Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Framework for Next Generation 911 Deployment	)	PS Docket No. 10-255
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	)	

COMMENTS OF
THE ALLIANCE OF TELECOMMUNICATIONS INDUSTRY SOLUTIONS

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I. INTRODUCTION AND SUMMARY

The Alliance for Telecommunications Industry Solutions ("ATIS") on behalf of its Emergency Services Interconnection Forum ("ESIF"), the Next Generation Interconnection Interoperability Forum ("NGIIF"), the Wireless Technologies and Systems Committee ("WTSC") and the Packet Technologies and Systems Committee ("PTSC"), hereby submits these comments in response to the Federal Communications Commission's ("FCC" or the "Commission") *Notice of Inquiry* ("*NOI*") in the above-referenced docket.[1] ATIS applauds the Commission's efforts to encourage the use of advanced communications technologies in emergency communications through a Next Generation 911 ("NG911") framework. To ensure the success of this migration to next generation technologies, the Commission should make the deployment of voice its number one priority, with other media types following as they mature in the standards process. In addition, ATIS cautions the Commission against specific technology mandates such as requiring the use of Short Message Service ("SMS"), because new non-

[1] *Framework for Next Generation 911 Deployment*, Notice of Inquiry, PS Docket No. 10-255, FCC 10-200 (rel. Dec. 21, 2010) ("*NOI*").

voice methods including texting are under development for an NG911 framework without incorporating the limitations inherent in the existing SMS network design. ATIS fully supports integrating capabilities into the NG911 framework that addresses the needs of users that cannot utilize voice communications. Such non-voice capabilities, including text-based communications, should be made part of the NG911 framework and made accessible to all users. By including non-voice communications in the NG911 framework, the Commission will help to address the needs of the disability community.

Work on interoperability and standards-setting for NG911 is well underway but is still a work-in-progress. The Commission should allow these collaborative efforts between industry and public safety time to evolve. The Commission should not certify devices as "911-capable"or require that non-generalized communications devices be capable of emergency communications. Lastly, no additional regulation is needed to ensure that international travelers roaming on a wireless network in the United States will be able to make an emergency call because such capabilities will be supported in standards and in next generation mobile networks.

II. BACKGROUND

ATIS is a global standards development and technical planning organization committed to leading the rapid development of global, market-driven standards for the information, entertainment and communications industry. ATIS' diverse membership includes more than 200 companies and key stakeholders from the information and communications technologies industry—wireless and wireline service providers, equipment manufacturers, competitive local exchange carriers, providers of commercial mobile radio services, broadband providers, software developers, consumer electronics companies, public safety agencies, digital rights management companies, and Internet

service providers. Nearly 600 industry subject matter experts work collaboratively in ATIS's 17 open industry committees, which develop standards, specifications, best practices, guidelines and other approaches as deemed essential to communications networks' operation and continued evolution. ATIS is also the North American Organizational Partner for the 3rd Generation Partnership Project (3GPP), a collaboration between key telecommunications associations to make globally applicable technical specifications for a 3rd Generation ("3G") Mobile System based on the evolved GSM core network, and the Universal Terrestrial Radio Access (UTRA).[2].

The ATIS ESIF serves as the primary forum for the telecommunications industry, public safety and other stakeholders to identify and resolve recognized technical and operational interconnection issues related to the delivery of E911 services. ESIF liaises with standards and government organizations to apprise them of its deliberations and decisions. ESIF also works closely with the National Emergency Number Association (NENA), which currently manages the technical evolution of the 911 system and emergency communications process. ESIF is an open, technical/operational forum that enables many different telecommunications entities to determine voluntarily the best practices and solutions to effectively and promptly deploy E911 services nationwide.

The ATIS NGIIF provides input from its perspective as the industry forum that addresses next-generation network interconnection and interoperability issues associated with emerging technologies and that develops operational procedures that involve

[2] ATIS is a founding and sole North American Organizational Partner of 3GPP. In addition to ATIS, the other current partners are the Association of Radio Industries and Businesses, China Communications Standards Association, European Telecommunications Standards Institute, Telecommunications Technology Association and Telecommunication Technology Committee.

architecture, disaster preparedness, installation, maintenance, management, reliability, routing, security, and testing between network operators.

The ATIS WTSC is comprised of leading technologists who lead industry technical work on wireless issues, including NG911. ATIS WTSC develops standards and technical reports related to 2G, 3G, and 4G wireless services and systems, as well as those for Wireless Wideband Internet Access systems and for advancing NG911 communications services.

The ATIS PTSC develops and recommends standards and technical reports related to services, architectures, and signaling. The PTSC also coordinates and develops standards and technical reports relevant to telecommunications networks in the U.S., reviews and prepares contributions on such matters for submission to U.S. ITU-T and U.S. ITU-R Study Groups or other standards organizations and reviews for acceptability or per contra the positions of other countries in related standards development and takes or recommends appropriate actions.

III. NG911 CAPABILITIES AND APPLICATIONS

ATIS believes that the incorporation of real-time media, specifically voice and text, should be the Commission's top priority but that the Commission should not mandate the use of a particular technology protocol for text-based services. Instead, the Commission should allow industry to continue to work on standards-setting that will address the specific needs of emergency communications and limitations inherent in existing protocols like SMS. Furthermore, ATIS believes that more work must be done to determine how and whether the sharing of private medical information should be incorporated into the NG911 framework and how the Commission should determine primary versus secondary media types.

A. The Inherent Limitations of SMS Make It Unsuitable for an NG911 Framework.

The *NOI* requests comment on "how increasing use of SMS may impact emergency communications and whether NG911 networks should be configured to support SMS emergency communications."[3] As described in the 4G Americas White Paper,[4] the Commission should not require the use of SMS in emergency communications, and should approach the use of texting in emergency situations cautiously. SMS has many technical limitations that make it unsuitable for emergency communications. As such, the Commission should continue to rely on the efforts of public safety organizations and industry trade groups to define the scope of next generation emergency services.

SMS is a service that enables the sending and receiving of short – typically 160 characters or fewer—text messages to or from mobile phones. One of the great innovations of SMS is the ability to send such messages across wireless platforms that use multiple different technologies. Although SMS is commonly associated with person-to-person texting, SMS can be created from external sources outside of mobile networks. Importantly, however, current SMS standards do not support the most critical elements of an emergency communications network – automatic routing to the designated public safety answering point ("PSAP"), the automatic provision of a sender's location information to the PSAP, reliability or priority.

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[3] *NOI*, ¶ 42.

[4] *See* 4G Americas Texting to 9-1-1, Examining the Design and Limitations of SMS at 8 (Oct. 2010) *available at* http://www.4gamericas.org/documents/SMS%20to%20911%20White%20Paper%20Final%20October%202010.pdf. ("SMS has several significant limitations and shortcomings which do not make SMS suitable for emergency communications especially under life threatening conditions.") (*4G Americas Texting to 911 White Paper*).

"The innovation in SMS is to use the telephony-optimized system to transport SMS messages on the signaling paths needed to control the telephony traffic during time periods when no signaling traffic exists."[5] Because SMS messages are transmitted using short data bursts on the otherwise unoccupied control channels – channels that are used for signaling between cellular tower base stations and mobile devices – its technical design for transmitting SMS makes it unsuitable for automatic location determinations. In contrast, when a subscriber makes an emergency voice call, the call is transmitted for a longer period of time over a wireless network's traffic channels that also facilitate location information.

Another inherent limitation of using SMS in emergency situations stems from the transaction-based nature of the communication, which is far inferior for emergency call purposes when compared to a session-based communication like a phone call. As the *NOI* recognizes, SMS is an "asynchronous messaging service that does not provide a means for the sender to know whether and when the message has reached its destination."[6] This limitation is inherent by design. Indeed, SMS was never designed to provide any time-sensitive, mission critical service. Instead, SMS was designed as a best-effort, store-and-forward system, not a real-time communications service. As such, it is virtually impossible to guarantee a real-time, two-way text communications exchange using SMS technology. And there is no guarantee of delivery – immediate or otherwise – of an SMS message, whether for commercial or emergency purposes; wireless operators can only guarantee "best efforts" with no priority and reliability is

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[5] *4G Americas Texting to 911 White Paper* at 12.

[6] *NOI*, ¶ 41.

subject to network conditions. Similarly, no acknowledgments of sent, delivered, or read SMS messages can be provided to the sender. Since SMS does not provide guaranteed delivery, it would be impossible to maintain session continuity across messages and ensure the kind of two-way communication that is necessary for emergency communications. Further, messages may arrive out of order, which may potentially cause the response to one message to appear as the response to a different message.

Given these inherent network design limitations, there is no simple method by which to alter the current system to resolve the challenges associated with the use of SMS in emergency situations. For example, adding a mobile-to-fixed messaging capability would not resolve limitations in the use of SMS. Providing for emergency service capabilities in SMS would require substantial reengineering of network systems—which could take as long as creating a new standard for non-voice emergency communications—and would require the design of such revised SMS functionality into new mobile devices. Lastly, the short code system does not resolve any of the issues associated with SMS. Short codes facilitate communications between wireless subscribers and applications that are typically part of marketing or advertising campaigns. The mobile subscriber uses the short code to send a short text message to the advertiser and in exchange agrees to receive promotional materials in return. The existing short code system is not a feasible mechanism for the routing of SMS emergency messages to PSAPs. On the one hand, a short code dedicated to each PSAP is infeasible, as it would require over 6,000 short codes, meaning that SMS users attempting to text to 911 would need to know the specific short code associated with the designated PSAP in the user's location. On the other hand, the creation of one national short code would also be

infeasible, as it would lead to routing challenges because the SMS user's location information would not be available.

1. Rather Than Require the Support of SMS, the Creation of a New Standard for Non-Voice Emergency Communications Should Be Encouraged.

The best path forward to develop a standard for non-voice emergency communications tailored to meet the special requirements of emergency communications is to encourage industry groups like ATIS and 3GPP to continue work with public safety organizations on developing a new standard for non-voice emergency services ("NOVES"). These industry groups have made great strides toward a new standard and should be allowed to complete their work.

Aside from SMS, other existing message-based text protocols like instant messaging ("IM") may also present limitations regarding their applicability to NG911.[7] IM services are not currently designed to support emergency calls, and many of today's IM services are not interoperable with each other. As such, ATIS emphasizes that text services do not need to use any particular protocol, and that existing IM protocols will need further study to support emergency calls.

2. If the Commission Determines to Include SMS-to-911 as Part of the NG911 System, It Must Ensure that Service Providers Are Protected from Liability.

If the Commission includes SMS-to-911 as part of the NG911 system, it should ensure full liability protection for service providers both during and after the transition to NG911 systems for SMS-to-911. Because SMS-to-911 is a best efforts service with no delivery or performance guarantee, full liability protection for service providers must be

[7] *See id.*, ¶ 33.

ensured. Further, given the higher probability of SMS-to-911 message failure, liability protection for SMS-to-911 services must be far stronger than that currently provided for voice calls to 911.

3. Consumer Expectations Regarding SMS Emergency Communications Must Be Addressed.

As the Commission notes, "in light of the popularity and ubiquity of SMS, many consumers may assume that they are or will be soon able to text to 911."[8] Given this expectation, the Commission should focus on educating consumers and correcting expectations regarding the use of SMS for emergency communications. Consumers generally do not understand that SMS is generally not supported for contacting PSAPs for emergency use. Some trial implementations of SMS to PSAPs in various locations across the country may have caused confusion as to whether SMS may be used to text to 911.

Additional public education is necessary regarding the limitations of SMS for emergency communications. This need will only increase as the implementation of NG911 changes consumer expectations about 911 capabilities, potentially deepening public misunderstandings about what emergency services are available. The Commission should require that organizations that contribute to consumer confusion pay for consumer education.

B. Use of Other Capabilities and Applications in the NG911 Framework.

The *NOI* requests comment on the use of a number of specific capabilities and devices that could be incorporated into the NG911 framework. ATIS addresses several of these capabilities and applications below.

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[8] *Id.*, ¶ 41.

1. Use of Still Images (Photos) Should Be Supported When Standards Are Adopted.

ATIS agrees with the Commission that various forms of non-real-time media, such as still images, may be helpful for first responders or emergency call takers and thus should be supported in an NG911 environment.[9] ATIS and the wireless industry have already started to work on including support for such forms of media. For example, in December 2010, 3GPP started work on developing standards for NOVES. Such standards will be based on an evaluation that includes case examples of transmitting still images as well as other non-real-time media within an emergency communication session, or call. As this work progresses, ATIS expects that further work items will be approved to extend the current 3GPP Common IMS ("IP Multimedia Subsystem") based NG911 service to support these various media types.

2. Use of Real-Time Video Should Be Addressed After Voice and Text Services Have Been Introduced.

ATIS agrees that real-time media, including video, may in some cases be helpful to first responders and call takers.[10] As a result, support for real-time video should be phased in after higher priority services, like voice and text, have been introduced. ATIS and the wireless industry have already started work on including support for real-time video and other media in the NOVES standard. Use cases specific to real-time video and audio are being addressed in the NOVES standard.

ATIS notes however that there is a distinction between an interactive emergency communication session, or call, initiated by or on behalf of a human (*e.g.*, via a camera-

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[9] *See NOI*, ¶ 35.

[10] *See id.*, ¶ 36.

equipped mobile phone) and a session provided by a non-interactive automated device such as a networked security camera. While both types of sessions may have the capability to provide real-time video, significant differences exist between the devices and the specific capabilities expected. In addition, PSAPs may prefer to handle and receive such media in distinct ways. Hence, the industry is approaching this issue with such distinctions in mind.

3. A Decision Regarding the Use of Telemetry Data Should Be Deferred.

ATIS suggests that the Commission defer the inclusion of telemetry data and non-human initiated data (i.e., automatic sensors) for a later version of NG911.[11] Standardizing such data will be a time-consuming process, as industry and public safety still need to define and agree on the content, format, and the appropriate means to transfer such data. For these reasons, this data should not be included in this version of NG911.

4. It is Premature to Support Auxiliary Medical and Personal Data and the Sharing of Such Data with First Responders.

The *NOI* seeks comment on (1) supporting auxiliary medical and personal data on the NG911 network[12] and (2) sharing such medical data with first responders.[13] ATIS believes that it is too early for NG911 to support auxiliary medical and personal data. However, this feature could be introduced into a later phase of N911 if found to be feasible and effective.[14]

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[11] *See id.*, ¶ 37.

[12] *See id.*, ¶ 38.

[13] *See id.*, ¶ 47.

[14] ATIS notes that WTSC has opened a study item to investigate the North American use cases, requirements, security, and impacts on 3GPP-based wireless networks used to support mobile health ("mHealth").

In addition to security and reliability concerns, the following issues need to be investigated before implementing the use of auxiliary medical and personal data in NG911: (1) which entities are trusted to store and maintain the data; (2) how the accuracy of the data is maintained, as it may become outdated or inconsistent; and (3) how access to the data would be properly restricted, particularly as various entities may play different roles related to such data (such as medical providers, affected individuals, end users, data repository organizations, data serving providers, etc.). ATIS does not believe that telecommunications service providers should be responsible for the content or delivery of this auxiliary medical and personal data. Further, additional complications are presented by the use of medical and personal data in emergency communications. For example, the person placing an emergency call may or may not be the person or one of the persons whose medical data is associated with the device, and the person placing an emergency call may or may not be the person in need of emergency assistance.

ATIS believes that the capability to support the sharing of information requires more time to better understand what information should securely be transmitted to first responders, and the issues that need to be investigated as described above. In particular, effective solutions for support of privacy, security and keeping information comprehensive, reliable and up-to-date need to be carefully considered. For example, many emergency calls are unrelated to the past condition of the caller or the subject needing assistance – and in such cases, sending confidential caller information would be both ineffective (*e.g.*, a distraction to the responder) and a possible deterrent to someone considering making an emergency call. ATIS intends to consider these issues and will report its findings to the Commission.

5. Industry Must Be Permitted to Define Primary v. Secondary Usage of Media Types.

To allow industry to provide an analysis of which types of media will be applicable to the *NOI*'s classification of "primary" and "secondary" media, the Commission should first allow industry to identify use cases that would be sufficient to define and identify the applicability of primary and secondary media.[15] This process will identify any additional information needed from the media type for use by the call taker, dispatcher or first responders.

IV. NG911 APPLICATIONS FOR PERSONS WITH DISABILITIES OR SPECIAL NEEDS.

ATIS strongly supports the Commission's efforts to ensure that the NG911 framework will support persons with disabilities or special needs. Indeed, there is broad industry agreement that NG911 should support services for persons with disabilities as part of an integrated Internet Protocol ("IP") system. In particular, ATIS believes that text-based communications should have a significant role in emergency communications for those with speech or hearing disabilities. However, ATIS notes that a separate rulemaking is not necessary to address the integration of text-based and other services for persons with disabilities, because such services should be integrated into the NG911 system and available to all users regardless of disability status.

[15] *See id.*, ¶ 39.

A. There is Broad Industry Agreement that NG911 Should Support Services for Persons with Disabilities as Part of an Integrated IP Communications System.

As ATIS's previously-filed comments make clear,[16] ATIS strongly supports the Commission's goal of "determining the most effective and efficient technologies and methods by which to enable access to NG911 emergency services by individuals with disabilities."[17] Industry participants have already begun this task and are moving towards such capabilities and services as demonstrated by industry's commitment to standardize NOVES. Consequently, any Commission action should focus on encouraging user-perceptible services rather than the specific protocols or underlying mechanisms by which such services may be supported. Mandating a specific technology could be counterproductive. For example, as noted above, SMS has many limitations that make it an infeasible solution for text-based emergency communications. This is but one example of how refraining from specific protocol mandates will allow industry and public safety to reach solutions that are both functionally optimal and cost-effective at the same time. These standardized solutions will work for users with or without disabilities.

1. Text-Based Emergency Services Should Have a Significant Role in a Future NG911 System.

ATIS believes that text-based emergency services should have a significant role in the NG911 framework.[18] ATIS anticipates that many people with hearing and speech

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[16] *See* Comments of the Alliance for Telecommunications Industry Solutions, Nondiscrimination on the Basis of Disability in State and Local Government Services; Accessibility of Next Generation 9-1-1, CR Docket No. 111, AG Order RIN 1190-AA62 (filed Jan. 24, 2011). In addition, ATIS has a long history of working on accessibility of telecommunications to persons with disabilities. Through its HAC Incubator, ATIS played a key role in facilitating the development of hearing aid compatibility rules that allowed for the deployment of wireless devices to all consumers including those with hearing disabilities.

[17] *NOI*, ¶ 44.

[18] *See id.*, ¶ 45.

disabilities would prefer to continue to rely on the use of text based communications services in the future, as they do now. ATIS, through its participation in 3GPP, is currently supporting the creation of new requirements as part of the process of developing standards support for such text-based emergency services. ATIS believes that such non-voice text based services can be aligned with existing 3GPP standards for NG911 by using Common IMS as the framework. The end result would mean that common text based services can be made available to all users, whether or not they have disabilities. Moreover, unlike previous accommodations necessary in the context of the public switched telephone network ("PSTN"), separate NG911 facilities for persons with disabilities will not be necessary because of the enhanced functionality of the network.[19] This in turn will lower the costs of providing services because unlike the current PSTN framework, under the NG911 framework, the subscriber base for non-voice (e.g., text services) will no longer be restricted to only users with disabilities. The wider subscriber base will create incentives for the industry to define and deploy improved capabilities.

2. A Separate Rulemaking Is Not Needed to Address an IP Emergency Network for Persons with Disabilities.

ATIS believes that, at this time, a separate rulemaking proceeding is not needed to address an IP emergency network for persons with disabilities.[20] ATIS and the wireless industry are working on standards, such as NOVES, that will evolve into the NG911 system that will support various forms of non-voice communication including text and

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[19] Regarding telecommunications relay services, ATIS believes that technology will evolve such that end-to-end communications in an NG911 system will be possible, which could allow for users to communicate directly with PSAP operators using text and video, as well as voice. But video relay services are likely to continue to play a role in NG911 due to the fact that not all PSAPs are likely to provide American Sign Language-fluent call takers.

[20] *See id.*, ¶ 48.

video (in addition to voice). These requirements will be based on a completed evaluation that includes case examples where text and/or video are used by persons with or without disabilities to make emergency calls. As this process progresses, ATIS expects that further standards work will be approved to extend the current 3GPP Common IMS-based NG911 framework to support additional media. As a result, the needs of persons with disabilities are being taken into account and will be built into the system from the outset.

B. Providing Automated Support for Different Languages in the NG911 System Would Present Problems.

Although ATIS agrees that all users, including non-English speaking users, should have access to emergency service, building automated support for various languages into the NG911 system is problematic.[21] Although it may be possible for the Emergency Services IP network to be designed to take language preference into account automatically when determining how to handle a call from a device with specific language settings, this functionality necessarily presumes (1) that a non-English speaking caller's devices are correctly programmed to convey language preferences and (2) that the person making the call has the same language preference as that of the device. Because emergency calls could easily be made by a person who did not set the device's preferences, such an automated system could result in a PSAP fielding calls according to language preferences that differ from that of the caller. Even if the device correctly identifies the caller's language preference, any automated solution will still be limited as the call will still be routed by the originating network to the appropriate emergency services network based upon location, not the language preference. The emergency

[21] *See id*., ¶ 46.

services network would then be responsible for rerouting the call based on language, potentially adding delay and complexity.

V. NG911 NETWORK ARCHITECTURE AND IMPLEMENTATION ISSUES

As an initial matter, ATIS believes that ensuring interoperability of the NG911 system is a complex task that requires additional evaluation and research by the industry and public safety.[22] This necessarily includes standards-setting and device certification frameworks. The Commission would be best served by allowing industry to continue this work before it imposes any technology mandates. And the Commission should be careful not to impose 911 capability requirements on devices that are not intended for generalized communications. The Commission should, however, require that international standards be used for digital information. Further, as for the implementation of NG911, no additional regulation is needed to support international users roaming in the United States.

A. Devices or Applications Should Not Yet Be Certified as 911-Capable, and Only Generalized Communications Devices and Applications Should Be Required to Have Baseline NG911 Capabilities of Voice and Text.

Specifically, the Commission should not require that devices or applications be certified or labeled as 911-capable.[23] Industry is still working on defining what "911-capable" means. Devices or applications intended for generalized communications—such as telephones and other communications devices—differ fundamentally from devices that support, or are intended for, limited communications—like gaming consoles, televisions, Internet discussion forums or email lists. Generalized communication

[22] *See id.*, ¶ 66.

[23] *See id.*, ¶ 52.

devices or applications should support emergency communications, and should include a minimal set of broadly supported capabilities such as voice and text. These functionalities should provide a reliable and consistent user experience. In contrast, devices and applications that provide only specialized or limited communication capabilities should not be relied on for emergency communication and need not support any particular capabilities (though the option of supporting such capabilities should not be precluded). This distinction between general and specialized communications is fundamental to establishing user expectations for NG911. By maintaining this distinction, consistent user expectations can be formed and reinforced through education and user experience.

B. International Standards for Digital Information Should Be Used.

The use of international standards for digital information[24] will encourage interoperability between devices and emergency centers. International standards are sufficient to ensure that emergency centers can handle the multimedia formats that are defined in standards and readily available. No additional standardization is required. Existing certification processes should be adequate to ensure interoperability given that the devices must be successful in the market.

C. Additional Regulation Is Not Required to Address Support to Roaming International Users.

ATIS does not believe that additional regulation is required to address roaming international users in the United States.[25] The solution currently deployed for E911 Phase 2 supports emergency calls made in the United States by a roaming international

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[24] *See id.*, ¶ 55.

[25] *See id.*, ¶ 82.

user almost entirely within the serving wireless network with no critical reliance on particular capabilities in the user's home network. ATIS, through its participation in 3GPP, has helped develop a similar solution for NG911.

VI. CONCLUSION

ATIS applauds the Commission's efforts to promote the transition to an NG911 framework. As ATIS' comments demonstrate, significant industry work has been completed in cooperation with public safety, but important contributions concerning specific standards that should be implemented are in progress. As such, ATIS urges the Commission to allow this work to continue and to refrain from technical mandates that are not informed by these collaborative efforts.

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