Before the
Federal Communications Commission
Washington, DC 20554

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

COMMENTS OF TELECOMMUNICATION SYSTEMS, INC.

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SUMMARY

TeleCommunication Systems, Inc. (TCS) shares the concerns of the Federal Communications Commission as expressed in this docket. Facilitating NG9-1-1 deployment is essential in enabling fully functional, nonvoice, emergency services capabilities which include automatic location identification for every type of emergency-requesting device (including a text to 9-1-1 device) that has location capabilities. However, there are text to 9-1-1 options available today in advance of full NG9-1-1 deployment in existing carrier network infrastructures. These solutions can work in harmony with those Public Service Answering Points (PSAPs) that either support existing TTY access or elect to have newer CPE-based Direct Internet Protocol (D-IP)[1] Short Message Service (SMS).

There has been a great deal of discussion, and even controversy, surrounding the question of the reliability and resilience of SMS as a means to communicate a 9-1-1 emergency request. TCS does not argue that SMS, and by analogy SMS to 9-1-1, would be infallible. However, TCS does assert that when reviewed from a national perspective, using real SMS data, generic claims that SMS is incapable of rising to the level of an emergency service must be called into question. Also, TCS does not believe that text to 9-1-1 message delivery will need prioritization in the near term as a method to increase reliability. TCS' architecture solution enables accurate location information delivery to the PSAP simultaneously with the SMS to 9-1-1 message.

To maximize the benefit to first responders, any nonvoice wireless application used in a 9-1-1 / emergency context should provide automatic support for location information-based routing of the emergency call. TCS strongly recommends that careful consideration be given to application-based text to 9-1-1 approaches and prefers the use of network-based approaches

[1] D-IP: Direct-IP; refers to an SMS 9-1-1 component that supports communication with IP capable PSAPs.

(such as SMS to 9-1-1 or other "Next Generation" messaging techniques that will be provided by the operator rather than a 3rd party application provider).

The consistent theme in both the Notice and underlying TCS' comments is that innovation and entrepreneurship are elemental to Next Generation 9-1-1 services. Willing carriers and PSAPs leveraging the cutting-edge strategies of imaginative vendors and "keys"by their intellectual property are the "keys" to NG9-1-1 public safety solutions. However, with innovation comes risk, not just of marketplace failure but additionally of victimization by patent assertion entities using Commission mandates as a wedge between new market entrants and their customers. TCS' comments include tangible actions and policies the Commission can easily enact to preserve the vision of NG9-1-1 services.

TABLE OF CONTENTS

SUMMARY 1

DISCUSSION 3

A. Facilitating the Short-Term Deployment of Text to 9-1-1 3

1. Expected Benefits of Text to 9-1-1 Availability 4
2. Approaches Based on SMS and Existing Infrastructure 11
3. Approaches Based on Software Applications 11

B. 9-1-1 Prioritization in Major Emergencies 13

1. PSAP-Based Triggers for Providers to Provide NG9-1-1 Solutions for Nonvoice Emergency Messaging to 9-1-1 13

C. Failure To Enforce The Commission's Intellectual Property Rights Policy Will Negate Many Of The Commission's Positive Achievements In The Public Safety Arena 14

CONCLUSION 19

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COMMENTS OF TELECOMMUNICATION SYSTEMS, INC.

TeleCommunication Systems, Inc. (TCS) hereby submits its comments in response to the Notice of Proposed Rulemaking (Notice) released by the Federal Communications Commission (FCC, or the Commission) in the above-referenced proceedings.[2] In the Notice, the Commission asks vital questions regarding Next Generation 9-1-1 (NG9-1-1) services, and seeks comments regarding the provision of text to 9-1-1 services, among other topics. As a company uniquely credentialed in public safety, text messaging, and location technologies, TCS welcomes this opportunity to share its expertise and perspectives with the Commission.

The Commission has previously received comments regarding the positive benefits derived from competition in the provision of Enhanced 9-1-1 (E9-1-1) services and competitors such as TCS will bring the same benefits to NG911.[3] TCS' experience and expertise in E9-1-1 began when the company pioneered the first U.S. wireless E9-1-1 solution in 1997 and continues through its recent deployments of some of the first true NG9-1-1 systems in Iowa, Texas, and

[2] Notice of Proposed Rulemaking, *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 (jointly released September 22, 2011).

[3] *Comment Sought On Competitive Provision of 911 Service Presented By Consolidated Arbitration Proceedings*, consolidated proceedings, WC Docket No. 08-33 and 08-185 (released June 4, 2009).

Tennessee.[4] TCS also continues to pioneer and improve the methods by which U.S. PSAPs receive a mobile caller's location during calls for emergency assistance. Today, TCS supports approximately 50 percent of all U.S. wireless and nomadic Voice over Internet Protocol (VoIP) E9-1-1 calls. Its award-winning wireless and VoIP E9-1-1 products, together with its E9-1-1 solutions, serve more than 140 million wireless, wireline, and IP-enabled devices. As the owner of the nation's only non-carrier, TL 9000-certified wireless and VoIP E9-1-1 Network Operations Center (NOC), TCS provides highly reliable E9-1-1 solutions that ensure a subscriber's emergency call routes to the appropriate PSAP.

TCS also powers one-third of all U.S. text message traffic, which amounted to nearly 1 trillion messages in 2010, and the message volume continues to increase.[5] The TCS Short Message Service Center (SMSC) supports next generation messaging for mobile subscribers, while TCS' Xypoint® Location-based Services (LBS) technology is used to provide network-initiated position determination for mobile devices in 3G and 4G networks.

TCS offers the following comments in response to specific questions posed by the Commission in its "Section III Discussion."

DISCUSSION

A. Facilitating the Short-Term Deployment of Text to 9-1-1

Facilitating NG9-1-1 deployment is essential in order to enable fully functional, nonvoice, emergency services capabilities, including automatic location identification of every type of emergency-requesting device (including a text to 9-1-1 device) that has location capabilities. At present, even an E9-1-1–qualified PSAP does not have the inherent capability to

[4] http://www.telecomsys.com/news/media.aspx
[5] Id.

receive a direct nonvoice communication other than TTY.[6] Implementation of Long-Term Evolution (LTE) and other 4G technologies is also essential to the availability of Real-Time Text (RTT) and the ability to communicate directly to nonvoice systems in an NG9-1-1 network. The standardization goals of the Third Generation Partnership Program (3GPP), which will support widespread text to 9-1-1, can best be realized in an environment where the implementation of NG9-1-1 is facilitated. The public safety community has been examining this topic for some time, and many of the resulting conclusions, including the baseline technical assumptions for text to 9-1-1 deployment, are contained in the document, *NENA Use Cases & Suggested Requirements for Non-Voice-Centric Emergency Services*, NENA 73-501, Version 1.0, January 11, 2011.[7] This document was also a source document for the Alliance for Telecommunications Industry Solutions' (ATIS) Interim Non-Voice Emergency Services (INES) incubator established in the spring of 2011. However, as noted herein, there are text to 9-1-1 options available today in advance of full NG9-1-1 deployment.

1. Expected Benefits of Text to 9-1-1 Availability

a) Accessibility of 9-1-1

Consistent and universal text to 9-1-1 availability would greatly improve 9-1-1 accessibility for hearing- or speech-impaired consumers,[8] and important advocacy groups have long lobbied for its deployment.[9] However, in addition to simply sending an emergency message, the most useful version of text to 9-1-1 also would enable the PSAP to acquire the

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[6] A TTY is a special device that enables people who are deaf, hard of hearing, or speech-impaired to communicate via telephone by typing text messages. A TTY is required at both ends of the conversation in order to communicate. It can be used with both land lines and cell phones. Unlike text messaging, it is designed for synchronous conversation, like a text version of a phone call. A modern digital cell phone must support a special digital TTY mode in order to be compatible with a TTY device. In accordance with the Americans with Disabilities Act, every call-taking position within a PSAP must have its own TTY or TTY-compatible equipment.

[7] http://www.nena9-1-1.org/sites/default/files/73-501%20Use%20Cases%20and%20Suggested%20Requirements%20for%20Non-Voice-Centric%20Em%20Svcs.pdf

[8] SMS to 9-1-1 is no different from text to 9-1-1 in its limitation of 160 characters per message.

[9] http://www.hearingloss.org/content/911 (*Hearing Loss Association of America* is just one example).

sender's location similarly to the type of PSAP location determination used for a 9-1-1 wireless voice call. The text to 9-1-1 solution should also have the ability to interface with a multimedia database which houses user-provided data[10] that could be supplied to the PSAP and securely accessed by the dispatcher or first responder. This would provide the personnel responding to the emergency with potentially life-saving, personal, and/or event-specific information.

While text to 9-1-1 deployment in a functional NG9-1-1 environment is the goal, TCS believes that a near-term Short Message Service (SMS) to 9-1-1 solution can be deployed in existing carrier network infrastructures. Said solution can work in harmony with PSAPs that support existing TTY access or elect to have newer call processing equipment (CPE)-based Direct Internet Protocol (D-IP)[11] SMS.[12] This text to 9-1-1 solution does not compromise on the level of functionality available to any end-user or the prerequisites expected by the PSAP. However, the text to 9-1-1 network platform should be designed to support unplanned message bursts, including concurrent session support, with the ability to scale for future growth. This text to 9-1-1 solution should not require any change to the originating sender's device.[13] The platform would be designed to be deployed with NG9-1-1 in mind, so any transition to an Internet Protocol (IP)-enabled, fully integrated NG9-1-1 service could be implemented with minimal modifications.

b) Improved Information for PSAPs

Providing critical information via text in an emergency situation can be challenging; more complex information can only be conveyed if the SMS sender is proficient with "texting." However, experience has demonstrated that there are situations (e.g., school shooting victims in

[10] Examples of such data include, but are not limited to; medical conditions of some residents, hazardous materials stored on site with notification instructions in case of an emergency, relatives or friends to contact in an emergency, or additional address or location instructions.

[11] D-IP: Direct-IP; refers to SMS 9-1-1 component that supports communication with IP-capable PSAPs.

[12] See detailed discussion of SMS in Section 1.c., Improved reliability and resiliency.

[13] Of course, this assumes that the sender has pre-existing texting service from the wireless carrier and a text-capable handset.

hiding, kidnapped individuals in a car trunk, etc.) where an SMS to 9-1-1 emergency message might be the only means of communications available to a victim. Additionally, public safety and law enforcement have long sought an affordable and widely available method for communicating with emergency participants who do not speak standard English as their first language.[14] SMS to 9-1-1 can be even more effective than voice at addressing this challenge through the utilization of text translation and other techniques. Moreover, there are without doubt still yet undiscovered ways in which SMS to 9-1-1 can meet the information needs of PSAPs.

The SMS to 9-1-1 solution also includes two-way communication between the PSAP and SMS sender. Based on the dominance of text messaging in the wireless communications space, the availability of this new means by which to convey emergency information may result in an increased volume of overall 9-1-1 / emergency traffic—although it is not yet known if the implementation of SMS to 9-1-1 would also result in fewer 9-1-1 voice calls.[15] The addition of text as a form of communication between the PSAP and the user advantages both parties, since it opens doors to new avenues of communication.

The TCS near-term SMS to 9-1-1 proposal will work in harmony with existing PSAPs that already have TTY support or those that install a client-based D-IP SMS system that does not require any change to the originating text sender's device or to the PSAP's TTY device. The intermediate network platform will handle all translations both ways.

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[14] "Lost in Translation Limited English Proficient Populations and the Police", *Police Chief Magazine*, November, 2011 http://www.policechiefmagazine.org/magazine/index.cfm?fuseaction=display_arch&article_id=861&issue_id=42006 "Nothing Lost in Translation", *TechBeat*, Fall 2003, Article begins, "Language barriers between public safety personnel and the communities they serve are a natural consequence of America's growing multicultural population." http://www.au.af.mil/au/awc/awcgate/nij/nothlostfall03.pdf

[15] TCS understands that a few PSAPs would like to conduct small experiments with incoming call messaging and voice response platforms that work to reduce duplicate messages for the same emergency incident (e.g., "If you are calling about the accident at 123 Main Street, press 1") or otherwise process incoming calls. SMS to 9-1-1 has the capability for automated responses in a parallel fashion. TCS is not aware of any published plan for such experiments to date, but the promise of improved response quality and efficiency is intriguing nonetheless, and TCS would welcome the opportunity to participate in any future Commission sanctioned programs in this area.

TCS has demonstrated a D-IP SMS client application that runs in a web browser and gives a PSAP call-taker who has connectivity to the IP messaging network the ability to receive, view, and respond to the SMS 9-1-1 call.[16] The web client provides an interactive map control that accurately displays the determined location of the SMS sender as derived in real time from the sender's handset or carrier network. This approach requires minimal deployment within the PSAP environment and entails only minor disruption to the PSAP, as there would be no requirement for integration, interoperability, and testing with the existing PSAP CPE. However, a prerequisite for this implementation is internet/IP connectivity at the PSAP call-taker station. Since many PSAPs already have this connectivity, this solution may be viewed by the PSAP community as the easiest and most effective option to receive and respond to SMS. Additionally, the web browser provides a rich and intuitive graphical user interface (GUI) to allow the PSAP call-taker to quickly get up to speed with the software's features.[17] Using the web-based client does not require the use of the SMS to TTY translations previously noted to interface with the PSAP for SMS delivery, and also works if the PSAP has already migrated to an NG9-1-1 system.

It is TCS' belief that the implementation of SMS and text to 9-1-1 could, over time, even lessen the PSAPs' overall communications processing time, particularly if used within the class of "important but non-emergency" messages. These will include, for example, messages from someone walking by an incident (e.g., a car accident, a neighbor falling down, etc.) in situations where initial transmittal of very basic information, along with automatic location determination by the PSAP, provides the information required to justify a physical dispatched response while

[16] The PSAP establishes an IP network connection to TCS's NOC. This can be accomplished in a variety of ways (ex. Private network connection or VPN over the Internet, etc.).

[17] The GUI was designed to appear similar to other PC-based CPE systems used by PSAPs, so as to reduce training and implementation.

still allowing for voice or text re-contact by the PSAP and/or responding agency. In addition, TCS is aware that the Association of Public-Safety Communications Officials (APCO) is currently reviewing the impact of text to 9-1-1 programs in other countries (e.g., SMS 1-1-2 in Sweden) as well as their impact on 3-1-1 services in the United States.

c) Improved reliability and resiliency

There has been a great deal of discussion, and even controversy, surrounding the reliability and resilience of SMS as a means to communicate a 9-1-1 emergency request. As a significant provider of SMS messages nationwide (nearly 1 trillion messages per year), TCS has access to sufficient geographically diverse and longitudinally robust data to offer valid high-level conclusions regarding the reliability and resiliency of SMS messaging.[18] TCS has determined that during normal time periods (e.g., no current or forecast flood, hurricane, etc.) over a geographically diverse region, in one set of detailed data analyzed, SMS messages were delivered on average after 1.27 attempts, and close to 90 percent were delivered on the first attempt.[19] Of the SMS messages that were not delivered on the first attempt, the majority failed due to the phone being unreachable (e.g., turned off or temporarily off the network[20]), not due to network congestion or failure. During a time when the network was experiencing traffic congestion (e.g., the aforementioned natural disasters), SMS messages were delivered on average after 1.42 attempts, a difference of only 10.5 percent. Also, the second attempt to deliver an SMS message occurs quickly, giving the appearance of near real-time communications that most users experience. SMS messages that are not delivered to another mobile scriber on the first

[18] It must be noted, that while instructive, these are not data specific to the delivery of SMS to 9-1-1 messages since the service has not been deployed. Also, TCS is not implying that these conclusions are the equivalent of an academic study performed by experts and published in a peer-reviewed journal. However, the efficacy of these common-sense observations available from TCS' large data pool is self-evident. The Commission may find it worthwhile to promote and fund such a scientifically valid study.

[19] Please note that actual results vary slightly by region of the country, weather, etc.

[20] Examples include the phone being in a basement, elevator, or deep inside a building. These are times when network access will usually be reestablished soon, but at the time the SMS is sent, the receiving phone is not connected to its network for reasons associated with the end user, as opposed to network congestion or failure by the network to communicate with the handset.

attempt can enter into a robust retry mechanism, ensuring that the vast majority of messages will be retransmitted and received successfully as long as the receiving phone is available.[21]

TCS is not implying that SMS, and by analogy SMS to 9-1-1, would be *infallible*. However, TCS does assert that when reviewed from a national perspective using real SMS data, generic claims that SMS is incapable of rising to the level of an emergency service are called into question. Furthermore, in an SMS to 9-1-1 scenario, both the sending and receiving devices would, by definition, be "on," "in network coverage," and "not blocked" since the entire emergency scenario begins with the person successfully texting for emergency support.

An additional benefit of SMS to 9-1-1 scenarios was made clear during the August 23, 2011, East Coast earthquake. Immediately after the earthquake, many individuals attempted to make voice calls and found them blocked due to network overload. During that same period, however, text messages were being completed (albeit at a slightly impaired completion rate as described earlier). Voice calls to 9-1-1 are blocked more frequently due to localized voice network congestion, while SMS to 9-1-1 messages in the same locality can be completed even without emergency message prioritization. In these circumstances, the wireless network is simply better able to deliver an SMS message than a voice call because of the relatively small amount of data usage required of the network for SMS messages as compared to voice calls.

The other end of the messaging conversation is the PSAP. Providing connectivity to the PSAP via a highly trusted and redundant IP backbone provides a more robust delivery and verification methodology, which in turn ensures the reliability of the path (as opposed to the recipient being simply another wireless subscriber on the network). Since the SMS architecture

[21] Message retry algorithms can vary by network and carrier. TCS' comments here are not intended to be a complete discussion of this complex topic, especially as retry configurations may be modified for emergency SMS to 9-1-1, a service that does not exist today. However, it is reasonable e to assume that retry strategies for true emergency SMS to 9-1-1 could be developed that would maximize message delivery even above the level available today.

provides controlled handoffs along each stage of communication,[22] the entire SMS communications method would be highly reliable and resilient.

However, as with any wireless communications method, problems can occur, especially on the sender's side of the communication. As mentioned previously, the phone battery could lose power, the sender could step into an environment that blocks wireless signals (e.g., deep inside buildings or into a basement), the sender could be interrupted by a third party, or the sender could simply stop texting. These scenarios demonstrate the need for "controllability" of the SMS message flow. In these situations, the standard SMSC retry methods should not be the only retry options available. The PSAP call-taker must be able to distinguish between these various situations and control the communication, determining whether and how many times to retry and the length of time between each attempt. Fortunately, the protocols supporting SMS have the ability to support this aspect of message control.

TCS recommends using existing protocol methods that allow the status of message delivery to the sender's handset to be identified for the PSAP dispatcher immediately (e.g., confirmation that the message has been delivered, determination that the handset is not responsive or not reachable, or representation that there is a network error and of what type). With this knowledge, the PSAP call-taker can take further action; for example, to resend the same message or to attempt to reach the subscriber by voice calling, or to dispatch emergency services.[23]

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[22] It is this highly controlled handoff mechanism that allows an SMS message to be delivered hours after the first delivery attempt. Because of the step-by-step handoff mechanism used to deliver SMS messages, the SMSC knows that a message has not been successfully delivered and employs retry mechanisms that will continue to attempt to deliver the message. Hours later, the SMSC may finally succeed in delivering that first message simply because of the messaging network's reliability.

[23] Public safety has existing dispatch / call back protocols and could use these to develop appropriate new protocols as needed for SMS to 9-1-1 services.

2. Approaches Based on SMS and Existing Infrastructure

As noted above, SMS can be extremely reliable. Existing network-based and handset-based location technologies can be used in conjunction with SMS to provide the sender's location during the SMS exchange. Currently, wireless voice calls are routed to the PSAP based upon the location of the cell site managing the voice call. Similar approaches can be used for SMS to 9-1-1 message routing. Additionally, the precise location of a SMS sender, similarly to that of a wireless voice 9-1-1 caller, can be determined and provided through various means to the PSAP.

By combining existing location technologies with existing SMS protocol capabilities, every wireless network should be able to provide a resilient and highly reliable SMS to 9-1-1 environment that presents end-to-end control of the message flow, as well as Phase I (cell site/sector) or Phase II (precise) location information equal to their wireless voice capabilities. Some networks may choose to adapt or reuse their existing infrastructure; others may find it more beneficial to provide separate infrastructure that independently uses the characteristics described earlier. In any case, existing networks should be able to provide a reliable and resilient SMS to 9-1-1 environment that provides capabilities at least equivalent to today's wireless voice-based E9-1-1 solutions. TCS' architecture solution enables accurate location information delivery to the PSAP simultaneously with the SMS to 9-1-1 message. This is analogous to locating a user dialing 9-1-1 on a wireless phone, with the same level of reliability that is expected from the existing 9-1-1 location delivery infrastructure.

3. Approaches Based on Software Applications

As noted above, to maximize the benefit to first responders, a primary qualification for any nonvoice wireless application used in a 9-1-1/emergency context should be automatic support for location information-based routing. This is the only way to guarantee that general

texting or 9-1-1- specific applications can provide the end-user access to the proper 9-1-1 PSAP based upon the end-user's location, while enabling the PSAP to receive an accurate representation of the end-user's location sufficient to support a dispatch decision. There are many references to the vital importance and assumption that any nonvoice emergency service also will provide location in the previously cited, *NENA Use Cases & Suggested Requirements for Non-Voice-Centric Emergency Services*, NENA 73-501, Version 1.0, January 11, 2011."[24]

Many handset applications currently use precise location capabilities. Such capabilities could be combined with text messaging functions, and emergency services could be provided within the handset-based application. When looking at these applications, it is important to understand the precise location methodology being employed.

The precise location capabilities of underlying devices fall into two categories: stand-alone and assisted. Stand-alone approaches interact with the interfaces on the device that extract the precise location information of the device from other sources. Assisted approaches receive critical information from the network that help the device determine its precise location; in some cases, the network performs the location calculations. TCS has long provided applications that utilize both location techniques.

Unfortunately, some applications relying upon stand-alone location techniques can be "spoofed" (i.e., the device can be made to appear to be somewhere that it is not).[25] Applications that rely upon assistance information from the network cannot be easily spoofed because the network essentially validates the location information against other location information that it uniquely holds and uses in an unbiased fashion. For this reason, TCS strongly recommends that

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[24] Ibid.

[25] Spoofing is also known as "Mock Locations", a common device setting which allows for developers to test software on actual phones. For instance, if you want to legitimately test mapping in NYC, but are really located in CA, you can activate the "mock location" feature and change your GPS coordinates to NYC. TCS has implemented handset software enhancements to allow for forcing the use of network location if the mock location feature is activated.

careful consideration be given to application-based text to 9-1-1 approaches and prefers network-based approaches, such as SMS to 9-1-1 or other next generation messaging techniques that will be provided by the operator rather than a third-party application provider.

B. 9-1-1 Prioritization in Major Emergencies

During a major disaster, the active 9-1-1 landline voice circuits serving the disaster area may become overloaded due to congestion. In contrast, the wireless experience is somewhat different. A wireless carrier's control channel is used to keep a device registered to the network, and it is this control channel that carries SMS messaging. Consequently, even though a wireless cell site might be able to handle a limited number of voice calls, it can support a much larger number of control messages (and therefore a much larger number of SMS messages). This is why SMS messaging still works in situations where voice calls cannot be completed: the digital overhead for voice is simply much higher than that needed for the relatively small digital packets delivering SMS messages. For this reason, TCS does not believe that text to 9-1-1 will need prioritization. As we explore more bandwidth-intensive messaging techniques (e.g., photo or video messaging), the need for prioritization will change. However, for SMS or other text-only messaging techniques in the near term, the smaller bandwidth usage should be sufficient to address prioritization requirements.

1. PSAP-Based Triggers for Providers to Provide NG9-1-1 Solutions for Nonvoice Emergency Messaging to 9-1-1

We are a highly mobile society. Texting is ubiquitous. To avoid consumer confusion, the ability to reach public safety via text should be established for all jurisdictions nationwide. A logical approach would be via statewide or regional launches.

a) State or Regional Approaches

TCS' experience has been that state or regional readiness for handling text and other media is essential. Readiness at the individual PSAP level will take time. Authorities for each 9-1-1 jurisdiction (state, region, county, etc.) should determine their readiness timeline, which may include routing decisions for a subset of PSAPs to handle text and other media within their jurisdiction. This approach was successfully followed for wireless voice E9-1-1 solutions. The advantages of facilitating NG9-1-1 capabilities for receiving text and other media at the PSAPs include a consistent consumer experience and efficient implementation of network resources.

TCS believes the Commission should follow an adoption model similar to that used for the original wireless voice E9-1-1 requirements by requiring service providers to support delivery of text or SMS to 9-1-1 to a given region after the jurisdictions (state, regional, county, etc.) have documented their readiness. Of course, the jurisdiction may determine that it is immediately ready to deploy if the jurisdiction determines that TTY is a viable approach, because PSAPs should already have capabilities and procedures that support messaging over TTY.

The deployment of an Emergency Services IP Network (ESInet) may not be the appropriate trigger for the request to launch SMS to 9-1-1. Actual text-handling capability is all that is required, even if this means that initially a subset of PSAPs may be assigned the responsibility for handling all of the text and other media within a jurisdiction at the beginning of certification, or the use of existing TTY capabilities.

C. Failure To Enforce The Commission's Intellectual Property Rights Policy Will Negate Many Of The Commission's Positive Achievements In The Public Safety Arena

In this Notice the Commission specifically addresses the issues of standardization as it relates to text to 9-1-1. This is a precise example of those instances in which when, in order to

promote the public good, the Commission is called upon to fulfill its public interest mandate as a "referee" to establish guidelines or standards, encourage order and consistency, or effectuate the will of Congress through policy guidance and regulations. All these actions create demand causing vendors eagerly seek to enter such new markets. However, like a moth to flame, the Commission's actions also attract a new type of entrepreneur: the patent assertion entity (PAE).[26] PAEs can bring the Commission's well-intended efforts in this Notice to a complete standstill.

Recently, the wireless industry has been plagued by PAE-initiated lawsuits that claim the mandatory provision of 9-1-1 services equals a prima facie case that the carrier has infringed the PAE's 9-1-1 related patent(s). It is critical that the Commission act now to ensure that ongoing intellectual property rights (IPR) disputes generated by PAEs do not delay the deployment of the new 9-1-1 location accuracy and emergency notification solutions discussed in the Notice, or otherwise discourage innovation in the public safety and wireless fields.

Companies subject to the FCC's jurisdiction and others may own, control, or develop IPR such as patents, copyrights, trademarks, and trade secrets that are or could be directly relevant to compliance with or fulfillment of stated FCC policies, orders, requirements, or standards. As early as 1961, the FCC announced that, in support of its mandates under the Communications Act, in the development of "technical standards and regulations" it is important to give "consideration to the effect of patent rights" upon the process.[27] The Commission has a long history with IPRs and has previously acknowledged its responsibilities to facilitate reasonable and nondiscriminatory IPR approaches: "We remain committed to the principle of reasonable

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[26] This term was coined by the Federal Trade Commission in *The Evolving IP Marketplace: Aligning Patent Notice and Remedies with Competition.* This report uses the term "patent assertion entity" rather than the more common "non-practicing entity" (NPE) to refer to firms whose business model primarily focuses on purchasing and asserting patents. Taken literally, the term NPE encompasses patent owners who primarily seek to develop and transfer technology, such as universities and semiconductor design houses. Patent assertion entities do not include this group. http://www.ftc.gov/os/2011/03/110307patentreport.pdf

[27] *Revised Patent Procedures of the Federal Communications Commission,* Public Notice, 3 F.C.C. 2d 26 (December 1961).

and nondiscriminatory licensing of relevant patents and if a future problem is brought to our attention, we will consider it and take appropriate action."[28] More recently, in explaining its position as related to digital television (DTV), the Commission has noted, "In order for DTV to be successfully implemented, the patents on the technology would have to be licensed to other manufacturing companies on reasonable and nondiscriminatory terms. ... We reiterate that adoption of this standard is premised on reasonable and nondiscriminatory licensing of relevant patents."[29]

Federal law supports the Commission in the development and enforcement of an IPR policy. For example, the National Technology Transfer and Advancement Act (NTTAA) of 1995, Public Law 104-113, directs all federal government agencies to use, wherever feasible, standards and conformity assessment solutions developed or adopted by voluntary consensus standards bodies in lieu of developing government-unique standards or regulations. The NTTAA also requires government agencies to participate in standards development processes, given that such involvement is in keeping with an agency's mission and budget priorities. The FCC has observed, "that this approach [licenses offered on RAND terms][30] is likewise consistent with the terms of the National Technology Transfer and Advancement Act and Office of Management and Budget Circular A-119, 63 Fed. Reg. 8545 (February 18, 1998), Sections 4a and 6j, which recommend that federal agencies participate in and support the voluntary standards process and that patents essential to a standard be licensed on terms that are reasonable and non-discriminatory."[31]

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[28] *In the Matter of Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service,* Fourth Report and Order, MM Docket No. 87-268, FCC 96-493, ¶ 55 (December 27, 1996) (*"ATSC Fourth Report"*).
[29] Id., at ¶ 54.
[30] RAND stands for "reasonable and non-discriminatory."
[31] *In the Matter of the Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010,* Memorandum Opinion and Order on Reconsideration in WT Docket No. 96-86, FCC 99-85, at Para. 21 (April 26, 1999).

TCS encourages the Commission, as related to this Notice, to revisit and enforce its IPR policy through a Declaratory Ruling so that:

- The IPRs of FCC-regulated entities and third parties are protected.
- FCC-regulated entities and third parties implementing FCC directives do not have their IPR licensing rights unreasonably inhibited by regulations, standards, or other FCC mandates.
- Compliance with stated FCC policies, mandates, standards, and/or requirements is not unduly or inappropriately burdened by the potential or actual existence of IPRs.
- No current or future IPR holder may manipulate the FCC's statutory obligations so as to ensure an unjustified IPR benefit.
- The relationship of the FCC's IPR Policy to 28 USC 1498 (Section 1498)[32] is clarified.

With regard to this last point, TCS encourages the Commission to review closely the need for an enforceable IPR policy in this docket and to close the resulting patent litigation and financial quagmire that lack of an IPR policy creates. The FCC mandates that explicitly or implicitly require the use of IPR to ensure compliance[33] create an unfortunate arbitrage opportunity for litigation-minded IPR holders, historically dubbed "patent trolls,"[34] now referred to as PAEs, who use the FCC's rules to greenmail compliant carriers and their vendors into licensing agreements or face crippling litigation expenses.[35] The direct effect of such litigation is

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[32] [i] http://www4.law.cornell.edu/uscode/28/1498.html § 1498. Patent and copyright cases
(a) Whenever an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same, the owner's remedy shall be by action against the United States in the United States Court of Federal Claims for the recovery of his reasonable and entire compensation for such use and manufacture. ... For the purposes of this section, the use or manufacture of an invention described in and covered by a patent of the United States by a contractor, a subcontractor, or any person, firm, or corporation for the Government and with the authorization or consent of the Government, shall be construed as use or manufacture for the United States.

[33] Entities that are required to use IPR in order to comply with specific FCC orders, standards, or mandates find themselves unavoidably subject to patent holder infringement suits because they face an unavoidable dilemma: be sued or violate an FCC mandate and suffer the consequences.

[34] http://en.wikipedia.org/wiki/Patent_troll

[35] In 2007, the biennial American Intellectual Property Law Association economic survey pegged actual litigation costs for *successfully defending* a patent infringement case at up to $4 million per case (for smaller cases). Other authors cite similar costs. Note that costs rise proportionally with the value of the patent rights at stake in the case; if the rights are more valuable,

an incentive to delay future compliance, modify future compliance, or even avoid future compliance with FCC directives, but the chilling effect on future compliance and/or technological advancement is even more damaging to the industry and the public's safety. Money spent on baseless litigation cannot be spent on 9-1-1 innovation, growing businesses and creating jobs, or improved public safety technologies.

Fortunately, Section 1498 closes this arbitrage opportunity by permitting the federal government to fairly license patents when a regulated company's performance under the relevant mandate is factually determined to be "by or for" the United States. Section 1498 is fair to all parties because it: preserves the IPR holder's cause of action; simplifies royalty negotiations; dramatically lowers costs for all parties by using only one forum for the cause of action; and removes the prohibitory chilling effect of surprise "submarine" lawsuits by limiting distracting litigation against otherwise compliant carriers and vendors. The Commission should issue definitive guidance through a Declaratory Ruling that when a carrier or regulated entity is in compliance with the Commission's mandates and regulations for the provision of 9-1-1 emergency services, such actions are "by or for" the benefit of the United States and any infringement action would be subject to Section 1498.

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the litigation costs increase. Also, these are only the direct litigation costs and do not include significant company administrative and other costs (e.g., costs of discovery, executive time, travel, etc.).

CONCLUSION

In summary, TCS submits these comments regarding the Commission's questions in this Notice, and encourages the Commission to resolve the additional open question regarding IPR that this Notice raises.

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Dated: December 12, 2011