Global
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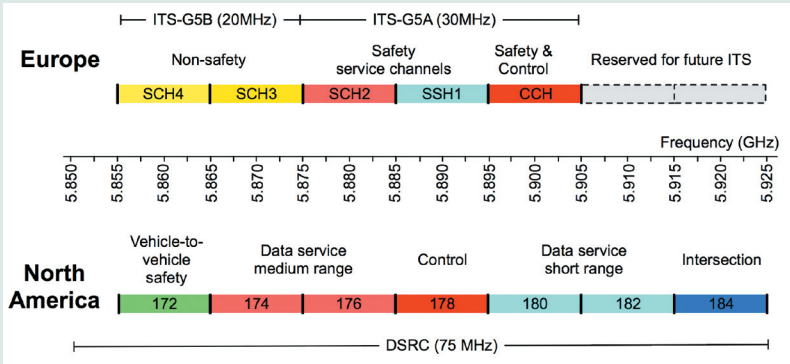
ETSI Technical Committee ITS: News from European Standardization for Intelligent Transport Systems (ITS)

By Dr. Andreas Festag and Soeren Hess, ETSI TC ITS

Communication is a cornerstone of future intelligent transportation systems (ITS); and standardization is a key aspect for European and worldwide deployment and usage. The European Telecommunication Standardization Institute (ETSI), well known for communication standards such as GSM, created a technical committee (TC) for ITS at the end of 2007. Generally, its mission is the creation of standards and specifications for the use of information and communication technologies in future transport systems in Europe. Most of the technical committee's ongoing standardization activities are focused on wireless communication for vehicle-to-vehicle and vehicle-to-roadside communication.



■ *ITS 5GHz frequency allocation in Europe compared to North America: similar frequency band, but different usage.*

The current situation of ITS development in Europe can best be described by three aspects. First, several European publicly funded R&D projects have created a solid technical basis for vehicular communication; see [1] for a project list. Second, the CAR-2-CAR Communication Consortium (C2C-CC), a European industry association, has showcased various use cases for vehicle safety and demonstrated interoperability among major European vehicle manufacturers and suppliers [2]. Third, the allocation of the frequency band for primary use with safety-related and traffic efficiency applications has been completed on a pan-European basis [3].

The TC is well connected to other organizations: various European R&D projects contribute to specifications, close cooperation with C2C-CC and ERTICO (a European public-private partnership for ITS) ensures the deployment of the developed standards, and interaction with other standardization development organizations (CEN, CENELEC, IEEE, ISO, ITU) allow for global harmonization. The TC has set up five working groups (WG1: Application and User Requirements, WG2: Architecture and Cross-Layer Issues, WG3: Network and Transport, WG4: Media and Media-Related, WG5: Security). In February 2009 the TC organized its first workshop at ETSI's headquarters in Sophia Antipolis, France. More than 120 participants representing a variety of European and worldwide stakeholders on ITS discussed the results the TC has achieved so far and the way forward (see [4] for more information and the workshop presentations). The secondnd ETSI TC ITS workshop is already scheduled for 10–12 February 2010, again in Sophia Antipolis.

From a technical perspective, the European approach to vehicular communication has many commonalities with the North American system as defined by the IEEE 1609 set of standards: Both primarily rely on a variant of IEEE 802.11 with a similar frequency band (see the figure for a comparison), use periodic heartbeat messages sent by every vehicle and roadside unit, and make use of IPv6 for data services. Likewise, the European system has a number of unique characteristics: it enables a multitude of wireless technologies, enforces IEEE 802.11 multitransceiver concepts, and facilitates multihop communication for IEEE 802.11 as well as specific safety and infotainment applications.

A core component of the European system is the "ITS station," a generic element that can be instantiated as vehicle, roadside, personal, or central (in the sense of infrastructure) type. The overall communication architecture being discussed in the TC enables ad hoc communication in the ITS ad hoc domain or infrastructure-based communication, via either a dedicated ITS roadside infrastructure network or a generic access network (typically UMTS). For road safety, the TC has defined a basic set of ITS applications that are expected to be deployed in the next few years. Important facilities that support these applications are CAM and DENM. Cooperative awareness messages (CAM) are heartbeat messages that are periodically broadcast by every vehicle station and carry a station's trajectory, velocity, and other data. It is also sent by roadside stations to announce their presence, status, and capabilities. Decentralized environmental notification messages (DENM) are triggered by the detection of a road safety

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"Broadband for All Europeans" to Fight Economic Crisis

By Nicolae Oaca, Romania

Today broadband access is more than a common utility. It is a key factor to accelerate economic development and fight the economic downturn. Accordingly, an increasing number of countries plan to connect 100 percent of premises with broadband Internet, 100 Mb/s, via next-generation networks (NGNs), while the European Commission wants broadband for all Europeans by 2010. Speaking about "Digital Britain," British Prime Minister Gordon Brown said: "Our digital networks will be the backbone of our economy in the decades ahead. It is as essential to our future prosperity in the 21st century as roads, bridges, trains, and electricity were in the 20th century."

European Commission Wants "Broadband for All Europeans"

In March 2006 the European Commission (EC) presented "Bridging the Broadband Gap," a report considering wide broadband coverage in Europe crucial for fostering growth and jobs in Europe.

On 25 September 2008, EC launched "Broadband Internet for All Europeans," a debate on the future of universal service aimed at providing broadband access to all EU citizens by 2010 and considering broadband access as part of a universal service obligation. The report, IP/08/1397, states that 7 percent of the EU's population is not connected (30 percent in rural areas) to broadband, finding impressive gaps: 100 percent of the population is covered in Denmark, Luxembourg, and Belgium, but more than 60 percent in Romania (75 percent in rural areas) do not have broadband access. Broadband Internet is expected to create 1 million jobs and boost the EU economy by €850 billion between 2006 and 2015.

On 28 January 2009, EC MEMO/09/35 announced €1 billion investment in broadband in rural areas, part of its plan to achieve high-speed Internet coverage for all citizens by 2010 as part of the European Economic Recovery Plan. The money is part of a larger package worth €5 billion for energy and infrastructure investments to stimulate the economy and will be injected into the existing Rural Development Programmes this year. Projects are selected by the member states to reflect local needs.

Investments on NGN in Europe to Accelerate Recovery

Greece reveals €2.1 billion national fiber network at 100 Mb/s

In early September 2008, the Greek government announced a sevenyear €2.1billion program to build a national fiber optic network connecting two million households: €1000/house. In mid-February 2009 new details were disclosed. The government aims to enable speeds of up to 100 Mb/s for nearly 650,000 users by 2010 to be expanded to over two million households over the next seven years. The project consists of fiber network deployments in Athens and 50 other cities, including the islands, and will be financed with support from the private sector to complement the government's €700 million investment. The project needs to secure EC clearance, also hoping for external funding from the EIB or EC. Network contracts will be awarded before the end of 2009 via public tender, with building to begin next year. New legislation aimed to facilitate the project's success and cover the shared use of ducts and in-building networking is to be introduced.

UK: Digital Britain to accelerate recovery from the recession

According to a report unveiled on 8 September 2008, the cost of installing high-speed broadband (100 Mb/s) in every home in the United Kingdom could reach up to £30 billion, covering one third of the population. National deployment of fiber to street-level boxes would cost £5.1 billion, while taking fiber to every home costs £28.8 billion.

In late January 2009 the British government released details of "Digital Britain," planning to bring broadband to every home by 2012 in a bid to make the country more competitive and accelerate recovery from the current recession. The plan is to provide access at speeds of at least 2 Mb/s, a level operators do not consider adequate for many basic home entertainment applications. Sixty percent of U.K. homes are connected to broadband, while 99 percent of the population has access to it.

Italy: €10 billion for NGN

In mid-September 2008 the Italian government announced plans to invest around €1 billion in a nationwide broadband network, which it says will help boost the country's GDP by between 1.5 and 2 percentage points. The state will finance around 10 percent of the cost of deploying a €10 billion NGN under a public-private partnership expected to cover the entire country via high-speed Internet by 2013.

Finland plans high-speed broadband for all by 2016

On 22 September 2008, Finland announced plans to offer broadband access to the entire nation by year-end 2016. One estimate is that building fiber optic networks in areas where they would not be built commercially costs around €200 million, of which the government could pay one third, 67million. The remaining cost is to be covered by operators, municipalities, and financial support from the EU. While the government plans to offer speeds of 100 Mb/s to all households by 2016, it will initially provide 1 Mb/s by 2010.

France announces "France NumErique 2012"

On 22 October 2008, government announced details of "France NumErique 2012," a policy document designed to restore growth and modernize the country. The government is proposing 154 measures under its digital economy plan including moves to give all citizens broadband access by 2012, up 54 percent from today. France NumErique 2012 aims to provide broadband access to everyone for less than €35/month.

Portugal: €1 billion investment in NGNs

On 8 January 2009, the Prime Minister announced a government provided €800 million credit line to support Portugal Telecom, Zon Multimedia, Sonaecom, and Oni in their €1 billion investment to build out broadband fiber networks this year. The networks will cover 1.5 million homes and are considered imperative to fight the economic downturn.

Ireland: €223 million "Broadband for All" plan

The Irish government announced on 23 January 2009 a €223 million plan to bring broadband to all by September 2010. A contract had been agreed with 3 Ireland to deliver high-speed Internet to the remaining 10 percent of the population without coverage. 3 Ireland has committed to the 21 month deadline; the contract will cover 223.000 premises (€1000/house) and create 170 new jobs.

Germany: Broadband for all Germans could cost €50 billion

On 19 February 2009, the German federal government presented plans to ensure all households broadband access by year end 2010. The first phase of the strategy aims to provide broadband access for all households by 2010, while the second phase aims to bring broadband access at or above 50 Mb/s to 75 percent of households by 2014.

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CCIS, the Croatian Society in ICT: Living in ComSoc's Sister Society Family

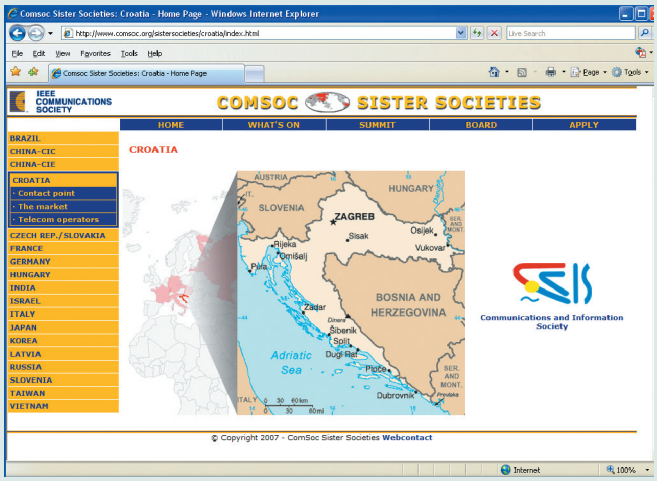
By Nikola Rozic and Dinko Begusic, CCIS, Croatia

The Croatian Communications and Information Society (CCIS) became a member of ComSoc's Sister Society family in 2002. The Agreement between CCIS and ComSoc was signed at GLOBECOM 2002 in Taipeh by Celia Desmond, President of ComSoc, and Nikola Rozic, President of CCIS. An important role and great work in encouraging and preparing both sides for that first step was done by Algirdas Pakstas, Director of Sister Societies, and Alex Gelman, VP Society Relationships at that time. The Agreement was renewed three years later in Seoul, at GLOBECOM 2005. We are very thankful for encouragement, first to ComSoc President Curtis Siller as well as to Naohisa Ohta, Director of Sister Societies and Nim Cheung, VP Society Relationships, at that time. Today, we are proud to say that we have enjoyed really fruitful seven years in ComSoc's Sister Society family and would be honored to continue our collaboration.

Maybe the most important and best part, without many words, about these past years' collaboration between CCIS (and other SSs) and ComSoc is the new ComSoc Sister Societies Web site (http://www.comsoc.org/sistersocieties/) initiated and promoted by Roberto Saracco, the current Director of Sister Societies, in cooperation with members of the Sister Society Board. The Web site's name is really inspired: "Piazza." Thanks to the Piazza initiative, the CCIS's Web site (as well as those of the other SSs) has been enriched by information including the contact point, status, and evolution of the telecommunication infrastructure and market, and relations with local industry and telecom operators. Piazza was launched in 2007. It was an extremely great step ahead particularly from the point of view of CCIS and its members. Piazza has become the place to present up-to-date information on Societies' status and activities when there is the need to share this information and involve the broader constituency of ComSoc and members of the other Societies.

As one of the key steps in the Piazza initiative, the ComSoc Sister Societies Board has launched an action to establish relationships with Chapter members like those ComSoc has established with SS CCIS' members. After this initiative, CCIS as ComSoc's SS and Croatian Chapter, have established very successful cooperation in organizing out main conferences in Croatia SoftCOM and ConTEL, as well as Distinguished Lecturer Tour programs.

Nim Cheung, President of ComSoc (right), Roberto Saracco, Director of the Sister Societies (left), and Elya Joffe, President of IEEE EMC Society (bottom), gave their keynote presentations at SoftCOM 2006, 2007, and 2008, respectively.



Screenshot of the CCIS's first page from the new Sister Society Web Site on Piazza (http://www.comsoc.org/sistersocieties/croatia/)

The CCIS President regularly attends and presents activities of the Croatian Society at SS Summits that are traditionally organized in conjunction with ICC and GLOBECOM. CCIS members are active in relations with ComSoc. Five CCIS members attended GLOBECOM 2008 in New Orleans, Louisiana. Senior Administrator Carole Swaim performed an important role in organizing contacts and meetings for the CCIS representative.

CCIS's main conference, SoftCOM, has been technically co-sponsored by ComSoc since 1998. In addition, starting in 2002, the SoftCOM conference has been regularly advertised in ComSoc's most popular publication, *IEEE Communications Magazine*. SoftCOM regularly features keynote and invited talks, often given by recognized ComSoc's speakers. Indeed, we were honored to have had the opportunity to welcome and heart Sergio Benedetto at SoftCOM 2003 and Nim Cheung at SoftCOM 2006, when he was ComSoc's President. In 2007 keynote speaker was Roberto Saracco, Director of Sister Societies. Besides ComSoc, last years SoftCOM conference was also technically co-sponsored by the IEEE EMC Society. The keynote speaker at SoftCOM 2008 was Elya Joffe, President of the IEEE EMC Society. The inspiring keynote talks and personal attitudes of these outstanding people as well as their openness and readiness to communicate with each conference participant have had a significant impact on interest in ComSoc as well as CCIS memberships. The joint CCIS-ComSoc info desk is regularly organized at SoftCOM conferences. Participants are offered samples of ComSoc's main publications, Conference Calendar, conference Calls for Papers, and Forms for Memberships and subscriptions provided by ComSoc.

CCIS regularly solicits members, particularly Ph.D. students, to join not only CCIS but also ComSoc so that they can easily and preferentially gain access to the most important publications, conference proceedings, and other scientific and

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event and disseminated in a geographical area until the dangerous situation clears. These messages use a specific GeoNetworking protocol at the network and transport layer. GeoNetworking enables ad hoc networking among stations and, if needed by upper layers, wireless multihop communication. It utilizes geographical positions for addressing individual stations and geographical areas, and provides efficient and low-latency communication. As wireless technology, IEEE 802.11 operating in the 5 GHz band is receiving the most attention. More specifically, the TC is developing a European profile standard of IEEE 802.11 that is similar to the p amendment of IEEE 802.11, but adapted to European conditions and requirements. This profile will be complemented by specifications for channel usage, transmit power control, multichannel operation for 5 GHz operation, and more.

The first set of standards and technical specifications will be finalized during 2009, including specifications on security and privacy issues with a threat vulnerability and risk analysis (TVRA) as well as objectives and functional requirements for ITS security and privacy.

We foresee increased standardization activities in TC ITS during 2009 and 2010. The European Commission's ITS action plan also includes a standardization mandate to develop ITS standards flanked by field operational tests (FoTs) for cooperative ITS in Europe. These activities point toward harmonized implementation and deployment of interoperable intelligent transport systems in Europe and worldwide.

[1] Overview of European R&D projects in ICT, 7th Framework program, http://cordis.europa.eu/fp7/ict/

[2] CAR-2-CAR Communication Consortium (C2C-CC), http://www.car-2-car.org

C2C-CC Forum October 2008: http://www.car-to-car.org/index.php?id=89

[3] European Commission DG Information Society and Media: "Commission Decision on the Harmonised Use of Radio Spectrum in the 5 875-5 905 MHz Frequency Band for Safety-Related Applications of Intelligent Transport Systems (ITS)," *Official Journal of the European Union*, vol. 51, Aug. 2008

[4] 1st ETSI TC ITS Workshop. Sophia-Antipolis, France, February 2009, http://www.etsi.org/webSite/NewsandEvents/Past_Events/2009_ITSWORKSHOP.aspx

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www.comsoc.org/pubs/gcn

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technical materials.

CCIS in cooperation with the University of Split started publishing the *Journal on Communications Software and Systems* (JCOMSS) in autumn 2005. The journal is published quarterly and focuses on high-quality internationally peer reviewed papers that advance the state of the art and applications in communications software engineering and communications systems, particularly including new technologies, methods, and algorithms, as well as reports on experiments with analyses of performance and prototypes. The journal has been endorsed by the ComSoc's Technical Committee of Communications Software (CommSoft) from its beginning. From the very start of publishing JCOMSS we have tried to keep step with IEEE standards. The JCOMSS editorial team includes a number of recognized ComSoc members, and reviewers are mostly recruited from members of the IEEE family. Among authors of published papers there are several very recognizable names such as C. Berrou, S. Benedetto, Y. Nemoto, A. Jamalipour, N. Kato, G. Caire, S. Lin, G. Montorsi, and F. Lattarulo, among many others.

In August 2007 a Memorandum of Understanding was signed between ComSoc and CCIS that extended the previous Publications Side Agreement to include ComSoc's technical co-sponsorship of JCOMSS for a five-year period. Currently, JCOMSS is under consideration for including published papers in Xplore as well as in Scopus.

Based on recommendations made at the SSS in Glasgow, United Kingdom in June 2007, information on JCOMSS and a link to the JCOMSS home Web page have been included in the Piazza Web site. The Sister Society Publications Website is http://www.comsoc.org/pubs/-sispubs.html, and the JCOMSS home Website is http://www.ccis.hr/jcomss. The CCIS website is http://www.ccis.hr/.

BROADBAND IN EUROPE/*continued from page 2*

To achieve this, the government focuses on speeding up digital dividend auctions pushing operators to seek synergy via joint infrastructure deployments (€3 billion savings in the medium term due to the fact that 70 percent of fixed-line rollout costs consist of excavations and civil engineering works). Fifteen measures are to be taken rapidly, including opening up all existing networks from federal, state, and local governments, as well as companies for third parties to use. The strategy will stimulate investments of up to €50 billion and should create around 250,000 jobs.