; Douglas N. Zuckerman, President of ComSoc; Marko Jagodic, President of EZS - SIKOM; Byeong Gi Lee, Vice President of ComSoc - Member Relations.*

EZS - SIKOM is also part of the ICT R&D network in Slovenia which is an association of industrial companies, professional societies and academic institutions with the goal to improve and strengthen the cooperation between industry and academia in Slovenia.

EZS was one of the founders of the Slovenian Institute for Standardization (SIST). SIST represents Slovenia in international standardization bodies including IEC, ISO, ITU-T, ETSI, CEN, and CENELEC. The members of EZS - SIKOM are in charge of the SIST Technical Committees dealing with ICT issues, and one of them is also a member of the Management Board of SIST.

EZS - SIKOM members are directly involved in the work of ITU-T representing Slovenia in Telecommunication Standardization Advisory Group (TSAG) and providing one of the Rapporteurs for Future Networks in Study Group 13.

EZS - SIKOM is asked on a regular basis to consult governmental and regulatory institutions of Slovenia on certain issues related to the more efficient use of ICT for the benefit of the Slovenian economy and society.

EZS, and in particular EZS - SIKOM, are also involved in the work of the European Federation of National Engineering Associations (FEANI). We have members on the Executive Board (FEANI - EB) and on the Continuous Professional Development Committee (FEANI - CPDC).

ConTEL 2009: The 10th International Conference on Telecommunications

Maja Matijasevic, Program Chair, Croatia

The 10th International Conference on Telecommunications, ConTEL 2009, took place on 8-10 June 2009 at the Sheraton Zagreb Hotel, Zagreb, Croatia. Celebrating the 10th jubilee event in the series, this was also a time to reflect on the first ConTEL conference in 1993, and a dramatic shift in the telecommunications world over the past 15 years. With its broad range of topics, ConTEL 2009 turned toward the foundations of the future information society: next generation networks, protocols and services; communications software and services; and information infrastructure. The technical program ran for two and a half days, and included three keynote talks in plenary sessions, and a total of 67 paper presentations in 14 technical sessions, including two special sessions and a one-day Workshop on IPTV Technology and Multidisciplinary Applications.

On each day of the conference, one keynote talk was presented in the plenary session. The keynote talk on the first day, entitled "Conversational Informatics for Situated Communication," presented some very interesting results and demos, as well as new research challenges in the exciting field of conversational informatics as seen by its founder, Toyoaki Nishida of Kyoto University, Japan. The second keynote speaker was Marie-José Montpetit, presently an Invited Scientist at the Massachusetts Institute of Technology, Cambridge, MA, USA. In her inspired talk, entitled "IPTV - Now and Next," she reviewed the current status of IPTV and discussed its evolution in light of access ubiquity, mobility across device boundaries, and new features presently associated with over-the-top offerings and social networks. The third keynote speaker was Luiz Moutinho of the University of Glasgow, UK, who talked about "Futurecast in Consumer (Mis)behaviour." He challenged the current (mis)perceptions about the relationship between providers and consumers, and provided insight into consumer behavior related to the ongoing "digital evolution" and the changes and challenges it brings to the new telecom market. All keynote talks were very well received by the audience.

In addition to regular paper sessions, the technical program also included two special sessions. The Special Session on Optical Wireless Communications was organized by Erich Leitgeb, TU Graz, Austria, and Steve Hranilovic, McMaster University, Canada. The Special Session on Optical Access was organized by Giorgio M. Tosi Beleffi, Italian Ministry of Economic Development - Communication Department (MED), Rome, Italy, and Antonio Teixeira, Instituto de Telecomunicações (IT), Aveiro, Portugal, and endorsed by FP7 NoE BONE and FP7 STREP SARDANA.

For the first time, the conference hosted the Workshop on IPTV Technology and Multidisciplinary Applications, organized by Oscar Martinez Bonastre of Miguel Hernandez University of Elche, Operations Research Center, Spain. The workshop presented innovative research in the area of IPTV in multimedia broadcasting, including but not limited to architectural standardization, content protection, quality of service and quality of experience, and middleware. The workshop program included a plenary talk by J.-M. Montpetit, two invited talks, eight technical paper presentations, and two demo presentations.

The highlight of the Conference was the gala dinner, and

Figure 1. *IEEE ComSoc Croatia Chapter Chair Mario Kusek presents the IEEE ComSoc Croatia Chapter Award to Vjekoslav Sinkovic (photo by Mario Kusek, ComSoc Croatia Chapter Chair).*

announcing the winners of the newly established IEEE chapter awards: the IEEE ComSoc Croatia Chapter Award and the Friend of IEEE ComSoc Croatia Chapter Award. The ComSoc Croatia Chapter Award was awarded to Gábor Németh of the Budapest University of Technology and Economics, Hungary "for continuous engagement and contribution to international affirmation of ConTEL," and to Vjekoslav Sinkovic of the University of Zagreb, Croatia "for the initiative for starting the ConTEL conference and contributions to research and development in the field of telecommunications and informatics." The Friend of IEEE ComSoc Croatia Chapter Award was awarded to HT - Hrvatske telekomunikacije and to Ericsson Nikola Tesla "for continuous support of all 10 ConTEL conferences." The awards were presented by the chapter chair, Mario Kusek.

The winners of the Best Student paper contest were also annouced at the dinner. Based on the Award Committee decision, the winner of the Best Student Paper Award was Udi Weisberg, for the paper "Near-Deterministic Inference of AS Relationships," coauthored with Yuval Shavitt and Eran Shir, all of Tel Aviv University.

The Conference was organized by the University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia, and the IEEE Communications Society Croatia Chapter, and it was technically co-sponsored by the IEEE Communications Society (endorsed by the Technical Committee on Communications Software), IEEE Croatia Section, and the IEEE Region 8.

The ConTEL 2009 Conference Proceedings are available through IEEE Xplore, and they have been submitted for indexing in the INSPEC bibliographic database. The next ConTEL will take place in 2011, in Graz, Austria.

The ConTEL conference Web site is located at: http://www.contel.hr

FTTH in Spain: Present and Future

R. Asorey-Cacheda, F.J. González-Castaño and F.J. Gil-Castiñeira, University of Vigo, Spain

Fiber-to-the-Home (FTTH) is a telecom access technology based on the utilization of optical fiber and distribution systems for advanced distribution services, such as IPTV or broadband Internet. Although FTTH is not new, introduction of this technology is now gaining strength, especially in countries such as the United States and Japan, where many operators are reducing their DSL or cable offerings in order to benefit with FTTH, a better access technology for all kinds of broadband services.

In Spain, the first FTTH trials were carried out in Madrid by the incumbent telecom operator Telefónica, reaching speeds up to 50 Mbps. In November 2008, the Comisión del Mercado de las Telecomunicaciones (Spanish's telecom regulator, CMT) authorized the commercialization of FTTH services, after checking FTTH reliability.

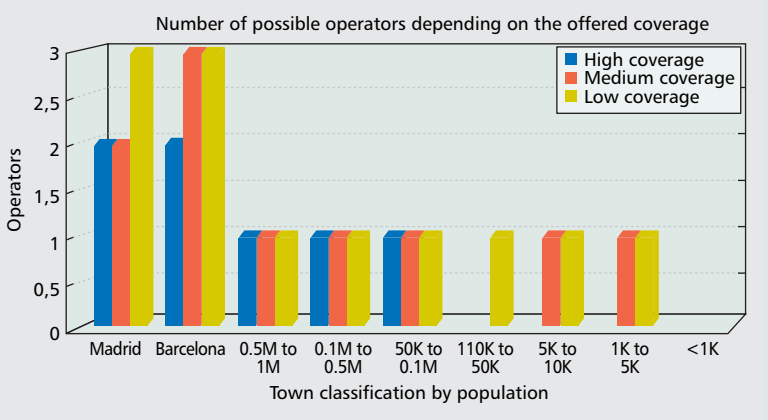

Figure 1. *Number of FTTH operators predicted by the CMT for three possible scenarios (high, possible and low coverage).*

It is important to review recent history to understand the FTTH market in Spain. In 1996, when Telefónica was privatized, its more than 50 year monopoly finished. Since Telefónica was the owner of the POTS network, in order to encourage competition, the CMT obliged it, as the incumbent operator, to provide unbundling and wholesale services to all alternative operators requesting them. The CMT is in charge of fixing the service fares and describing how these services must be provided.

In this scenario, placed in the mid 90s, with new entrants fighting for market share, important things happened at the same time. Telefónica, the incumbent operator, POTS network owner, and with more than 80 percent of market share, launched the Fotón project. The goal of this project was to deploy a fiber network in cooperation with the Spanish media group Sogecable to provide CATV services. This project was financed with public funding before Telefónica were totally privatized, but was never finished because the Spanish Government considered that allowing this would eliminate competition in the CATV market. As a consequence, all CATV equipment was dismantled but the fiber network remained. Thus, more than 10 years later, Telefónica owns a mostly-non-utilized fiber network deployed in cities of more than 50,000 inhabitants, which ends at 200 meters of the households.

Under these circumstances, Telefónica asked for permission from the CMT to launch a 30 Mbps FTTH service. The problem is that while telephony and DSL services are subject to regulation, Telefónica argued that FTTH was a service based on a different infrastructure not subject to regulation. As a consequence, main alternative operators, such as Vodafone, Orange or Jazztel, brought a lawsuit against Telefónica saying that its fiber network had been built using public funds, and that while Telefónica deployed its FTTH network they had to invest in the DSL market.

In the first turn, the CMT decided that FTTH would be a non-regulated market, i.e. no operator would have to unbundle its network to allow competition. The reason for this was that FTTH was in the early stage and, in consequence, a non regulated market would promote and speed up the deployment of FTTH networks. However, pressures from the European Union and the telecom market made the CMT change its mind. In March 2009, the CMT announced that there would be a regulatory framework for FTTH. Summarizing, the first telecom operator deploying a FTTH network in a building must allow competitors to use its fiber. In fact, this means that companies must share building facilities and reach an agreement on how to do it. However, the CMT did not say anything about how this unbundling must be implemented (it exists for fixed telephony and DSL) and how long can it take. For the moment, we can say that FTTH in Spain is a much less regulated market than the DSL market.

In May 2009, there were only fewer than 100,000 FTTH lines rolled out. By 2023, the CMT, through a recently published report, predicts that half of the 14 million households will have FTTH connections (43 to 46 percent). It is clear that FTTH has a large potential for growth. Under the actual regulation, we cannot expect more than two or three market players:

- Telefónica, which is already a player.
- Regional cable operators (R Cable, Telecable, Euskaltel and Ono), which are in a good position to make the transition from cable to fiber networks.
- A coalition of alternative operators (among others Vodafone, Orange and Jazztel), which will allow the sharing of costs of deploying a FTTH network.

Figure 1 represents the number of operators expected by the CMT depending on the offered coverage, by town size. Only the largest cities will be served by alternative operators to Telefónica or the main cable operators. In rural and sparsely populated areas public investment will be essential to at least guarantee the presence of one operator. As outlined in [1], the coexistence of several next-generation access networks is unlikely in those cases. However, it will depend on future operator alliances, market regulations and institutional support.

More information about the status of FTTH in Spain can be accessed through the CMT Web site: http://www.cmt.es (Spanish language only).

Reference

[1] J.C. Sánchez-Aarnoutse, F. García-Sánchez, and P. Manzanares-López, "Next-generation access networks are fostered to a competitive market in Spain," *IEEE Commun. Mag., Global Communications Newsletter*, Dec. 2008.

Workshop on Carrier Grade Mesh Networks

Andreas Kassler, Karlstad University, Karlstad, Sweden
Frank Zdarsky, NEC Network Laboratories, Heidelberg, Germany
Arturo Azcorra, University Carlos III and IMDEA Networks, Madrid, Spain
Albert Banchs, University Carlos III, Madrid, Spain

The Carrier Grade Mesh Networks workshop took place on 9 June, 2009 in Santander, Spain. It was co-located with the ICT Mobile Summit 2009, which is a major event supported by the European Commission (EC) and technical co-sponsored by IEEE that provides a forum for the EC funded projects to meet and discuss. The workshop was organized by the CARMEN project and supported by the CONTENT Network of Excellence, the EU-MESH project, and the BioGridNet regional project.

The goal of the workshop was to discuss recent advances in Wireless Mesh Networks (WMNs). Although a substantial effort so far has been devoted to the design of mechanisms and solutions for WMNs, a number of research challenges still need to be addressed before this technology can be widely deployed. Following this, the workshop aimed at identifying these key pending challenges and discussing possible solutions, giving a special focus to the mechanisms needed for "carrier class" service provisioning in WMNs.

In order to tackle the goal, the following leading experts in WMNs were invited to present their work and ideas in the workshop: Burak Simsek (Fraunhofer), Vasilios Siris (ICS-FORTH), Mario Gerla (UCLA), Prasant Mohapatra (UCDavis), Omer Gurewitz (Ben Gurion), Claudio Casetti (Politecnico di Torino), Michael Bahr (Siemens), Matthias Hollick (UC3M & TU Darmstadt), Stefano Avallone (University of Naples) and Matteo Cesana (Mobimesh). The workshop was organized in three sessions with three talks each, which was followed by a panel.

A number of the presentations of the workshop focused on the deployment of testbeds, which clearly showed the importance of validating WMN solutions by means of real experiments. Mario Gerla described the MobiMesh testbed at UCLA on mesh networks with vehicular support, and talked about the challenges being tackled with this testbed. Prasant Mohapatra presented the research activities being conducted with the QuRiNet testbed, which is a WMN deployed in the Quail Ridge Reserve to help out the ecological studies. Omer talked about the "Technology for All" mesh testbed of Houston's East End, and presented the work done to understand and fight the anomalies of TCP observed in this testbed. Claudio Casetti presented yet another testbed currently being deployed in Turin to provide network access for commercial services in a local rack railway line, and showed some initial results obtained from this testbed.

The issue of designing and configuring WMN mechanisms was addressed by the presentations of Vasilios Siris, Stefano Avallone and Matthias Hollick. Vasilios presented a number of algorithms for efficient resource management in WMNs, while Stefano focused on channel assignment and routing issues and Matthias outlined challenges and mechanisms for a QoS-aware mesh network solution with IEEE 802.16 technology. It became evident from these presentations that the design of WMNs is indeed a very complex problem because its solution space is extremely large and has many dimensions, including planning, channel assignment, routing, transmission power, etc. The presentations shed some light on some of these aspects and (more importantly) their interaction.

The remaining two presentations focused on standardization activities in WMNs. Indeed, standardization is crucial for the commercialization of WMNs. Burak Simsek described the work of the CARMEN project to define a media independent layer for heterogeneous WMNs and the ongoing activities of this project in the IEEE 802.21 working group in this context, while Michael Bahr presented the standardization work conducted within the IEEE 802.11s Mesh Networking task group, giving special emphasis to the mechanisms included in the upcoming standard that support carrier grade.

The panel was chaired by Arturo Azcorra, and had Prasant Mohapatra, Mario Gerla, Matteo Cesana and Vasilios Siris as panelists. One of the issues debated by the panel was the success of WMNs in the market place. There was a rough consensus among the panelists that although WMNs may not succeed in all marketplaces, there are some specific applications where WMNs are very well positioned to succeed. Some of the applications pointed out were developing countries, rural areas, vehicular WMNs, disaster areas, WMNs as public utilities, and military applications. Regarding the pending research challenges that yet need to be addressed, there was a wide agreement that support for carrier grade services (including QoS, reliability and security) is one of them. Another issue debated by the panel was the need for heterogeneous WMNs consisting of different wireless technologies. This issue raised different opinions: while some panelists advocated for its need, others believed that heterogeneous WMNs will only be used marginally and future WMNs will be mostly homogeneous. The panel was followed by a lively discussion that addressed many aspects, including spectrum issues, integration of LTE, size and scalability of WMNs and multi-path issues, among others.

We hope that the Carrier Grade Mesh Networks workshop has fulfilled the expectations of the participants. The success of this workshop relied on the work and commitment of the invited speakers and panelists, who gave high quality presentations, as well as the participation of the attendees, who triggered many lively discussions. The presentations given in the workshop are available at http://www.ict-carmen.eu/workshop09/.

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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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REGIONAL CORRESPONDENTS WHO CONTRIBUTED TO THIS ISSUE

THOMAS MICHAEL BOHNERT, SWITZERLAND (THOMAS.MICHAEL.BOHNERT@SAP.COM)
MARKO JAGODIC, SLOVENIA (JAGODIC.MARKO@GUEST.ARNES.SI)
KERIM KALAMUJIC, BOSNIA (KERIM.KALAMUJIC@HOTMAIL.COM)
JOSÉ MARIA MALGOSA-SANAHUJA, SPAIN (JOSEM.MALGOSA@UPCT.ES)

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