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The New Broadband Era: A 100 Mb/s Universal Service in the USA

By Ana Vazquez Alejos, Muhammad Dawood, and Rafael Asorey Cacheda
New Mexico State University, USA; University of Vigo, Spain

To provide universal Internet access to U.S. citizens, the FCC presented an ambitious plan to Congress in March 2010 [1]. According to this plan, about 100 million American citizens without access to broadband service are to be provided 100 Mb/s connectivity by 2020. The main target of the FCC plan is to make this service affordable to rural and low income urban areas, thereby ensuring universal service in a way similar to the service provided by the European Union to its citizens. An intermediate goal of the FCC plan will be to provide 50 Mb/s connectivity to 100 million households by 2015. Provision of 1 Gb/s connectivity to institutions such as schools, hospitals, and government buildings is presented as a long-term goal.

From an economical point of view, the FCC, by launching this service, hopes to achieve the goal of affordability for U.S. homes by stimulating the competition in this vital sector of the U.S. economy. The development of a specified competition policy is one of the strongest aims of the FCC broadband plan. The plan will seek to encourage private innovation and investment. The policies and actions recommended in this plan fall into three categories: 1. fostering innovation and competition in networks; 2. devices and applications; 3. redirecting assets that government controls or influences in order to spur investment and inclusion, and optimizing the use of broadband to help achieve national priorities.

However, the FCC does not detail how the infrastructure and access to affordable connections will be provided and financed. It is estimated that $12–$25 billion may be needed to expand and modernize the present infrastructure, thereby necessitating a large public investment. This kind of investment may not be available at a time some Internet providers and operators are undertaking improvements of their own networks. To this end, one of the approaches under consideration is a public auction of spectrum to be reclaimed from television broadcasters. Hence, the FCC hopes to reach a mobile broadband spectrum from the available 50 MHz to 500 MHz in 10 years. It is likely, however, that without public funds, it will not be possible to accomplish these goals, although achieving them would doubtlessly place the United States on top of the most developed information-driven societies.

Another no less important point is apprehension about network neutrality being compromised by government regulations. The broadband plan seems to have a price in a critical faction. This somewhat expected action would be in line with the recent Declaration of Granada adopted by the EU to justify the right of a government to keep some kind of control on the Internet.

Among the technical benefits that can be derived from the accomplishment of the FCC plan, 25 times faster web access is noteworthy. Other minor benefits include multiple aspects of present and future living, such as teleteaching, teleworking, and telemedicine. The main collateral benefit is doubtlessly the creation of employment opportunities in a time of economic crisis that has badly affected the information technology (IT) sector as well as so many others. Additionally, the use of broadband will let every citizen track and manage their real-time energy consumption, thereby helping the United States to lead the clean energy economy worldwide.

Since there are large areas in the United States without any kind of Internet access, another important and interesting intent of the plan is to deploy the fastest and most extensive wireless networks of any nation in an attempt to lead the world in mobile innovation. The white spaces (WS) broadband plan that FCC approved in 2008 is again claimed to encourage societies, industry, and investors to make working devices and networks that make use of this broadband WS. We remember that WS is the name used for the VHF spectrum gaps released by the TV broadcasters after the analog switchoff. The 700 MHz portion was auctioned by the FCC in 2008 at an amount of $20 million per 1100 licenses.

Additionally, the plan incorporates two important points that make it largely novel and proactive with respect to similar plans offered by other international information societies, such as South Korea, Singapore, Germany, Finland, and Spain. Another of the many goals of the program is to guarantee a nationwide public safety wireless network for first-responder agents.

The present year may be a suitable moment to support the consideration of the broadband Internet as an indispensable service to an information-driven society. The plan is not free from criticism, however. The intended data rates of 100 Mb/s may not be enough and could hardly be considered broadband Internet in 2020 due to the fast evolution of Internet applications and services. As an example of the fast growing speed demand, we find that the IPTV business is expected to blossom and grow exponentially over the next few years. On the other hand, the FCC plan is described as too aggressive. However, service providing commercial companies such as Google Inc. have announced the deployment of an experimental 1 Gb/s Internet network in some communities to test its feasibility.

Many more questions are still open, and future decisions will define the success of this plan. Perhaps the present critical economic situation will strongly shape its adoption.

(Continued on Newsletter page 4)

Project iREACH: Informatics for Rural Empowerment and Community Health in Cambodia

By Brian Unger, University of Calgary, Canada, Chea Sok Huor, iREACH Project Manager, Cambodia, and Helena Grunfeld, Victoria University, Australia

The International Development Research Centre (IDRC) of Canada has funded an ambitious unique project designed to influence ICT policy in Cambodia. Two pilot sites were developed in poor rural areas, one in Kamchay Mear of Prey Veng Province and one in Damnak Chang Eur of Kep. Each pilot comprises both a cluster of 10 WiFi hotspots, called hubs, and a central office connected to the Internet via satellite and to the 10 hubs by a WiMAX network. Each pilot site is managed by a locally elected management committee with support from project staff.

Project staff at each pilot include a pilot manager, a multimedia development coordinator, several content developers who work directly with community members to create audio and video programming, a research coordinator, and an IT technical support person. The key staff at the central Phnom Penh office are a project manager, a research manager, and an IT technical support manager. The latter two have relevant university degrees and several years' experience. The two IT support people at the pilot sites have little formal IT education.

During the IT specification and implementation stages, computer science and engineering experts were available as consultants. Two fourth year geomatics undergraduate students from the Faculty of Land Management and Administration, Royal University of Agriculture, also performed a transmission "line of sight" study. The results of this study helped with the determination of antenna heights, locations, and other network topology issues.

The project was launched by the Cambodian Ministry of Commerce in May 2006 with initial funding of US$1.3 million from IDRC. With a small further commitment by IDRC, the project is funded through May 2011. Significant further support is needed to achieve sustainability.

iREACH benefits are being studied and documented, and lessons are emerging around community capacity building and empowerment; technical challenges in rural environments; developing relevant and appropriate ICT services; creating a community-based enterprise; deploying a range of participatory monitoring and evaluation approaches; and working within a centralized and fluid political context.

Cambodians videoconferencing at pilot sites between remote villages.

Young and old people participate to iREACH activities.

iREACH is intended as a model of an ICT-based rural community initiative run by the community to serve its needs. The rural communities are envisioned as using ICTs to improve the their economic and social health.

Project Activities and Expertise

Over the years, iREACH staff and volunteers have developed unique expertise in several areas, including:

- Generating and sharing information through e-modules on health, agriculture, and education using Ihe internet, videoconferencing, and radio programming
- Providing ICT services for the community including email, Internet access, overseas calls, audio and videoconferencing, distance learning, and English language training
- Empowering the community by building skills, capacity, and confidence in ICT service development and use, and enabling community participation in all related activities including gender awareness and equality
- Conducting participatory research and surveys in rural areas, including appropriate training for local people and young volunteers

Initial Results on How Villagers Have Benefitted

A full report on participatory research conducted in 2009 and followed up again in February 2010 is nearly complete. Using a qualitative methodology, information was collected from villagers in 22 focus groups in 2009 and 19 groups in 2010.

This research identified many aspects of iREACH that have contributed positively to the livelihoods of users, and other villagers who have benefited through the knowledge passed on by users. Participants from diverse backgrounds demonstrated a capacity for internalizing the information they obtained and using the resulting knowledge in productive ways. Benefits of the project have also played an important

(Continued on page) 4

Third IEEE Lebanon Communications Workshop at American University of Beirut

Rima Cortbawi, Lebanon

The IEEE Communications Society Lebanon Chapter in collaboration with the IEEE American University of Beirut (AUB) Student Branch organized the Third IEEE Lebanon Communications Workshop 2009 (IEEE LCW '09) on 21 November at AUB's Hostler Auditorium. The workshop attracted around 230 participants including telecom engineers, professors, and students. The program started with a plenary session followed by two technical sessions, and for the first time this year, the proceedings were concluded by a panel discussion on the impact of electromagnetic radiation on health.

IEEE Communications Society Lebanon Chapter Chair Dr. Zaher Dawy (AUB) opened with a welcoming speech, thankful for the "strong participation" and "distinguished speakers from Lebanon and abroad." He pointed out that IEEE LCW '09 is instrumental in achieving IEEE ComSoc Lebanon Chapter objectives: to contribute to telecom advancement on a national level, to add to telecom awareness, and to strengthen ties between the academic and industrial worlds. He concluded by thanking the workshop's corporate supporters Detecon Consulting, National Instruments, Cisco, and Nokia Siemens Networks.

AUB's Dean of the Faculty of Engineering and Architecture (FEA) Ibrahim Hajj commended student interest in particular, adding that "students will drive the technology of the future." Hajj added that "countries are not born rich and powerful; they get that way through innovation and research," both of which require collaboration and team work. "This workshop is a small step in the direction of creating [the needed] atmosphere of cooperation," he concluded.

Chair of the IEEE Lebanon Section Dr. Elias Nassar (Notre Dame University) introduced the IEEE as the "largest professional organization in the world" and showed the division of memberships by numbered regions around the world. Nassar then outlined the technical activities of the IEEE, mentioning benefits to professionals from joining the Institute and adding that "staying technically current" through IEEE pays off in the professional world.

The plenary session included a presentation by the head of Competence Practice Communication Technology and member of the Executive Board at Detecon International Dr. Hans-Peter Petry, who elaborated on the next generation of mobile networks, discussing assessment methodologies as well as benchmark parameters. The plenary session was followed by two technical sessions with featured presentations by distinguished invited speakers from Nokia Siemens Networks (Dr. Jijun Luo, LTE System Product Manager), Intel (Mr. Cuneyt Yucel, Director of Market Development for META Region), Ericsson (Mr. Dory Chakour, Radio Access Network Director for Middle East), Cisco (Mr. Moustafa Kattan, Senior Consulting Systems Engineer), and the Lebanese Telecom Regulatory Authority (TRA).

The workshop concluded with an interactive panel discussion on the impact of electromagnetic radiation on health with specialist panelists representing both the public health and engineering points of view on the subject. The panelists included Dr. Sobhi Abou Chahine (Beirut Arab University), Dr. Rima Habib (AUB), Mr. Ibrahim Duhaini (Rafic Hariri University Hospital), Mr. Nayef Azar (Alfa managed by Orascom), and Mr. Hassan Dhaini (TRA).

For more information, check
http://ewh.ieee.org/r8/lebanon/com/ieee_lcw.html

42nd World Telecommunications and Information Society Day 2010 in Pune and Mumbay

By Avinash Joshi, Tech Mahindra, India

WTISD 2010 in Pune

The IEEE ComSoc Bombay Chapter celebrated the 42nd WTISD 2010 with traditional grace, jointly with the Institute of Engineers (India) Pune Local Centre and also with the IETE Pune Centre. A press conference was jointly held on 14 May 2010, at Patrakar Bhavan to give a brief outline of the agenda for 17 May, and the Chairman of the IETE Pune Centre (Mr. Ravi Datar) spoke about this year's WTISD theme and the objectives of celebrating the day. The Secretary Institute of Engineers (India) Pune Local Centre, Mr. D. B. Dhone, and Chairman of the IEEE Comsoc Bombay Chapter (Dr Avinash Joshi) spoke about their respective organizations.

The venue of WTISD 2010 was the Firodia Hall of the Institute of Engineers (India) building in Shivaji Nagar Pune. The chief guest of the function was Shri V. K. Mahendra, principal general manager at BSNL Pune Telecom. The function started with a welcome address by Er. Shri A V Surve, Chairman, Institute of Engineers (India) Pune. Thereafter the Chairman of IETE Pune, Shri RV Datar, read out the message received from the ITU Secretary General on this year's theme, "Better City, Better Life with ICTs." He also spoke about the various activities of IETE Pune Centre. Shri TV Mahadevan, Honorable Secretary, IETE Pune Centre, introduced the eminent chief guest.

Dr. Bharat Chaudhari, Chairman, IEEE Pune Subsection, spoke on behalf of Dr. Avinash Joshi who was traveling and hence unable to participate in the function. Dr. Chaudhari apprised the audience of the IEEE and Communications Society activities, in particular.

The star attraction of the program was the keynote address by chief guest Shri VKMahendra. The audience was highly appreciative of the keynote address and listened with rapt attention. Shri Mahendra in his address first recalled the history of telecommunications as well as IT in the world since their inception and simultaneously brought out the corresponding developments in India recalling the manual electromechanical Strowger and crossbar, and then electronic and digital switching eras. He then came to the ITU theme and explained how modern ICT with its global connectivity through the Internet and digital pathways can serve society in various ways. He also brought out the scope ICT provides for introducing innovative services that can serve society in an inclusive manner. Shri Mahendra concluded his speech by outlining various BSNL Pune Telecom activities in the pipeline.

The occasion was utilized to present the annual ISF awards. Prof. SV Kharkar, Distinguished Fellow and founder member of IETE Pune Centre, declared the results, and the chief guest distributed the prizes.

The function was expertly coordinated by Shri D. G. Patil, committee member of the Institute of Engineers (India), despite short notice.

Er Shri D. B. Dhone Secretary, Institute of Engineers

(Continued on Newsletter page 4)

WTISD 2010/*continued from page 3*

(India) Pune Local Centre, proposed a vote of thanks. The function concluded with high tea. Wide press coverage of the event followed in the next day's newspapers.

WTISD 2010 in Mumbai

The IEEE Bombay Comsoc Chapter jointly organized the program with TCS-Nortel Lab Mumbai, one of the oldest units in TCS jointly working with Nortel for more than 15 years in code-division multiple access (CDMA) technology based development, support, and R&D activities. The topic "Trends in Communication" was aptly chosen by Dr. Madhukar Pitke, Founder-Director of the Center for Development of Telematics (CDOT), Fellow of IEEE Indian Academy of Sciences and IETE, who guided associates in opportunities and challenges in the telecom world and also shared some instances related to the ITU council theme "Better City, Better Life with ICTs." He shared the importance of peer recognition and inspired associates to write papers for IEEE journals where they can get high value and recognition for their work. He also focused on the telecom basics that need to be built by every person working in this domain. The highlight of this session was the interaction between the TCS telecom engineers and Dr.Pitke, who answered all the audience's technical questions in detail.

Mr. Ashok Jagatia, IEEE Bombay Section Secretary, addressed the audience, shared the benefits of WCET certification, and urged TCS associates to take up this certification examination to enhance their competencies. Helso shared details about the Industry Now program with TCS management.

Introduction of the speaker and a vote of thanks were given by Dnyaneshwar Kamble, IEEE Bombay ComSoc Secretary. At the end of this program high tea was served.

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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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BORHANUDIN MOHD ALI, MALAYSIA (BORHAN@ENG.UPM.EDU.MY)
EWELL TAN, SINGAPORE (EWELL.TAN@IEEE.ORG)

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PROJECT iREACH/*continued from page 3*

role in focusing attention on social issues, including domestic violence and security.

It emerged that iREACH has brought many benefits to the people and has been responsive to the needs of communities within its catchment areas. Some of the key findings of iREACH are:

1) It has become part of the social infrastructure in the communities and has driven many positive changes by heralding new forms of engagement between different sectors of the communities, including those who are more marginalized. The project's spirit of volunteerism in its activities, from research to the preparation of audio programs and passing on computer skills to community members, has enhanced positive social capital.

2) It has generated interest in learning among children, youth, and adults. Adults expressed their appreciation for the opportunity to learn through informal education. Students have become more inquisitive, with 200 XO laptops donated by Elaine Negroponte in 2009.

3) It has contributed to improvements in farm practices and income through informal education, primarily in the form of village-to-village broadcasts and lectures.

4) It has improved health, through sanitation and other health related information, and this has reduced people's medical expenses. This has also encouraged many to make more effective use of government health facilities.

5) It has facilitated communication, interaction, and cooperation within families and villages, and between villages equipped with hubs.

6) It has made information accessible on topics produced by other agencies, thereby strengthening the impact of those other initiatives.

7) Research suggests that the project has not yet had much influence on government policy, and there was limited reference to the project being used for, or having spawned, entrepreneurial activity.

8) The project has had an empowering influence, particularly on women, who are in a stronger position to effect improvements in their quality of life. The influence of the project in reducing domestic violence emerged as a strong contributing factor to this, both through education and by providing a meeting place. There were also a few references to villagers being more empowered to engage with people in authority (e.g., report issues to the police and communicate with council members). (Contact e-mail: unger@ucalgary.ca)

References

[1] H. Grunfeld *t al.*, "Informatics for Rural Empowerment and Community Health (iREACH Cambodia). How Villagers Have Used and Benefitted from iREACH: Report on Participatory Evaluation," in preparation, 2010.

NEW BROADBAND ERA/*continued from page 1*

Among other issues, it is not clear that this plan will bring broadband to low population density areas, of low interest to service providers. The absence of public funds might endanger deployment in most areas and thus reduce its benefits. President Obama has compared the deployment of this huge plan to the history of the trail, and for sure it will mark a milestone in the short and recent history of the Internet.

References

[1] http://www.broadband.gov/