

## IEEE's Industry Connections Program: A Collaborative Environment for Developing Shared Results

By Bruce Kraemer, President, IEEE Standards Association

<http://standards.ieee.org/develop/index.html>

The IEEE Standards Association is primarily known for its extensive set of published standards, for example 802.3 Ethernet, and the process used to bring together experts from around the world to contribute to standards development.

But there are occasions where industry wants to discuss technology trends and options without an immediate plan to produce a standard.

The IEEE Standards Association (IEEE-SA) Industry Connections (IC) program provides a forum for collaboration among organizations and individuals that want to discuss new technology challenges and opportunities. The collaboration within these Industry Connection groups has results in white papers, technical guides, software, databases, conferences, and workshops.

Rather than attempting to generically describe the virtues of the program, I refer you to the fascinatingly diverse range of activities already underway. I present below a brief description of each of the existing programs. I encourage you to obtain further details about an existing program and how to participate at:

<http://standards.ieee.org/develop/indconn/index.html>

Similarly, I will not attempt to use this article to describe details about the process for forming a new Industry Connection Program. That information can be found on the website:

<http://standards.ieee.org/develop/indconn/groups.html>

Note that the project list is provided in chronological order with the most recently started projects listed at the end.

IC09-001 Computer Security Group (ICSG): Computer security experts from around the globe, working together to combat malware and other computer security threats.

IC12-003 IEEE Intercloud Testbed: Bringing industry and research institutions together to gain real-world experience in cloud-to-cloud interoperability with the IEEE Intercloud Testbed.

IC12-006 IEEE Actionable Data Book for Education: Creating and demonstrating prototypes for new methods of activity-based mobile learning via an open-standard e-book format with new forms of interactive learning technology and functionality.

IC13-001 IEEE-SA Symposium on EDA Interoperability: Organizing an annual symposium to help members of the electronics/semiconductor design and verification community better understand the landscape of Electronic Design Automation and semiconductor intellectual property standards, as well as the role of these standards to address industry interoperability challenges.

IC13-002 Electric Vehicle Wireless Power Transfer: Pre-standardization efforts for Electric Vehicle Wireless Power Transfer, with a particular focus on dynamic wireless charging to address issues such as range limitation of electric vehicles and energy storage costs.

IC13-004 IEEE-SA Ethernet & IP @ Automotive Technology Day: Organizing an annual conference and exhibition on the application of Ethernet and Internet standards in the automotive environment.

IC13-005 DC in the Home: Exploring the issues and work to be done to ensure DC electricity can be safely and conveniently accessed in the home, improving energy efficiency by eliminating the wasteful conversions between AC and DC.

IC14-001 Green Power Generation: Bringing together enterprises and research institutions to overcome major issues and discuss potential technical standards relating to cleaner fossil fuel and especially coal-fired power generation in China and beyond.

IC15-001 Fiber Optics Sensors: Companies that manufacture fiber optic sensing systems or components for fiber optic sensing systems working together to identify gaps in standards related to fiber optic sensors and develop a plan to address these gaps.

IC15-002 Smart Glasses Roadmap: Adoption and acceptance of Augmented and Virtual Reality will be dependent on the readiness of technologies to provide a positive and cost effective user experience. This project aims to analyze the markets, use cases, and technology considerations that must be addressed to accelerate enhanced reality technology readiness and adoption.

IC15-003 Smart City Compliance Indicators: Define the factors that determine the “smartness” of a city. Identify the key indicators of “smartness” that are required for a city to be called a smart city and develop a smart city rating index.

IC15-004 3D Body Processing: Bringing together an ecosystem of players to propose new standards around enabling 3D body processing, which includes the capture, processing, storage, sharing, and (augmented) representation for “Of-the-body” and “On-the-body” technologies.

IC15-005 Next Generation Enterprise/Campus/Data Center Ethernet: The growing diversity of applications within enterprise, campus, and data center networks requires new Ethernet standards to be developed. This is evident by recent standardization activities related to 2.5 Gb/s, 5 Gb/s and 25 Gb/s Ethernet, as well as subsequent conversations related to introducing new Ethernet solutions at these rates. The goal of this activity is to assess emerging requirements for enterprise, campus, and data center networks, identify gaps not currently addressed by IEEE 802.3 standards, and facilitate building industry consensus toward proposals to initiate new standards development efforts.

IC16-001 Open Data: Stakeholders assessing existing Open Data initiatives and proposing new standards for making data “open.” Creating a globally accepted definition, format, and structure for Open Data to enable interoperability, whereby Open Data sets from different sources can be easily combined into larger and more valuable data sets.

IC16-002 The Global Initiative for Ethical Considerations in the Design of Autonomous Systems: Bringing together experts in fields relating to autonomous systems (e.g. Robotics, Artificial Intelligence, Computational Intelligence, Machine Learning, Deep Learning, Cognitive Computing, Affective Computing) to identify and address the ethical considerations related to the design of autonomous systems and the issues they involve.

IC16-003 Internet of Things Interest Group: Bringing together participants active in the Internet of Things (IoT) space for collaboration toward mutually beneficial outcomes and deliverables, with special focus on connecting with industry players.

IC16-004 Augmented Reality in the Oil/Gas/Electric

Industry: Stakeholders collaborating to identify requirements, standards needs, and other issues, to help enable augmented reality solutions, as well as potentially mixed and virtual reality solutions, that can benefit the oil, gas, and electric industries.

IC16-006 International Roadmap for Devices: This Industry Connections activity will focus on an International Roadmap for Devices and Systems (“IRDS”) via establishment

of an interest group closely aligned with the new electronics industry ecosystem. Activity members will collaborate in the development of this roadmap, as well as engaging with other segments of the IEEE in complementary activities (Rebooting Computing Initiative, Computer Society, and other supporting IEEE societies) that help assure alignment and consensus across a range of stakeholders.

---

## ATIS: Enabling ICT Industry Transformation

By Susan Miller, President and CEO, ATIS

Since its inception as a standards organization to advance the telecommunications industry’s transformation from regulated monopoly to competitive communications services, the Alliance for Telecommunications Industry Solutions (ATIS) has evolved at the velocity of the information and communications technology (ICT) industry. Today, in addition to the thousands of standards, specifications, and requirements delivered, ATIS generates business use cases, software toolkits, application program interfaces, interop testing, user guidelines, best practices, and more. Our solutions embrace the opportunity of open source, but also recognize that open source and standards will co-exist, both playing a role in our industry’s transformation. Educating regulators on evolutionary topics such as the 5G future is an important area where ATIS also engages.

ATIS brings together the industry’s top technology leadership. Our board of directors consists of a diverse group of C-level executives from the leading global ICT companies. Our success critically depends on attracting innovative companies that are disrupting how the more traditional industry players do business. ATIS’s historical roots are in defining standards for traditional telecommunications service providers and equipment vendors. As competition changed the industry landscape, Internet and cable operators joined ATIS, expanding the organization’s diversity and its suite of solutions. This expansion has continued in 2016, with ATIS welcoming Google and Facebook to its membership ranks. Combined with our Board’s insight and guidance, aligning the broad and diverse ecosystem of stakeholders and engaging them in dialogue are what help us to deliver the full opportunity of the future. Our approach positions ATIS to address technologies that will disrupt ICT, specifically the game-changing technologies that will impact compute, storage, and the network, to better understand how they will drive future innovation.

Accelerating change, innovating, and advancing industry transformation are central to ATIS’s mission. We embrace and define forward-looking opportunities through our Innovation Agenda. The Agenda’s objective is to set the stage for industry alignment on priorities that reflect the industry’s direction over the next 18 months. One of its first major initiatives is a roadmap for the 5G future. The Agenda has also launched ATIS’s cybersecurity work, which focuses on emerging threats. It is defining the evolutionary path from today’s IP-based routing network to a future network that leverages the increasingly important role of content. Slated for future engagement is the creation of a technology roadmap to guide Smart Cities planners and accelerate investments in infrastructure.

### A History of Advancing Transformation

ATIS has a 30-year history in bringing the industry together to align on and speed transformation. For example, ATIS developed the SONET-SDH synchronous optical standards,

including the European version that later was adopted by the ITU-T as the first-ever global optical standard. Although the original SS7 specification pre-dates ATIS, much of the ongoing evolution of the standard was driven by ATIS and then adopted by ITU-T. This work laid the foundation for today’s optical networks and intelligent services that have helped our industry handle the exponential increase in data rates.

ATIS was also a catalyst in advancing high-speed Internet. ATIS’s work contributed some of the major broadband Internet standards, including those guiding successful mass-market deployment of services such as DSL and VDSL.

Not only has our work advanced network speeds, it also has transformed quality of service. Innovation in devices is now pushing the need for an expanded definition of quality. In response, ATIS has contributed a wide range of performance, reliability, and quality of service standards to improve the processing of voice, audio, data, image, and video signals, as well as their multimedia integration.

### The Future Unfolding Now

With the emergence of mobility, ATIS was a member of the visionary team that founded the Third Generation Partnership Project (3GPP) in 1998, a pivotal force in enabling global wireless connectivity and roaming. As the founding North American Organizational Partner of 3GPP, ATIS created standards and solutions for wireless systems and services, from the creation of the first domestic Personal Communications Service standards, to development of global specifications for 3G, 4G, and now pointing to 5G. ATIS has become a major contributor and leader in the development of global wireless specifications.

ATIS is also an industry leader in advancing the all-IP network. Through a joint task force with the SIP Forum, ATIS delivered the first standardized, industry-based specification designed to achieve IP-based interconnection of all service provider networks. ATIS is also leading a testbeds initiative to validate key aspects of the all-IP network transformation. This work addresses emerging solutions in areas including numbering evolution, IP-NNI routing, and authenticated caller-ID. Already, an assessment of key testing requirements has been conducted and has identified nine business use cases of interest for an ATIS testbed. These cover number provisioning, IP-NNI routing, and secure caller-ID.

The ATIS-SIP Forum IP-NNI Task Force is currently developing a specification for a “verified token” in cooperation with the Internet Engineering Task Force (IETF). The verified token leverages service provider infrastructure to provide an important enabler for more effective approaches to combat caller-ID spoofing. This work is specifically geared toward adding value to service provider offerings while giving consumers important tools to combat the problem.

As ATIS continues to transform the communications eco-

system for users, it is also advancing machine-to-machine communications. ATIS is a founding partner of oneM2M, the global organization for standards for M2M and the Internet of Things. oneM2M is developing a common service layer that can benefit vertical markets such as the automobile industry, the healthcare industry, and the smart grid, all which will be central to the surge in M2M communications. This work is critical as these communications are expected to exceed that generated by the sum of all human voice conversation on the world's wireless networks. oneM2M has a strong security focus, which is vital to protect M2M applications and avoid the type of high-profile security lapses we have seen in other systems. Also, oneM2M has named ATIS as the initial Registry Management Authority for the oneM2M app-ID registry, developed by iconectiv, which is essential for accelerating the adoption of open M2M systems.

In the transformation from hardware to software-centric networks and the growing virtual network operator movement, ATIS plays a key role. Our Network Functions Virtualization (NFV) Forum leverages new technology to enable innovative business models based on the use cases that matter most to ATIS members. These include the use of NFV

services between providers to deliver cheaper and more efficient mobile roaming, CDNs, and other applications. Underlying these is the use of virtualization to dynamically combine resources from several providers. Beyond a traditional network-to-network interface, open standards for exposure of NFV capabilities enable operators, enterprises, and web companies to construct services using virtual resources chosen, on demand, from a catalog of available functions.

NFV will create both new opportunities and security challenges. It is critical that the transition to NFV preserves the good operational security achieved in today's carrier networks. ATIS has taken the initiative to work with operators to define security approaches that are preparing the network for the NFV world.

This brings us to the present, which, at ATIS, is always focused toward the future. In 2016, more than ever, ATIS is helping the industry advance the opportunities brought our way by new technology, member business imperatives, and consumer preference. In an industry that is constantly changing, ATIS has been adept in transforming itself. As our industry evolves, ATIS will continue to pivot with it, and serve as a critical force in advancing industry transformation.

*“The best way to predict the future is to invent it.”*

*-Alan Kay*



IEEE COMSOC  
**TRAINING**  
[www.comsoc.org/training](http://www.comsoc.org/training)