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IEEE and Thai Communications: History & Milestones Pictorial Book 2011 Edition

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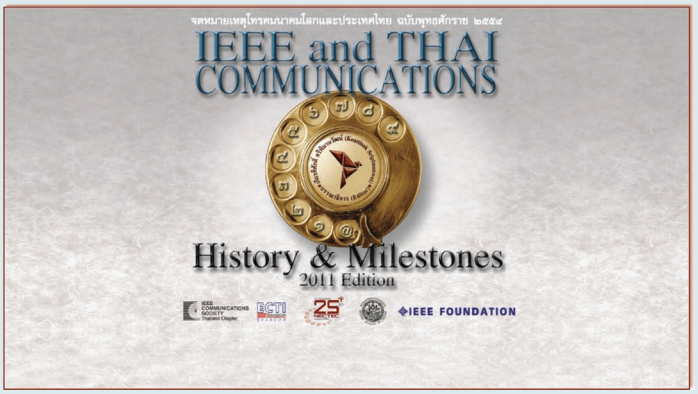
The first coffee table book of IEEE and Thai communications was published at the end of 2011 with financial and technical support from the IEEE Foundation, the IEEE Thailand Section, the IEEE Communications Society: Thailand Chapter, the Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology association of Thailand (ECTI-Telecom) and major organizations in Thailand. It is the first of its kind in Thailand, which combines both international and domestic pictorial contents and annotations of communications history and milestones.



Cover of the book.

As the old adage says, "a picture is worth a thousand words", this book is aimed to inspire and promote the communication engineering discipline among Thai's people. It provides an easy access of historical photographs, notable individuals and pioneers in telecommunications, and illustrations of old telecommunications devices and events such as old telephone/ telegram invention and related communication histories from ground to the air. Major parts of the book are in forms of chronology or time lines enhanced with attractive artwork, pictures, and photos, which should be appeal to larger audiences such as younger generation. The book is also filled with compared lists of both international and national milestones on communications events.

Based on initial resources from the original version of IEEE Communications Society book titled "A Brief History of Communications", which celebrated 50 years of IEEE Communications Society, this book also incorporated Thai's history from national archived materials and public domain sources that intertwined with the world history of communications. Its focus is to preserve the unique history of telecommunications technologies in Thai's society by various individuals and organizations.

Valuable pictures and information are obtained from the National Archives of Thailand, several museums, and related public and private organizations. Two thousand copies of the book and its compact disc versions of 5,000 copies were donated and freely distributed to universities, schools, academic institutes, and libraries around the country. This book, which is also free to download, aims to be available to access by more than three million students. Moreover, some illustrations were used to create the 3,000 copies of the 2012 calendars, which are also freely distributed. It is expected that the book will be a stimulating source of basic telecommunications engineering knowledge and will increase the technological literacy of Thai students. Thanks to IEEE Foundation and all supporters, more information of this book and free e-Book version are online at www.thaitelecomkm.org/TTM.

Spanish COIT introduces New Business Opportunities for Telecommunications Engineers: The Wireless Sensor Ecosystem Initiative

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One of the main challenges that Telecommunications Engineers have to face nowadays in Spain is to adapt to the new economic scenario, not only within the national framework, but also at a global scale. Traditionally, Telecommunication Engineers in Spain have a strong entrepreneur culture, with a great deal of SMEs founded as a consequence. The activity of these companies span from a wide range of services: information and communication consultancy, infrastructure planning and deployment, strategic management, project development for regulatory compliance, among others. This accounts for more than 50% of the job placements that Telecommunication Engineers have in Spain, which is a statement of the relevance that this type of entrepreneurship has among the collective and that has been identified as one of the potential elements to surpass the current economic crisis.

The development of the profession as Telecommunication Engineer in Spain has an institutional representation in the Colegio Oficial de Ingenieros de Telecomunicación (COIT) [1]. Traditionally, it has served as a bridge between Government Bodies and the Telecommunication Engineers, dealing with topics such as consultancy and support to Public Administration, promotion social importance of telecommunications and compliance of legislation by means of project validation, in which COIT acts as warrant of the work carried out by the qualified Telecommunication Engineer. In order to increase the market opportunities and to make more competitive the profession, a group within COIT was formed under the name of New Professional Activities (COIT-NAP). This working group has been analyzing the role of Telecommunication Engineers in business segments such as security consulting, implementation and assessment in cloud computing or adoption of green communication strategies.

One of the most promising opportunities that are being explored is derived from the design and implementation of Wireless Sensor Networks (WSNs) and the applications that these networks can support and deliver. This opens a wide range of possibilities, linked with the advent of the Internet of Things [2], like remote monitoring of vital constants of patients, structural sensing, smart grid evolution, extraction of environmental parameters in agriculture or home and building automation. Due to the fact that the adoption of wireless sensor networks is becoming transversal to every productive segment, there is a clear opportunity window in order to obtain revenue in a mid-term time span. With this idea in mind the COIT NAP group established an initiative called the Wireless Sensor Network Ecosystem. The main goal of the Ecosystem is to provide a platform for exchange of experiences and technical information related to the design, implementation and analysis of Wireless Sensor Networks by the SMEs as well as by large companies, in order to stimulate the growth of activity in this sector. The business model includes all of the previous actors, as well as individual free lance professionals.

In order to achieve a global approach, in which all of the players can interact, a WSN Marketplace has been envisaged, with a common meeting point in the web created for that purpose [2]. This concept includes the developers of the technology (hardware platforms, heterogeneous wireless standards), the application designers, collaborating institutions and consulting partners, SME and freelance as well as the network operators. The structure of this common ground is twofold. On one hand, there is a community of technology developers and providers. The requisites in order to be part of this community are to provide the following:

1. a set of sensors (e.g., humidity, temperature, CO2, etc.) that can be embedded with the transceiver for the final device
2. to provide a gateway element in order to coordinate the elements within the WSN, as well as software in order to perform remote management of the network
3. availability of a software platform in order to develop applications as well as to parameterize the WSNs

These requisites aim to guarantee a high standard of technological development as well as the flexibility for the SMEs as well as freelance engineers who will develop the final projects with the clients. On the other hand, there is a community of application developers, which on the basis of the technological platforms provide the final solution for the client need. In this case, the requisite is to provide generic software implementation, with enough complexity to require the consulting service of the SMEs and freelance workforce to realize the projects.

Since this initiative has been launched, in 2010, the Ecosystem has been integrated by 6 technology developing companies, 7 application developing companies, 2 major network operators and 3 consulting partners, as well as a large amount of engineers who develop their job as freelance or heading SMEs. As a consequence, several initiatives have taken place:

1. An introductory workshop was developed, in which all of the actors of the Ecosystem gave an overview of the business model, the technological platforms, the integration with clients and operators and the future growth of opportunities.
2. The members of the Ecosystem, with the assistance of COIT NAP, have created a content repository which is web based, allowing the exchange of technical information and increasing the adoption of technology by SMEs and freelance members.
3. Several workshops, courses and presentations have been given, in order for the Ecosystem to gain visibility and increase the number of participants within the project.

The experience up to now is proving to be satisfactory for all of the members of the Ecosystem, increasing the interaction as well as opening the path to new business opportunities. In the near future, the WSN Ecosystem will focus on increasing the participation of members as well as exploring new business niches subtle to the introduction of Wireless Sensor Networks in their operation and promoting cooperation projects (public sector and private sector) with public aids.

Further Reading

[1] http://www.coit.es/index.php
[2] Internet of things. UIT 2005. http://www.itu.int/osg/spu/publications/internetofthings/
[3] http://www.coit.es/index.php?op=redessensores

Croatia is "Looking to the Future"

By Mario Weber, HAKOM, Croatia

In late 2010, HAKOM (Croatian Post and Electronic Communications Agency) signed a contract with the Faculty of Electrical Engineering and Computing of the University of Zagreb on the launching of a multidisciplinary research project "Looking to the Future". In addition, the Faculty of Economics and Business, Zagreb, the Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, Split and the Faculty of Electrical Engineering, Osijek have also become engaged in the project, as well as representatives from the industrial sector, Ericsson Nikola Tesla and Nokia Siemens Networks. HAKOM invited all other relevant and interested stakeholders in the electronic communications market (operators, producers and other market participants) to participate in the project, to create a Croatian Electronic Communications Forum. With the launching of the multidisciplinary research project HAKOM managed to combine industry, science, and legislation into a single project of wider social significance.

The project is aiming at preparing participants in the electronic communications market, including HAKOM, for challenges to be encountered in this market in the near future.

The results of research on individual topics are presented in quarterly reports that are commented on and presented at the project's Steering Committee meeting, consisting of members of HAKOM and the academic community.

The project defines two time frames for research. The first one, 1-3 years, with emphasis on market and regulation, and the second, 5-10 years, with emphasis on technology and investments.

Joint topics extending over all three project years are the following: development of electronic communications up to 2020; next-generation network and services; theoretical principles of NGN regulation; infrastructure building policy.

The following specific topics should be mentioned: broadband access in fixed and mobile networks in the Republic of Croatia; development of Internet and IP- network services; IP-based interconnection principles; digital dividend.

1. FIRST YEAR OF THE PROJECT

The objective of the first year was to define architecture of a network supporting new services both in fixed and mobile networks.

Some things may be taken over from the EU, but some are specific for the Republic of Croatia, such as network development in rural areas or development and connection of islands. For that reason, research focuses on network architecture, fixed and mobile, optical transmission network and the development of value added services as an important issue from the regulatory point of view.

It is planned to involve network operators, service providers, as well as equipment producers, in order to achieve desired results.

1.1. Broadband access networks in rural areas.

Rural areas cover the majority of Croatian national territory and their population density is very low. Today's rural areas are faced with numerous problems – significant differences between strongly urbanized areas and the prevailing rural areas

Insufficient and uneven distribution of broadband Internet access may result in the so-called digital divide causing significant differences in development. The creation of conditions for a balanced development of broadband Internet access is of national interest for the Republic of Croatia and a technological and economic analysis represents a basis for the development of a strategic plan for a balanced introduction of broadband access to all parts of country.

In parallel, HAKOM has started a new project with state aid for the development of broadband Internet. €13,4M will be invested over the next five years for infrastructure development, the equipment purchase and development of services on this infrastructure.

1.2. Value-added services/VAS

Location services are becoming increasingly present due to the appearance of new phones with more positioning possibilities. Through this project, HAKOM would like to foresee trends in this field, and possible issues that could arise.

2. SPECIFIC TOPICS OF THE PROJECT

2.1. Regulatory aspects of next generation networks/NGN

NGNs represent a regulatory challenge because of new architecture, organisation and manner of work enable new services and new ways of providing services, thus opening a new electronic communications market.

Our aim is to propose regulatory activities, the necessary tools, knowledge and skills necessary for the regulation of the electronic communications market, and to investigate the possibilities for connection with NGN and between NGNs.

2.1.1. Interconnection models

NGN is based on the packet-switching and IP network protocol. It is necessary to find out interconnection models that will be appropriate for such a network and influence the fulfilment of general goals of regulation of the electronic communications market: encouraging protection and non-distortion of competition, including removal of entry barriers, in order to allow users to select affordable services of desired quality.

2.1.2. Investments and costs of NGN

Investments into NGNs bring new challenges for network operators, service providers and for the regulatory authority. Without an in-depth understanding of total and individual construction costs, and the provision of individual services (retail and wholesale), operators will not get an accurate picture of total investments and the NRA will not be able to impose appropriate regulatory obligations. Therefore, costs understanding may be achieved by means of an appropriate NGN cost model which may differ and depend on the manner of provision of specific services. These cost models also provide insight into investment options (more initial investments = lower unit cost = higher risk) and permit the assessment of cost-effectiveness of investments themselves.

2.2. Use of digital dividend band for new services

Croatia completed switching-over process by the end of 2010 thus creating preconditions for availability of the digital dividend band.

Our aim is to prepare an offer for an efficient use of the freed radio frequency spectrum for the provision of new services. One of the solutions is spectrum auction, but this requires the analysis of specific characteristics of the Croatian market. This project will define the auction mechanisms model that will best fit with national interests.

2.3. Introduction of the IPv6 protocol

Croatia is lagging behind Europe in terms of IPv6 migration,, therefore we have established an IPv6 forum to promote the use of the IPv6, analyse the state of use and introduction of IPv6 in Croatia, identify issues for lack of interest for use of IPv6 by operators, prepare thematic lectures, workshop and presentation for provision of information and prepare technical guidelines for migration to IPv6.

2.4. Network neutrality

The network neutrality issue is still not detected (in Croatia) in a way as it is in the USA or in some European countries, however HAKOM is trying to define the minimum set of QoS and QoE parameters that could be imposed if needed.

Croatia is "Looking to the Future" via a dynamic project that gather a team of experts from the academic community and the industry.

SAWomEng: Revolutionising the Face of Engineering

By Naadiya Moosajee, South Africa

Engineering, not a field for the faint hearted due to the technical and complex nature of the engineering environment and until recently, a field where few women ventured. Globally, the engineering fratenity has struggled to attract and retain women engineers. In more developed countries, female engineers comprise 20% of the engineering workforce, in South Africa, that percentage is lower, at only 14%. South African Women in Engineering (SAWomEng) was founded by two bold female engineering students in 2006 at the University of Cape Town in order to attract, retain and develop young women in this environment. SAWomEng has since grown into a national non-profit organisation with three divisions, which have focussed interventions along the engineering skills pipeline, these are GirlEng, The National Conference and @network.

SAWomEng: future faces of Engineering.

GirlEng attracts high potential maths and science high school girls, through information sessions, weekend engineering camps and school visits. The weekend camps allow girls to gain information on the types of engineering, meet women engineers making remarkable contributions to the industry and gain access to mentors – university engineering students who have been specially trained to assist girls make good decisions on engineering as a possible career path. GirlEng camps provide the opportunity for girls to find information on university requirements, and scholarships and bursaries through sponsoring companies. Since the inception of the GirlEng program, in 2010, more females are applying for engineering, and the program has provided 2000 girls with an opportunity to explore engineering as a career opportunity.

The SAWomEng National Conference is an annual weeklong challenge for the top 70 female engineering students from around South Africa. Delegates are challenged with finding solutions to some of the toughest engineering problems; from alternative energy and green buildings to water and sanitation in informal areas. During the fully sponsored conference, delegates have access to the best thought leaders in the industry, site visits and panel discussions. By the end of the week, delegates present their solutions to a panel of judges. The week is also filled with workshops from presentation and leadership skills to becoming a great networker. Delegates have the opportunity to find an industry mentor at our speed networking events, as well as possible employement at our annual engineering fair and cocktail networking function.

Currently, SAWomEng relies on 81 volunteers, the majority being university students and recent graduates to coordinate all the programs, and many have been recognised for leadership skills on national and international platforms. Wth the work in attracting, skilling and developing female engineers, SAWomEng is well on its way to developing a pool of remarkable women engineering leaders in South Africa.

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