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## PRESIDENT'S MESSAGE

ATIS is where the leading ICT companies come together to advance our industry's transformation. In this issue of *ATIS Updates*, you'll get up to speed on some of our recent priorities, including:



- Our ***Smart Cities Technology Roadmap***, which is helping city planners leverage innovation in the areas of 5G, augmented reality and machine learning to rapidly advance the cities of the future
- Our **Unmanned Aerial Vehicles** initiative addressing an emerging technology with a critical role in communications' operational and infrastructure aspects
- Our **Connected Car – Cybersecurity** work that leverages ICT industry cybersecurity expertise to advance security in the connected car
- Our solutions to mitigate the FCC's number one source of consumer complaint: illegal **robocalling and caller ID spoofing**

ATIS is growing. Since this time last year, we have welcomed as members Altery Systems, Anokiwave, Apple, Cablcon, Carnegie Technologies, Coherent Logix, U.S. Department of Transportation, FirstNet, Further Enterprise Solutions, GCB Services, Gladiator Forensics, iPosi, JHU-APL, Lockheed Martin, Mavenir, Redline Communications, Seygen, and Telnix.

For more insight into the top priorities that are attracting new members and advancing the ICT industry's transformation, visit us online at [atis.org](http://atis.org) and follow us on Twitter at [@atisupdates](https://twitter.com/atisupdates).

Sincerely,

Susan M. Miller  
President & CEO

## FEATURED INITIATIVES

ATIS' Board-driven Innovation Agenda is what sets many of ATIS' initiatives into motion. These priorities are addressing the ICT industry's latest imperatives and helping to advance industry transformation.

### SMART CITIES

*Creating the technology roadmap for smart cities planners and decision makers.*

The 5G network, augmented reality, machine learning and other innovations are delivering a wealth of options to rapidly advance Smart Cities technology. To help city planners know what's on the horizon, so that they can start developing their technology vision today, ATIS published the [\*Smart Cities Technology Roadmap\*](#) in early May.

The [\*Roadmap\*](#) is the first ICT industry publication designed for city decision makers including CTOs, CIOs and technology advisors that provides an overview of the network-enabled technologies to have the greatest impact on the evolving Smart City. The goal is to foster better budgeting, purchasing and staging decisions. The end result will be to position city decision makers to more effectively manage their upcoming technology investments as they create the connected cities of the future.

Following the [\*Roadmap\*](#)'s publication, ATIS' work will continue. Our Smart Cities Initiative will seek feedback from city planners on collaborative activities that can advance Smart Cities technology investments. We are also engaging cities to develop prioritized next steps, which may include data exchange frameworks, use of an



IoT Secure Registry or meeting other business framework needs that will support Smart City planning. Finally, we are exploring opportunities to standardize foundation-level aspects of Smart City infrastructure, while also allowing customization to meet each city's unique vision.

ATIS wishes to thank the following companies for participating in development of the [\*Smart Cities Technology Roadmap\*](#): AT&T, Bell Canada, C-Spire, CenturyLink, Cisco, Cox Communications, Ericsson, Fujitsu, HPE, iconectiv, InterDigital, JMA Wireless, Motorola, NextNav, Nokia, Oracle, Qualcomm, Sprint, TELUS, Verizon, Viavi and West Corporation.

### 5G

*Optimizing user experience in the 5G network.*

Earlier this year, ATIS delivered an update to our [\*5G Reimagined\*](#) whitepaper, which added new use cases to address augmented and virtual reality and identified corresponding requirements in the new network. The white paper also provides initial assessment of an approach to provide Optimized User Experience (OUx) in the forthcoming network. Since the update was published, a detailed assessment of OUx requirements has been completed and is scheduled to be released at the end of June. In their quest to provide increasingly competitive services, network operators have found that better understanding and providing OUx for wireless customers is critical. The forthcoming white paper outlines the breakthrough use cases related to OUx and discusses Service and Ecosystem enhancements that enable them to be delivered. Looking toward the future, ATIS' 5G Initiative will continue to work on additional detailed use cases from the newly emerging standards as basic 5G specifications become solidified in 3GPP.



Speaking at high-visibility industry events is one way in which ATIS is gaining visibility for our work in the 5G realm. On May 16, ATIS Senior Technology Consultant Tom Anderson spoke at [5G North America](#), held as part of BCE (the Big Communications Event) 2017, in Austin, Texas. Anderson delivered a presentation entitled [Standards and Release Roadmap Toward 5G: A North American Perspective](#), and lent his insight in [A 5G Standards Debate](#), where he was joined by, among others, Brian Daly, Director, Core Network & Government/Regulatory Standards, AT&T. Daly is also actively involved in ATIS as a leading contributor to the ATIS Board, TOPS Council and Standards Committee initiatives.

## CYBERSECURITY

*Securing critical infrastructure against growing and evolving cyber threats.*

ATIS recently published two white papers to advance cybersecurity in the network: 1. [Cybersecurity Architectural Risk Analysis Process](#) and 2. [Securing Internet of Things \(IoT\) Services Involving Network Operators](#).

One of the objectives of the Cybersecurity Ad Hoc group is to create a process for performing an Architectural Risk Analysis (ARA) on ICT solutions. The ARA will then make it possible to proactively create cybersecurity risk management steps for these solutions. This work, published in [Cybersecurity Architectural Risk Analysis Process](#), includes developing procedures to determine security goals, identify and assess potential risks, and, most importantly, develop necessary steps to proactively mitigate the risks identified.

[Securing Internet of Things \(IoT\) Services Involving Network Operators](#) focuses on the need to address the security concerns inherent in the rapid growth in the adoption of Internet of Things (IoT) services. ATIS' work in this area is geared both toward protecting the IoT service itself and preventing IoT equipment from becoming a source of attacks against other service users. In some

cases, the network operator's role in delivering IoT services is simply to provide connectivity. In this arrangement, there is no direct technical or business partnering between the operator and the IoT service provider. In other cases, however, the network operator takes a more active role, and the IoT service encompasses placing technical and business aspects under the network operator's control. Responsibility for securing the service may be shared, and the consequences of security failures may be felt by both the network operator and the IoT service provider. The forthcoming white paper introduces several different scenarios and characterizes the different levels of partnering that may take place in each. Practices to proactively address security implications are covered.

## CONNECTED CAR – CYBERSECURITY

*Bringing ICT leadership in standards and state-of-the-art cybersecurity developments to vehicle OEMs.*



While an age of connected and self-driving vehicles brings unprecedented new options to consumers, the risks posed by cyber intrusion are significant. To reduce this risk, ATIS has spearheaded a major effort to foster collaboration between the Information and Communication Technology (ICT) industry and vehicle original equipment manufacturers (OEMs). At the end of June, our Connected Car Cybersecurity Ad Hoc Group will complete its first report *Connected Vehicles: Improved Cybersecurity Through Collaboration*.



The report addresses two critical questions:

1. How can the ICT industry, with its vast knowledge of how to address security threats to the network and devices, assist vehicle OEMs with improved cybersecurity; and
2. What can the ICT industry and OEMs gain from closer collaboration?

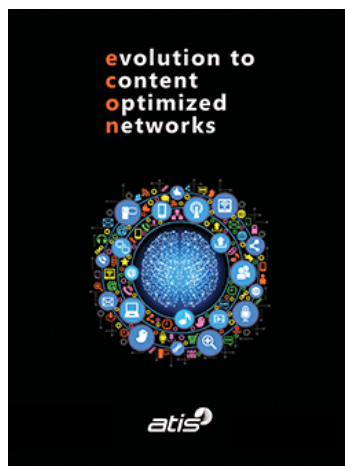
In the white paper, ATIS describes approaches that the ICT industry is currently taking to reduce the risk of cyber intrusion in telecommunications networks, outlines how these techniques could help defend the connected vehicle, and identifies the next steps needed to advance this work. A potential engagement model for the ICT industry and Vehicle OEMs is provided, which emphasizes the mutual benefits achievable through collaboration. ATIS sees the white paper as a starting point for productive, ongoing industry-to-industry dialogue. Updates are anticipated as new knowledge is added to the field.

## EVOLUTION TO CONTENT OPTIMIZED NETWORKS

### *Advancing network evolution.*

The eCON Group is building on its [\*Evolution to Content Optimized Networks\*](#) report released earlier this year by developing “deep dive” incremental assessments of early deployment opportunities for information-centric networking (ICN) solutions in comparison to IP-based architecture.

eCON has identified several use cases that could have significant market and network impacts in the next few years. These include augmented reality, efficient linear video delivery, multi-access collaboration



and Smart Mobility IoT applications. Each of these use cases will be assessed on the basis of an optimized ICN-based implementation and a near term IP-based solution. These findings will be covered in a Phase 2 Report to be issued later this year and should provide network architects and planners with valuable deployment-level information with respect to ICN-based opportunities.


## UNMANNED AERIAL VEHICLES (UAVS)

### *Advancing an emerging technology with important roles in the operational and infrastructure aspects of communications.*



This summer, ATIS will release its first analysis to advance industry priorities on Unmanned Aerial Vehicles or “drones.” The report will address critical command and control issues to support UAVs, including location services, identification, and reliable communications. Deriving location information from multiple independent sources can increase accuracy and authenticity, delivering a range of benefits. For example, as drones are being used for a variety of innovative new applications, a network-based audit trail could be valuable to prove the vehicle has avoided controlled air space. ATIS is exploring how the network can play an important role in this, and other areas related to the command and control of UAVs.

ATIS is also exploring opportunities to progress UAV identification services by working with SAE, a U.S.-based, globally active professional association and standards developing organization with principal emphasis on transport industries such as



automotive, aerospace, and commercial vehicles. This joint work would develop a mechanism to uniquely identify the UAV, and the UAV operator, under the auspices of the ANSI UAS Standards Collaborative. In the next phase of work, ATIS' program will also address the payload aspects of drone flights, for example, how to most effectively stream live data down as it is created without impacting service to ground-based users.

## INTER-COMMITTEE AND FORUM ACTIVITIES

### ROBOCALLING

*Mitigating the FCC's number one source of consumer complaints.*

An industry-led group, the Robocall Strike Force released a [final report](#) in April summarizing industry efforts to develop solutions to mitigate the caller fraud problem. The report cites ATIS solutions as being critical to these efforts. One major ATIS contribution mentioned is the development of the SHAKEN (Signature-based Handling of Asserted information using toKENs) specification. Developed by the ATIS-SIP Forum Joint NNI Task Force, SHAKEN defines a signature to verify a calling number and specifies how it will be transported in SIP "on the wire." Working together with the IETF's STIR (Secure Telephony Identity Revisited) standard, STIR/SHAKEN offers, for the first time in the network, a practical mechanism to provide verified information about the calling party as well as the call's origin. Access the [Industry Robocall Task Force Report](#).

In addition to developing the underlying technical framework to mitigate unlawful robocalling, ATIS is also advancing the governance model which will help the industry implement it. For SHAKEN to work, a secure process is needed for issuing certificates to service providers — and ensuring that only an authorized certification authority is indeed issuing the certificates. To achieve this goal, the ATIS-SIP Forum has just completed SHAKEN:

Governance Model and Certificate Management that provides the framework for managing SHAKEN certificates. ATIS is now delivering a proposal to act as the governance authority for this process, based on the approved framework.


Another critical solution in ATIS' multifaceted approach to mitigate unlawful robocalling is the [ATIS Robocalling Testbed](#), which allows carriers to test implementations of SHAKEN in a realistic end-to-end network configuration. Twelve companies are currently signed up to test SHAKEN through the Testbed. If your company is interested in participating in the ATIS Robocalling Testbed, contact [Jim McEachern](#), Senior Technology Consultant, ATIS, or visit [www.atis.org/robocallingtestbed](http://www.atis.org/robocallingtestbed).

## TOPS COUNCIL INITIATIVES

### RELIABILITY IMPLICATIONS OF EMERGING TECHNOLOGIES

*Proactive assessment of the service resiliency implications of emerging technologies.*

The techniques used to predict and estimate the end-to-end reliability of services are often based implicitly on specific technologies and network architectures. As new technologies are introduced, the existing approaches continue to be used, and the same metrics collected and reported. Eventually the most significant new technologies are factored into reliability reporting, but it often takes time for this to happen. The effort to update reliability assessment in light of the PSTN to IP packet technology evolution, for example, is still ongoing — even though IP technology has been widely deployed in the PSTN for well over a decade. The new ATIS Reliability Implications of Emerging Technologies Landscape Team will speed progress in critical areas such as this. It will identify a handful of key emerging technologies, and provide a high-level assessment of how these could change end-to-end service reliability and resiliency. This assessment will provide an



emerging technology “watch list” to ATIS’ [Network Reliability Steering Committee](#), home to a key set of industry advisors on the health of the nation’s communications networks.

The new Landscape Team’s work is just starting and will consider the resiliency implications of important trends such as network virtualization, 5G, UAVs, and more agile software development with increased use of field experience and testing to achieve multi-vendor interoperation. It will also consider how Proximity Services (3GPP ProSE) could significantly enhance resiliency for public safety services.

## SOLUTIONS AND STANDARDS

### EMERGENCY COMMUNICATIONS

#### Metrics Gap Analysis for NG9-1-1 Demarcation Points

*The right metrics to improve performance.*

As the all-IP evolution continues, the FCC has begun the process of expanding its Part 4 Outage Reporting rules to include broadband and performance metrics (e.g., throughput, latency, and packet loss). In June, ATIS is on schedule to publish a *Gap Analysis of Legacy & IP Networks for FCC Reportable Data Points* (ATIS-0500034). The goal is to better understand the complexities of how Next Generation 9-1-1 (NG9-1-1) service architectures are designed and where there are divergences from the pre-existing Legacy 9-1-1 network infrastructures. This will create the means for service providers across all industry segments (cable, wireline and wireless), in all stages of the PSTN transition, to be able to identify when their networks may be experiencing service-impacting events that impair 9-1-1 services.

ATIS-0500034 contains within it an Annex that will be used as the basis for a new project concentrating on developing metrics and common guidelines for data collection (outage reporting) that are critical for service providers and stakeholders for evaluation of demarcation points.

The focus will be on IMS originating networks and NG9-1-1 systems.

#### Study of Emergency Services and NS/EP NGN-PS Coexistence on LTE Access Networks

*Analyzing contention issues between Emergency Services and NS/EP NGN-PS communications during network degradation conditions.*

In commercial LTE network service deployments, Emergency Services (e.g., 9-1-1 and E9-1-1) and National Security / Emergency Preparedness Next Generation Network Priority Services (NS/EP NGN-PS) will have to coexist. Both are expected to be served along with commercial priority services as well as non-priority commercial services under network degradation conditions (e.g., congestion and overload during certain disaster events). There are 3GPP-defined mechanisms for admission and congestion controls such as the Access Class Barring mechanism, and scheduler imposed restrictions on throughput. However, it is not clear how and when these capabilities may be invoked in an optimal manner. For example, it might be possible for a flood of Emergency Services sessions and normal sessions (e.g., voice and messaging), initiated as a result of a disaster or emergency event, to monopolize LTE access resources.

To solve this problem, ATIS is studying contention issues between different access classes such as Emergency Services and NS/EP NGN-PS communications during network degradation conditions. Among other things the analysis involves identifying and analyzing network admission and congestion control capabilities and mechanisms defined in 3GPP LTE specifications to determine adequacy and identify gaps in addressing the problem.



## Implementation Guidelines for Non-NEAD Dispatchable Location

*Conveying useful wireless caller information to PSAPs in a consistent manner.*

ATIS is involved in a new initiative to help get critical information to Public Safety Answering Points (PSAPs) in a more consistent and comprehensible format. This work will identify existing and expected scenarios where wireless connectivity for static or nomadic services has the ability to provision the dispatchable location of the caller independent of National Emergency Address Database (NEAD) provisioning. The work will involve developing implementation guidelines that can be used consistently by the service providers and will enable a Class of Service and the Subscriber Name field (where not displaying customer name) to appear at the PSAP in a consistent manner. The goal is to simplify PSAP recognition of information (e.g., presenting “femtocell” instead of a particular service provider’s product name), as well as other information.

## NETWORK RELIABILITY

*Addressing silent alarm failures.*

ATIS’ Network Reliability Steering Committee (NRSC) has been investigating an FCC concern associated with what is perceived to be outages that are not detected by equipment alarming (e.g., non-intrinsic alarming for translation failures, input errors, etc.). To address the problem, the NRSC examined the examples of “Silent Alarm Failures” provided by the FCC as well as additional examples internal to companies in the NRSC. Consensus was reached on the concerns around these events. These were investigated and the applicable Best Practices were provided to form a [comprehensive list](#) aimed at reducing the frequency of these types of outages and mitigating their impacts when they do occur. In one key finding, the NRSC noted that the events around “Silent Alarm Failures” generally are attributed

to situations that dealt with new technology, where existing processes and procedures did not anticipate the particular situation that occurred.

The NRSC recommends that Network Operators, Service Providers, Public Safety, and Equipment Suppliers review and operationalize the findings of NRSC Bulletin No. 2017-002 to reduce “Silent Alarm Failures.” It also recommends that in addition to reviewing Best Practices, service providers consider conducting a periodic review of their existing alarming, triggers, KPIs, and/or MOPs, as appropriate. It further recommends as a new Best Practice that network operators, service providers, public safety, and equipment suppliers should conduct regular review of their alarming thresholds and selection.

## NEWS

### ATTEND THE AUG. 29 3GPP UPDATES WEBINAR

On the afternoon of Tuesday, August 29, ATIS will host an informational Webinar featuring the latest 3GPP updates. The Webinar is intended to strengthen ATIS 3GPP members’ understanding of the breadth of 3GPP activities, and provide an opportunity to discuss North American priorities and engagement. ATIS’ Tom Anderson, along with key 3GPP member experts, will provide an overview of relevant 3GPP activities.

The Webinar will specifically focus on the current progress and status of Release 15, which promises to deliver the first set of 5G standards. It will also cover other new 3GPP work as well as the maturing of the LTE-Advanced Pro specifications. Topics will include: 3GPP structure; Release 15 schedule; description of the features and capabilities (RAN and Core) associated with 5G Phase 1 work; as well as a description of key features and capabilities (RAN and Core) of LTE-Advanced Pro.

A calendar invitation will be distributed shortly. If you have any questions or suggested topics to cover, please contact [llayman@atis.org](mailto:llayman@atis.org).



## FEATURED ATIS EVENT



### **oneM2M INDUSTRY DAY**

*July 12, 2017 | Memphis, TN*

oneM2M will host its first U.S.-based [Industry Day](#) conference on July 12 at the Peabody Hotel in Memphis.

ATIS invites your company to learn how oneM2M's standards-based approach is accelerating IoT's success. The event follows the inaugural oneM2M Industry Day held in June in Shenzhen, China. Join us in Memphis to see first-hand how harmonized oneM2M standards will make IoT connectivity easier, more secure, cheaper and more efficient for a broad range of industries, service providers and vendors.

Industry Day brings together oneM2M and IoT experts along with representatives from the vertical markets oneM2M serves to share information and ideas. You will hear a oneM2M overview and learn about the organization's role in advancing machine-to-machine connectivity globally. Presentations from organizations such as GridNet, the connected home group Thread, as well as companies such as HPE, iconectiv and others will show how they use oneM2M standards in their work. Real-world implementations will be addressed, covering various industries' technical requirements and pain points as well as how oneM2M addresses them. [View the full agenda here.](#)

Attendance is complimentary. Interested in attending? Please email [cbagwill@atis.org](mailto:cbagwill@atis.org) to register.

[www.atis.org/01\\_strat\\_init/onem2m/industry-day/](http://www.atis.org/01_strat_init/onem2m/industry-day/)



## INDUSTRY EVENTS



**SMART CITIES  
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**June 26-28, 2017 • Austin, TX**

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GLOBAL CITY  
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### GLOBAL CITIES TEAM CHALLENGE EXPO

*August 28-29, 2017 | Washington, DC*

[pages.nist.gov/GCTC/event/gctc-expo-2017/](http://pages.nist.gov/GCTC/event/gctc-expo-2017/)



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