

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

In the Matter of)	
)	
Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications)	PS Docket No. 11-153
)	
Framework for Next Generation 911 Deployment)	PS Docket No. 10-255
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COMMENTS OF 4G AMERICAS

4G Americas, the leading industry association in the Americas representing the GSM family of technologies, including HSPA and LTE,¹ hereby responds to the Notice of Proposed Rulemaking in the above-referenced proceedings regarding Next Generation 911 (“NG911 NPRM” or “NPRM”).² 4G Americas shares the Federal Communications Commission’s goal of deploying NG911 technology that will enhance emergency responders’ ability to serve the public. Accordingly, 4G Americas commends the Commission for initiating this proceeding and for facilitating the transition of legacy 911 networks to NG911.³ 4G Americas agrees with the Commission that replacing today’s 911 “system with a broadband-enabled, Internet Protocol

¹ 4G Americas’ Board of Governor members include Alcatel-Lucent, América Móvil S.A.B. de C.V., AT&T Inc., Cable & Wireless Worldwide PLC, CommScope, Inc., Ericsson Inc, Gemalto N.V., Hewlett-Packard Company, Huawei Technologies Co., Ltd., Nokia Siemens Networks US LLC, Openwave Systems Inc., Powerwave Technologies, Inc., QUALCOMM Incorporated, Research in Motion Limited, Rogers Communications Inc., T-Mobile USA, Inc., and Telefónica.

² *Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications*, Notice of Proposed Rulemaking, 26 FCC Rcd. 13615 (2011) (“*NG911 NPRM*”).

³ *See generally* Letter from Patricia Paoletta, Counsel to 4G Americas, to Marlene H. Dortch, Secretary, Federal Communications Commission (Aug. 31, 2011) (“*4G Americas Aug. 31st Letter*”).

(“IP”)-based 911 network will offer far more flexibility, resilience, functionality, innovation potential, and competitive opportunities than is presently possible.”⁴

4G Americas and its members have worked diligently towards the realization of NG911’s benefits, expending substantial resources studying NG911 solutions and participating in various standards bodies. 4G Americas has encapsulated its study in two separate White Papers.⁵ Chris Pearson, President of 4G Americas, presented 4G Americas’ more recent White Paper, *Evaluation of Short-Term Interim Techniques for Multimedia Emergency Services* (“Interim Techniques White Paper”) to the Commission’s Emergency Access Advisory Committee (“EAAC”) earlier this year.⁶ 4G Americas, its member companies and others are studying NG911 technology solutions in the Third Generation Partnership Project (“3GPP”) and Alliance for Telecommunications Industry Solutions (“ATIS”) standards organizations.

The National Emergency Number Association (“NENA”) i3 solution for Public Safety Answering Points (“PSAPs”), in conjunction with the compatible 3GPP Session Initiation Protocol/IP Multimedia Subsystem (“SIP” and “IMS”)-based solutions now being specified in 3GPP, is the best long-term approach for texting to 911. 4G Americas recommends that the Commission encourage industry and the PSAP community to focus on NENA i3 with 3GPP’s

⁴ See *Framework for Next Generation 911 Deployment*, Notice of Inquiry, 25 FCC Rcd. 17869, ¶ 28 (2010).

⁵ 4G AMERICAS, TEXTING TO 9-1-1: EXAMINING THE DESIGN AND LIMITATIONS OF SMS (2010), *avail. at* <http://www.4gamericas.org/documents/SMS%20to%20911%20White%20Paper%20Final%20October%202010.pdf> (“*Texting To 9-1-1*”).

⁶ 4G AMERICAS, EVALUATION OF SHORT-TERM INTERIM TECHNIQUES FOR MULTIMEDIA EMERGENCY SERVICES (2011), *avail. at* <http://www.4gamericas.org/UserFiles/file/White%20Papers/Evaluation%20of%20Short-Term%20Interim%20Techniques%20for%20Multi-Media%20Emergency%20Services.pdf> (“*Interim Techniques White Paper*”). A copy of the Interim Techniques White Paper has been introduced into the record of this proceeding; see 4G Americas Aug. 31st Letter.

SIP/IMS-based solution for the long-term, since that approach will deliver the most robust multimedia solution for PSAPs and the public they serve.

I. INDUSTRY IS DEVELOPING A STANDARDS-ALIGNED NG911 SOLUTION

4G Americas is pleased to share its knowledge of NG911 to advance the common goal of “accelerat[ing] the development and deployment of [NG911] technology.”⁷ Industry standards-setting bodies are diligently working to develop standards to enable wide deployment of IP-based text and Multimedia Emergency Services (“MMES”) for next-generation networks. The three approaches noted by the Commission – 3GPP IMS, ATIS IP-based Emergency Services Network (“IESN”)⁸ and NENA i3 – in combination with the ATIS IMSESINET are creating standards support for end-to-end MMES over IP networks.⁹ 3GPP IMS and ATIS IMSESINET activities are intended to standardize user devices and originating networks, while ATIS Emergency Services - Next Generation Network (“ES-NGN”) and NENA i3 activities are intended to standardize emergency service networks for PSAPs.

⁷ NG911 NPRM ¶ 1. 4G Americas notes that today there is a robust system to serve callers who make emergency 911 calls over wireless networks, due to substantial investment by commercial mobile service providers. In particular, under the Commission’s wireless E911 rules, providers are obligated to provide the telephone number of the originator of a 911 call, as well as information regarding the caller’s location to any PSAP that has requested that such information be delivered with 911 calls. The development of NG911 is intended to further enhance emergency communications.

⁸ ATIS ES-NGN (“Emergency Services - Next Generation Network”) has been renamed to ATIS IP-based Emergency Services Network (“IESN”) to reflect that the IESN network is not based on ATIS NGN architecture. An IESN is an emergency services network based on NENA i3 specifications, using Internet Engineering Task Force (“IETF”) protocols.

⁹ NATIONAL EMERGENCY NUMBER ASSOCIATION (NENA), DETAILED FUNCTIONAL AND INTERFACE SPECIFICATION FOR THE NENA i3 SOLUTION—STATE 3, § 4.1.9 (June 14, 2011), *avail. at http://www.nena.org/resource/collection/2851C951-69FF-40F0-A6B8-36A714CB085D/08-003_v1_Detailed_Functional_and_Interface_Specification_for_the_NENA_i3_Solution.pdf*.

3GPP IMS, ATIS IESN, ATIS IMSESINET and NENA i3 requirements and standards are currently aligned, which will reduce the costs and time to deploy NG911.¹⁰ With standards alignment, NG911 systems can be built utilizing IMS-based services without the need to implement a separate backbone network for the Emergency Services IP Network (“ESINet”). Standards alignment also avoids the need to use a protocol conversion gateway between SIP-based IMS and NG911 systems. In the absence of standards alignment, there would be no standardized interoperable emergency functionality to support additional video, picture, and text messages from IMS originating networks. As a result, the cost to convert messages between these disparate systems would be very high, and there would be additional delays, traffic capacity constraints, and application selection limitations.

Pursuant to the Commission’s request for comment regarding on-going activities of standards-setting bodies regarding MMES,¹¹ the following is a brief summary of the standard bodies’ related efforts from 4G Americas’ perspective:

3GPP IMS

IMS Emergency Services were previously standardized to support voice and real time text (“RTT”) calls. 3GPP has a work item in progress to provide support for IMS-based MMES.

NENA i3

NENA has completed the development of i3 ESINet specifications. NENA is still working on other NG911 systems aspects including emergency call routing, system management, systems demarcation points, and transition to NG911.

¹⁰ Standardization alignment normally takes at least one release cycle.

¹¹ See NG911 NPRM ¶ 76.

ATIS ES-IESN

ATIS ES-NGN has been renamed ATIS IESN to reflect that the IESN network is not based on ATIS NGN architecture. An IESN is an emergency services network based on NENA i3 specifications, using Internet Engineering Task Force (“IETF”) protocols. Standardization efforts have focused on the Network-to-Network Interface (“NNI”) between the IMS originating network and the IESN, or between two IESNs.

ATIS IMSESINET

Because of the re-use of IMS functionality between Commercial Mobile Radio Service (“CMRS”) IMS networks and IESN with the IETF-based model, ATIS initiated the IMSESINET project to develop a 3GPP IMS-based model for IESN. An IMS model for IESN is intended to increase efficiency by using common components and elements for the next-generation networks, originating and ESInet networks. ATIS is currently developing a standard that defines the interface from IMS-based origination networks to legacy PSAPs via Selective Router and NENA i3 PSAP via an ESInet. This standard also defines emergency call handling procedures in IMS originating networks specific to North American requirements.

As 4G Americas has previously shared with the Commission, the leading NG911 technology is IMS-based MMES,¹² currently being developed by 3GPP. MMES is generally aligned with the relevant NENA documented requirements. 4G Americas expects that the MMES being specified in 3GPP will also be supported in the LTE environment. IMS-based MMES will address the non-voice emergency service needs of the general public, as well as the long-term needs of persons with disabilities. The 3GPP effort utilizes IETF protocol and

¹² MMES is the label used by the telecommunications industry to identify standards development of next-generation emergency services utilizing multimedia capabilities.

standards to provide a mechanism to establish multimedia sessions supported by all access types, *e.g.*, wireless, wireline, and cable.

The 3GPP IMS-based MMES standard, in conjunction with the NENA i3 standard for PSAPs, will offer more flexibility, resiliency, functionality, and innovation than interim solutions being considered today and is consistent with the Commission's goals. The standard will allow for the delivery of text, including RTT (referred to by 3GPP as "GTT"), video, photos, and pre-recorded audio and video to 911, as well as IP-based messaging and RTT alternatives, in addition to location services. IMS-based MMES will also facilitate emergency communications by persons who are deaf, deaf-blind, hard of hearing, or with speech impairments, consistent with the goals of the Twenty-First Century Communications and Video Accessibility Act.¹³

Network operators have not implemented standalone RTT for emergency services on their networks, and the 3GPP IMS-based MMES standard, which includes RTT, requires the use of IMS and IMS Emergency Services. If the Commission were to mandate standalone RTT for emergency services, network operators would have to undertake additional development and testing efforts before deploying that service.

II. A DEFINED AND COORDINATED MIGRATION PLAN TO A LONG-TERM SOLUTION IS CRITICAL

It will take a significant amount of time before full deployment of NG911 can be achieved. That period will be shortened if the various stakeholders coalesce around a defined migration path. While the long-term MMES solution standards development is taking place now, initial implementation is not expected until at least three or four more years. In addition, as part of the NG911 solution, end-to-end messaging relationships among end user devices,

¹³ Twenty-First Century Communications and Video Accessibility Act of 2010, Pub. L. No. 111-260, 124 Stat. 2751 (2010).

origination networks and PSAP systems will need to be established. And even after MMES begins to be deployed by commercial mobile service providers, it will be available initially only in certain service areas and may not provide full multimedia services for some time. Thus, a defined and coordinated migration plan is critical.

4G Americas believes that an MMES migration plan should take into consideration the recommendations of the ATIS Interim Non-voice Emergency Services (“INES”) Incubator and enable as seamless a transition as possible from the ATIS INES near-term solution to a long-term MMES solution.¹⁴ During this transition period, emergency callers will have access to emergency service capabilities including voice 911 emergency calling, limited INES capability, some degree of MMES capability, and/or full MMES capability.

Development of this transition strategy will require coordination among all emergency service stakeholders, including origination network operators, the public safety community, and end user device manufacturers. 4G Americas will continue to work within the telecommunications industry and with public safety officials to coordinate these transition activities. From its past efforts, 4G Americas observes that local government involvement is critical. 4G Americas recommends that the transition to NG911 occur, not on a PSAP-by-PSAP

¹⁴ ATIS has created the INES Incubator to assess the current landscape of candidate solutions and to identify viable near-term text-based alternatives to text telephone devices (“TTY”). The ATIS INES was tasked with performing a technical review of commercially-available text-based communications solutions that could be deployed in the near term to enable emergency communications to existing PSAPs for the deaf, hard of hearing, and speech impaired communities. The ATIS INES has targeted June 2012 as a deployment date. Thus, the ATIS INES is focusing on candidate solutions that could reasonably be expected to be deployed soon to provide short-term improvements in emergency access, while awaiting more robust improvements promised under IMS/LTE and NG911. The ATIS INES has explored a wide variety of approaches, many of which were eventually eliminated due to their impacts on users, PSAPs, carriers, and manufacturers, or due to the time needed to complete the standards or integration work. 4G Americas considers the INES Incubator to be an extension of its efforts in support of a common mission and is awaiting release of the INES Incubator’s conclusions and recommendations.

basis, but rather at an intra-state – *e.g.*, county or region within a state – and/or statewide basis. To maximize efficient expenditure of limited resources, state and/or local authorities should require PSAPs to demonstrate their ability to receive text and other media before network operators are obligated to provide NG911 service. The transition to NG911 must also be effectively conveyed to consumers, who will be dependent on 911 emergency services throughout the transition period. All stakeholders have a role to play in public education.

III. MOST CURRENT TEXT-BASED TECHNOLOGIES ARE NOT APPROPRIATE INTERIM SOLUTIONS

4G Americas appreciates the interest in a short-term, interim solution that would allow PSAPs to receive text-based information and recognizes the need to identify a more robust text-based replacement for text telephone devices (“TTY”), both for the near-term and long-term. Of particular concern, as wireless communications evolve to digital and IP networks, TTY may no longer offer meaningful access to emergency services for individuals with hearing disabilities. 4G Americas recently undertook an extensive evaluation of current interim technologies that were thought to be potential near-term solutions for individuals who rely on text-based communications for pre-IMS based networks. Its conclusions are detailed in the 4G Americas Interim Techniques White Paper.¹⁵ The White Paper describes and compares ten different short-term solutions for 911 multi-media communications which are consistent with the long-term solution, eight of which are text-based. However, 4G Americas found no short-term solution that did not exhibit limitations with respect to capability, performance, and impacts to users, network operators and/or PSAPs.

In the current budget environment, 4G Americas believes it would do little good to develop and implement technologies that would require massive investments by PSAPs or

¹⁵ Interim Techniques White Paper.

require a complete overhaul of existing emergency communications systems. Moreover, an “interim” solution should be just that – available in the immediate term with little or no changes to end-user devices and networks. 4G Americas investigated possible interim technologies that were supported today by wireless networks and/or PSAPs and found that none of the short-term interim techniques could be supported without a significant, costly development effort. In fact, the implementation of any “interim” technique for a short-term solution would require significant resources and substantial time to develop and deploy. Even if funding were available for the development and deployment of a short-term technique, all of the potential techniques evaluated have operational limitations that would negatively impact the usefulness and availability of the techniques as interim short-term solutions.

Direct Short Message Service (“SMS”)-to-911 showed the greatest number of limitations out of all the short term solutions, not the least of which is the need for substantial widespread modifications at PSAPs that state and local governments can ill afford.¹⁶ In addition, SMS is a store-and-forward service with no service or performance guarantees, and SMS is not a session-based protocol, so subsequent messages from the subscriber may be delivered to different PSAP call takers.¹⁷ Furthermore, SMS, as currently defined and deployed, provides no location information – not even a cell tower – so the originating network may not accurately route the message to the correct PSAP. Because the lack of location and session information, false SMS messages can be easily spoofed, *e.g.*, by sending a message purporting to come from another user, without the PSAP detecting the spoof.

¹⁶ See Texting To 9-1-1.

¹⁷ See Interim Techniques White Paper at 15.

In its NPRM, the Commission sought comment on whether its description of texting methods and capabilities was accurate and complete.¹⁸ 4G Americas also notes that, contrary to certain information in the core technical characteristics table included in the NPRM,¹⁹ existing SMS communication is not SIP-based; rather, it uses protocols such as the Mobile Application Part (“MAP”) within a network, an External Machine Interface (“EMI”), an extension to Universal Computer Protocol (“UCP”), or Short Message Peer-to-Peer (“SMPP”) between SMS message centers and gateways. And it is unclear how SMS delivery to a PSAP would be supported. While IMS SIP MESSAGE is one potential long-term IP-based option, message centers and gateways do not currently support SIP, which could slow its deployment. For all of these reasons, 4G Americas believes that SMS-to-911 is simply not viable.

IV. CERTAIN TEXT-BASED RELAY TECHNOLOGIES MAY BE APPROPRIATE INTERIM SOLUTIONS ON A LIMITED BASIS

In its Interim Techniques White Paper, 4G Americas found text-based SMS via a relay center and IP relay solutions to be least problematic to users, network operators, and PSAPs. 4G Americas also found that an RTT-based relay solution, while it would require some users to acquire a new handset, may be a viable short-term solution. But because even imperfect interim solutions would take time and valuable resources to implement, 4G Americas recommends that the Commission instead direct industry and the public safety community to focus on a long-term NG911 solution, while encouraging limited deployment of one of the more promising short-term solutions over a short period of time and/or for a defined subset of users (*e.g.*, individuals with disabilities) before a long-term solution is available.

¹⁸ NG911 NPRM ¶ 32.

¹⁹ *Id.* ¶ 31.

4G Americas recognizes that there have been limited trials of potential interim solutions, yet cautions that such trials may not be a good indication of the future potential of those solutions. For instance, a solution that is open to all users would be more subject to impaired PSAP call taker performance or failure due to PSAP overload and/or spoofing. In order to solve this problem, the SMS relay and IP relay solutions could be restricted through prior user registration, *e.g.*, available only to individuals with disabilities.

4G Americas also notes that interim solutions are not being standardized in the wireless community due to standards bodies' focus and extensive work on a long-term IMS-based MMES solution. In fact, if new standardization were required for a solution, that solution would not qualify as "short-term."

V. PRIORITIZING 911 CALLS WOULD NOT HAVE THE INTENDED EFFECT

The Commission requested comment on whether 911 traffic should be prioritized.²⁰ 4G Americas does not recommend prioritization of 911 calls over non-emergency calls on commercial networks. Legacy communications networks were not designed to facilitate 911 prioritization, and adding such capabilities could require major redesigns of the networks, taking resources away from implementation of NG911 and next-generation origination networks, while not likely resulting in more calls being successfully completed to the PSAPs.²¹

Prioritizing 911 calls could in fact have unintended adverse consequences, particularly if such prioritization involves disrupting normal communications. Most importantly, during major events, congestion and capacity limitations are more likely to occur at the PSAP level, rather than in the commercial networks. 911 call prioritization on the commercial networks would

²⁰ *Id.* ¶¶ 6, 60.

²¹ 4G Americas also notes prioritization of 911 calls could be viewed as unreasonably discriminating against other calls by other subscribers and therefore may violate 47 U.S.C. § 202(a).

likely result in even more congestion at the PSAP level. In addition, the majority of calls during large-scale disasters involve “socially important purpose[s],” such as people checking on the status and safety of their families.²² If those callers were pre-empted from getting through because of prioritized and likely highly duplicative 911 calls, it could result in more calls to 911, creating a vicious cycle of PSAP and network congestion. 4G Americas also cautions that any general 911 prioritization solution could negatively affect the Wireless Priority Service (“WPS”) for first responders, due to many more calls receiving “priority” treatment, thus potentially causing congestion on the WPS network.

4G Americas is aware of two general methods that could allow for prioritization of 911 calls, both of which assume the availability of signaling to support prioritization. But both of these methods have significant drawbacks in addition to those described above.

The first method involves bandwidth reservation for emergency calling. This method is problematic for several reasons. First, there is already too much demand at many cell sites, and reserving bandwidth for the rare cases in which 911 calls could overload the network would waste valuable bandwidth during the majority of the time. In addition, it would be difficult to ascertain how much bandwidth would have to be reserved to guarantee that all 911 calls would be completed in the event of a wide-scale emergency. Even with reserved bandwidth, there would still be the possibility that the reserved bandwidth would be insufficient. And given limited PSAP capacity, there is a high probability that bandwidth could be reserved only to have those calls ultimately sent to “fast busy”.

The second method involves selective call barring, *i.e.*, blocking all calls other than calls to 911 during mass overload conditions to ensure that those calls would get through to the PSAP.

²² NG911 NPRM ¶ 61.

This method is also problematic. The PSAP choke point would still exist. And there are many other forms of communication that could be equally important to callers. In fact, in the case of a mass emergency event such as an earthquake, implementing these types of call restrictions could lead to a greater degree of panic, since people would not be able to confirm the safety of their families or offer other assistance to friends and neighbors in addition to that provided by emergency providers.

Other similar types of call preemption could be implemented as well, but the question remains which calls would be preempted and at what cost.

CONCLUSION

4G Americas believes the public interest in facilitating NG911 is best served by allocating resources to the on-going efforts of 3GPP, ATIS and NENA, which will provide far more innovation, flexibility, resilience, and functionality than any “interim” solution under discussion. 3GPP is actively working on IMS-based MMES to deliver NG911 technologies. A coordinated industry and public safety community effort to transition to NG911 from today’s 911 systems and any limited interim solution will be critical to realizing the many public safety benefits of NG911, which 4G Americas and its member companies are dedicated to working on in order to make transition a success.

Respectfully submitted,



Chris Pearson, President
4G Americas
1750 112th Ave., S.E.
Suite B220
Bellevue, WA 98004

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