United States National Committee of the IEC

News and Notes

In This Issue

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FOCUS ON: Linking Standardization and Research

To ensure that the U.S. standardization system remains strong and influential, it is essential that the standards community increases its outreach and activities with universities and inspires the next generation of standards and conformance professionals. In this issue, standardization leaders from industry, government, standards developing organizations, and academia share their experience and insights on how collaboration with research institutions and outreach to students offer limitless benefits to everyone involved.

A Model for Collaboration: Georgia Tech Research Institute (GTRI) and the Telecommunications Industry Association (TIA)

By James McGarrah, Chief of Staff, GTRI, and Herb Congdon, Associate Vice President of Technology and Standards, TIA

There has been a noticeable, global growth in the substantive interaction between standards developers and academia. There are many factors that have led to this growth. Academic institutions have increasingly been developing capabilities to expand curriculum beyond the classroom, leading to the creation of applied research institutes and capabilities that seek to combine the expertise of the faculty, the interests of the student body, the institute's laboratories, and the projects of corporate and government entities. Enabling that partnering to evolve into an effective, working relationship presents several challenges, as each entity has their own objectives, strengths, and limitations, and must operate within their own business models. Accordingly, not every combination will ultimately result in a worthy endeavor.

The successful endeavors, however, often form a more effective pipeline for standards development. The subsequent new

technologies, capabilities, and applications, while valuable in and of themselves, might only realize a portion of their potential at the onset. Standardization and the resulting interoperability and security hold the keys to opening new markets, reducing costs, increasing efficiency, and strengthening competitiveness. Establishing a relationship between academia and standards development fosters engagement *(continued)*

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A Model for Collaboration: Georgia Tech Research Institute (GTRI) and the Telecommunications Industry Association (TIA) (continued)

throughout the duration of the research, development, deployment, and improvement of any technology, and enables the experts from academia, industry, government, and the user community to gainfully collaborate for the ultimate benefit of society.

The Relationship

In February 2011 the Telecommunications Industry Association (TIA) and Georgia Tech Research Institute (GTRI) signed a Memorandum of Understanding (MOU) to explore collaborative standards development opportunities of mutual interest involving research, testing, and outreach in the area of global ICT infrastructure. Since then, both organizations have cooperatively participated in several successful endeavors. To assist other groups in fostering these types of relationships, TIA and GTRI offer the following information.

Creating a Model

The GTRI-TIA MOU aims at establishing mutually acceptable cooperative programmatic arrangements that will facilitate the achievement of both organizations' strategic goals. Georgia Tech's involvement in the machine-to-machine (M2M) communications area has contributed to the efficient addressing of pressing concerns in smart device standardization. For example, a senior GTRI researcher led the security work effort for TR-50, *M2M - Smart Device Communications*. The combination of leading, hands-on industry expertise with support from a premier institution of higher learning and research should strengthen TIA's voluntary standards process throughout the engineering committees.

Getting students and faculty researchers directly engaged in engineering committees gives them exposure to real-world business considerations that might not otherwise be readily available in an academic environment.

The collaboration also provides TIA with access to state-of-the-art research capabilities, on top of the strong and broad operational experience already offered by the TIA member companies. Together, the combination of people and resources this relationship represents is *(continued)*

GTRI and TIA Background

The **Georgia Tech Research Institute (GTRI)** is the applied research arm of the Georgia Institute of Technology (Georgia Tech). In 1934, to boost the struggling state economy by maximizing its education infrastructure, the Georgia Board of Regents allocated $5,000 to fund a State Engineering Experiment Station. Fifty years later, that program was officially renamed the Georgia Tech Research Institute, which today employs over 1,600 people, and last year received over $300 million in research awards from more than 200 clients in industry and government. Each day, GTRI's science and engineering expertise is used to solve some of the toughest problems facing government and industry across the nation and around the globe. GTRI conducts its research programs through eight technology-focused laboratories that span the breadth of information, communications, sensors, security, and related technologies. These laboratories, particularly those focused on communications, security and sensors, are of particular interest in the modern world of telecommunications.

The **Telecommunications Industry Association (TIA)** represents the global ICT industry through standards development, policy initiatives, business opportunities, market intelligence, and networking events. With support from hundreds of members, TIA enhances the business environment for companies involved in telecom, broadband, mobile wireless, information technology, networks, cable, satellite, unified communications, emergency communications, and the greening of technology. TIA, an American National Standards Institute (ANSI) accredited standards developer, has Engineering Committees producing voluntary industry standards, American National Standards, TIA Telecommunications Systems Bulletins, and other documents in the fields of communications. Recently, in response to industry interest in wireless and machine-to-machine (M2M) technologies, Internet of things (IoT), and communications security, TIA has created new standards committees on Smart Device Communications, Smart Utility Networks, and other related technologies.

A Model for Collaboration: GTRI and TIA (continued)

becoming an increasingly effective model for standardization activities and for addressing the expanding demand for standards.

Defining the Purpose

While every situation will be different, it is safe to surmise that a standards developer and an academic institution expect to mutually explore collaborative standards development opportunities of mutual interest involving research, testing, and outreach in an area or technology of mutual interest. For TIA and GTRI, this area is global information and communications infrastructure. In any case, identifying the area or technology that is of primary and mutual interest to your organizations is an important first step.

Identifying Benefits

Each partner should be looking for specific benefits to come from the relationship. A wide variety of possibilities should be considered, such as access, opportunities, networking, sponsorships, publicity, and education among others. As an example, TIA looked to GTRI for access to state-of-the-art research capabilities, for a way to combine leading hands-on industry expertise with higher learning and research, and for a way to strengthen TIA's voluntary standards process. GTRI was seeking a way to bridge their research competence with industry experience, and to solicit advice and guidance on advancing the research mission.

The member companies of TIA are given an opportunity to provide advice and guidance to GTRI that, in turn, assists GTRI in developing both curricula and research programs than are forward-looking and of potential incremental value down the road. Along the way, those same member companies can then be approached about sponsoring some specific research projects. The concepts and information can then be further developed under contract, or can be brought into the standards development process to enhance or grow the industry. These relationships and cooperative efforts then begin to define an industry-supported effort at Georgia Tech focused on the science, engineering, and testing necessary to advance telecommunications standards.

Planning Activities

Beyond pure research, a host of other possibilities can be exploited. Getting students and faculty researchers directly engaged in engineering committees, particularly in task and study groups, gives the students and faculty exposure to real-world business considerations that might not otherwise be readily available in an academic environment. Academic facilities are often well-positioned to host conferences, seminars, and events that build the association between the institution and the subject matter. Incorporating the academic presence in industry trade shows and conferences opens new opportunities for research funding. In some cases, the standards developer is even able to elevate the efforts onto a global stage, providing additional gravitas to the academic institution.

As an example, TIA, a member of the Global Standardization Council (GSC), was chosen to lead the M2M Standardization Task Force (MSTF) as this relatively new standardization effort began to take shape. TIA and GTRI worked together to host two meetings of the MSTF and to leverage those meetings to engage interested parties from industry, government, academia, and other standards developers. Using the state-of-the-art facilities at Georgia Tech gave the institution global exposure on cutting-edge technologies. TIA's resources for video production, marketing, and promotion built Georgia Tech into the messages surrounding the event.

Establishing a relationship between academia and standards development enables the experts from universities, industry, government, and the user community to gainfully collaborate for the ultimate benefit of society.

Finding the Right Partner

As mentioned previously, it is important to identify the best partner(s) to approach. Sadly, "right" is not always defined, and the definition may change over time. Further, it is important to recognize that relationships focused within any certain subject matter may be particularly difficult for academia, which often is quite diverse in areas of expertise. Accordingly, it may often be necessary to look at smaller components of the academic organization – schools, institutes, foundations, etc. – rather than at the entire entity.

(continued)

A Model for Collaboration: GTRI and TIA (continued)

In addition to the academic and standards development members, other entities with common or vested interests should be sought from the beginning as potential partners. More importantly, such entities can often be the driving force that brings the partners together in the first place, and can serve as a sounding board or advisor as the partnership progresses. These partners can be very influential, particularly with the related activities, publicity, and relationship-building efforts outside the partnership.

Getting Formalized

An MOU aims at establishing mutually acceptable, cooperative, programmatic arrangements that will facilitate the achievement of both organizations' strategic goals. The agreement should be specific to the subject matter and clearly identify which entities or sub-entities are engaged, but should otherwise be flexible enough to allow the organizations to explore and expand the opportunities along with the discussions. In most cases, especially for the first several months and even years, the discussions will lead to a spider web of opportunities.

Ensuring Communication

Regular and open communication at multiple levels – top-level, marketing to marketing, technology to technology, – is an essential aspect of a successful partnership. This increases the chances that more opportunities will be identified and, when those opportunities are identified, that the most benefit can be realized. Routine communications can be scheduled and maintained. For this reason, proximity of the organizations should be a consideration – not necessarily next door, but within a reasonable distance to allow shared hosting of meetings.

Fostering Participation

Extending the invitation for participation in the standards development process should be, at a minimum, part of the MOU. However, the invitation should be followed with an introduction of the representatives from academia to the appropriate engineering committee leadership and participants. These introductions should include some background on the MOU and what expertise the representatives can bring to the project.

At TIA, Georgia Tech has sent representatives to the TR-50 Engineering Committee on Smart Device Communications, and has taken the leadership role in the Security Aspects Working Group. Working with GTRI's Information and Communications Lab (ICL) resulted in contributions to efficiently address pressing concerns in smart device standardization. Georgia Tech brings unique resources in this regard, including those of GTRI's newly created Cyber Technology and Information Security Laboratory (CTISL) and the world-renowned Georgia Tech Information Security Center (GTISC).

The Big Picture

Combining leading hands-on industry expertise with support from a premier institution of higher learning and research offers a significant win-win opportunity. However, blindly forming partnerships for the sake of a press release is likely to leave both sides disappointed. Investing the time to identify the right partner, establishing a constructive agreement, and communicating regularly significantly increase the probability of success.

Further information

For more information, about the Georgia tech Research Institute, visit www.gtri.gatech.edu/. To learn more about TIA's activities, visit www.tiaonline.org/. ■

James McGarrah

Jim McGarrah is the chief of staff of the Georgia Tech Research Institute (GTRI). Mr. McGarrah served in the Navy for 37 years, culminating in his promotion to the rank of Rear Admiral. He also spent 24 years working for Southern Bell, BellSouth, and Cingular Wireless, leaving as executive director of national network engineering and operations, while serving in the Navy's Reserve components. He earned his BS in mechanical engineering from the United States Naval Academy and master's degrees in human resources management from Pepperdine University and in mechanical engineering from Georgia Tech.

Herbert V. Congdon II, PE

Herb Congdon is the associate vice president of technology and standards at the Telecommunication Industry Association (TIA). He has worked in the cable and components industry since 1992. He has served in multiple leadership positions in TIA Engineering Committee TR-42, *User Premises Telecommunications Cabling Infrastructure.* Mr. Congdon earned an electrical engineering degree from Georgia Tech, served as a commissioned officer in the U.S. Navy nuclear submarine force, and is a licensed Professional Engineer with two patents.

FOCUS ON: LINKING STANDARDIZATION AND RESEARCH

Lighting a Fire for Standards

By Susan K. Tatiner, Director, Government Relations and Standards Education, IEEE Standards Association (IEEE-SA)

"Education is not the filling of a pail, but the lighting of a fire."
—William Butler Yeats

The seeds of the IEEE's Standards Education program were sown in 2003, when two units of the IEEE came together to form the Standards in Education Task Force. The first focus was academic. IEEE volunteers from the IEEE Standards Association (IEEE-SA) and IEEE Educational Activities (EA) agreed that engineering students needed to learn how to use standards in their classes and senior design projects to be prepared to begin their careers. Augmenting the learning experience by pointing students to available standards tools and best industry practices was an early goal of the effort that has endured.

By 2007 the Task Force had evolved into the IEEE Standards Education Committee (SEC), with a group of volunteers chosen from the standards arena and a group with educational expertise. The SEC remains a key body for standards education, in coordination with the IEEE-SA Board of Governors and the IEEE Educational Activities Board.

A deepening exploration of the need for standards education led the SEC to identify six key issues to be addressed:

1. The growing significance of standards to industry and the cost borne by industry when engineering students graduate with little or no familiarity with standards.
2. The lack of training that many faculty express when implementing standards education.
3. The lack of materials for implementing standards education.
4. The needs that practicing professionals exhibit for continuing standards education.
5. The extended audience for standards education that includes business and law school faculty and students.
6. The role that accreditation criteria plays in standards education, and the complexities of accreditation globally.

Engineering students needed to learn how to use standards in their classes and senior design projects to be prepared to begin their careers.

The IEEE has a number of standards education-related activities, geared for various target audiences, that respond to these needs.

IEEE Standards Education e-Magazine (eZine)

The IEEE Standards Education e-Zine provides a forum to publish contributions from industry practitioners, educators and students on topics related to education about technical standards. The intended audience includes educators, students, and practitioners – all of those who learn, teach, use, deploy, develop, and enjoy standards! The most recent issue can be accessed at http://standardsmagazine.ieee-elearning.org/.

University Outreach Business Plan (for educators and students)

In 2010-2011 the SEC had "outreach to universities" as one of its stated goals, to help IEEE better understand what products and services would be helpful at the university level. The business plan for products and services aimed at professors and students was developed by an ad-hoc team of staff and volunteers, and the plan was endorsed by the SEC at the end of 2011. Implementation began in 2012 and includes these elements:

- A textbook of case studies to be published by John Wiley & Sons in August 2014.
- A Standards Internship Program to be piloted in India (roll-out in January 2014).
- A partnership agreement with IP-Shield brought "Standards Aware" courses to IEEE members at a discount through links on the IEEE Standards Education website.
- Basic standards education webinars in collaboration with the China National Institute of Standardization (CNIS) are under development.
- Case studies about the business value of standards and an

(continued)

Lighting a Fire for Standards (continued)

The IEEE Standards Education Committee sponsors standards education workshops and offers grants to students faculty mentors for design projects that include technical standards.

accompanying slide set was developed and are available on the IEEE Standards Education website (www.ieee.org/standardseducation) for classroom use.

- A hands-on series called "Practical Ideas from Professors" has been initiated, with ideas on how to include standards education in curricula. The first PDF is available in the Educators Resource Library (www.ieee.org/education_careers/education/standards/educators_resource_library.html), and additional documents are in development.
- Additional educator resources to be developed will include videos of interviews, workshops, and presentations; ancillary materials to aid professors; and eLearning Library courses on standards and related material.

Standards Education Student Grants/Student Application Paper Grants

The SEC offers grants of $500 to students and $300 to faculty mentors for senior, capstone, or graduate design projects that include technical standards. In 2012 there was a spike in applications from India. The SEC and Microsoft have joined together to pilot a program for student grants in Sub-Saharan Africa.

IEEE Standards Education Speakers Bureau (SESB)

The IEEE SESB provides speakers for education about standards, the standards setting process, and technology policy matters. The intended audience includes educators, students, and practitioners.

Standards Education Workshops/Seminars

The SEC sponsors standards education workshops aimed at students, educators, and practitioners. The committee has been averaging one per year since 2009. Two recent examples are a one-day workshop at City University in London in September 2012 and a two-day workshop at Delhi Technological University in Delhi in October 2012.

IEEE Policy Paper on the Role of Technical Standards in Curriculum

The IEEE has issued a policy paper to define the role of technical standards in education within engineering, technology, and computing (ETC) academic curricula in the technical areas of interest of IEEE. The intended audience includes academics and accreditation professionals.

The paper has been highlighted in SEC outreach to universities and professors, through SEC workshops and SESB presentations, and to other groups with a focus on standards education, including the American National Standards Institute (ANSI) Committee on Education, ASTM International, ASME, ITU, and *(continued)*

IEEE and IEEE-SA Background

IEEE is the world's largest professional association, with more than 425,000 members in more than 160 countries. Student membership tops 116,000, distributed among 2,354 student branches at colleges and universities in 80 countries and an additional 800 student branch chapters affiliated with IEEE technical societies. IEEE members are dedicated to advancing technological innovation and excellence and providing inspiration through IEEE's highly cited publications, conferences, technology standards, and professional and educational activities.

The **IEEE Standards Association** (IEEE-SA) is a leading consensus-building organization that nurtures, develops, and advances global technologies through IEEE. The IEEE-SA brings together a broad range of individuals and organizations from a wide range of technical and geographic points of origin to facilitate standards development and standards-related collaboration. With collaborative thought leaders around the world, the IEEE-SA promotes innovation, enables the creation and expansion of international markets, and helps protect health and public safety. Collectively, the work of the IEEE-SA drives the functionality, capabilities, and interoperability of a wide range of products and services that transform the way people live, work, and communicate.

Lighting a Fire for Standards (continued)

IEC IEEE 2012 Challenge Award winners (holding awards, left to right) Ken Krechmer, Axel Mangelsdorf and Knut Blind of Germany (second prize), and Joyce van de Vegte with Ben Johnson, IEEE Standards Association Past President (far left) and Jacques Régis IEC Immediate Past President (far right).

the International Cooperation for Education about Standardization (ICES). ANSI's Board of Directors adopted the policy paper in 2009. The document is available at http://grouper.ieee.org/sa/sec/public/accreditation/StandardsPositionPaper_approvedJune09.doc.

IEC-IEEE Challenge

In 2011-2012, IEEE partnered with IEC on a global initiative that invited the world's academic institutions to analyze and debate the impact of electrotechnology on the economic, social, and environmental development of nations and regions, including how accepted standards affect this process. Authors of prize-winning papers were recognized at the IEC General Meeting in Oslo in October 2012. The winners were Ken Krechmer of the United States (first prize), Axel Mangelsdorf and Knut Blind of Germany (second prize), and Joyce van de Vegte from Canada (third prize).

IEEE-SIIT 2013

IEEE is pleased to have become the technical and financial sponsor of the International Conference on Standardization and Innovation in Information Technology (SIIT). This forum, which began in 1999, aims to bring together standardization researchers from different disciplines (IT practitioners, policy makers, standards developers, and users) to discuss theory, practice, and research issues in standardization. Information is available at http://ieee-siit.org/ .

Access to IEEE Standards

Hundreds of universities and colleges worldwide have full access to IEEE standards through their subscriptions to the IEEE electronic library (IEEE Xplore®), which provides access to IEEE journals, transactions, letters, magazines, conference proceedings, and IEEE Standards. A list of the participating schools is available at www.ieee.org/education_careers/education/standards/classroom.html.

In addition, all IEEE 802® Standards are freely available to the public six months after publication via the GET IEEE 802® program paid for by industry. Other "Get" programs are also in place. More information is available at http://standards.ieee.org/about/get/index.html

An Ongoing Commitment

IEEE will continue to grow its standards education program – creating more materials for audiences like university faculty that we have served from our earliest days, deepening our engagement with newer audiences like practicing professionals, and continuing to expand in new directions. Moving forward, the IEEE-SA has plans to use its education platform to facilitate debate and discussion on topics of importance in the areas of standardization research and public policy related to technology, in forums that include the developing world.

Susan K. Tatiner

As director of government relations and standards education at IEEE Standards Association, **Susan Tatiner** is responsible for strategic planning, maintenance, and growth of internal and external business relationships and all activities in the areas of government relations and standards education for the IEEE Standards Association.

Ms. Tatiner is a member of the Council of Engineering and Scientific Society Executives (CESSE) and the American Society of Association Executives (ASAE). She is a member of the ANSI Committee on Education, and has served on the ANSI National Policy Committee and Organizational Membership Council. She has been a Certified Association Executive (CAE) since 2008, and holds a BA from Queens College of the City University of New York and an MA from New York University.

Further information

For more information, visit www.ieee.org/standardseducation. ■

FOCUS ON: LINKING STANDARDIZATION AND RESEARCH

Linking Standardization and Research: NIST's Approach

By Dr. George Arnold, Director, Standards Coordination Office (SCO), NIST; Erik Puskar, Program Manager, Global Standards Information, SCO, NIST

Standardization plays a critical role in technology advances and innovations that continue to change the world. Modern manufacturing, medicine, communications, agriculture, air transport, and the Internet are just a few of the fields in which standards have enabled tremendous advancements with global reach.

In the United States, the National Institute of Standards and Technology (NIST), a non-regulatory agency of the federal government and part of the Department of Commerce (DOC), supports the role that standardization plays in innovation and industrial competitiveness. NIST provides technical know-how, cutting edge research, and advanced facilities that underpin standards development to reduce investment risk and enable innovation, entrepreneurship, and commercialization by private industry.

Standards Initiatives

Some of the specific standards-supporting activities that NIST engages in include:

- Coordination of technical standards-related programs among and between federal agencies and private industry
- Contributing NIST technical expertise and knowledge to improve the technical quality of standards
- Meeting standards needs for federal government programs by conducting standards needs–assessment workshops, helping federal agencies participate in voluntary consensus standards activities, and, in some cases, leading the development of standards
- Convening public/private partnership efforts to address standards supporting national priorities – e.g., cybersecurity, cloud computing, smart grid, and health IT

As a research organization, NIST work is guided by future measurement and standards needs of U.S. industry. Rapidly evolving sectors such as nanotechnology, biotechnology, homeland security, information technology, and advanced manufacturing need leading-edge technology and supporting standards. NIST disseminates its measurement and standards research results to industry and other interested parties through a number of mechanisms to promote innovation and ensure that the resulting technologies are widely dispersed.

Some of the strategies that NIST uses include:

- Participation in documentary standards committees
- Developing and providing standard reference materials and data
- Supporting cooperative research-and-development agreements
- Planning and hosting workshops
- Developing performance metrics and test methods
- Providing user facilities and test beds
- Developing models and testing tools
- Hosting guest researchers
- Participating in trade shows

Expansive Reach

NIST's commitment of resources to the development of documentary standards is substantial. About 400 technical staff participate on more than 1,100 standards committees, matching their technical competence to committee needs. Of these, 25 technical staff currently serve on IEC standards committees. NIST's contributions support testing protocols and other conformity assessment related activities associated with the standard as well as research that formed the basis of the standard. NIST also works cooperatively with industry to establish requirements and specifications and develops standards related software.

One of NIST's roles in the innovation cycle is to facilitate the development of products and manufacturing processes that significantly reduce market development risks for industry. Once prototypes emerge from basic research, developing the measurement technology – that is, the know-how to make things and control processes with accuracy and precision – becomes important and needs to be widely shared to be effective. Standardization is how this can be accomplished, allowing buyers and suppliers of new and innovative products to trust that the measurement methods are accurate and don't favor one product over another for the wrong reasons.

NIST Headquarters, Gaithersburg, MD

Cooperative Work

Often, NIST's role as an unbiased contributor working alongside but outside of the competitive nature of market players facilitates technology transfer and diffusion. An example of how this works is NIST's work in support of a Department of Energy (DOE) and NEMA collaboration – Next Generation Lighting Initiative – to accelerate the development of white-light solid-state lighting (SSL).

To legitimately compare the performance and cost-effectiveness of SSL with *(continued)*

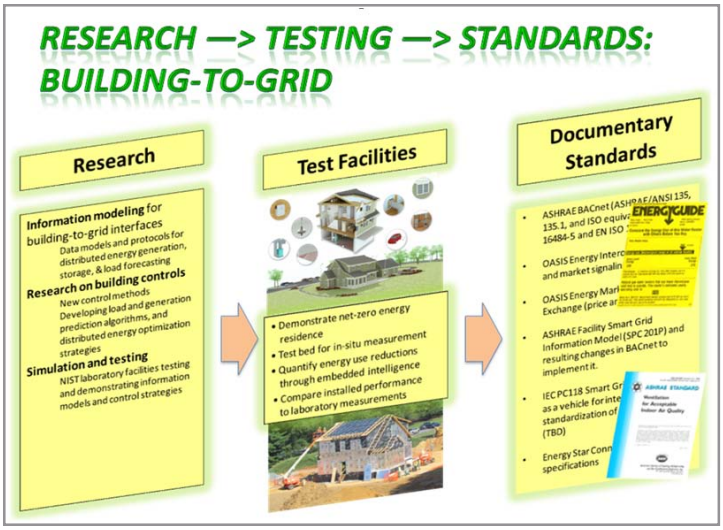
Linking Standardization and Research: NIST's Approach (continued)

more traditional lighting technologies, and thereby to facilitate the transition to more efficient SSL products, new performance metrics and measurement methods were needed. NIST worked closely with the DOE and NEMA to develop new standards for SSL; conducted research on color quality and measurement methods for high-power light emitting diodes (LEDs) and other SSL products; and developed new calibration standards and services to support the lighting industry's measurement needs. This resulted in the development of two foundational SSL-related documentary standards: ANSI C78.377-2008, *Chromaticity of Solid State Lighting Products,* and IESNA LM-79-08, *Electrical and Photometric Measurements of Solid-State Lighting Products*.

NIST's work on radiological/nuclear detection instruments is another example. There are many uses of radiation, from medical applications, food, and material irradiation to homeland security applications such as airport screening, border crossing, and cargo screening. NIST has focused its efforts on homeland security standards by developing new test methods and providing standards leadership for testing of Rad/Nuc and X-ray screening instruments. This effort has led to at least 17 new American National Standards (ANS 42.xx and 43.xx series), ten of which have an IEC analog.

Finally, the approach towards standards development in the building energy and controls areas traditionally occurs through fundamental laboratory research, implementation of the research in test facilities, and movement of the lessons learned to documentary standards through standards developing organizations. The construction of a Net-Zero Energy Residential Test Facility at NIST is an example of a test-bed facility which provides researchers the opportunity to gather in-situ performance measurements of a single-family home to compare installed performance to laboratory measurements and to quantify energy-use reductions through embedded data collection. These capabilities, as well as the potential for examining home-to-electric-grid communications, will provide valuable insight to the standards development process to ensure that documentary standards can be implemented as designed. This is illustrated in Diagram 1, at left.

Diagram 1



Dr. George Arnold

Erik Puskar

Dr. George Arnold, director of the Standards Coordination Office at NIST, heads up NIST's work with the larger voluntary consensus standards and conformity assessment communities and oversees the NIST Quality Management System, the National Voluntary Laboratory Accreditation Program, and the NIST Standards Services Program. He previously served as national coordinator for smart grid interoperability and as deputy director of technology services at NIST. He received his doctorate in electrical engineering and computer science from Columbia University.

Erik Puskar, program manager for global standards information of the Standards Coordination Office at NIST, provides technical information related to standards and supports Federal agencies by monitoring developments in standards and conformity assessment internationally. He is a member of the ANSI Committee on Education and represents NIST on the International Cooperation for Education about Standardization (ICES). He has a bachelor's degree from Rutgers University and a master's in public management and policy from Carnegie Mellon University.

Path to Innovation

In summary, NIST provides basic measurement research, industry-coordination resources, and efficiency-enhancing technologies to a wide range of documentary standards development efforts in many sectors which are a vital component of the innovation process. ■

FOCUS ON: LINKING STANDARDIZATION AND RESEARCH

Standardization Tools for the Next Generation: Insights from NEMA

By Ken Gettman, Director, International Standards, NEMA

According to Dr. Ir. Henk J. de Vries, associate professor of standardization at the Rotterdam School of Management of Erasmus University in the Netherlands, "Standards shape technology and are a prerequisite for growth in international trade. Economic studies report that standards stimulate labor productivity and innovation, and have been calculated to make a substantial contribution to the economic growth – more than patents or licenses do."

It is this impact on trade, through market access, that makes it imperative that companies ensure their concerns and their country are represented at standards development activities, in particular in regional and international forums. In order to ensure a continuity of representation, it is critical to ensure that emerging professionals be given training in the importance of standardization, along with opportunities for participation early in their careers. We need experts that are prepared and ready to step into vacancies that result from the departure of experienced individuals.

Linking Standards & Research

NEMA, the Association of Electrical Equipment and Medical Imaging Manufacturers, has working arrangements with a number of different universities. The interaction ranges from participation by a university representative on one or more NEMA committees, to funding research on topics ranging from lighting systems to relationship between smoke detectors and sprinkler systems to UV effects on cable ties. We even have one individual on the technical board for a local university. While these activities have been stalled in 2013 as NSF reconfigures its sequestration-hobbled budget, I have been involved in the following education-related work at NEMA:

University Initiatives

1. NEMA submitted a proposal to NSF in the fall of 2012 with North Carolina State University as a subcontractor to perform research and trials in battery health monitoring. This effort was anticipated to provide important information on device characteristics and susceptibilities to enable manufacturers to develop product improvements.

2. I coordinated outreach for and negotiated a seat on the industry advisory board of a new NSF-funded center at the University of Illinois termed the "Energy Innovation Center." The first project was to be R&D on high temperature, high current materials contemplated to be used in transmission wires and aircraft/vehicle components.

Findings from a NEMA/University of Maryland research program demonstrating the very significant life safety benefit of sprinklers in combination with smoke detection will serve as the basis for requirements in building and installation codes.

3. For the past 4 years, the NEMA Signaling Protection and Communication Section has been actively working with the University of Maryland on a two-phase research program to explore the comparative injury/fatality rates in occupancies equipped with sprinklers only, smoke detection only, a combination of sprinklers and smoke detection, and no protection. The research program, led by Professor Jim Milke, examined residential, educational, commercial, and industrial occupancies. The research findings clearly demonstrated the very significant life safety benefit of sprinklers in combination with smoke detection in all occupancies. The research findings have been presented at numerous technical forums and will serve as the basis for requirements in the building and installation codes. Copies of the *(continued)*

NEMA Background

NEMA, the Association of Electrical Equipment and Medical Imaging Manufacturers, was founded in 1926 as the National Electrical Manufacturers Association. Its member companies manufacture a diverse set of products including power transmission and distribution equipment, lighting systems, factory automation and control systems, and medical diagnostic imaging systems. Worldwide annual sales of NEMA-scope products exceed $120 billion. NEMA provides a forum for the development of technical standards that are in the best interests of the industry and users, advocacy of industry policies on legislative and regulatory matters, and collection, analysis, and dissemination of industry data. With a North American focus and global reach, NEMA is the voice of and forum for the electrical and medical imaging industries serving manufacturer members.

Standardization Tools for the Next Generation (continued)

phase 1 residential occupancies report are currently available from NEMA. Copies of the phase 2 report educational, commercial and industrial occupancies will be available by the end of June 2013.

Mentoring Program

NEMA conducts formal training for new members of the NEMA Codes & Standards committee that includes review of a module of slides by an experienced member of the committee for a new individual. The new member is also provided with a best practices/ training guide for review as needed and there is an informal assignment of a mentor to be available for questions and guidance.

New staff members are typically assigned to an individual who has some tenure at NEMA so that they have a friendly face who can facilitate their integration into the organization. The staff mentor will explain standard procedures for everything from getting office supplies to submitting travel requests and expense reimbursement forms.

German VDE Young Professional's Program

The VDE YoungNet is a network of young people in the VDE (the Association for Electrical, Electronic & Information Technologies), one of the largest technical and scientific associations in Europe. Over 8,000 student members and 4,000 young professionals in 29 VDE local chapters participate in the VDE YoungNet.

The VDE helps students and new or young professionals learn and expand their experience, offering study information and assistance, professional contacts for intensive preparation by the district associations, and opportunities to gain experience and knowledge in research and development. YoungNet teams are set up to address current issues and tackle tasks quickly and efficiently. They are provided with their own budgets and a YoungNet CD with important study information. They share their experiences with other young members through web pages they develop.

VDE young members committees are set up to provide national advocacy for students and young professionals in the VDE. They meet twice a year to ensure the exchange of information between university groups, to report on the work of YoungNet teams, and to initiate joint projects. VDE has developed special offers to foster greater participation by young and emerging professionals.

Ensuring a Strong Future

Within NEMA, the Board of Governors assigned the task of developing a succession plan for the organization, originating with a concentration on activities within the USNC and IEC. It was acknowledged that a more formal and organized process would benefit the organization and its members to maintain a continuity of effective representation in these organizations. As part of the program that is being developed, it is envisioned that NEMA will collaborate with the USNC, the American National Standards Institute (ANSI), and other entities to increase understanding of standardization, its importance to society in general and to manufacturers in particular, and aspects from conceptualization to development to implementation. ■

Kenneth E. Gettman

Ken Gettman, director of international standards for NEMA, is a registered Professional Engineer in Illinois and a Certified Quality Engineer from ASQC. He earned a BS in engineering from Northwestern University and an MBA in technology management from the Illinois Institute of Technology.

LAUGH TRACK

"Life is easy for you kids these days! When I was a boy we had to turn a crank to get our paper towels!!"

USNC Names Participants for 2013 IEC Young Professionals Workshop

The USNC is pleased to announce the U.S. winners of the 2013 IEC Young Professionals Workshop competition. To be held in conjunction with the 77th IEC General Meeting (GM) in New Delhi, India, on October 21-25, 2013, the workshop will bring together professionals from around the world who are at the start of their careers in electrotechnical standardization and conformance.

Now in its fourth year, the Young Professionals Workshop aims to cultivate long-term national involvement in the international arena, strengthen the future of technology transfer, and encourage the participation of young professionals in shaping the future of standardization and conformance.

The USNC received numerous applications for qualified candidates, making the selection committee's job very difficult. The winners are:

Ethan Biery

Ethan Biery is a design and development leader for Lutron Electronics, a major supplier of innovative and energy-saving light control solutions. He has been actively engaged with standards development activities related to lighting undertaken by the Zhaga Consortium, which focuses on LED light engine interoperability, and the National Electrical Manufacturers Association (NEMA).


Ethan Biery


Diana Bull

Diana Bull

Diana Bull serves as a wave energy converter (WEC) modeling lead at Sandia National Laboratories, a Federally Funded Research and Development Center (FFRDC). She has been actively involved in the USNC-approved U.S. Technical Advisory Group (TAG) to IEC Technical Committee (TC) 114, *Marine energy - Wave, tidal and other water current converters,* beginning with her work as a member of the TAG's mirror committee for Maintenance Team (MT) 62600-100, *Power performance assessment of electricity producing wave energy converters,* and as a liaison for Project Team (PT) 62600-101, *Wave energy resource assessment and characterization*.

Chelsey Schweikert


Chelsey Schweikert

Chelsey Schweikert is a product compliance design engineer for Solar Turbines Inc. Since 2012, she has served as an alternate member of the USNC TAG for the IEC System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres (IECEx) and has worked extensively with the IEC 60079 series of standards in a manufacturing context.

The USNC's selectees will attend a dedicated workshop alongside recipients from other nations where they will learn more about the IEC, standardization strategies, and conformity assessment. They will also have the opportunity to attend technical meetings where standards are developed, observe meetings of the IEC Standardization Management Board (SMB) and the IEC Conformity Assessment Board (CAB), and benefit from extensive networking opportunities in an international setting. All three selectees will be financially supported for their travel and up to three nights of accommodation.

"Being able to sit in at the SMB and CAB meetings and at the Technical Committee level was a great insight," said Manyphay Souvannarath, senior systems analyst for GE Energy, and a 2012 Young Professional awardee from the United States. "This provided a holistic view from the technical side all the way through to the management side of standards." Ms. Souvannarath was one of only three international participants voted to be a 2012 Young Professional (YP) Leader at the 76th IEC GM in Oslo, Norway. As such, she will act as ambassador for the program within the IEC family and help to shape its activities. This is the second year in a row that a U.S. Young Professional has received this honor.

"On behalf of the USNC, I'd like to particularly congratulate our three winners, and express the wish that we could have recognized all of the candidates," said Phil Piqueira, global standards leader for General Electric (GE) Industrial Solutions and president of the USNC. "We look forward to having these deserving recipients participate in the Young Professionals Workshop in New Delhi this fall."

Further information

Visit www.iec.ch/members_experts/ypp/. ■

Standards Boost Business: Get Involved and Demonstrate Your Support

By S. Joe Bhatia, President and CEO, American National Standards Institute (ANSI)

In partnership with 30 organizations from across the standardization community, the American National Standards Institute (ANSI) administers the Standards Boost Business (SBB) program, a campaign to help American companies understand how standards and conformance can help cut costs and boost the bottom line. Since its launch in 2010, SBB has made great strides and received excellent feedback from standards developers, industry, and corporate leaders alike. And to keep this momentum going, ANSI is seeking new partners to join the campaign and spread its reach even further, particularly in the electrotechnology fields.

Message and Resources

The www.StandardsBoostBusiness.org site offers real-world evidence for the power of standards, and guidance on how to harness that power to benefit business. Companies and organizations are encouraged to:

1. Participate in standards development activities, both domestic and international, to exert influence on technical content, align products and services with changing market demand, gain early access to information on emerging issues, and reduce redundancy, errors, and time to market.

2. Rely on standards to design products and services, and turn to recognized conformity assessment systems to test, inspect, certify, and accredit them, in order to facilitate market access across borders.

3. Treat standardization as a strategic business tool, to be managed alongside an organization's quality, safety, and environmental policies.

Case studies on the SBB site provide concrete examples of how U.S. businesses are leveraging standards to their advantage. And a gallery of videos offers first-hand accounts from executives on how standardization has fostered the success and growth of their businesses. But we want to do more, and we need your help.

Become an SBB Partner

I invite you to take advantage of the numerous free resources available on the website; I think they will convince you that the SBB campaign is worth your support. And then I strongly encourage you to join the partnership and help us strengthen the recognition of standards and conformance as essential tools for a sound economy.

At a time when the public and private sectors are looking to foster business growth and create good jobs for the future, it is more important than ever that U.S. government and companies understand and harness the power of standardization.

Further information

Visit www.standardsboostbusiness.org/sponsors.aspx for the list of current SBB partners and information on getting involved. ■

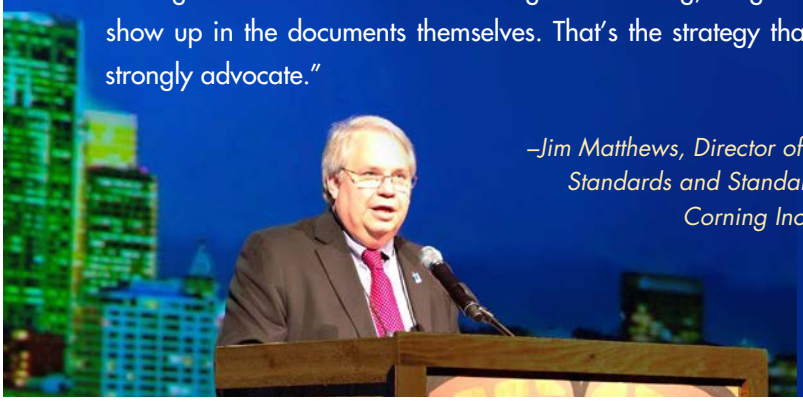
Click here **to read more from the USNC's *Why IEC Standards Work Is Important to My Company.***

Why IEC Standards Work Is Important to My Company

"I can tell you by past experience, if you follow a reactive strategy you'll end up putting in 10 times the effort. You'll just be following things as they go down the river, and you won't know where you're going.

By choosing active participation you can influence domestic and international policy, gain valuable networking opportunities, and learn from international colleagues about what kinds of things are coming, long before they show up in the documents themselves. That's the strategy that I would strongly advocate."

–Jim Matthews, Director of Technical Standards and Standards Policy, Corning Incorporated



THE STANDARDIZATION WORLD

NIST Develops New Methodology for Standards Analysis

The U.S. Department of Commerce's National Institute of Standards and Technology (NIST) recently released a document outlining a new problem-solving methodology intended to ease the process of designing and implementing voluntary consensus standards. Known as Framework for Analysis, Comparison, and Testing of Standards (FACTS), the new methodology uses a matrix format to ease the process of analyzing a proposed or existing standard in light of its scope, function, motivation, and other relevant characteristics.

In developing the new framework, NIST researchers adapted a problem-solving methodology called the Zachman Framework, originally designed for developing comprehensive blueprints of organizations, depicting all strategic, operational, and informational elements as well as the relationships among them. It could potentially be used both to clarify goals during the development of a standard and to provide insight into issues and concerns related to the impact of implementing separate standards.

"By applying our approach early, developers can identify possible holes in a standard's scope for a given use by a particular stakeholder – say a manufacturer, a buyer, or a regulator," said Paul Witherell, the document's lead author. "During implementation, our approach can assist in identifying coverage gaps and overlaps between standards' scopes of coverage."

	Why	How	What	Who	Where	When
Contextual	Goal List	Process List	Material List	Organisational Unit & Role List	Geographical Locations List	Event List
Conceptual	Goal Relationship	Process Model	Entity Relationship Model	Organisational Unit & Role Relationship Model	Locations Model	Event Model
Logical	Rules Diagram	Process Diagram	Data Model Diagram	Role Relationship Diagram	Locations Diagram	Event Diagram
Physical	Rules Specification	Process Function Specification	Data Entity Specification	Role Specification	Location Specification	Event Specification
Detailed	Rules Details	Process Details	Data Details	Role Details	Location Details	Event Details

The FACTS methology is based on an adaptation of the Zachman Framework (pictured), a highly structured way of defining an enterprise.

The publication, titled *FACTS: A Framework for Analysis, Comparison, and Testing of Standards,* is expected to lead to the development of a specialized digital development tool that would assist the process of developing and implementing voluntary consensus standards.

Further information

The framework document is available at http://nvlpubs.nist.gov/nistpubs/ir/2013/NIST.IR.7935.pdf. ■

LATEST LITERATURE FROM THE USNC AND IEC

Stay up on all the recent brochures, documents, and other offerings from the USNC and IEC by clicking on the titles below.

Electrical Energy… the IEC Helps Keep the Power On

Why IEC Standards Work Is Important to My Company

An Introduction to IEC Conformity Assessment Systems in the United States

New Harmonized IEC/ISO Commenting Template

Download the updated user guide and the new commenting template

THE STANDARDIZATION WORLD

Free ANSI Webinar on American National Standards

Registration is now open for the upcoming American National Standards Institute (ANSI) webinar, *What is an American National Standard anyway?* Offered by ANSI free of charge, the webinar will take place on Wednesday, July 17, 2013, from 1:30 to 3:00 p.m. EST.

The webinar will provide an entry-level overview of the American National Standards (ANS) process, the ANSI Essential Requirements (www.ansi.org/essentialrequirements), and the role of ANSI and the 228 current ANSI-accredited standards developers (ASDs), as well as information for stakeholders interested in participating in the ANS voluntary consensus standards development process. An optional question-and-answer period will follow the webinar's main presentation.

The webinar is open to all interested parties and representatives of standards developing organizations (SDOs), government agencies, academia, industry, consumer advocates, and others. All those seeking to learn more about ANS and the ANS development process are strongly encouraged to take part. Advance registration is required.

To register for *What is an American National Standard anyway?*, click here.

Further information

For more information, email psa@ansi.org. ■

THE STANDARDIZATION WORLD

ANSI Site Licenses Support USNC

To obtain the greatest value and convenience for your organization when buying IEC standards, USNC members should consider purchasing a site license from the American National Standards Institute (ANSI). ANSI site licenses enable standards to be shared within a network. They provide real-time access to standards data and offer automatic notification of updates and revisions. And the revenue ANSI receives directly supports the activities and initiatives of the USNC.

The USNC/IEC is a totally integrated committee of ANSI. As such, the Institute provides administrative support to the USNC and its nearly 1,400 participants. ANSI also provides the fiduciary framework by which the USNC's financial obligations are met, including the payment of annual dues to IEC. And since ANSI is a non-profit organization, the revenue earned from your purchase helps to support the programs and services offered to USNC members.

When you purchase a site license from ANSI you are making a commitment to bolster U.S. leadership at the IEC table – and gaining the benefits of easy accessibility, total customization, and affordable pricing for your organization's standards needs.

Further information

Visit webstore.ansi.org/SiteLicense or email sitelicenses@ansi.org. ■

Upcoming Issues of *News & Notes*

Q III Multimedia

Q IV Highlight of IEC SMB Strategic Groups

USNC *News & Notes* Naming Contest – DEADLINE EXTENDED TO JULY 22

Want to try your hand at naming the USNC *News & Notes*?

The current name has been used since the inception of this newsletter, and the USNC Communications and Continuing Education Committee feels that it's time that a unique and distinctive name be given to this important publication. Please click here to review the contest rules, and e-mail your submissions to Tony Zertuche (tzertuche@ansi.org) by Monday, July 22, 2013. The winner will receive a $300 gift card.

SAVE THE DATES

Mark Your Calendar for Upcoming Meetings & Events

SEPTEMBER 2013

FINCA Meeting
September 4–5
Miami, FL

CAPCC/TMC/Council Meetings
September 10–12
NEMA Headquarters, Rosslyn, VA

6th TAG Leadership Workshop
September 13
NEMA Headquarters, Rosslyn, VA

World Smart Grid Forum
September 24–25
Berlin, Germany

ANSI World Standards Week
September 30–October 4
Washington, DC

OCTOBER 2013

U.S. Celebration of World Standards Day
October 3
Washington, DC

77th IEC General Meeting
October 21–25
New Delhi, India

SMB	October 21
CAB	October 22
CB	October 23
Council	October 25

2014

78th IEC General Meeting
November 10–14
Tokyo, Japan

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