April 29, 2005

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Introduction and Overview

The Alliance for Telecommunications Industry Solutions (ATIS) hereby submits its response to the United States Department of Transportation's (USDOT) February 16, 2005, Request for Information (RFI), Reference No. DTFH61-05-RFI-21705, pertaining to the Next Generation 9-1-1 (NG9-1-1) component of the USDOT's Intelligent Transportation System (ITS) Program. The RFI seeks information to assist the USDOT in its development of a NG9-1-1 Initiative, which will establish the foundation for public emergency services in a "wireless mobile society" and enable enhanced 9-1-1 (E9-1-1) access from a variety of communications media or networks.

ATIS supports the USDOT's efforts to ensure that emergency services, such as E9-1-1, can meet the evolving needs of the government, business and consumers, and the technical challenges posed by advances in transportation and communications technologies. These goals can only be achieved through a careful analysis of NG9-1-1 as an integral aspect of the Next Generation Network (NGN).

As NG9-1-1 cannot be developed outside of the context of the overarching NGN, the USDOT should promote the development of NG9-1-1 through existing organizations such as ATIS that have the requisite expertise and existing NGN and E9-1-1 programs in place. As explained more fully below, existing ATIS committees and forums have the expertise and resources to develop the technical and operational standards pertaining to NGN and NG9-1-1.

Reliance on existing industry resources will prevent the development of redundant programs and the unnecessary expenditure of scarce industry resources. Moreover, relying on established NGN programs will facilitate the development of a consistent and workable NG9-1-1 solution.

Background

ATIS is a technical planning and standards development organization committed to rapidly developing and promoting technical and operational standards for communications and related information technologies worldwide using a pragmatic, flexible, and open approach. Industry professionals from more than 350 communications companies actively participate in ATIS' open industry committees, forums, and "Incubators."[1] The ATIS membership spans all segments of the communications industry, including local exchange carriers, interexchange carriers, manufacturers, competitive local exchange carriers, data local exchange carriers, wireless providers, broadband providers, providers of operations support, software developers, and internet service providers.

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[1]ATIS Incubators are industry-driven work groups that provide the industry with a "fast-track" process for resolving technical and operational issues. For more information, see the ATIS incubator web site at: http://www.atis.org/incubator.shtml.

Open, consensus-based, transparent processes are the foundation of all ATIS committees and projects. As a standards developing organization, ATIS is accredited by the American National Standards Institute (ANSI) -- a private, non-profit organization that administers and coordinates the US voluntary standardization and conformity assessment system. This accreditation signifies that ATIS' forums and committees follow essential requirements that guarantee due process in the development of standards.

A number of ATIS forums and committees provide subject matter experts, contributions, and liaison information into the International Telecommunications Union, which is responsible for the development of international voluntary standards for telecommunications technologies and services. In fact, ATIS is the lead contributor to the ITU.

Among the ATIS forums and committees that are working on issues pertinent to NG9-1-1 services are the following:

ATIS Technical & Operations (TOPS) Council Next Generation Network Focus Group
The ATIS TOPS Council Next Generation Network Focus Group proposes requirements for NGN that include a multi-service, access-independent architecture and enables an evolution from currently deployed architectures. The proposed common architecture and service interfaces will allow the seamless delivery of new applications to customers while ensuring continued support for existing services.

Emergency Services Interconnection Forum (ESIF)
The ATIS ESIF is a technical and operational forum co-convened by ATIS and the National Emergency Number Association (NENA) to facilitate the identification and resolution of technical and operational issues related to the interconnection of wireline, wireless, cable, satellites, Internet and emergency services networks.

Network Performance, Reliability, and Quality of Service Committee (PRQC)
The ATIS PRQC develops standards, requirements, and technical reports related to the performance, reliability, and security aspects of communications networks and the processing and multimedia integration of voice, audio, data, image, and video signals. As part of its focus on the performance and reliability of communications networks and services, the PRQC examines security- and emergency communications-related aspects and coding (e.g. video and speech) of carrier-to-carrier and carrier-to-customer interfaces.

Packet Technologies and Systems Committee (PTSC)
The ATIS PTSC develops and recommends standards and technical reports related to services, architectures, and signaling. The PTSC coordinates and develops standards and technical reports relevant to telecommunications networks in the United States and reviews and prepares contributions on such matters to U.S. ITU-T and U.S. ITU-R Study Groups or other standards organizations.

Telecom Management and Operations Committee (TMOC)
The ATIS TMOC develops operations, administration, maintenance, and provisions standards and other documentation related to Operations Support System (OSS) and Network Element (NE) functions and interfaces for communications networks. The TMOC develops standards and other documentation for communications network operations and management areas, such as: configuration management, performance management (including in-service transport performance management), fault management, security management (including management plane security), and common/underlying management functionality/technology.

Wireless Technologies and Systems Committee (WTSC)
The ATIS WTSC develops and recommends standards and technical reports related to wireless and/or mobile services and systems, including service descriptions and wireless technologies.

Responses to RFI NG9-1-1 Questions

The USDOT seeks industry input on key issues regarding the organization of the NG9-1-1 Initiative. ATIS is pleased to be able to provide its input and to describe the relevant work currently being performed by ATIS committees to resolve these issues.

RFI Question: What are the critical issues that need to be addressed to enable the deployment of advanced 9-1-1 capabilities?

ATIS Response: ATIS believes that the most critical issues to be addressed for the deployment of advanced 9-1-1 are: (1) reliability -- while existing E9-1-1 systems consist of components, including trunks and tandems, that have demonstrated a level of reliability and robustness sufficient to ensure the successful completion of emergency communications, the reliability of new communications networks has yet to be proven; (2) routing -- concerns persist over the capability of internet protocol (IP) enabled services to ensure routing to the correct public safety answering point (PSAP); and (3) interoperability -- NGN, and the NG9-1-1 component thereof, will involve multiple broadband transport technologies that must successfully interoperate to enable advanced 9-1-1 capabilities.

Other critical issues that must be addressed in order to successfully deploy NG9-1-1 include:
- Priority calls. When and how E9-1-1 calls get priority treatment require technical solutions.
- Incorporation of multimedia services within E9-1-1 calls. Multimedia sources, such as TTY, short message service (SMS), and video streaming, must be E9-1-1 capable.

- Access to NG9-1-1 by those with disabilities. New NG9-1-1 capabilities must permit access for those with disabilities to 9-1-1 services through a variety of media.
- Operations, administration, maintenance, and provisioning (OAM&P). NG9-1-1 systems will present new and unique operational challenges.
- Operational Support Systems (OSS). How will different NG9-1-1 applications interconnect?

RFI Question: What activities should be initiated to hasten the development and deployment of advanced 9-1-1 systems?

ATIS Response: ATIS believes that the deployment of NGN, and its NG9-1-1 component, requires a clear overarching framework that addresses not only advanced 9-1-1 systems, but their role within NGN generally. Ensuring that NG9-1-1 efforts are consistent with existing industry efforts regarding NGN will facilitate the development and deployment of these services.

The deployment of advanced 9-1-1 services must also take into account the industry work that has been completed and is underway with regard to E9-1-1. The ATIS ESIF has undertaken efforts to promote the reliable implementation of Phase I and Phase II E9-1-1 and also is examining other areas of concern relative to NGN E9-1-1 systems and applications. Alignment of this work with the NG9-1-1 Initiative is critical to avoid redundant or contradictory technical or operational standards.

RFI Question: What other significant initiatives, programs, or deployments related to NG9-1-1 warrant USDOT attention?

ATIS Response: Significant work is underway on issues related to NG9-1-1. This includes work by the ATIS NGN Focus Group, which has released the first of two key documents in this area. The "ATIS Next Generation Network (NGN) Framework" was released in November 2004 and provides a snapshot of NGN target objectives and features.

In this Framework document, the ATIS NGN Focus Group adopted the definition of NGN promulgated by the ITU-T draft Y.2001. This definition defines a Next Generation Network as:

> Next Generation Network (NGN): a packet-based network able to provide telecommunication services and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies. It offers unrestricted access by users to different service providers. It enables unfettered access for users to networks and to competing service providers and/or services of their choice. It supports generalized mobility which will allow consistent and ubiquitous provision of services to users.

The National Security Telecommunications Advisory Committee (NSTAC) is looking closely at the work of the ATIS NGN Focus Group, especially with regard to NGN definitions and architectures.

The USDOT also should be aware of the work of the ATIS ESIF regarding E9-1-1 services. As noted previously, the ATIS ESIF is a committee composed of wireline and wireless service provides, service bureaus and government entities involved in the delivery and provisioning of E9-1-1 services. Among the ATIS reports, standards and other resources already developed by ESIF for use by the emergency services community are:

- ESIF Technical Report - *ATIS-0500001: High Level Requirements for Accuracy Testing Methodologies*: The Federal Communications Commission (FCC) has established accuracy requirements for network and handset based location solutions for E9-1-1 emergency call services. As a result, ESIF identified the need for industry-accepted requirements for testing the accuracy performance of Wireless E9-1-1 Phase II systems. This document provides a common frame of reference that individual stakeholders can use to validate the accuracy methodology of 9-1-1 location technologies.
- Wireless E9-1-1 Phase II Readiness Package: The PSAP Readiness Checklist was developed to supply PSAPs with a method to verify readiness and provide carriers with complete information to speed the implementation process.
- Wireless 9-1-1 Emergency Information Request Fax Form: The Wireless 9-1-1 Emergency Information Request Fax Form was created in order to establish an acceptable generic national procedure for wireless carriers (network and resale providers) to provide current/prior customer information to PSAPs in emergency situations and/or cases of fraudulent use of 9-1-1.

In addition to these established resources, ESIF is currently working on a number of issues that are significant to NG9-1-1. These include:

- Issue 34: PSAP Messaging Interface Issue – Next Generation Need
  One of ESIF's most significant new issues, Issue 34 seeks to address the underlying problems associated with today's protocol and network architecture between the Public Safety Answering Point (PSAP) and the Emergency Service Network (ESN) that provides automatic location identification (ALI) data. This legacy protocol has not substantially changed since its introduction approximately 30 years ago, and is a barrier to advancing emergency services. As a result, ESIF is currently working on defining a new messaging and interaction protocol between PSAPs and ESN that goes significantly beyond the paradigms that exist today.
- Issue 30: Call Delivery
  Subsequent to the publication of ESIF's *High Level Requirements for Accuracy Testing Methodologies* (July 2004), ESIF identified the need to establish a standard testing procedure in order to measure the consistent and timely delivery of the data of wireless 9-1-1 calls to the PSAP. This new procedure would not

test wireless carrier accuracy, but rather would establish procedures/standards to check that the data delivery remains constant throughout the network and is delivered with integrity to the PSAP.

- Issue 33: Maintenance Testing
  In addition to the need to test accuracy and call delivery, ESIF has also identified the need to establish a standard set of maintenance testing requirements. These testing requirements are essential for on-going compliance with the FCC's E9-1-1 Phase II performance mandate and the pertinent guidelines identified in the FCC's OET Bulletin No. 71 regarding post-installation monitoring and testing issues relating to E9-1-1 systems.[2]

RFI Question: What specific agencies/organizations/entities are essential to the development of a comprehensive transition and implementation plan to NG9-1-1?

ATIS Response: There are a number of organizations that are essential to the development of any plan that will usher in the implementation of NG9-1-1 systems and services. ATIS, as the organization that has taken a leadership role in the development of NGN and E9-1-1 issues, is essential to development of NG9-1-1.[3] In addition, ATIS recommends that other key stakeholders have a role in the development of NG9-1-1, including PSAPs, public safety agencies, carriers, manufacturers, the National Emergency Number Association, and the Internet Engineering Task Force (IETF).

RFI Question: What is the proper forum for carrying out the necessary engagement of the various stakeholders and how might the USDOT establish that forum?

ATIS Response: ATIS urges the USDOT to not duplicate the efforts of industry organizations such as ATIS, which has been developing NGN and E9-1-1 technical and operational standards through its open, industry-driven forums and committees. ATIS membership includes many of the key stakeholders, including local exchange carriers, interexchange carriers, manufacturers, competitive local exchange carriers, data local exchange carriers, wireless providers, broadband providers, providers of operations support, software developers, and internet service providers.

ATIS recommends that the USDOT also promote consistency with international NGN work. The USDOT should promote the international alignment of technical solutions through a critical path that would include ATIS and the ITU-T.

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[2] OET Bulletin No. 71, *Guidelines for Testing and Verifying the Accuracy of E9-1-1 Location Systems, (April 12, 2000).*
[3] In the Hatfield Report regarding Phase I and Phase II implementation of E9-1-1, it was noted that the technical requirements being aggressively worked in such groups as ESIF were the key to successful implementation of E9-1-1.

If the USDOT believes that an industry forum should be created to focus on NG9-1-1 issues, ATIS is willing to convene such a forum. If the USDOT decides to itself convene the forum, ATIS would be interested in participating in this forum.

RFI Question: Would you be interested in participating in some sort of public-private partnership for the NG9-1-1 Initiative? If yes, in what way? If not, what would encourage you to participate?

ATIS Response: ATIS would be interested in participating in a public-private partnership for this initiative. However, ATIS strongly urges the USDOT to minimize the unnecessary duplication of existing industry efforts and streamline, to the extent possible, the operations of any such partnership. ATIS has the technical expertise to take a significant role in a public/private partnership for the NG9-1-1 Initiative. ATIS has demonstrated its capabilities and flexibility in working with various groups to produce national and industry standards to meet the fast-pace needs of the emergency services user community. It also should be noted that ATIS ESIF has been an active participant providing technical industry input in both the Department of Transportation's Wireless E9-1-1 Steering Council and ITS America's Public Safety Advisory Group.

Conclusion

ATIS commends the USDOT for seeking industry input into the development of next generation public emergency services. ATIS urges the USDOT to look to the existing industry efforts regarding NGN and E9-1-1 and to avoid unnecessary duplication of this existing work. ATIS also urges the USDOT to consider the role of NG9-1-1 capabilities within the context of NGN generally. NG9-1-1 is an important and integral aspect of NGN. As such, it cannot be developed in isolation from NGN. ATIS believes that the USDOT, working with existing industry groups such as ATIS, can successfully develop a framework and deployment plan for NG9-1-1 services that can support the USDOT's Intelligent Transportation System (ITS) Program. ATIS looks forward to working with the USDOT on this issue.

Questions or comments pertaining to ATIS's response to this RFI should be directed to Tim Jeffries, Vice President of Technology Development, tjeffries@atis.org.