RAISING COMSOC STANDARDS ACTIVITIES TO NEW HEIGHTS

Standards play increasingly greater role in communications industry. As the technology progresses and silicon allows more flexibility the need for more standards grows as well. A simple illustration is this: while a "hard wired" physical layer in a mobile wireless device requires only one standard, a flexible solution based on cognitive or software defined radio requires as minimum additional, configuration management and secure download, standards for the same physical layer to operate.

Bringing industry together in development of a broad spectrum of global communications and networking standards and enabling academia not only to support industry but also drive the creation of scholarly standards in technologies which are still in precompetitive phase of evolution, is the mission of ComSoc Standards Activities.

Recognition of Standards as a critical service to ComSoc membership, to industry, academia, and humanity brought ComSoc to a decision to elevate standards activities to the highest possible level by creating the position of Vice President – Standards Activities and the Standards Activities Council. The first elected Vice President of Standards Activities is Alexander D. Gelman who will serve in this position in 2012-2013.

Alex and two Standards Activities Directors, Kevin W. Lu and Stephen F. Bush, are contributors to this president's message.

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THE NEW COMSOC STANDARDS ACTIVITIES STRUCTURE

ComSoc enjoyed a successful evolution of Standards Activities from the time of the Standards Board creation under Technical Activities in 2004 (the first ComSoc Director of Standards – Raouf Boutaba) till the end of 2011. A number of Standards Activities volunteers grew within ComSoc but even more of new standards experts joined the ComSoc standards community. It pays to note that in 2012 ComSoc Standards Activities area enjoys significant presence in the IEEE Standards Association (IEEE-SA) governance structure. Standards Activities Volunteers serve on the IEEE-SA Board of Governors (BoG) and its committees (Rob Fish and Don Wright) and on the IEEE-SA Standards Board (IEEE-SASB) and its committees (Masayuki Ariyoshi, Jean-Philippe Foure, Alex Gelman-representing IEEE TAB, Paul Houze, Oleg Logvinov, Curtis Siller, and Don Wright).

As of January 1, 2012 ComSoc had total of 24 Working Groups. Some of them, are grouped into three Standards Committees and some report directly to the ComSoc Standards Board. These Working Groups operate in various phases of the standards lifecycle: project formation, development of standards, standards maintenance.
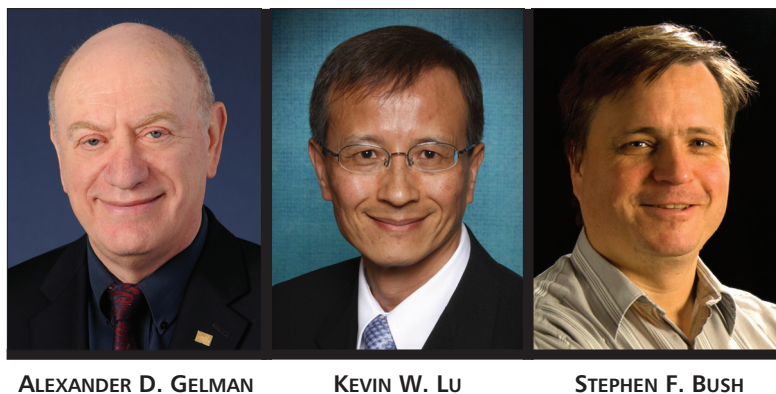
ComSoc sponsored both, individual and entity based projects. ComSoc has been a champion and served as a test ground for entity projects in IEEE-SA. It is therefore not surprising that ComSoc Standards Board was among first recipients of the Entity Sponsor award in 2009 and one of ComSoc's project lead entities, Huawei, was among the first recipients of the Entity award for their leadership of the IEEE P1903 (Next Generation Services Overlay Networks – NGSON) project.

The year 2011 culminated with an IEEE-SA entity award given to Broadcom for the leadership of the ComSoc-sponsored IEEE P1904.1 (Standard for Service Interoperability in Ethernet Passive Optical Networks – SIEPON) Working Group. The chair of the P1904.1 Working Group, Glen Kramer of Broadcom, exhibited extraordinary skills in launching and leading the project. The award was received by Nickolas Ilyadis, Vice President and CTO of Broadcom Infrastructure and Networking Group. In his acceptance speech Nicholas praised ComSoc for support and leadership in standards arena.

During 2011 the ComSoc Board of Governors worked on restructuring Standards Activities. As a result a new ComSoc Standards Activities Council has been formed and it went into operation on January 1, 2012. By this historic move ComSoc has elevated its standards activities to the highest strategic level.

Figure 1 shows the new ComSoc Standards Activities structure. It encompasses a Standards Activities Council (SAC), chaired by ComSoc Vice President of Standards Activities, Alexander D. Gelman, and two boards: ComSoc Standards
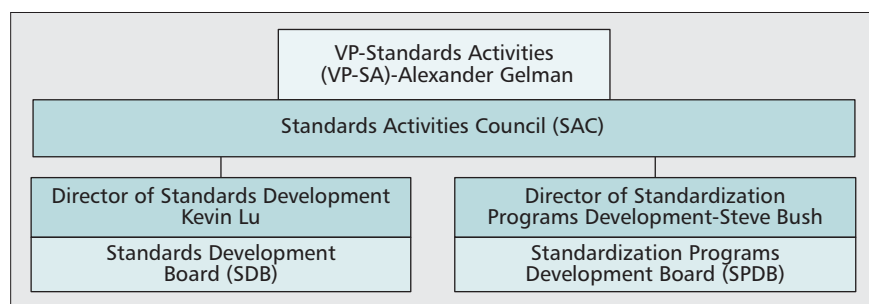

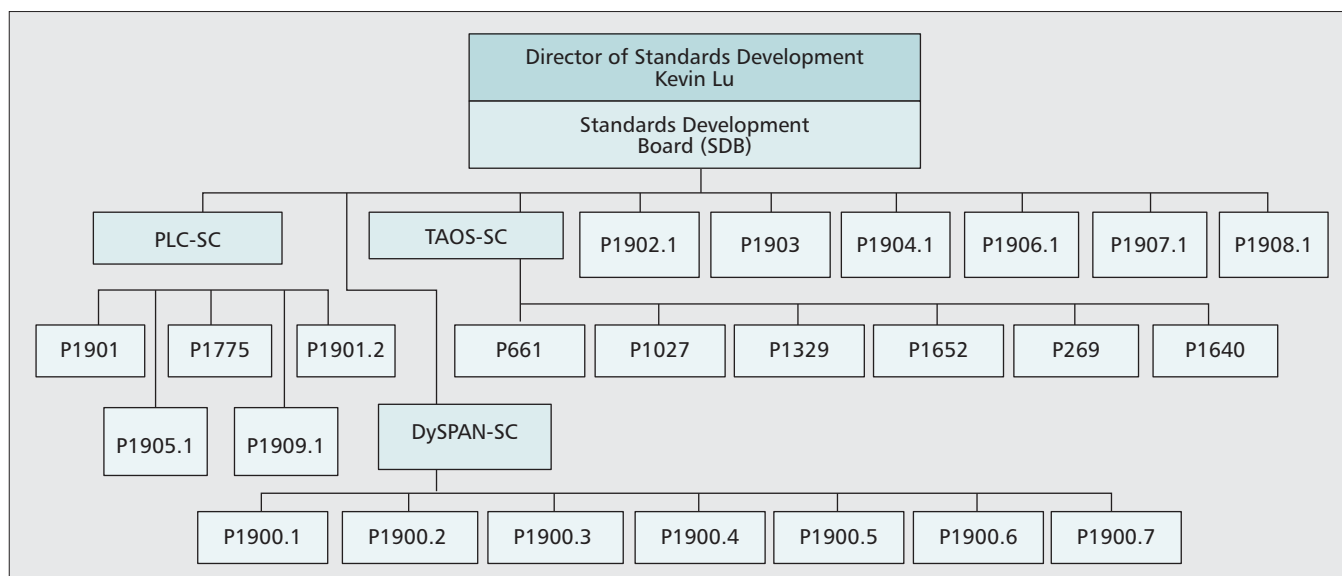**FIGURE 1.** *Standards Activities Council.*

FIGURE 2. *CSDB structure.*

Development Board (CSDB), chaired by ComSoc Director of Standards Development, Kevin W. Lu, and ComSoc Standardization Programs Development Board (CSPDB), chaired by ComSoc Director of Standardization Programs Development, Stephen F. Bush.

According to ComSoc bylaws, SAC automatically includes as members the Vice President – Technical Activities, Len Cimini, two Directors reporting to the Vice President of Standards Activities, and additional members who are chairs of Standards Committees reporting to both Standards Activities Boards. In 2012 these SAC members are Jean-Philippe Foure, the chair of the Power Line Communications Standards Committee (PLC-SC), Hiroshi Harada, the chair of Dynamic Spectrum Access Networks Standards Committee (DySPAN-SC), and John Bareham, the chair of Transmission, Access and Optical Systems (TAOS) Sub-Group. The latter one is not working on new standards but rather supports maintenance of telephony-related standards sponsored by ComSoc in the past.

COMSOC STANDARDS DEVELOPMENT BOARD - CSDB

The 2012-2013 ComSoc Standards Development Board (CSDB) consists of nine voting members. It is chaired by Kevin W. Lu (Broadcom). Other officers are: Vice Chair – Don Wight (Lexmark), Secretary – R. Venkatesha Prasad (TU Delft), and Treasurer – Farooq Bari (AT&T). The five other members are: Jean-Philippe Faure (Progilon), Nada Golmie (NIST), Hiroshi Harada (NICT), Paul Houzé (France Telecom), and Glen Kramer (Broadcom). The board also enjoys the wisdom of two advisers, Rob Fish (NETovations, LLC) and Curtis Siller (Enginnovation). According to ComSoc bylaws, the VP-Standards Activities is also an ex officio of the CSDB. The CSDB has standards liaisons from the ComSoc Technical Committees and Subcommittees. The CSDB strategy is threefold: aim for standards portfolio spanning the entire ComSoc technical scope, seek out standards opportunities – target early scholarly standards, and leverage the pool of experts residing in all ComSoc Technical Committees (TCs).

In the past two years the ComSoc Standards Board, chaired by Curtis Siller, has significantly grown its standards portfolio. During the period of 2010-2011 the following ComSoc standards were published IEEE1901, IEEE1775, and IEEE1900.5 and two standards were amended: IEEE1900.1a and IEEE1900.4a. At this time the IEEE1904.1 draft standard is close to completion: it is entering its final phase – the sponsor ballot.

A number of new projects have been launched. In the area of Cognitive Radio a new project IEEE P1900.7 (Radio Interface for White Space Dynamic Spectrum Access Radio Systems Supporting Fixed and Mobile Operation, Chair-Stanislav Filin) has been recently created by the DySPAN Standards Committee. The most recently created project is IEEE P1909.1 (Recommended Practice for Smart Grid Communication Equipment –Test Methods and Installation Requirements, Chair – Aron Viner) has been launched by the ComSoc Standards Board and is now governed by the PLC Standards Committee.

While ComSoc is a relatively "young" IEEE standards sponsor, ComSoc standards constitute a significant part of the IEEE standards portfolio. The brochure that was distributed by IEEE-SA at the International Consumer Electronics show in Las Vegas featured IEEE standards related to consumer networking. Among standards in the "Smart Grid into Home Devices" category, 3 out of 7 were those sponsored by ComSoc; in the "Home Networking" category, 3 out of 5 were ComSoc standards; in the "Electric Vehicles" category, 2 out of 6 were standards sponsored by ComSoc.

There have been recent IEEE-SA press releases related to three ComSoc-sponsored projects:

1. "IEEE P1901.2™ Standard for Low-Frequency, Narrowband Power Line Communications Enters Letter Balloting" – IEEE P1901.2 supports Smart Grid applications such as grid to utility meter, electric vehicle to charging station, home area networking and solar-panel communications.

2. "New IEEE P1908.1™ Working Group to Develop Virtual Keyboard Standard for Indic Languages" – IEEE P1908.1 aims to enable use of Indian languages on smart phones and tablet computers through touch screen interface with little or no training.

3. "IEEE Conformity Assessment Program (ICAP) to Establish Testing and Certification Program for EPON Equipment" – It was a collaborative effort by ICAP and the member entities of the IEEE P1904.1™ SIEPON Working Group.
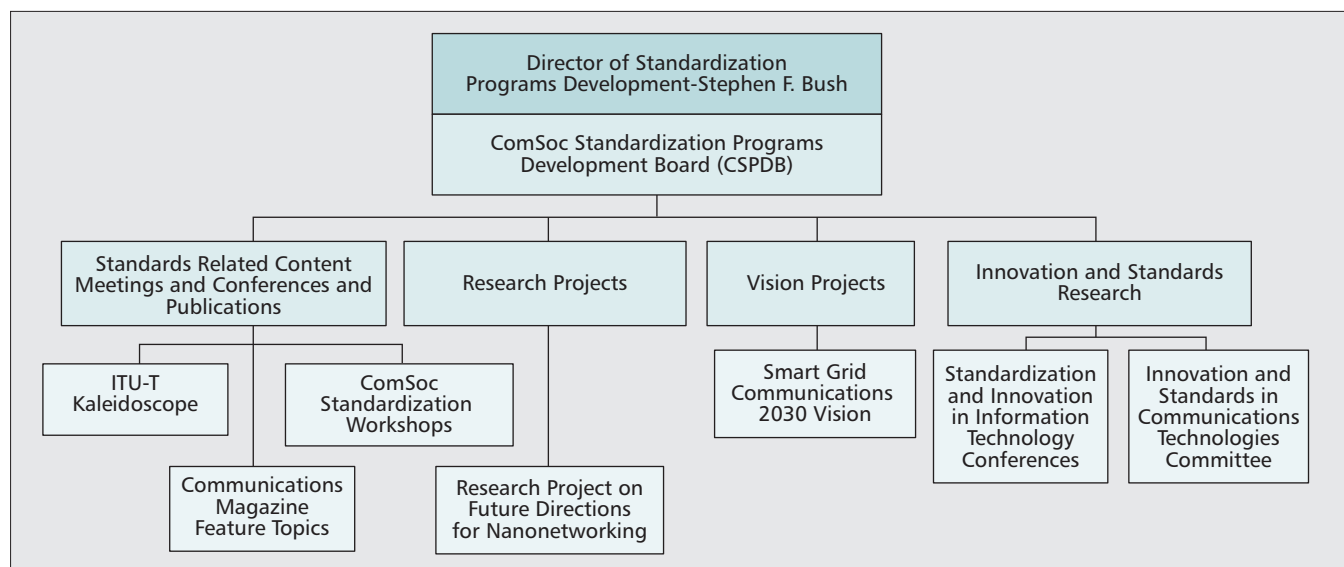
FIGURE 3. *CSPDB structure. Details can be found on the board website: http://committees.comsoc.org/CSPDB.*

Figure 2 shows the CSDB structure. The CSDB aims to scale up ComSoc Standards Development activities by forming Standards Committees, the sub-groups that will sponsor standards development projects within their scope. The three standards committees currently in operation are: PLC-SC, DySPAN-SC, and TAOS Sub-group. Our goal is to grow to the number and scope of standards committees mirroring ComSoc TCs.

The CSDB pays special attention to growing the part of its standards portfolio that supports industry in Asia. This activity is represented by such projects as IEEE P1903 (NGSON) series and one of the newest ComSoc projects IEEE P1908.1 (Chair – Arjuna Rao Chavala) that targets development of a virtual keyboard standard for Indic languages. Wide support of Asian industry has been also observed during the formation of the IEEE P1907.1 – Standard for Network-Adaptive Quality of Experience (QoE) Management Scheme for Real-Time Mobile Video Communications (Chair – John Ralston). This entity type project is still in its infant phase and participation from industry and academia is invited.

A dialog facilitated by IEEE-SA has been established between the ComSoc Standards Activities and IEEE-SA Standards Interest Group (SIG) for India. New projects are expected from this relationship. A Study Group has been already formed on "Emergency Warning System (EWS)". The project is championed by Syam Madanapalli of Indian SIG and the Study Group is chartered to develop a new Project Authorization Request (PAR) for a EWS-related standard within six months.

CSDB's doctrine is to leverage expertise residing in ComSoc Technical Committees. CSDB enjoys liaison relations with most ComSoc TCs as well as with Interest Groups within TCs and also with newly formed Emerging Technologies Subcommittees. The IEEE P1907.1 project PAR was created with the help of Quality of Experience Interest Group of the Multimedia Communications TC. The Emerging Technologies Technical Subcommittee on Applications of Nanotechnologies in Communication has formed a standards project IEEE P1906.1 "Recommended Practice for Nanoscale and Molecular Communication Framework" (Chair – Stephen F. Bush). This project has brought together a diverse group of experts from communications, bio-electronics, physics, biology, chemistry,

and other fields to focus on a common definition, framework, and terminology that will support global research activities in nanoscale communications. This standard will enable researchers to collaborate and share ideas across diverse fields. It is CSDB's strategy to grow ComSoc standards portfolio of scholarly standards as exemplified by IEEE P1906.1

The CSDB is on the lookout for new standardization opportunities. It strives to be the venue of choice for global standards in the areas of communications and networking.

All inquiries on current ComSoc Standards projects as well as new project proposals should be directed to the ComSoc Director of Standards Development Kevin Lu (klu@ieee.org).

COMCOC STANDARDIZATION PROGRAMS DEVELOPMENT BOARD - CSPDB

Standardization Programs Development is an exciting new phenomenon in ComSoc Standards Activities. The mission of this board is to spur innovation in research and help incubate early, potentially high-risk/high-payoff, concepts onto a path towards standardization. The modus operandi includes initiation and management of Vision and Research projects as well as standards related conferences, workshops, and publications.

The ComSoc Standardization Programs Development Board is chaired by ComSoc Director of Standardization Programs Development Stephen F. Bush (GE Global Research) and it includes the following Board members: Sanjay Goel (SUNY Albany), SM Hasan (GE Global Research), Warren Grice (Oak Ridge National Laboratory), Marija Ilic (CMU), Lutz Lampe (UBC). As per ComSoc bylaws in this Board as well, VP-Standards Activities Alex Gelman serves as an ex officio. The Structure of CSPDB is shown in Figure 3.

Pre-standardization activities, such as Vision and Research Projects, are among main items in the CSPDB modus operandi.

In this area CSPDB is already partnering with IEEE-SA's Industry Connections Program Committee-ICCom (Chair – John Kulick). CSPDB members, Sanjay Goel and Stephen Bush, are leading the Smart Grid Communications Vision Project designed to formulate a vision for Smart Grid Communications in 2030 and beyond. The formation of this pro-

ject has been supported by the ComSoc Smart Grid Communications Ad Hoc Committee (Chair – Stefano Galli).

The intent is to launch more Vision Projects. Possibilities include Communications for Clouds, Internet of Things, etc.

Research projects are designed to provide a forum for discussion of technologies that need to be developed before they are ready for standardization. The participants in Research Projects can be industry and/or academia groups. The output of such projects may be in a form of a white paper, a position paper, a vision book, a technology road map, etc. Among objectives is to draw a path to standards and discovery of early standardization opportunities.

The first ComSoc-sponsored Research Project on Future Directions for Nanonetworking has been formed in partnership with the IEEE-SA ICCom on initiative of the ComSoc emerging Technologies Subcommittee on Applications of Nanotechnologies in Communication. This project was launched in 2011 and it was initially sponsored by the ComSoc Standards Board. The sponsorship has been transferred to CSPDB in the beginning of 2012.

The responsibility for Vision and Research Projects in CSPDB is assigned to Sanjay Goel.

The CSPDB is gearing up for support of standards-related meeting and conference activities. This area is being led by Warren Grice and Lutz Lampe. CSPDB members will participate in the Research-to-Standards Workshop at ICC 2012. Alex Gelman, Stephen Bush, and Andrew Eckford will lead off with Keynote presentations discussing innovation, standards, and lessons learned from the Nanonetworking research project. CSPDB has also assumed responsibility for technical sponsorship of the ITU-T Kaleidoscope conference according to the MoU signed by ComSoc and ITU-T. CSPDB intends to seek and oversee ComSoc's technical sponsorship of the International Conference on Standardization and Innovation in Information Technology (SIIT).

The CSPDB will also oversee creation of standards-related content in ComSoc publications. A series of standards-related Feature Topics are already in the Communications Magazine's pipeline. New Feature Topics will be created by CSPDB. The responsibility for standards-related publications activities has been assigned to CSPDB members Sanjay Goel and Lutz Lampe.

A novel part of the CSPDB's charter is support of industry and academia in the area of innovation and standardization research as it applies to information, communication, and networking technologies. The objective is to introduce these type of topics into ComSoc technical scope and develop products and services in this area.

The CSPDB members established contacts with the community of experts in Innovation and Standards science and methodologies in order to help nurture this area. Most of these experts are part of the community centered on SIIT and similar conferences.

A committee under CSPDB has been created on Innovation and Standards in Communications Technologies (ISICT), Chair – SM Hasan, to lead technical activities in this new area. This committee intends to seek the status of a ComSoc Emerging Technologies Subcommittee in near future. Those who are interested in joining this activity should email to SM Hasan (hasan@ge.com).

Inquiries for all issues related to CSPDB activities can be directed to Stephen F. Bush (bushsf@research.ge.com).

GOING FORWARD

The ComSoc Standards Activities Council follows the strategy adopted by the ComSoc BoG that calls for sponsorship of global standards in technologies that span the entire technical scope of the Society. We intend to seek out opportunities for sponsoring scholarly standardization projects and support industry and academia in their aspirations in developing technically excellent consensus standards. We will be glad to entertain proposals for new projects in the standards development area and in the area of standards-related technical activities.

The ComSoc Standards Activities are open for business.

BIOGRAPHIES

ALEXANDER D. GELMAN received M.E. and Ph.D. in Electrical Engineering from City University of New York. Currently, he is CTO of NETovations Group. During 1998–2007 worked as Chief Scientist at Panasonic Princeton Laboratory; during 1984–1998, at Bellcore, recently as Research Director. He initiated ComSoc Standards Board; served three terms as ComSoc VP; served as ComSoc Director of Standards, on IEEE-SA BoG and Standards Board; chaired TAB's Ad Hoc Committee on Standards. He currently serves as ComSoc VP-Standards Activities.

KEVIN W. LU is a senior principal scientist at Broadcom. He received B.S. in control engineering from National Chiao Tung University, Taiwan, and M.S. and D.Sc. in systems science and mathematics from Washington University, St. Louis. He was a chief scientist and executive director at Telcordia Applied Research and Chair (2007–2010) of TIA TR-48. He contributed to the ATIS M2M Focus Group and the 2011–2014 Strategic Plan for the USDOT ITS Standards Program.

STEPHEN F. BUSH is a research scientist at the GE Global Research Center, B.S. EE Carnegie Mellon University, M.S. CS Cleveland State University, and Ph.D. University of Kansas. He is author of the textbook, Nanoscale Communication Networks, past chair of the IEEE Emerging Technologies Subcommittee on nanoscale networks, and currently chair of the IEEE P1906.1 standards working group. He is an IEEE Distinguished Lecturer on smart grid and nanoscale communication networks.