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Serbia Hosted a Summit on the Digital Dividend in Central and Eastern Europe

By Dr. Milan Jankovic, Executive Director RATEL, Serbian Regulatory Body

Belgrade hosted the first ministerial summit on the digital dividend in Central and Eastern Europe, the South East Europe Ministerial Summit on the Digital Dividend. The event was organized by the Ministry of Telecommunications and Information Society in cooperation with GSMA, the GSM Association, on June 15–16, 2010 and brought together representatives of 13 countries (ministry and regulatory bodies) in the region: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Hungary, Italy, Macedonia, Poland, Romania, Serbia, Slovenia, and Turkey; operators (Telekom Serbija, T-Mobile, VIP Mobile, Vodafone Group, etc.); manufacturers (Ericsson), consultants (Europe Economics, Quotient Associates), associations (ITU, GSMA, EBU, etc.) with the aim to start developing a unified approach to the allocation of the "digital dividend" band, 790–862 MHz, the spectrum to be freed up by the switchover from analog to digital TV, in South East Europe.

Heads of delegations in the lobby of the Serbian National Assembly in Belgrade.

Allocating the digital dividend band to mobile communications will increase Internet penetration and have a significant positive economic impact by driving innovation, job creation, productivity, and competitiveness. Harmonization of spectrum usage on a regional basis is needed for the economy, to drive down handset and network equipment costs, make broadband access affordable to consumers, and reduce the region's digital divide. The low-frequency digital dividend band is ideally suited to the rollout of mobile broadband in rural areas in South East Europe where population density is typically lower than in western Europe and scattered over large rural areas. The region's position on the borders of the European Union makes coordination between states more complex, while the high number of multiple border issues threatens to complicate coordination further.

The summit was opened by Jasna Matic, the Serbian minister of telecommunications and information society, the organizer of the event, the first session continuing with a keynote presentation by Martin Whitehead, head of GSM Association Europe, and a message from Sami Al Basher, BDT director, ITU. "Our corner of the world also holds EU member states, candidate states and other potential members of the European Union. It is vital that we work together to ensure our citizens have the best possible access to communications services. As we move into the next decade, the digital dividend forms a vital opportunity to give more affordable access to more people, and lower the digital divide." said Serbian minister Jasna Matic.

The second session was dedicated to countries in the region, each country speaking about their digital switchover schedule and plans on the freed band. The plans presented by the states in the region and the subsequent discussions represent a starting point for future cross-border coordination and a regional calendar. The participants also analyzed the hot topics in the region: spectrum harmonization, frequency problems at borders, how to regulate, the importance of bilateral or multilateral meetings for a regional approach, and others. One highlighted that the digital switchover is a complex process, with significant economic and social implications, and that the efficient use of the digital dividend band could be one of the major challenges. ANCOM, the Romanian regulatory body, considered the Belgrade summit as a second step toward a regional approach after the Bucharest summit on March 30, 2010, and proposed a website dedicated to regional synchronization of digital dividend band usage in the region to accelerate common decisions on the type of contest, technology to be used, contest timing, bundling the digital dividend and 2.6 GHz bands, and so on. Romania's ANCOM is ready

(Continued on Newsletter page 4)

The Ultra-Broadband Infrastructures and Services Research Program of the Italian Authority for Guarantees in Communications

By Fulvio Ananasso, Aldo Milan, and Ines Pinto, Directorate of Studies, Research and Education, AGCOM, Italy; Maurizio Dècina and Stefano Bregni, Politecnico di Milano, Italy

In 2008 the Italian regulator for electronic communications (Authority for Guarantees in Communications, AGCOM) launched the Ultra-Broadband Infrastructures and Services (ISBUL) Research Program, managed by its Directorate of Studies, Research and Education in collaboration with the Polytechnic of Milan, University Bocconi, four universities in Rome (LUISS, Roma Tre, La Sapienza, Tor Vergata), the University of Naples Federico II, the University of Siena, the Polytechnic of Turin, and Imperial College London. The objective of the ISBUL Research Program was to pave the way for AGCOM to become a permanent presidium on various technological, juridical, and economic aspects of the Ultra Broadband Next Generation Access Network (UBB – NGAN) infrastructures.

The ISBUL Program consisted of 14 Work Packages on technological, economic, and juridical aspects (Fig. 1), stimulating interdisciplinary investigation of themes such as:

- Effective investment promotion and risk sharing
- The role of competition, ladder of investment, and new access methods
- Geographical markets, the digital divide, and the digital spectrum dividend
- The transition to NGAN
- The Registry of Next Generation Infrastructures (RING)

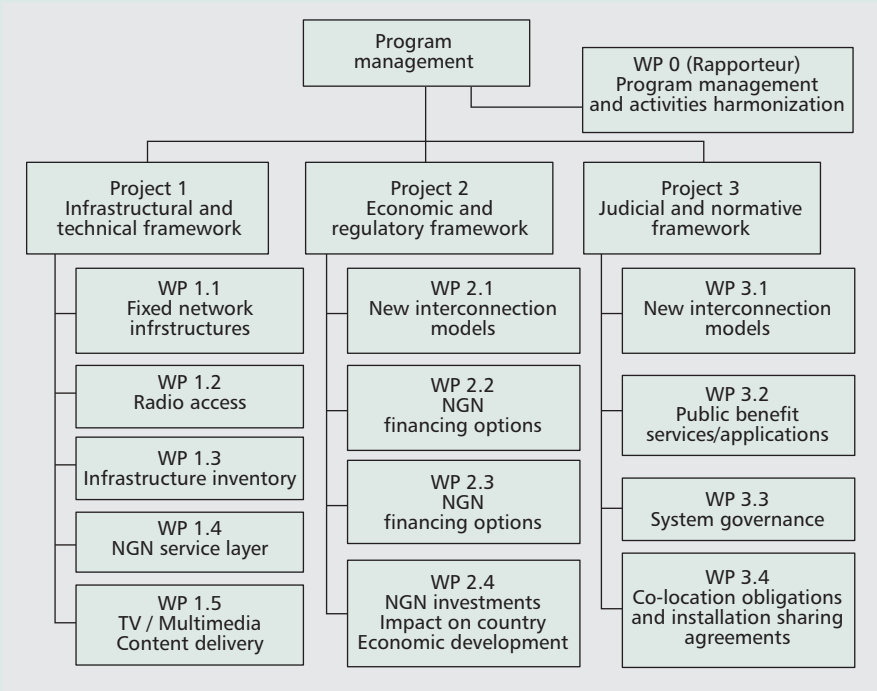

FIGURE 1. *ISBUL Work breakdown structure.*

The project activities were carried out from December 2008 to February 2010, with a number of plenary progress meetings and three Workshops (March, May, and September 2009), and concluded with a final presentation to the AGCOM Council of the relevant outcomes of the research.

The research made an in-depth assessment of the current Italian access network, based on both copper pairs and optical fibers, and the main ultra-broadband access solutions. The relevant distribution architectures (fiber to the exchange, FTTE; fiber to the cabinet, FTTC; fiber to the building, FTTB; and fiber to the home, FTTH) and access systems (passive optical networks, PON/GPON, and point-to-point fiber systems, P2P) were investigated, also assessing the penetration and development of broadband and ultra-broadband access worldwide.

The research activities also analyzed the administrative simplification process so far implemented in Italy, underlining some remaining ambiguities in the legislation despite significant progress made via legislative simplification initiatives carried out in 2008–2009. Such ambiguities, making the regulatory framework rather uncertain, constitute a transition cost increase factor. It would then be desirable, to some extent, to reduce the relevant norms and embed the new broadband rules in the Electronic Communications Code. Furthermore, although the role of the State appears to be crucial, it is deemed mandatory to involve more and more the various levels of local administration and government. In the institutional context, the role of AGCOM should be strengthened as a consequence of normative prescriptions in the matter of state aids in support of broadband provisions.

With reference to economic and financial sustainability conditions, the study estimated the required capital expenditure (CapEx) to deploy a nationwide NGN in Italy, assuming it is implemented as a single undertaking under a natural monopoly regime and in the presence of "total replacement" of copper with fiber optics ("switch off"). Under those hypotheses, a FTTH/P2P infrastructure with 50 percent population coverage would cost slightly more than €13 billion vs. ~€3 billion for 20 percent population coverage in the presence of a FTTB/GPON architecture; see Work Package 2.2, "NGN Financing Options."

The study estimated the main effects of broadband and ultrabroadband network implementation on the Italian economy, investigating three types of effects: (i) the direct impact of NGN CapEx on the Italian gross domestic product (GDP), (ii) the related effect on (new) jobs, and (iii) the indirect effects on the overall Italian economy, or "spillovers" (e.g. new service offeringa, increase of productivity in delivering goods and services, sector transformation, and innovation). These three effects have been estimated for three different NGN implementation scenarios: FTTH/P2P 50 percent coverage, FTTB/GPON 20 percent coverage, and a mixed P2P/GPON network with dark fiber to the building basement and 91 percent coverage.

Under the intermediate hypothesis (€13.3 billion for an FTTH/P2P network and 50 percent coverage), the direct GDP effect has been estimated at ~€17.4 billion in 10 years, with some 248,121 jobs created and indirect effects on the overall economy in the range €49–420 billion. The actual value across the mentioned range really delivered by an NGN for the Italian economy will depend on the capacity of such economy to fill in the growing "digitalization" gap with respect to other European countries (France, Spain, United Kingdom, etc.),

(Continued on Newsletter page 4)

ComSoc Education Board Initiatives for the Young Generation

By Fabrizio Granelli, Univ. of Trento, Italy, and Michael Devetsikiotis, North Carolina State Univ., USA

The initiative was pursued by Michael Devetsikiotis and Fabrizio Granelli, members of the IEEE Communications Society Education Board, with the support of ComSoc Director of Education Stefano Bregni, to increase the visibility and awareness of telecommunications among the younger generation, university students and even high school students, future telecom engineers. The goal of the initiative was to help students understand the importance of the telecommunications field and also the great value of belonging to an international community of professionals, such as the IEEE Communications Society.

The students attending the high school lecture at Oude Molen Technical High School, Cape Town.

Cape Town was identified as a suitable location to organize the first event of this kind, as the venue of one of ComSoc's flagship events: ICC 2010. Three days of outreach events were organized in order to inform local groups about the latest advances in telecommunications and to promote:

- Communications as a service for society (to show the major impact of communications on society)
- Working in the field of telecommunications (about job opportunities and positions)
- Telecommunications in the context of humanitarian challenges (future trends in the field and initiatives)

The success of such events required the support of outstanding technical experts, able to communicate with the younger generations and involve them in the fascinating field of telecommunications. For this reason, Michael and Fabrizio contacted a number of highly qualified and experienced people to seek their support for this initiative by participating in the events and providing a presentation on a topic close to their interests.

The events took advantage of ComSoc's Distinguished Speakers Program (DSP) and the fact that several ComSoc Distinguished Lecturer series participants and other technical experts were in Cape Town attending ICC 2010. A portion of the event series was a half-day collection of distinguished speaker seminars at the University of Cape Town, set up by local IEEE chapters, with crucial assistance from local contacts Sunil Maharaj and Richardt Wilkinson, and overseen by Yigang Cai, coordinator of the ComSoc DSP program.

The Distinguished Speakers portion of the series took place on Wednesday, May 26, at the Department of Electrical Engineering, University of Cape Town. The event was hosted by the UCT IEEE Communications Society Student Branch Chapter, UCT IEEE Student Branch, UCT Center for Broadband Networks, IEEE Communications Society & Signal Processing Society Joint Chapter, IEEE South Africa Section, IEEE Communications Society, South African Institute of Electrical Engineering (SAIEE), a sister society of the IEEE Communications Society, and the UCT IEEE Women in Engineering Student Affinity Group.

Prof. Barry Downing, Head of Department, Electrical Engineering, UCT, offered welcome remarks. Then Prof. Susana Sargento (University of Aveiro, Portugal), Dr. Celia Desmond (Past President IEEE ComSoc), Prof. Michael Devetsikiotis (North Carolina State University, USA), and Prof. Azzedine Boukerch (University of Ottawa, Canada), presented lectures on current research topics and trends in telecommunications, followed by a tea break. In the second part of the event, Victor Jesus (University of Aveiro), Josep Miquel Jornet (Georgia Tech, USA), and Prof. Vijay K. Bhargava (University of British Columbia, Canada) presented lectures. The day ended with a reception hosted by the sponsoring groups, allowing interactions between the visitors and the faculty and students at UCT.

F. Granelli and M. Devetsikiotis at the Oude Molen Technical High School, Cape Town.

The high school outreach events took place on May 25 and May 27. They intended to reach a younger audience from local schools and promote engineering in general, and telecommunications more specifically. The venues were arranged with the crucial help of local contacts Sunil Maharj of the South African Chapter and Joyce Mwangama of the Women in Engineering chapter at UCT. Joseph Wamicha of the local student chapter was the invaluable driver and escort during the visits. On May 25, from 10 a.m. to 12 noon, Fabrizio Granelli, Celia Desmond, and Roberto Saracco visited the Oaklands High School. On May 27, Michael Devetsikiotis and Fabrizio Granelli visited Oude Molen Technical High School from1 to 3 p.m.. The visitors met with the school principals and science teachers, were given tours of the facilities, and met with the students, to whom they talked about telecommunications, engineering, and all the exciting possibilities arising from the progress in the field. The students asked questions and participated in interactive activities involving demonstrationss of optical fibers, telephone devices, and smart phones.

Given the success of the initiative, as a long-term plan the organizers of the initiative envision a series of repeating events following ComSoc flagship conferences, combining elements and strengths from the Distinguished Speaker programs with educational outreach to universities and local high schools.

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SUMMIT IN SERBIA/*continued from page 1*

to create and operate such a website together with a working group of at least one representative from every country.

The summit in Belgrade also saw the release of a new research report from analysts at Europe Economics, which estimated the potential value of the digital dividend that will become available to Serbia when it ceases transmission of analog TV signals. The research found that if digital dividend spectrum is allocated to mobile broadband deployment, the net present value could increase by between €572 million (40 MHz to use) and €950 million (160 MHz to use). The first day ended with a debate among a panel consisting of top executives representing cell companies.

The last session had speakers representing the GSM Association, Serbian ministry, and Serbian regulatory body, RATEL, consultants, operators, manufacturers, and broadcasters, many of them optimistic about the harmonized usage of the digital dividend band despite the fact that a business case based on the band could not occur in region too early, due to technical (spectrum and equipment availability) and economic problems.

A reference point in the presentations and discussions at the Serbian summit was the recent German contest, an ascending auction that sold frequency licenses in four bands (digital dividend band, 1.8 GHz, 2.0 GHz, and 2.6 GHz) over 29 bidding days (April 12–May 20th) and 224 bidding rounds raising €4.385 billion, out of which €3.3577 billion, or 81.6 percent of the total, came from the digital dividend band.

The main result of the Bucharest summit on the digital dividend (March 30, 2010) is a draft calendar of switchover in the region, currently under consultation, while the practical result of the Belgrade summit is a website dedicated to the digital dividend and a working group to create and operate it in order to synchronize the digital dividend band licensing process and usage across the region.

The regional summit Serbia organized is a success story, as long as representatives of the 13 countries in the region (seven members of the EU and six candidates) agree to start finding a harmonized way to address the digital dividend band for the benefit of the citizens and economies in the region. This event, along the March 2010 summit organized in Bucharest, prove that harmonization of the digital dividend band usage is a hot topic in Europe these days. Europe is placing its bet on the digital dividend band!

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ITALIAN RESEARCH PROGRAM/*continued from page 2*

capitalizing on the utilization of the NGN in terms of innovation, improvement of business processes, increase of productivity (see Work Package 2.4, "NGN Investments Impact on the Country's Economic Development").

Concerning the impact on specific economy sectors, it has been estimated that, for investments on fibers, about 59 percent of the production and intermediate consumption would be in high labor-intensive sectors, that is, in civil construction (42.4 percent in mixed P2P/GPON networks, 26.3 percent in FTTH/P2P, and 34.9 percent in FTTB/GPON) and telecommunications equipment (see WP 2.4).

Regardless of the choice of investment type, the ISBUL results confirmed that NGN deployment is mandatory for any economy aiming to be considered among the most developed countries.

Furthermore, as far as the transition from a copper to fiber access network is considered, the ISBUL Programme made clear the key role of the regulatory bodies in order to safeguard previous investments by incumbent and other operators, but also to favor new investments and open competition. In this respect, it will be critical to regulate wholesale services at the access and interconnection levels, as well as the debate on network neutrality and the possible extension of the Universal Service Obligations (USO) to broadband network and services.

Lastly, spectrum management will be a central topic in the transition to "all IP" networks and in development of fixed-mobile convergence, as well as providing the opportunity to cover the whole country with a broadband network, overcoming digital divide issues.

For additional information, see the AGCOM web site at http://www.agcom.it, http://www.agcom.it/Default.aspx?message= contenuto&DCId= 416.