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**Emergency Access Advisory Committee (EAAC)  
Report and Recommendations**

# Table of Contents

Executive Summary.....	2
1 Introduction.....	3
1.1 Purpose .....	3
1.2 Scope .....	4
1.3 Entities and Equipment Subject to EAAC Recommendations.....	4
1.4 References .....	5
1.5 Advanced Communication Equipment and Services .....	5
1.6 Direct Access to PSAPs.....	5
1.7 Glossary of Terminology and Acronyms .....	6
2 Background.....	6
2.1 Twenty-First Century Communications and Video Accessibility Act of 2010.....	6
2.2 Emergency Access Advisory Committee.....	7
2.3 Summary/Overview of Other Related Efforts on Emergency Communications .....	8
2.3.1 NENA i3 .....	8
2.3.2 DOT NG9-1-1 Project .....	9
2.3.3 ATIS INES Incubator .....	9
2.3.4 REACH112.....	10
2.3.5 CSRIC 4B Working Group .....	10
2.3.6 EENA .....	12
2.3.7 3GPP.....	12
3 About Individuals With Disabilities .....	13
3.1 Prevalence of Disabilities in America .....	13
3.2 Disability References.....	13
4 Jurisdiction, Authority, and Regulatory Roles.....	14
4.1 Legal and Regulatory Framework .....	14
4.2 Department of Justice’s Authority to Ensure Access for Individuals with Disabilities to 9-1-1 Services.....	15
4.2.1 Legal Authority .....	15
4.2.2 ADA Title II Regulation.....	16
4.2.3 2010 Advance Notice of Proposed Rulemaking.....	17
5 Recommendations.....	18
5.1 Policy Recommendations .....	19
5.2 Technical Recommendations.....	28
5.3 Education/Outreach Recommendations .....	38
Appendix A: Section 106 – Emergency Access Advisory Committee .....	39
Appendix B: Sources and Documentation .....	42
Appendix C: Standards Related to Advanced Communication Equipment and Services.....	44
Appendix D: Documents Related to Direct Access to PSAPs .....	53
Appendix E: Glossary of Terminology and Acronyms .....	58

## List of Figures

Figure 1: IMS Service Architecture.....	45
Figure 2: Global Text Telephony Service Environment .....	47
Figure 3: IMS Emergency Calls Architecture .....	54

## Executive Summary

The Emergency Access Advisory Committee (EAAC) is pleased to offer the following recommendations to the FCC following the Twenty-First Century Communication and Video Accessibility Act (CVAA) of 2010<sup>1</sup> (CVAA). Achieving equal access to 9-1-1 emergency services by individuals with disabilities as part of the migration to the national Internet protocol (IP)-enabled emergency network (NG9-1-1) is a matter of national policy. The EAAC believes our recommendations will significantly advance access to NG9-1-1 for individuals with disabilities.

To achieve that goal of equal access required an in-depth analysis of technical and policy barriers that impair or impede access to emergency communications for all, as well as development of technical and policy recommendations whenever necessary to address those issues. To meet this goal, Congress, in the CVAA tasked the EAAC with conducting a survey and recommending to the Commission the most effective and efficient technologies and methods by which to enable access to 9-1-1 emergency services by individuals with disabilities. The release of EAAC's recommendations to the FCC to further this policy represents an important milestone toward implementation of the CVAA.

In December 2010, the FCC established the EAAC with a balance of representatives from state and local government, subject matter experts, communications service network providers, vendors, developers, and manufacturers, representatives from national organizations representing individuals with disabilities and senior citizens, and representatives from several Federal agencies, in accordance with the CVAA. The EAAC conducted its survey from March 16, 2011, to April 25, 2011, and received over 3,000 completed responses. On July 21, 2011, the EAAC submitted the report on the completed survey to the Commission.<sup>2</sup> The EAAC was required to make its recommendations to the Commission by December 7, 2011, which the Commission is then empowered to implement by regulation.<sup>3</sup> Since July, the EAAC has dedicated itself to developing a report and recommendations to address the tasks assigned by Congress.

In order to complete the recommendations by the CVAA's December 7<sup>th</sup> deadline the EAAC has conducted monthly meetings and expended significant time and resources hearing, discussing and collaborating on issues that affect accessibility to 9-1-1 emergency services for individuals with disabilities. The coordination of comments by a group with such diverse views and opinions was a herculean task. The EAAC wishes to express its appreciation to the individual EAAC members and FCC staff for the time and commitment that has gone into preparation of the report, and for the progress that the EAAC has made since it first met on January 14, 2011.

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<sup>1</sup> Twenty-First Century Communications and Video Accessibility Act of 2010, Pub. L. No. 111-260, 124 Stat. 2751 (CVAA) (amending sections 3, 255, 303, 503, 330, 710, and 713 of the Communications Act, and adding sections 615c and 715-19, codified at 47 U.S.C. §§ 153, 225, 303, 330, 503, 610, 613, 615c, 616-20).

<sup>2</sup> EAAC, *Report on Emergency Calling for Persons with Disabilities Survey Review and Analysis 2011*, July 21, 2011, at 3, available at <http://transition.fcc.gov/cgb/dro/EAAC/EAAC-REPORT.pdf> (last visited Aug. 12, 2011) (EAAC Report).

<sup>3</sup> 47 U.S.C. § 615c(g) (providing that “[t]he Commission shall have the authority to promulgate regulations to implement the recommendations proposed by the [EAAC], as well as any other regulations, technical standards, protocols, and procedures as are necessary to achieve reliable, interoperable communication that ensures access by individuals with disabilities to an Internet protocol-enabled emergency network, where achievable and technically feasible”).

Given the limited period of time to submit recommendations required by the CVAA and complex coordination required to complete the recommendations, the EAAC submits the following recommendations, and requests additional editorial privileges and the right to submit the full report which will contain the technical and policy background for these recommendations at a later date, but no later than December 7, 2012.

The EAAC believes that each recommendation is critical to further a national policy of equal access to emergency communications services and represents an important milestone toward implementation of the CVAA. The EAAC wishes to note that any of the EAAC recommendations that are actionable by the FCC should be interpreted within and consistent with the Commission's jurisdiction under the Communications Act of 1934, as amended from time-to-time. As the regulatory and operational framework for NG9-1-1 continues to develop, the adoption and application of these recommendations will need to be determined through the appropriate rulemaking and standards development processes. Given the complexity of applying these recommendations to diverse IP environments, the EAAC also notes that some of the recommendations may require further research and development of technical standards, best practices or guidelines.

Following months of hard work and dedication, the EAAC releases the following recommendations.

## **1 Introduction**

### ***1.1 Purpose***

The recommendations included in this report, presented by the Emergency Access Advisory Committee (EAAC or Committee) established by the Federal Communications Commission (FCC or Commission), contain the findings of an in-depth review and analysis of a national survey of individuals with disabilities conducted by the EAAC in accordance with The Twenty-First Century Communications and Video Accessibility Act of 2010 (CVAA),<sup>4</sup> and the development of recommendation to implement technologies and methods through which individuals with disabilities have the most effective and efficient technologies and methods by which to enable access to NG9-1-1 emergency services.<sup>5</sup>

The CVAA requires the Commission to take various steps to ensure that individuals with disabilities have access to emerging communications technologies in the 21st century. The Commission established the EAAC in accordance with the CVAA, which directs that an advisory committee be established within 60 days after the date of enactment,<sup>6</sup> for the purpose of achieving equal access to 9-1-1 emergency services by individuals with disabilities as part of our nation's migration to a national Internet protocol-enabled emergency network, also known as the next generation 9-1-1 system ("NG9-1-1").<sup>7</sup> Section 106 of the CVAA is provided in *Appendix A: Section 106 – Emergency Access Advisory Committee*.

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<sup>4</sup> Twenty-First Century Communications and Video Accessibility Act of 2010, Pub. L. No. 111-260, 124 Stat. 2751 (2010). See also Amendment of Twenty-First Century Communications and Video Accessibility Act of 2010, Pub. L. 111-265, 124 Stat. 2795 (2010), also enacted on October 8, 2010, making technical corrections to the CVAA.

<sup>5</sup> *Id.*

<sup>6</sup> *Id.*

<sup>7</sup> *Id.* at § 106.

## **1.2 Scope**

The CVAA directs that within one year after the EAAC's members are appointed,<sup>8</sup> the EAAC conduct a national survey, with the input of groups represented by the Committee's membership, and develop recommendations to the Commission to implement the most effective and efficient technologies and methods by which to enable access to NG9-1-1 emergency services by individuals with disabilities.<sup>9</sup> The CVAA requires that these recommendations take into account what is technically and economically feasible, and include the following:<sup>10</sup>

- (1) actions needed for the migration to a national Internet protocol-enabled network to achieve reliable, interoperable communication that will ensure access to emergency services by individuals with disabilities;
- (2) protocols, technical capabilities, and technical requirements to ensure the reliability and interoperability necessary to ensure access to emergency services by individuals with disabilities;
- (3) technical standards for use by public safety answering points, designated default answering points, and local emergency authorities;
- (4) technical standards and requirements for communication devices and equipment and technologies to enable the use of reliable emergency access;
- (5) procedures to ensure that IP-enabled network providers do not install features, functions, or capabilities that would conflict with technical standards needed to achieve 9-1-1 emergency access by individuals with disabilities;
- (6) deadlines by which interconnected and non-interconnected VoIP service providers and manufacturers shall achieve the actions required in the above paragraphs, where achievable, and for the possible phase out of current-generation TTY technology to the extent that this technology is replaced with more effective and efficient technologies and methods to enable access to emergency services by individuals with disabilities; and
- (7) rules to update the Commission's telecommunications relay services regulations with respect to 9-1-1 services, as new technologies and methods for providing such relay services are adopted by providers of such relay services.<sup>11</sup>

## **1.3 Entities and Equipment Subject to EAAC Recommendations**

The following target entities are covered by the NG9-1-1 accessibility recommendations by the EAAC:<sup>12</sup>

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<sup>8</sup> *Id.*

<sup>9</sup> *Id.* at § 106(c).

<sup>10</sup> *Id.* at § 106(c).

<sup>11</sup> *Id.*

<sup>12</sup> The EAAC goes beyond the CVAA's category of Advanced Communication Services (ACS) and includes both 47 U.S.C. § 255 interpretation of equipment and ACS interpretation of equipment, this EAAC Report and

1. Manufacturers of equipment used for Telecommunications or Advanced Communications Services;
2. Telecommunications and Advanced Communications Service providers;
3. Telecommunications and IP Relay and Interpretation Service providers (includes VRS and Sign Language Assistance Service);
4. Emergency Service Network manufacturers and providers;
5. Public Safety Answering Points (PSAPs).

#### **1.4 References**

The references to the sources and documentation used in the preparation of this report are contained in *Appendix B: Sources and Documentation*.

#### **1.5 Advanced Communication Equipment and Services**

Advanced communication equipment and services are comprised of a large set of technical standards and specifications. These standards and specifications are referred to at various points throughout this document. A high level description of these standards and specifications are provided in *Appendix C: Standards Related to Advanced Communication Equipment and Services*, along with pointers to more complete descriptions.

#### **1.6 Direct Access to PSAPs**

A key recommendation of this document talks about ways that individuals with disabilities can directly access NG9-1-1. There are currently a number of existing standards as well as standards under development that would be used for providing direct access to NG9-1-1 using different communication modalities (e.g., voice, text, and video). These include the following:

- 3GPP TS 23.167 IP Multimedia Subsystem (IMS) Emergency Sessions
- IETF RFC 5012 Requirements for Emergency Context Resolution with Internet Technologies
- NENA i3 Detailed Functional and Interface Specification for the NENA i3 Solution
- ATIS IMS ESI<sub>net</sub>
- IETF Framework for Emergency Calling using Internet Multimedia
- IETF Best Current Practice for Communications Services in Support of Emergency Calling

#### **Ongoing standardization work of specific accessibility interest**

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Recommendations will cover “target” rather than “covered” entities to avoid confusion with the term used in the CVAA. *Target network, equipment and service(s)* encompasses both hardware and standalone software, unless noted otherwise.

- ETSI DTS 103 170 Total Conversation Access to Emergency Services
- 3GPP TR22.871 Study on Non-Voice Emergency Services
- ATIS Interim Non-Voice Emergency Services (INES) Incubator
- ATIS Applying 3GPP Common IMS to NG9-1-1 Networks
- NENA 73-501 Use Cases & Suggested Requirements for Non-Voice-Centric Emergency Services

Detailed descriptions are provided in *Appendix D: Documents Related to Direct Access to PSAPs*.

## **1.7 Glossary of Terminology and Acronyms**

A glossary of terminology and acronyms used in this document is contained in *Appendix E Glossary of Terminology and Acronyms*.

## **2 Background**

### **2.1 Twenty-First Century Communications and Video Accessibility Act of 2010**

In explaining the need for the CVAA, Congress noted that the communications marketplace has undergone a “fundamental transformation” since Congress acted to ensure access to telecommunications services and equipment by individuals with disabilities as part of the Telecommunications Act of 1996.<sup>13</sup> Specifically, Congress stated that since in 1996 it added Section 255 to the Communications Act of 1934, as amended (hereinafter referred to as the Communications Act or the Act), “Internet-based and digital technologies . . . driven by growth in broadband . . . are now pervasive, offering innovative and exciting ways to communicate and share information.”<sup>14</sup> Congress found, however, that individuals with disabilities often have not shared in the benefits of this rapid technological advancement and that they face disproportionately higher rates of unemployment and poverty than those without disabilities.<sup>15</sup> Recent surveys confirmed this finding, showing a gap of 38 percentage points in the rates of employment of working-age individuals with disabilities and those without disabilities (21% v. 59%)<sup>16</sup> and a gap of 27 percentage points in the rates of Internet access (54% v. 81%).<sup>17</sup>

These trends are even more troubling when one considers the pace at which the communications marketplace is changing and how we as a society are becoming more dependent on such

<sup>13</sup> See 47 U.S.C. § 255; S. Rep. No. 111–386, at 1 (2010) (“Senate Report”); H.R. Rep. No. 111-563, at 19 (2010) (“House Report”).

<sup>14</sup> See Senate Report at 1; House Report at 19.

<sup>15</sup> See Senate Report at 1-2; House Report at 19.

<sup>16</sup> See National Organization on Disability and the Kessler Foundation, 2010 Gap Survey of Americans with Disabilities (July 26, 2010), available at <http://www.2010disabilitysurveys.org/indexold.html>.

<sup>17</sup> See Susannah Fox, Pew Internet, *Americans living with disability and their technology profile*, (Jan. 21, 2011), <http://www.pewinternet.org/Reports/2011/Disability.aspx>. Additionally, this article shows that “43% of Americans say that people who do not have broadband at home are at a major disadvantage when it comes to finding out about job opportunities or learning career skills.” *Id.*



technologies to succeed in the workplace and to manage our daily lives. Statistics show, for example, that more than ever, Americans rely on their mobile phones for much more than phone service.<sup>18</sup> Increasingly, wireless handsets have evolved into multi-media devices capable of accessing the Internet, sending e-mails or text messages, downloading music, and viewing streaming video programming that can, for example, enable distance education and telemedicine. As described in the National Broadband Plan,<sup>19</sup> one of the Commission's most important policy objectives is the rapid deployment of and universal access to broadband services for all individuals across the country, because broadband technology can stimulate economic growth and provide opportunity for all individuals. To that end, the recommendations in the National Broadband Plan were consistent with the objectives set forth in the CVAA.<sup>20</sup>

## 2.2 *Emergency Access Advisory Committee*

The FCC released a Public Notice on October 9, 2010, requesting nominations for membership in the EAAC.<sup>21</sup> The Commission announced the members and co-chairs of the EAAC by Public Notice released December 7, 2010.<sup>22</sup> Monthly meetings of the EAAC began January 14, 2011. The EAAC is composed generally of state and local government representatives responsible for emergency management, representatives of emergency responders and national organizations representing individuals with disabilities and senior citizens, subject matter experts, and others, as described below. The Federal Advisory Committee Act (5 U.S.C. App. 2) does not apply to the Advisory Committee.<sup>23</sup>

To fulfill its mission to determine the most effective and efficient technologies and methods by which to enable access to NG9-1-1 emergency services by individuals with disabilities, the CVAA directs that within one year after the EAAC's members are appointed, the Committee shall conduct a national survey, with the input of groups represented by the Committee's membership, after which the Committee shall develop and submit to the Commission recommendations to implement such technologies and methods. On July 21, 2011, the EAAC Committee released the *Report on Emergency Calling for Persons with Disabilities Survey Review and Analysis 2011* (Survey Report)<sup>24</sup> which is available at [www.fcc.gov/cgb/dro/EAAC](http://www.fcc.gov/cgb/dro/EAAC).

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<sup>18</sup> Aaron Smith, Pew Internet, *Mobile Access 2010*, (July 7, 2010), available at <http://www.pewinternet.org/Reports/2010/Mobile-Access-2010.aspx>. The Pew Report states that "40% of adults use the Internet, email or instant messaging on a mobile phone (up from the 32% of Americans who did this in 2009)" and that "mobile data applications have grown more popular over the last year." *Id.* It shows that the usage of "non-voice data applications" has grown dramatically in the last year as the percentages have risen for people who use their phones for such things, among others, as checking the Internet, taking pictures, and sending text messages, instant messages, and e-mail and also states, "[o]f the eight mobile data applications we asked about in both 2009 and 2010, all showed statistically significant year-to-year growth." *Id.*

<sup>19</sup> Federal Communications Commission, *Connecting America: The National Broadband Plan* (rel. Mar. 16, 2010) ("National Broadband Plan" or "NBP"), available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-296935A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296935A1.pdf).

<sup>20</sup> National Broadband Plan at Recommendation 9.10.

<sup>21</sup> *FCC Requests Nominations for Membership on Emergency Access Advisory Committee in Accordance with the Twenty-first Century Communications and Video Accessibility Act*, Public Notice, DA 10-2001 (CGB Oct. 19, 2010).

<sup>22</sup> *Emergency Access Advisory Committee Announcement of Members*, Public Notice, DA 10-2318 (CGB Dec. 7, 2010).

<sup>23</sup> PL 111-260, § 106(f).

<sup>24</sup> EAAC, *Report on Emergency Calling for Persons with Disabilities Survey Review and Analysis 2011*, at 3, July 21, 2011, at 3 available at <http://transition.fcc.gov/cgb/dro/EAAC/EAAC-REPORT.pdf> (last visited Aug. 12, 2011) (EAAC Report).



The CVAA directed that the EAAC be established for the purpose of achieving equal access to emergency services by individuals with disabilities as part of the nation's migration to a national Internet protocol-enabled emergency network, also known as the next generation 9-1-1 system (NG9-1-1).

Specifically, the EAAC is charged with determining the most effective and efficient technologies and methods by which to enable access to NG9-1-1 emergency services by individuals with disabilities. In order to fulfill this mission, the CVAA directed that within one year after the EAAC's members were appointed, the Committee was to conduct a national survey of individuals with disabilities and senior citizens to obtain feedback on the means by which individuals with disabilities access 9-1-1 services, as well as the emergency access preferences of such individuals in an NG9-1-1 environment.

The EAAC conducted its national survey, made available in English, American Sign Language, Spanish, and "easy-to-read" versions, in March and April 2011. Of 12,766 persons who accessed the survey on line, 3,149 respondents completed all questions. The EAAC Report contains an in-depth review and analysis of the survey, which covered the full spectrum of equipment and services used for reaching 9-1-1 emergency assistance, as well as the full range of disability populations covered by the new law.

In accordance with the CVAA, the EAAC used the results of the survey to develop and submit to the Commission recommendations to ensure equal access to the technologies used to access NG9-1-1 services.

## **2.3 *Summary/Overview of Other Related Efforts on Emergency Communications***

### **2.3.1 NENA i3**

NENA released a document, *Detailed Functional and Interface Standards for the NENA i3 Solution*, which is known by its technical name NENA Technical Standard Document 08-003 on June 14, 2011, which is available at [www.nena.org/?page=Standards](http://www.nena.org/?page=Standards). The i3 standard describes only the network, components, and interfaces required to establish Next Generation 9-1-1 service. This document describes an end-state NG9-1-1 architecture, a migration from legacy TDM circuit-switched telephony and the legacy E9-1-1 system built to support it, to an all IP-based NG9-1-1 emergency service system with a corresponding IP-based Emergency Services IP network. It describes a long term design, as well as the interim transitional network steps to maintain support for legacy interfaces from originating service providers such as wireline, VoIP and cellular telephone carriers, and to accommodate legacy PSAP equipment.

The i3 solution supports end-to-end IP connectivity; gateways are used to accommodate legacy wireline and wireless origination networks that are non-IP, through a transition from existing legacy originating network and 9-1-1 PSAP interconnections to next generation interconnections. New GIS location-based routing and routing control mechanisms are defined, as well as 9-1-1 call related data processes, including additional data access to support

telecommunicator and responder decisions and actions. In addition to technical and operational standards, a detailed transition and policy framework must be created to enable and support the migration to NG9-1-1.

The i3 architecture has been designed to support some of the known characteristics of the IP Multimedia Subsystem (IMS), but could not cover all aspects. ATIS is developing a standard that supplements the NENA i3 specification to more fully address the IMS/ESInet interface.

### **2.3.2 DOT NG9-1-1 Project**

The Next Generation 9-1-1 Initiative (NG9-1-1) is a U.S. Department of Transportation (USDOT) research and development project to help define the system architecture and develop a transition plan that considers responsibilities, costs, schedule, and benefits for deploying Internet Protocol (IP)-based emergency technologies within the 9-1-1 network across the Nation.<sup>25</sup> As detailed in the USDOT NG9-1-1 System Initiative: Concept of Operations (CONOPS), USDOT understands that access to 9-1-1 emergency services provided by PSAPs in today's world of evolving technology will ultimately occur within a broader array of interconnected networks comprehensively supporting 9-1-1 emergency services—creating a seamless communications network from public access to those services, to the facilitation of those services, to the delivery of the emergency information to dispatchers and first responders.<sup>26</sup> The USDOT's NG9-1-1 Initiative has two main areas of focus: Technical/Engineering and Institutional/ Transitional. The technical aspect of the NG9-1-1 Initiative mainly centers on documenting NG9-1-1 system requirements, developing system architecture, and demonstrating a proof-of-concept system. The institutional aspect primarily focuses on developing an assessment of cost, value, and risk of the NG9-1-1 system and developing a transition plan to evaluate all non-technical factors (e.g., cost, stakeholders, impacts, benefits) that will affect the successful transition to NG9-1-1.

### **2.3.3 ATIS INES Incubator**

The industry formed the ATIS Incubator for Interim Non-voice Emergency Services (INES) when it became apparent that the long term Multi-Media Emergency Services (MMES) would take years to fully deploy and individuals with disabilities had not embraced mobile TTY as the primary means to communicate to public safety. The INES incubator explored the technical feasibility of existing technologies to find an interim solution that could be deployed nationally by June of 2012. The INES comprised of representatives from the telecommunications industry, public safety, and manufacturers created a list of mandatory requirements needed for an interim solution. The INES periodically reviewed and sought input from the representatives of individuals with disabilities.

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<sup>25</sup> It is assumed that NG9-1-1 emergency service networks will be IP-based and shared with other emergency and government services. NG9-1-1 service must be a priority service on the shared IP networks. NG911 Transition Plan, note 5.

<sup>26</sup> USDOT ITS JPO, Next Generation 9-1-1 (NG9-1-1) System Initiative: Concept of Operations, April 2007, available at: [http://www.its.dot.gov/ng911/pdf/NG911ConOps\\_April07.pdf](http://www.its.dot.gov/ng911/pdf/NG911ConOps_April07.pdf) (last accessed August 25, 2011).

### **2.3.4 REACH112**

A project called REACH112 is partly funded by the European Commission in the Policy Support Program, PSP, and performed in Europe 2009-2012. The REACH112 project has goals that are closely related to the tasks of the EAAC. The goals are to deploy improved user-to-user communication as well as 112 emergency service access by means of the Total Conversation and Real-Time Text services, and to show the sustainability of these services and their usability for emergency service access for individuals with disabilities.

The Total Conversation service provides communication with video, real-time text and audio, is valuable for all, but especially for individuals with disabilities who require media communication other than voice, whether it be for example in sign language, text, voice or any combination of these communication modalities.

The project has 19 partners, and runs five pilot implementations with systems from different partners in five countries. The project implements the same call control and media protocols as are specified in the media chapters of IETF and NENA i3 standards on IP-based emergency services. The standards are IETF RFC 3261 SIP for call control, ITU-T H.263 and H.264 for video, and ITU-T T.140/RFC 4103 for real-time text. Also the standards for location provision in the SIP environment are used, so that for the few terminals that support SIP-based location provision, this information can be displayed by an emergency center.

The intention is to provide interoperable services between different Total Conversation operators, so that the service can be called “equivalent” to what voice phone users are provided. Relay services are also invoked in calls when needed.

The REACH112 project benefits a lot from the smartphone revolution. Implementations of Total Conversation support in smartphones have been introduced in the project and are gaining a lot of popularity because it provides good mobility and good sign language quality as well as real-time text in the same calls in convenient smartphone shape.

The five various national pilots in REACH112 have different approaches to how emergency service PSAPs are included in the services. One method is a three party call with all media between the user, the 112 center and an interpreter. Another validated method is to staff the emergency service with sign language competent personnel. Yet others provide only real-time text support directly to 112. This variation enriches the experience collected by the project.

Even if REACH112 is a project, it handles real emergency calls.

More information about REACH112 can be found at <http://www.reach112.eu>.

### **2.3.5 CSRIC 4B Working Group**

The Communications Security, Reliability and Interoperability Council's (CSRIC) is a Federal Advisory Committee to the FCC.<sup>27</sup> The CSRIC mission is to provide recommendations to the FCC to ensure, among other things, optimal security and reliability of communications systems,

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<sup>27</sup> See <http://transition.fcc.gov/pshs/advisory/csric/> (visited November 1, 2011).

including telecommunications, media, and public safety. Working Group 4B of the Commission's CSRIC addressed the issue area of the transition to Next Generation 9-1-1 (NG9-1-1) – a topic of considerable breadth and depth.<sup>28</sup> The CSRIC 4B working group report summarized, “The use of an IP technology base for NG9-1-1 systems allows transformation of E9-1-1 to a structure of software and database components that equal and exceed current 9-1-1 system features. This enables more complete support for current and future telecommunications services used to access 9-1-1 systems and 9-1-1 PSAPs, and other entities that process emergency calls.”

CSRIC 4B identified that “critical to the transformation of the nation's 9-1-1 systems and PSAPs is adoption and adherence to a common set of standards (e.g., product, interface, data, performance and operational standards).” CSRIC 4B concluded “Although technology-related work has been underway in the 9-1-1 community for some time, there is much work that still must be completed to support the technical needs of a transition to NG9-1-1. Both NENA and APCO, along with a host of standards development organizations have been working to establish the technical requirements, system design, network and database needs for the overall NG9-1-1 system. This work must continue and be supported by 9-1-1 stakeholders and additional participation in the technical working groups, committees and standards development should be encouraged.”

The specific recommendations from CSRIC 4B include:

- **Accelerate research and development into emerging technologies for individuals with disabilities to access 9-1-1.** This may include in the near term, technologies such as handset/device-based TTY emulation. In the longer term, evaluation, research and development of real-time text standards and emerging technologies should be intensified while the next generation systems are being designed.
- **Additional coordination between the various standards development organizations is needed.** In order to maintain interoperability across NG9-1-1 systems and networks, well understood areas of focus and responsibility, and non-overlapping standards efforts will help ensure the compatibility needed to realize the full potential of NG9-1-1.
- 9-1-1 authorities and PSAPs should inventory and evaluate the IP networks that they are already using because it is likely that multiple, limited-purpose networks will already exist. **Consolidation of legacy networks into single (or as few as possible) networks should be strongly urged, rather than multiple, limited-purpose networks.**
- **The design and engineering of NG9-1-1 systems must take into account the impact on 9-1-1 systems and PSAPs as standardized security practices are implemented where they have not been in place before.** Identifying the technical expertise required to design, implement and administer security in a complex network architecture for mission-critical systems will be a priority.

CSRIC 4B concluded critical to the transformation of the nation's 9-1-1 systems and PSAPs is adoption and adherence to a common set of standards. Many necessary standards already exist and still more are being actively developed. Those of most interest and applicability to NG9-1-1 can be grouped into the following six categories:

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<sup>28</sup> See Final Report, CSRIC Working Group 4B *Transition to Next Generation 9-1-1* (March 2011).

- Product Standard—Describes the expectations and minimum requirements for a particular product or functional entity, typically in the context of a specific use.
- Interface Standard—Describes the requirements for connecting two or more functional entities to one another. For example, a user interface standard would describe the interaction between a human and a machine.
- Data Standard—Describes the definition, format, layout, and other characteristics of data shared across systems. Data standards help to ensure the seamless exchange of data between disparate systems and permit a common understanding to interpret and use data consistently.
- Test Methodologies Standard—Describes the test methodologies, processes, and other requirements associated with determining the performance of a particular product.
- Performance Standard—Describes how a product or service should function, often in terms of quality, functionality, timeliness, etc.
- Operational Standard—Describes how a function or business process should occur, setting minimum requirements for performance or delivery. Operational standards could include standard operating procedures (SOP), training guidelines, and policies.

### **2.3.6 EENA**

EENA, the European Emergency Number Association, is a Brussels-based NGO set up in 1999 dedicated to promoting high-quality emergency services reached by the number 112 throughout the EU. EENA serves as a discussion platform for emergency services, public authorities, decision makers, associations and solution providers in view of improving emergency response in accordance with citizens' requirements. EENA is also promoting the establishment of an efficient system for alerting citizens about imminent or developing emergencies. The EENA memberships include 570 emergency services representatives from 42 European countries, 25 solution providers, 9 international associations/organizations as well as 26 Members of the European Parliament. EENA is active in establishing an accessible 112 for persons with disabilities in many ways. EENA is actively promoting specification of NG112, including its accessibility aspects. EENA participates in the REACH112 project. EENA took the initiative to standardization of Total Conversation access to Emergency Services in ETSI EMTEL.

### **2.3.7 3GPP**

The 3rd Generation Partnership Project (3GPP) is a collaboration of international telecommunications associations representing North America, Europe, Korea, China, and Japan. 3GPP has developed standards for the 2nd generation, 3rd generation, and 4th generation wireless networks and standards for the access independent IP Multimedia Subsystem (IMS). IMS standards provide the framework for the convergence and interconnection of wireless, fixed line, and broadband access networks. 3GPP has completed the standardization of IMS-based Voice over IP emergency services including the support of Global Text Telephony. 3GPP is currently developing standards for Multimedia Emergency Services (MMES) based upon requirements and use cases provided by NENA and other international organizations. MMES will support emergency services based upon media types such as voice, text, and video.



## 3 About Individuals With Disabilities

### 3.1 *Prevalence of Disabilities in America*

More than 54 million Americans have disabilities; 35 million of them have severe disabilities.<sup>29</sup> Among Americans aged 65 and above, more than half have a disability, and nearly 37 percent have a severe disability.<sup>30</sup> About 15 percent of the population, or 34.5 million people, have hearing trouble, and 11 percent, or 25.2 million experience vision trouble.<sup>31</sup> The incidence of hearing trouble increases significantly with age, occurring in up to 27.8 percent of Americans ages 65 to 74, and 42.7 percent of those over 75.<sup>32</sup> Similarly, 14.3 percent of those between 65 and 74 have vision disabilities, as do 21.1 percent of individuals over 75.<sup>33</sup>

### 3.2 *Disability References*

In the EAAC Survey,<sup>34</sup> Question #2 asked respondents to select a description that best fits them and listed several categories of disabilities. Responders checked one or more of 12 options.<sup>35</sup>

Of the 3,149 survey takers, 3,090 or 98% identified themselves as having disabilities. They are as follows:

- 331 or 10.7% cognitive (e.g., autism, dementia, Down Syndrome, dyslexia, learning);

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<sup>29</sup> Matthew W. Breault, *Americans with Disabilities: 2005 3* (U.S. Dep't of Commerce, U.S. Census Bureau) (2008) (AmericanswithDisabilities), available at <http://www.census.gov/prod/2008pubs/p70-117.pdf>. “Individuals with disabilities” is an umbrella term to include people who are blind or have low vision, people who are deaf, hard of hearing or have speech disabilities, those with physical or cognitive disabilities, and persons with multiple disabilities.

<sup>30</sup> *Americans with Disabilities at 4*. Census data from 2005 indicates that the chances of having a disability increase significantly with age. By 2030, 20 percent of the population will be over 65 years old. Frank B. Hobbs, *The Elderly Population*, U.S. Census Bureau, <http://www.census.gov/population/www/pop-profile/elderpop.html> (noting “[a]bout 1 in 8 Americans were elderly in 1994, but about 1 in 5 would be elderly by the year 2030.”)

<sup>31</sup> Centers for Disease Control and Prevention, *Disability and Functioning (Adults)*, <http://www.cdc.gov/nchs/fastats/disable.htm> (last visited Feb. 4, 2011) (citing U.S. Dep't of Health and Human Services Centers for Disease Control and Prevention & National Center, *Health Statistics Summary Health Statistics for U.S. Adults: National Health Interview Survey*, Vital Health Statistics Series 10, No. 242 (2008) (Health Statistics for U.S. Adults 2008), at 36 (Table 11) and 38 (Table 12), available at [http://www.cdc.gov/nchs/data/series/sr\\_10/sr10\\_242.pdf](http://www.cdc.gov/nchs/data/series/sr_10/sr10_242.pdf)); *See also* *Americans with Disabilities 2008* at 5–7.

<sup>32</sup> *See Health Statistics for U.S. Adults 2008* at 124 (Table IX).

<sup>33</sup> *See Health Statistics for U.S. Adults 2008* at 124 (Table IX).

<sup>34</sup> EAAC, *Report on Emergency Calling for Persons with Disabilities Survey Review and Analysis 2011*, at 3, July 21, 2011, at 3 available at <http://transition.fcc.gov/cgb/dro/EAAC/EAAC-REPORT.pdf> (last visited Aug. 12, 2011) (EAAC Report).

<sup>35</sup> The reader should note that this survey was not carried out in a manner that would result in proportional representation across disabilities and therefore the relative number of individuals with different disabilities in this “Report On Emergency Calling For Persons With Disabilities” is not consistent with current United States Census Bureau statistics. *See* 2009 American Community Survey 1-Year Estimates, S1810. Disability Characteristics, U.S. Census Bureau, available at [http://factfinder.census.gov/servlet/STTable?\\_bm=y&-qr\\_name=ACS\\_2009\\_1YR\\_G00\\_S1810&-geo\\_id=01000US&-ds\\_name=ACS\\_2009\\_1YR\\_G00\\_-lang=en&-format=&-CONTEXT=st](http://factfinder.census.gov/servlet/STTable?_bm=y&-qr_name=ACS_2009_1YR_G00_S1810&-geo_id=01000US&-ds_name=ACS_2009_1YR_G00_-lang=en&-format=&-CONTEXT=st) The descriptive numbers here should not be taken to represent the size of different disability populations in the United States – but rather just the size of the different disability groups that took this survey.

- 1,210 or 39.2% deaf;
- 649 or 21% hard of hearing and 158 or 5.1% late-deafened;
- 170 or 5.5% mobility disability that affects my ability to use communication devices;
- 455 or 14.7% mobility disability that does not affect my ability to use communication devices;
- 134 or 4.3% speech disability;
- 168 or 5.4% blind and 140 or 4.5 legally blind;
- 170 or 5.5% low vision or partially sighted;
- 42 or 1.4% color blind; and,
- 344 or 11.1% checked “other,” and were provided an opportunity to elaborate. Responses to "Other" for question #2, “What describes (fits) you best?” 364 people or 11.1% checked “Other” for this question. Most of the responses listed other disabilities, including, but not limited to, ADHD, aphasia, Asperger’s Syndrome, autism, bipolar, brain injury, cerebral palsy, cochlear implant, deaf-blind, dyslexia, diabetes, epilepsy, fibromyalgia, glaucoma, learning disability, mental health, paralysis, Parkinson’s Disease, and spina bifida. 18 listed themselves as parents. 10 listed no disability or none.<sup>36</sup> A complete listing of “Other” responses can be found at: [http://transition.fcc.gov/cgb/dro/EAAC/EAAC\\_SURVEY/List-of-Other-Responses.htm/#Q02](http://transition.fcc.gov/cgb/dro/EAAC/EAAC_SURVEY/List-of-Other-Responses.htm/#Q02).

Personas: See <http://www.aegis-project.eu/images/docs/Personas/NiteshHQacc.pdf>.

## 4 Jurisdiction, Authority, and Regulatory Roles

### 4.1 Legal and Regulatory Framework

State, tribal, territorial, and local governments are the primary administrators of the legacy 9-1-1 system and are responsible for establishing and designating PSAPs or appropriate default answering points, purchasing customer premises equipment, retaining and training PSAP personnel, and purchasing 9-1-1 network services.<sup>37</sup> Certain communications technologies, however, necessitated the adoption of a uniform national approach. For example, following the introduction of paging and cellular telephone systems in the United States, the Commission established rules requiring paging and cellular telephone carriers to implement basic 9-1-1 and E9-1-1 services.<sup>38</sup> In addition, Congress adopted the 911 Act to promote and enhance public safety through the use of wireless communications services.<sup>39</sup> The 911 Act directed the Commission to designate 911 as the universal emergency assistance number for wireless and

<sup>36</sup> A complete listing can be found at: [http://transition.fcc.gov/cgb/dro/EAAC/EAAC\\_SURVEY/List-of-Other-Responses.htm/#Q02](http://transition.fcc.gov/cgb/dro/EAAC/EAAC_SURVEY/List-of-Other-Responses.htm/#Q02).

<sup>37</sup> Framework for Next Generation 911 Deployment, PS Docket No. 10-255, *Notice of Inquiry*, 25 FCC Rcd 17869 (2010) (*NG911 NOI*).

<sup>38</sup> See *E911 First Report and Order*, 11 FCC Rcd at 18689-722 ¶¶ 54-91.

<sup>39</sup> See H.R. Rep. No. 106-25 at 1.



wireline calls,<sup>40</sup> which the Commission accomplished in 1999.<sup>41</sup> The 911 Act also required the Commission to consult and cooperate with state and local officials in its role of encouraging and supporting the deployment of “comprehensive end-to-end emergency communications infrastructure and programs.”<sup>42</sup> Similarly, in applying E9-1-1 rules to interconnected VoIP in 2005, the Commission noted that a uniform national approach was necessary to ensure that the quality and reliability of 9-1-1 service would not be damaged by the introduction of new communications technologies that posed technical and operational challenges to the 9-1-1 system.<sup>43</sup> In 2008, Congress codified these rules in the NET 911 Act.<sup>44</sup>

The level and manner of state-level coordination of 9-1-1 services varies widely.<sup>45</sup> In some states, 9-1-1 service is strictly a local matter, yet other states have centralized the 9-1-1 program function or have otherwise established a statewide coordination mechanism, although their circumstances and authority vary widely. Although the staffing of PSAPs and handling of 9-1-1 calls will generally remain a local function, certain aspects of transitioning to NG9-1-1 will require state-level planning and implementation coordination. For example, according to NENA, “ESInets will be developed and managed locally or regionally, but will need strong state-level leadership and coordination to ensure both operability and interoperability of state, local, and regional ESInets.”<sup>46</sup>

## ***4.2 Department of Justice’s Authority to Ensure Access for Individuals with Disabilities to 9-1-1 Services***

### **4.2.1 Legal Authority**

The Department of Justice (DOJ) is responsible for implementing and enforcing the nondiscrimination requirements of title II of the Americans with Disabilities Act (ADA) in the

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<sup>40</sup> See Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, 113 Stat. 1286, § 2(b) (1999) (*911 Act*), § 3(a) (codified at 47 U.S.C. § 251(e)(3)).

<sup>41</sup> See *N11 Codes Fourth Report and Order*, 15 FCC Rcd at 17083-85 ¶¶ 8-14.

<sup>42</sup> *911 Act* § 3(b).

<sup>43</sup> *IP-Enabled Services, E911 Requirements for IP-Enabled Service Providers*, WC Docket Nos. 04-36, 05-196, First Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 10245, 10249-50 ¶¶ 8, 10, 10259-60, ¶ 25 (2005), *aff’d sub nom. Nuvio Corp. v. FCC*, 473 F.3d 302 (D.C. Cir. 2006).

<sup>44</sup> *Interconnected VoIP services (1) enable real-time, two-way voice communications; (2) require a broadband connection from the user’s location; (3) require Internet protocol-compatible customer premises equipment (CPE); and (4) permit users generally to receive calls that originate on the Public Switched Telephone Network (PSTN) and to terminate calls to the PSTN. See 47 C.F.R. § 9.5; IP-Enabled Services; E911 Requirements for IP-Enabled Service Providers, WC Docket Nos. 04-36, 05-196, First Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 10245 (2005)(VoIP 911 Order and VoIP 911 NPRM), aff’d sub nom. Nuvio Corp. v. FCC, 473 F.3d 302 (D.C. Cir. 2006). In 2008, Congress enacted the New and Emerging Technologies 911 Improvement Act of 2008 that, among other things, amended the 911 Act to codify the Commission’s E911 rules for interconnected VoIP providers. New and Emerging Technologies 911 Improvement Act of 2008, Pub. L. No. 110-283, 122 Stat. 2620 (2008) (*NET 911 Act*).*

<sup>45</sup> See National Emergency Number Association, Next Generation 9-1-1 Transition Policy Implementation Handbook, A Guide for Identifying and Implementing Policies to Enable NG9-1-1, at 1 ¶ 2 (Mar. 2010) <[http://www.nena.org/sites/default/files/NG911%20Transition%20Policy%20Implementation%20Handbook\\_FINALE.pdf](http://www.nena.org/sites/default/files/NG911%20Transition%20Policy%20Implementation%20Handbook_FINALE.pdf)> (NENA NG9-1-1 Transition Handbook) at 6.

<sup>46</sup> *Id.* at 7.

programs, services and activities of State and local governments.<sup>47</sup> In enacting the ADA, Congress sought to “provide a clear and comprehensive national mandate for the elimination of discrimination against individuals with disabilities.”<sup>48</sup> Title II extends the prohibition on discrimination established by section 504 of the Rehabilitation Act of 1973, as amended, (section 504),<sup>49</sup> to all activities of State and local governments regardless of whether these entities receive Federal financial assistance.<sup>50</sup> A “public entity” is defined in the statute as “any State or local government” or “any department, agency, or other instrumentality of a State . . . or local government.”<sup>51</sup> Therefore, State and local governments that operate 9-1-1 call-taking centers, also known as Public Safety Answering Points (PSAPs), are subject to the requirements of title II of the ADA.

#### 4.2.2 ADA Title II Regulation

Title II of the ADA directs the Attorney General to promulgate regulations to carry out the provisions of title II, except for certain provisions dealing specifically with transportation.<sup>52</sup> DOJ first issued rules implementing title II of the ADA on July 26, 1991, which are codified at 28 CFR part 35. The title II regulation incorporates the ADA’s general non-discrimination obligation by requiring that the services provided by public entities to individuals with disabilities be as “effective” as services provided to others, in affording an equal opportunity to obtain the same result, to gain the same benefit, or to reach the same level of achievement.<sup>53</sup> DOJ has interpreted this nondiscrimination obligation to require that PSAPs provide individuals with disabilities who use text telephones (TTYs) with services that are as effective as those provided to those without disabilities. The application of this requirement to 9-1-1 services means that the services provided for TTY users be as effective as those provided for voice telephone users, in terms of response time, response quality, hours of operation, and all other features offered by PSAPs (e.g., callbacks).<sup>54</sup>

In addition, the title II rule explicitly requires that PSAPs offering “[t]elephone emergency services, including 9-1-1 services,” provide “direct access” to individuals who use TTYs and computer modems.<sup>55</sup> DOJ’s analysis of this section in 1991 regarding direct access to 9-1-1 services explains that this requirement does not establish any minimum standards of service (e.g., the quantity and location of TTYs and computer modems needed in a given PSAP), but

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<sup>47</sup> Title II of the ADA prohibits discrimination against qualified individuals with disabilities by State and local governments and provides that:

[N]o qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of a public entity, or be subject to discrimination by any such entity. *See* 42 U.S.C. 12132.

<sup>48</sup> 42 U.S.C. 12101(b)(1).

<sup>49</sup> 29 U.S.C. 794

<sup>50</sup> 42 U.S.C. 12131-65.

<sup>51</sup> 42 U.S.C. 12131(1)(B).

<sup>52</sup> 42 U.S.C. 12134(a). The Department of Transportation was assigned responsibility for promulgating regulations to implement the public transportation provisions of the ADA.

<sup>53</sup> 28 CFR 35.130(b)(1)(iii).

<sup>54</sup> The Department of Justice’s ADA Technical Assistance Publication, Access for 9-1-1 and Telephone Emergency Services <http://www.usdoj.gov/crt/ada/911ta.pdf> (last visited April 5, 2011).

<sup>55</sup> 28 CFR 35.162. In addition, in 2010 DOJ issued updates and revisions to its title II ADA regulation, but no changes were made to the provision at 28 CFR 35.162 addressing the obligations of public entities that operate 9-1-1 call-taking services. 75 FR 56164 (September 15, 2011).

instead establishes a performance standard through the mandate for direct access. PSAPs must “take appropriate steps, including equipping their emergency systems with modern technology, as may be necessary to promptly receive and respond to a [TTY] call”; PSAPs are given “the flexibility to determine what is the appropriate technology for their particular needs.”<sup>56</sup>

Pursuant to statutory mandate,<sup>57</sup> DOJ, after issuing the 1991 regulation, published its Title II Technical Assistance Manual (1993 & Supp. 1994) (Title II TA Manual)<sup>58</sup> to provide guidance for the public in understanding and complying with the statute and the regulation. The Title II TA Manual explains the title II requirements for direct access to 9-1-1 emergency services and states that access through a third party or through a relay service does not satisfy the requirement for direct access, although calls received through a relay service should be accepted. In addition, the Manual states that PSAPs are prohibited from imposing any additional requirements upon a TTY caller to announce that the call is being made on a TTY, but that the caller may choose to do so. Furthermore, the Manual states that telecommunicators within the PSAPs must be trained to recognize incoming TTY signals and respond appropriately, and that PSAPs must recognize “silent calls” as potential TTY calls and respond appropriately.<sup>59</sup> In cases where 9-1-1 is available to the public, PSAPs are prohibited from requiring a separate ten-digit number for use by non-voice callers.<sup>60</sup>

#### 4.2.3 2010 Advance Notice of Proposed Rulemaking

When DOJ issued its June 17, 2008, Notice of Proposed Rulemaking (NPRM) to adopt the revised ADA Standards and propose revisions to the title II and title III ADA regulations, it did not propose any specific regulatory language with regard to the accessibility of 9-1-1 services.<sup>61</sup> DOJ, however, received comments urging it to amend the title II rule to mandate that, as PSAPs implement Internet-Protocol enabled Next Generation 9-1-1 (NG9-1-1) systems, they provide voice and data (such as text, images, and video) capabilities so that they will be able to directly receive various kinds of text- and video-based calls. Based on these comments, DOJ published an Advance Notice of Proposed Rulemaking (ANPRM) in July 2010 for the accessibility of NG9-1-1 services<sup>62</sup> and in this ANPRM, DOJ announced it was considering revising the title II rule to reflect two major migrations in advanced personal communications devices and 9-1-1 services that have occurred since the publication of the original (1991) title II rule. DOJ did not propose any regulatory language in the ANPRM. Instead, DOJ presented a broad range of issues concerning access to current 9-1-1 services for individuals with disabilities who make text calls using mobile devices; access to NG9-1-1 services for individuals with disabilities who make different types of media calls; legacy TTYs; performance standards; emergency alerts; compliance dates; and cost-benefit analysis. The comment period on the ANPRM closed on January 24, 2011, and it is anticipated that DOJ will proceed with its rulemaking in this area, which would include issuance of an NPRM.

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<sup>56</sup> 28 CFR 35.162, app. B (2011).

<sup>57</sup> 42 U.S.C. 12206(c)(3) & (d).

<sup>58</sup> Title II TA Manual at II-7.3000 (Emergency telephone services) available at <http://www.ada.gov/taman2.html> (last visited March 18, 2011).

<sup>59</sup> Title II TA Manual at II-7.3100, General, pp. 41-42.

<sup>60</sup> *Id.* at II-7.3200 911 lines, p. 42.

<sup>61</sup> 73 FR 34466.

<sup>62</sup> 75 FR 43446 (July 26, 2010). The July 26, 2010, ANPRM is accessible through the Federal eRulemaking Portal (<http://www.regulations.gov>), at docket number DOJ-CRT 0111.

## 5 Recommendations

- *Scope of Recommendations:* The EAAC emphasizes that any of the EAAC recommendations that are actionable by the FCC should be interpreted within and consistent with the Commission's jurisdiction under the Communications Act of 1934, as amended from time-to-time. It is the intent of the EAAC that all of the recommendations made in this report were made with the understanding that they are subject to the related laws and the rulings of the FCC. For example, everything covered by the CVAA would have to be (1) "achievable" and (2) "technically and economically feasible," as those terms are defined by the Commission. Any legal issue arising out of them will be addressed and resolved by the Commission.
- *Prospective Application:* The EAAC recommends that any action taken by the FCC on these recommendations should apply prospectively to new equipment and services. The EAAC intends that these recommendations ensure access to emergency communications services for individuals with disabilities consistent with access to such services for all citizens. Since the NG9-1-1 regulatory and operational framework continues to develop, these recommendations are intended to apply prospectively to equipment or services consistent with future NG9-1-1 obligations, subject to the FCC's notice and comment rulemaking procedures. With respect to recommendations regarding any "interim solution(s)," the application of such recommendations to existing equipment and services the EAAC expects these to be determined through the FCC's rulemaking process as well.
- *Ongoing Proceedings:* Nothing in the Report should prejudice the outcome of ongoing proceedings. For example, recommendations within this report may assume that services currently classified as "non-interconnected VoIP" will be subject to 9-1-1 obligations even though this question was raised within the FCC's NG9-1-1 and Location Accuracy proceedings, which have not yet concluded.
- *Further Research:* The EAAC notes that this Report contains some issues that have been identified as needing further research and development. The EAAC recommends that the FCC work with industry, academia, consumers, and public safety on further research or development prior to taking action on these areas. Specific areas identified for further research or development include, but may not be limited to, network congestion and quality of service; networks not impair or impede; non-service initialized multimedia calls; TTY migration; interoperability testing; test calls for individuals with disabilities; and relay service standards.
- *Technical Standards:* In implementing the EAAC recommendations, the EAAC recommends that the FCC use technical standards and operational procedures developed or adopted by voluntary consensus standards bodies whenever possible. The EAAC recommends that the FCC and other agencies consider participation in the standards activities of voluntary standards bodies and standards-developing groups in response to the EAAC recommendations.

## **5.1 Policy Recommendations**

For these recommendations, IP enabled emergency services is referred to as Next Generation 9-1-1 (NG9-1-1). An NG9-1-1 network provides end-to-end emergency services and includes consumer devices, originating networks, advanced communications service provider networks, third party emergency services providers, emergency services networks, and Public Safety Answering Points (PSAPs). The EAAC also notes that increasingly affordable broadband services and broadband-equipped devices will enhance the ways for Individuals with Disabilities to access NG9-1-1 services consistent with Congress's CVAA objectives.

### ***I. Individuals with Disabilities Migration toward NG9-1-1***

**Recommendation P1.1: Accessible NG9-1-1 Network:** The EAAC recommends that the FCC issue regulations as necessary to require that target entities, in the development and deployment of NG9-1-1 systems, take appropriate steps to support features, functions and capabilities in order to enable individuals with disabilities to make multimedia NG9-1-1 emergency calls.

**Recommendation P1.2: Call from Daily Devices:** The EAAC recommends the FCC promulgate rules that individuals with disabilities be able to contact NG9-1-1 using the same devices that they (individuals with disabilities) use for daily communication. Users need to use familiar technologies and methods, such as text/ audio/ video communication, when calling in an emergency and therefore both want and need to be able to access NG9-1-1 from the same devices they will use every day.

#### **Rationale:**

1. Based on user survey carried out by the EAAC, users overwhelmingly want to be able to call PSAPs using the same technologies they use daily and know how to use reliably (just as all other citizens can).
2. In an emergency, people turn to what is known, and are not in a position (nor do they remember) to use something new.

If not used every day the particular network segments and devices to be used to call PSAPs are not likely to work reliably when the NG9-1-1 call is made. An emergency call should not be the way that problems or lack of interoperability in the network between a particular user or location and the PSAP are identified.

**Recommendation P1.3: NG9-1-1 Rate of Adoption:** NG9-1-1 will be adopted over time with different PSAPs migrating to NG9-1-1 at different times and it will be many years before the last PSAP migrates to NG9-1-1. The EAAC recommends that the FCC requirements for all NG9-1-1 capabilities implemented for individuals without disabilities also be implemented for individuals with disabilities, and that individuals with disabilities should be able to access 9-1-1 emergency services from any point in the United States to obtain accessible, reliable, interoperable emergency services using the same technique/number to call, regardless of whether the local PSAP is NG9-1-1 yet or not.

#### **Notes:**

1. The call may need to be routed to an NG9-1-1 PSAP if local PSAP cannot handle the type of call from that user.



2. All types of calls may not be available in all areas of the country if the networks cannot handle that type of call in that geographic location.

**Rationale:**

Any plan must allow for the fact that some PSAPs will be NG9-1-1 while others are not NG9-1-1 yet the system should still allow users to call 9-1-1 from any point in the United States and get to the same (if possible) PSAP and get the same quality of service as individuals without disabilities. The PSAPs will move to NG9-1-1 over a long period of time yet consumers will have no way to know what types of PSAPs are at any point in the country that they may be traveling through. So the system must **not** require that all PSAPs change at once, and it must **not** require that callers have any idea what type of PSAP they are calling or that is local to them.

**Recommendation P1.4: Interoperability and Standards:** Since NG9-1-1 interoperability cannot occur without end-to-end support (directly or through translation) of common standards, the EAAC recommends that the FCC should work with industry to identify common standards for *voice, video, real-time text, and messaging* that must be supported by all components in each environment (e.g., IMS, public Internet) and that the FCC not specify any standards themselves unless industry does not specify format for these media types for an environment or cannot agree on a format. For proprietary or closed environments with connectivity to public networks, the EAAC recommends the owner of that environment should be allowed to identify the formats for their environment but must convert these formats where their environments interface with other environments in order to support interoperable communications across the environments and with the NG9-1-1 systems. If there is conflict in the industries as to which protocols to choose for the public transport-environments the FCC should call a summit during which a protocol is determined either by the group or in the absence of agreement, by the FCC. (See **Recommendation P3.3: Interoperability Testing.**)

**Note:**

The interoperability of accessibility functions and media, including interoperability with specialized CPE, is only required where there is an expectation that emergency communications will be supported for people without disabilities.

**Rationale:**

Common standards that allow interoperability by different environments are important (these environments should have the freedom to set their standards but these should work with others). In addition interconnectivity is an important part of interoperability. IP communications are undergoing rapid technological change and that any framework for emergency communications needs to be flexible to enable competition and innovation in both the network core and edge devices as long as it preserves interoperability and backward compatibility.

**Recommendation P1.5: NG9-1-1 Migration Dependencies:** The EAAC recommends that the FCC disability access requirements recognize that Consumers/Users access to NG9-1-1 depends not only on the availability of new equipment, equipment upgrades, or updates to originating service provider networks and advanced communications service provider networks, hardware and software capabilities, among other things the deployment of emergency services networks (ESInet) as well as new equipment, equipment upgrades or updates to the PSAPs to support

NG9-1-1 capabilities. These provisions of new equipment, equipment upgrades, or updates will occur in phases, and can and should be outlined to include the need for direct access by individuals with disabilities that parallels access by those without disabilities at every stage and that funding mechanisms to be developed so that this migration can allow this equal and direct access and be more of a reality sooner than later.

**Rationale:**

Any plan must allow for the fact that there will be a rollout period as PSAPs gradually become NG9-1-1 ready. Currently Users have indirect access to 9-1-1 via TRS Relay, and the goal is to see this changed to direct access to NG9-1-1.

**Recommendation P1.6: Liability:** The timely deployment of NG9-1-1 service itself is an essential step toward the availability of accessible emergency communications. To ensure that entities have the regulatory certainty to expeditiously deploy new techniques and technologies, the EAAC recommends that the FCC conduct a comprehensive review of federal and state liability laws and regulations to ensure adequate protections are available for any entity that participates in the NG9-1-1 system, including telecommunications and advanced communications service providers, originating service providers, manufacturers, developers, emergency service network providers, third party service providers (e.g., relay providers), and PSAPs.

**Recommendation P1.7: Funding for 9-1-1 System:** The EAAC supports CSRIC 4B's recommendation that the National 9-1-1 office convene a Blue Ribbon Panel to address 9-1-1 funding issues and make recommendations for funding of an accessible NG9-1-1 system. Any such panel must have as part of its charge, any issues that relate to accessibility (such as funding of relay centers to convert from "relay" to "direct" model and ensuring that PSAPs have sufficient funds to upgrade to accessible NG9-1-1).

**Recommendation P1.8: Open Proceedings:** The EAAC recommends that the FCC incorporate accessibility issues of NG9-1-1 including direct access by individuals with disabilities in its open proceeding on NG9-1-1.

**Recommendation P1.9: Funding in 5 Step Plan:** The EAAC recommends that the FCC keep accessibility funding issues in NG9-1-1 in mind when advancing its "Five-Step Action Plan to Improve the Deployment of NG9-1-1."

**Recommendation P1.10: NG9-1-1 Transition:** The EAAC recommends the FCC consider all accessibility aspects in the transition from legacy 9-1-1 to NG9-1-1.

**Recommendation P1.11: R&D Funding for Direct Access:** The EAAC recommends the FCC explore opportunities to identify funding sources for research and development of mainstream and special devices (hardware and software) that can be used by individuals with disabilities to call NG9-1-1 directly.

***II. Individuals with Disabilities ~ Direct Access to 9-1-1***

**Recommendation P2.1: Minimum Common Standards:** The EAAC recommends that the FCC, in consultation with stakeholders including industry, public safety, consumer groups and the DOJ as required, identify and develop, if necessary, standards to ensure direct, reliable and



interoperable accessible emergency services to NG9-1-1 and take the appropriate steps to promote the adoption of minimum standards.

**Recommendation P2.2: Types of Direct Access:** Based on the results of the survey, Consumers identified the following types of equipment and communication needs for direct access to NG9-1-1. As with all NG9-1-1 communications, this communication needs to be reliable and interoperable. Further, in order for NG9-1-1 and to the extent that the solution is usable without causing confusion during an emergency call and for NG9-1-1 emergency services to be accessible, the EAAC recommends that “standards and functional requirements be adopted that are technically and economically feasible”<sup>63</sup> to achieve the following:

**Consumers can:**

1. Call NG9-1-1 using different forms of data, text, video, voice, and/or captioned telephony individually or any combination thereof.
2. Call using any device currently used, including TTY.
3. When using video, see both the NG9-1-1 dispatcher and the emergency-trained sign language interpreter or video communication assistant (CA) of any type during the call.

**Note:** A concern was raised with regard to whether telecommunicators would want to be seen by 9-1-1 callers due to safety or other issues, as well as the impact not seeing the telecommunicator might have on deaf sign language users calling in. The EAAC committee decided it needed more information on this and will be turning in a report later on this topic.

4. When using video interpreting (including VRS), have the PSAP dispatcher see the caller and the interpreter directly throughout the call both for better communication and so that all communication is recorded.
5. Have direct access to NG9-1-1 using IP-based text communications (including real-time text, IM, and email) and, at least for transitioning to IP-based text communication, SMS.
6. Have direct Access to NG9-1-1 using video–multimedia phone including:
  - Videophone using American Sign Language (bi-directional).
  - Videophone using American Sign Language and/or a communication assistant and see the NG9-1-1 telecommunicator and interpreter at the same time.
  - Videophone with voice capability and captioned telephony.
  - Videophone with speech (bi-directional).
  - Videophone with real-time text and voice (i.e.,- total conversation - ITU-T F.703 and also IMS multimedia telephony 3GPP TS 26.114) using e.g., sign language with occasional text and audio, and being connected directly to see the NG9-1-1 telecommunicator and an assisting interpreter at the same time.

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<sup>63</sup> See CVAA § 106 (c) (8).

7. Have the option to send text to NG9-1-1 but allowing voice-back capability from NG9-1-1 as well as the reverse, where voice is sent to NG9-1-1 but allowing text from NG9-1-1.
8. Have the option to use American Sign Language to communicate directly or interpreted by video interpreter, with NG9-1-1 telecommunicator sending text in return.
  - Of particular benefit for deaf blind callers who sign but use Braille and/or large print to read responses.
9. Have bidirectional video option in a speech-to-speech enabled call where the caller and NG9-1-1 telecommunicator can see each other directly.

**Note:** A concern was raised with regard to whether telecommunicators would want to be seen by 9-1-1 callers due to safety or other issues, as well as the impact not seeing the telecommunicator might have on deaf sign language users calling in. The committee decided it needed more information on this and will be turning in a report later on this topic.

10. Have the option to listen and speak to NG9-1-1 using captioned telephony.
11. Have the option to speak and listen, and receive back real-time text, IM, SMS or email back from NG9-1-1.
12. Have option to listen and speak but receive information back in ASL.
13. Have the option to communicate in real-time text to NG9-1-1 bi-directionally.
14. Have all voice communications be assistive listening compatible.
15. Have the option to have a speech-to-speech interpreter on the line in a manner that allows the 9-1-1 telecommunicator to switch easily back and forth between listening to both people or listening to just one or the other.
  - So the 9-1-1 telecommunicator can either listen carefully to the caller or listen carefully to the interpreter if the caller does not stop talking to allow for interpretation to be interspersed.
16. Have the option to receive, in accessible form, any information provided by NG9-1-1 to callers without disabilities, including any location, images, or other data.
17. Have any equipment or devices that provide telephony functions comply with CVAA or Section 255 requirements as appropriate to enable individuals with disabilities to benefit from NG9-1-1.
18. Have access via emerging technologies using future standard communication technologies as they are introduced.

**Recommendation P2.3: Video Voice and Text Quality:** EAAC recommends that the FCC adopt requirements that ensure that the quality of video, text and voice communications is sufficient to provide usability and accessibility to individuals with disabilities based on industry standards for the environment.

**Recommendation P2.4: User Choice of Media:** EAAC recommends that the FCC require that network providers, manufacturers, and other covered entities including the NG9-1-1 system, provide end-to-end support of voice, real-time text, messaging, and video in a single call so that callers can rely on any combination in parallel in either direction that they need to communicate effectively with NG9-1-1 services, including the ability to have the 9-1-1 telecommunicators see them directly and to interrupt as needed to guide the communications based on industry standards for the IP-based telecommunication or advanced communication service environment. For terminal devices, the requirement for support of the different formats is dependent on hardware support as defined in **Recommendation T4.2: Availability of Calling Terminals**. The EAAC recognizes the potential of other services, such as other data, to aid in handling of an NG9-1-1 emergency call and urges that appropriate safe harbor standards be implemented to support such non-covered services.

**Recommendation P2.5: Availability of Calling Terminal:** The EAAC recommends that the FCC require that all terminals (hardware or software) that can call NG9-1-1 via voice and that already have the hardware (or run on hardware) capable of supporting voice, real-time text, messaging, and/or video for other purposes, include the software needed to allow the use of those capabilities to make voice, real-time text, messaging, image and/or video calls, within the native environment, so that they will be available for calling to NG9-1-1 services, if achievable. The EAAC recognizes the potential of other services, such as images or other data, to aid in handling of an NG9-1-1 emergency call and urges that appropriate safe harbor standards be implemented to support such non-covered services.

**Recommendation P2.6: Cost:** The EAAC recommends that the FCC adopt rules that would ensure that individuals with disabilities have direct access to NG9-1-1 emergency services without incurring any additional fees or cost not paid by the provider's subscribers generally.

**Recommendation P2.7: Telecommunicator Training:** The EAAC recommends that training for PSAP telecommunicators be required on how to assist individuals with disabilities using the various modalities of communication that may be used in calling a PSAP.

**Recommendation P2.8: PSAP Training in User Need Assessment:** The EAAC recommends that DOJ require PSAP personnel be trained in assessing the communication needs of the caller and the telecommunicator. This is necessary if the information for automatic invocation of assistance is unavailable (due to the caller's choosing, or due to the caller using someone else's terminal or service), or if there is a communication breakdown between the caller and the PSAP using the caller's communication preferences.

**Recommendation P2.9: Special Deaf-Blind 9-1-1 Devices:** EAAC recommends the FCC take appropriate steps to ensure distribution of information about special devices that can be used by people who are deaf-blind to call 9-1-1 including people who do and who do not have or use braille devices. This device would call 9-1-1 and relay important information and then provide some type of tactile indication in vibration for example to indicate that the call was successful.

**Recommendation P2.10: Sign Language Assistance:** The EAAC recommends that the FCC and DOJ work together to create policy that PSAPs must employ Sign Language Interpreters or Assistance Services that provide interpreters fully trained in emergency situations, subject to both emergency and interpreter certification standards. In furtherance of this recommendation, the EAAC recommends that the FCC and DOJ develop more information on what interpreter

performance standards should be. Similar requirements also apply to other types of assistance for communicating with individuals with disabilities, including but not limited to speech-to-speech assistance.

**Note:**

There are also concerns that until the NG9-1-1 service is fully deployed (which could be a long time), there will still be people who call through a traditional or IP-based relay service, and run into problems getting connected to 9-1-1 (such as waiting in line for an available communications assistant, delays in getting connected to the appropriate PSAP, and communications assistants not trained for emergency situations). The EAAC is therefore looking at ways to avoid these problems and address the training needs for regular relay communication assistants, and plans to submit a supplemental report on this topic with recommendations in 2012.

***III. Individuals with Disabilities ~ Technical Policy Requirements***

**Recommendation P3.1: Not Impair or Impede:** The EAAC recommends procedures to be developed to ensure that IP-enabled network providers and operators do not install features, functions, or capabilities or setup or configure network equipment in any manner that would conflict with technical standards adopted by the FCC in their requirements in any way that would impair or impede communication with PSAPs by individuals with disabilities.<sup>64</sup> Network providers and operators should not be responsible or liable for third-party applications downloaded by end users that might interfere with 9-1-1 calling capabilities.

**Recommendation P3.2: Industry and Public Safety Standards:** The EAAC recommends that the FCC adopt an approach that sets priorities and policy and that relies on industry and public safety developed standards wherever they meet the accessibility goals outlined herein.

**Rationale:**

Many industry and public safety technical and operational standards must be developed in order to accomplish an effective NG9-1-1 communication. As the FCC's CSRIC Working Group 4B concluded, the EAAC also notes that "Industry associations and other standards organizations need to provide harmonized NG9-1-1 standards that foster the development and transition to NG9-1-1, including non-voice accessibility. The FCC may have to either assist or set policy when industry conflict is not resolved by the parties."

**Recommendation P3.3: Interoperability Testing:** The EAAC recommends that the FCC define policies and regulations which require originating and other service providers, emergency service network providers, vendors, developers and manufacturers of systems to perform regular testing necessary to verify interoperability of accessibility related communication formats.

**Note:**

Although end-to-end interoperability is required for the calls to go through, exhaustive end-to-end testing of all components is not possible. There are issues that must be addressed carefully. Yet simple interoperability testing of segments will not work either.

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<sup>64</sup> See 47 U.S.C. § 617 (e)(1)(B) (covered entities have a duty not to impair or impede the accessibility features of advanced communications services).

The EAAC will therefore be doing further study of this and will be submitting a supplemental report that can provide further guidance on how to achieve end-to-end interoperability in a practical and effective manner.

**Recommendation P3.4: Modification and Upgrades:** The EAAC recommends that any modification, upgrade or revision to the target consumer equipment, services available to consumers, and those network entities which are accessed by consumers or support consumer services must be made so as to ensure that, to the maximum extent feasible, the modified portions of the system are readily accessible to and usable by individuals with disabilities. For the purposes of this paragraph, a modification is a change to the network that affects or could affect the accessibility or usability of the system or any part thereof. The phrase, to the maximum extent feasible, applies to the occasional case where the nature of a system, equipment or service makes it virtually impossible to comply fully with applicable accessibility standards through a planned alteration or addition.

**Recommendation P3.5: Multiparty Video Calls:** The EAAC recommends that video conferencing between a caller and the PSAP may need to include more than just three locations on a conference call and should be able to handle this with ability to support sign language or lip reading to assist understanding of speech.

#### *IV. Individuals with Disabilities ~ Interim Requirements for Access*

**Recommendation P4.1: Interim Text Access:** The EAAC recommends that until aforementioned future consumer requirements can be implemented, and fully deployed as part of NG9-1-1's transition completion, PSAP's, mobile device manufacturers, carriers and networks should implement an achievable interim method for text-based messaging to 9-1-1. Support of this functionality must take into account the capabilities and limitations of second, third, and fourth generation wireless networks and the fact that it must work on all of them. Such capability may depend on updates to PSAP networks and potentially also to originating service provider networks depending on the approach chosen.

#### *V. Individuals with Disabilities ~ FCC Collaboration and Coordination in sync with the Department of Justice to Avoid Improper Overlap in Regulatory Authority under the CVAA and the ADA*

**Recommendation P5.1: FCC and DOJ Coordination:** The EAAC recommends that the FCC and the DOJ coordinate their respective activities pursuant to the CVAA and the ADA regarding the requirements for access to individuals with disabilities to 9-1-1 emergency services so as to avoid confusion for stakeholders and improper or conflicting overlap in regulatory authority. The EAAC also recommends that the FCC coordinate with DOJ in the development of any regulations pursuant to Sections 106(c) (3) or (4) that pertain to enabling access to 9-1-1 emergency services to individuals with disabilities.

**Recommendation P5.2: Equal Protection:** The EAAC recommends that the FCC, working with the DOJ as appropriate, adopt rules that would ensure that individuals with disabilities calling NG9-1-1 have the same privacy, security, and monitoring safeguards as well as evidentiary records as individuals without disabilities who call NG9-1-1.

**Note:**

It is understood that these same levels may not be possible with interim text solutions as discussed above. Multimedia conferencing via PSAP should be recorded across all media.

***VI. Individuals with Disabilities ~deadlines for interconnected and non-interconnected VoIP service providers and manufacturers***

**Recommendation P6.1: No TTY Phase-Out Deadline for PSAP:** The EAAC recommends against imposing any deadline for phasing out TTY at the PSAPs until the analog phone system (PSTN) no longer exists, either as the backbone or as peripheral analog legs, unless ALL legs trap and convert TTY to IP real-time text and maintain VCO capability.

**Recommendation P6.2: PSTN Transition:** The EAAC recommends that the FCC Technological Advisory Council (TAC) include accessibility requirements in the critical PSTN transition work. The EAAC recommends that the FCC include individuals with disabilities who are knowledgeable in technical issues and disability concerns in such transition discussions.

**Rationale:**

The FCC TAC is studying how traditional PSTN wireline users are migrating to broadband digital services, attained through a multiplicity of systems (cellular, Wi-Fi, other RF, xDSL, cable, fiber, broadband over power-lines, and satellite). Part of this study is to look at the questions: *“Is wireless a viable replacement for landline PSTN capabilities (Ref: regulated requirements of PSTN)?”*, *“How can we further incent and accelerate the transition)?”*, and *“What needs to be done to provide social service needs related to E9-1-1 and rural coverage?”* Disability access issues need to be included as an integral part of these inquiries and plans. Also related to accessibility, as part of this transition, the EAAC urges the TAC to continue to study the ability to "influence Public/Emergency Services to adopt SMS emergency reports in addition to voice calls for Emergency service capability" and for the FCC to play larger role in harmonizing global standards, and common reference systems for handling Emergency services for IP-based systems (benefit to OS's, vendors, and end users). (All quotes are from the TAC documents).

One major concern regarding the migration from TTY to IP-based technologies is that IP/PSTN gateways must support TTY until PSTN is phased out. Some consumers have access to nothing but PSTN analog network and can only communicate in text using a TTY.

**Recommendation P6.3: Timeline Contingency:** The EAAC recommends that NG9-1-1 implementation timelines for product manufacturers, service providers, telecommunication and advanced communication service providers are aligned with the deployment of NG9-1-1 PSAPS geographically. Further detail on this will be provided as part of a planned migration report to be developed in 2012.

**Recommendation P6.4: NG9-1-1 Criteria for Readiness:** The EAAC recommends that the FCC work with the DOJ to establish criteria for accepting NG9-1-1 calls from individuals with disabilities as part of its overall criteria for establishing PSAP Readiness at the Regional or State Level to accept NG9-1-1 calls.



**Recommendation P6.5: Conditional TTY Waiver:** The EAAC recommends that the FCC remove the requirement for TTY (analog real-time text) support for new IP-based consumer devices that implement IP-based text communications that include at a minimum real time text or, in an LTE environment, IMS Multimedia Telephony that includes real-time text. The text must be possible to use in parallel with voice on the same call so that VCO equivalence is maintained. The EAAC recognizes real time text provides characteristics which are required by some users in emergency communications (e.g., sent continuously as it is typed and supports captioned telephony).

## ***VII. Individuals with Disabilities ~Indirect Access via Relay Services***

**Recommendation P7.1: NG9-1-1 Requirements and Relays:** The EAAC recommends that any and all requirements for NG9-1-1 shall be applied to any and all relay services and those new technologies and methods for providing such relay services shall be adopted by providers of TRS and VRS Relay Services.

**Recommendation P7.2: Multi-Party Relay Capability:** The EAAC recommends that the FCC examine the proper mechanisms (technical, regulatory and funding) to ensure that Relay Systems are updated as part of the NG9-1-1 rollout so that they can support multi-party conference calls with NG9-1-1 so that NG9-1-1 services can see callers directly if they call the Relay first and are then connected to NG9-1-1.

**Recommendation P7.3: Relay Support of NG9-1-1 Standards:** The EAAC recommends that IP-based Relay services of all types (e.g., text, video, captioned telephony, and speech-to-speech) be required to support the same standard formats as NG9-1-1 PSAPs for both communication with users and with NG9-1-1 PSAPs.

## ***5.2 Technical Recommendations***

### ***I. Actions needed for the migration to a national Internet protocol-enabled network to achieve reliable, interoperable communication that will ensure access to 9-1-1 emergency services by individuals with disabilities***

**Recommendation T1.1: Function Not Device:** The EAAC recommends that the FCC create all of its requirements based on communication functions rather than on device type. This will provide a more level playing field as it is likely consumers will be communicating using a very different mix of technologies and devices in the future. Consumers may even change type of devices used throughout the day due to the convenience of the communication functions of the device available to use. For example, in the home the consumer may use desktop video upstairs in bedroom, or downstairs using mobile phone, tablet or laptop, or in the car using telematics.

**Recommendation T1.2: Interim Mobile Text Solution:** The EAAC recommends that the FCC work with Department of Justice, industry, academia, consumer groups and public safety entities to develop an interim solution that can be rapidly deployed to provide nationwide access to 9-1-1 services through industry standards-based mobile text communications solution(s) to provide critical coverage for this important constituency during the transition to NG9-1-1.



**Notes:**

1. Using any number besides 9-1-1 creates the problem that the user will probably never remember it when they have an emergency, if they ever knew that there was a number besides 9-1-1. However, requiring that 9-1-1 work for SMS for example, may delay rollout because it would require changes in the network to accept 9-1-1 or changes in the handsets to change 9-1-1 into a longer number that the networks can handle.
2. This interim solution should not necessarily be subject to all of the requirements of either voice 9-1-1 calls or long-term solutions so that it can be implemented in the near term and without reworking the carrier, handset or PSAP systems extensively.
3. The FCC should work with consumers and industry to secure any needed additional liability protection for all entities that are implementing these new text 9-1-1 calls.
4. Consumers believe that is an important part of the mobile text solution. However the solution cannot be only SMS since pagers and some other phones (e.g., BlackBerry, and iPhone) have applications people use for daily text communication that do not use SMS as their transport protocol but use email or other protocols (e.g., BlackBerry Messenger, iMessage) to communicate with similar phones and with the SMS features on other people's phones.
5. The EAAC believes that if the text message to 9-1-1 solution is not available to all people, with and without disabilities, that it would be too complicated for carriers and others to qualify some people as eligible and others as ineligible to make an SMS/text message call to 9-1-1 during emergency situations. The liability issues from denying access to unregistered callers would complicate it further.
6. The EAAC intends to take this topic up in 2012 and submit a separate report on this important topic.
7. From a consumer standpoint, direct access via mobile text to 9-1-1 is a critical goal.

**Rationale:**

1. It was stated by the FCC in the early EAAC meetings that recommendations for interim solutions to emergency calling during the transition were within scope.
2. Individuals who cannot hear or speak well enough to accurately and effectively communicate with 9-1-1 have no way of using text to 9-1-1 other than TTY when they are mobile.
  - a. Many deaf consumers have data-only plans so they are not familiar with how to make a voice call (which are necessary to use a TTY). However, they do have plans that include SMS.
  - b. Current trend of Consumers using mobile phones with advanced features such as video can use VRS to call 9-1-1 but it is still through a third party, not direct connect to 9-1-1. Quality of such video calls is dependent upon the performance characteristics (e.g., bandwidth and delay etc.) of the wireless network and connection.

- c. Some mobile users of text-based communication can use text-based relays (such as IP Relay via IM) (but not call directly).
  - d. Many consumers use phones that only have SMS or other message (e.g., BlackBerry Message) text capability. Since TTY is unreliable, if individuals cannot use voice reliably or at all to communicate their emergency they have no means of effectively communicating with 9-1-1 (**either directly or indirectly**) except in a few locations where an interim text solution has been implemented or is undergoing a trial.
3. A key finding of the EAAC is that individual with disabilities should be able to call 9-1-1 using the same means they use for everyday telecommunication.
  4. Another key policy group recommendation is that the consumers be able to call 9-1-1 directly. However, the EAAC is not limiting the solution at this point since a technically and economically feasible hybrid approach may be needed in the interim, because of PSAP readiness and device and network capabilities. The ideal, however, would be immediate implementation of nation-wide direct access.

Support of this functionality must “take into account what is technically and economically feasible” and depends not only on updates to PSAPs but potentially also to originating devices, originating service provider networks and telecommunications service provider networks.

**Recommendation T1.3: Interim Solution for Location-Aware Relay Services:** The EAAC recommends that as part of the interim solution, IP-enabled relay services support obtaining location from existing mechanisms (e.g., through APIs to obtain GPS-based and other location finding capabilities) in applications for mobile devices, and use this Location Information to automatically identify and facilitate the connection to the appropriate PSAP (nearest to the actual location of the mobile user).

## ***II. Protocols, technical capabilities, and technical requirements to ensure the reliability and interoperability necessary to ensure access to 9-1-1 emergency services by individuals with disabilities***

### **Recommendation T2.1: Minimum Required Set of Codecs and Transport Protocols:**

In order to ensure end-to-end interoperability and backward compatibility between devices used by individuals with disabilities and NG9-1-1, the EAAC recommends that the FCC require that the entity in charge of each IP-based telecommunication or advanced communication service environment (public and proprietary) define a minimum set of codecs and transport protocols for each of the following media types, that must be supported by all entities (including but not limited to hardware, communication service providers, supplemental services like interpreting services or relays, and PSAPs) in their equipment, software and systems:

- Voice
- HD Voice
- Real-time text
- Messaging
- Video
- Still image

In doing this, terminal hardware shall not be required to add video or text display or video or text origination if their design does not already call for it for some other purpose. If video or multiline text display or generation is present in the design for other purposes then they must support the generation and display of video, text, and image using the minimum protocols defined. (See **Recommendation T2.4: Minimum Specifications for Native SIP**, **Recommendation T2.5: Minimum Required Set of Codecs and Transport Protocols for IMS Multimedia Subsystems**, and **Recommendation T4.2: Availability of Calling Terminals**.)

In addition, terminal hardware, terminal software or terminal interpretative services (that have no pass through function) do not need to support any protocols that they do not use, though they must not fail if the media/protocols are offered to them on call setup, or are used by others in a conference call.

**Notes:**

1. Introduction of new codecs and transport-protocols would be handled in the standard industry fashion. The new protocol would be added to the minimum set and the old one dropped at some point in the future when all of the equipment using the old protocol has been retired from service.
2. Examples of IP-based telecommunication or advanced communication service environment (public and proprietary) would include IMS, native SIP, public Internet, Skype, AVAYA or CISCO enterprise solution.
3. The requirements in this provision are standard procedure for voice communication and the intent here is to extend these practices to the other forms of communication that will be depended upon by individuals with disabilities in making calls including those to NG9-1-1.

**Recommendation T2.2: Removal of TTY Requirement:** The EAAC recommends that the FCC remove the requirement for TTY (analog real-time text) support for new IP-based consumer devices that implement IP-based text communications that include, at a minimum, real time text or, in an LTE environment, IMS Multimedia Telephony that includes real-time text. The text must be possible to use in parallel with voice on the same call so that VCO equivalence is maintained. The EAAC recognizes real time text provides characteristics that are required by some users in emergency communications (e.g., sent continuously as it is typed and supports captioned telephony). (This is same recommendation as **Recommendation P6.5: Conditional TTY Waiver**.) (See also **Recommendation T6.3: Timeline Contingency**.)

**Recommendation T2.3: Collaboration to Establish Best Practice:** The EAAC recommends that in addition to rulemaking the industry, public safety, and consumer advocacy groups collaborate to establish best practices for terminal products that fulfill both requirements for advanced communication services important for individuals with disabilities and have user interface features usable by individuals with disabilities.

**Recommendation T2.4: Minimum Specifications for Native SIP:** The EAAC recommends that for Internet-based or generic IP-enabled VoIP systems, standalone software, and equipment, the standard to use to ensure reliability and interoperability is section 14 of the IETF “Best

Current Practice for Communications Services in support of Emergency Calling” draft-ietf-ecrit-phonebc [phonebc] for voice and text, and section 4.1.8.2 of the NENA i3 stage 3 for video. These specifications should be used as the minimum required (fallback) specification for interoperability between communication service providers and between Internet-based or generic IP-enabled VoIP terminal devices and systems.

**Recommendation T2.5: Minimum Required Set of Codecs and Transport Protocols for IMS Multimedia Subsystems:** The EAAC recommends that for networks in the IP Multimedia Subsystems IMS environment, the terminals and corresponding network elements shall support the 3GPP specification 3GPP TS 26.114 IP Multimedia Subsystem (IMS), Multimedia telephony, Media handling and interaction, in order to implement real-time conversational services in an accessible and interoperable way. These specifications will provide a minimum set of codecs and transport protocols that must be supported by all elements in the IMS system for each of the following media types: video, real-time text, audio and HD audio. Terminals must support the minimum set of codecs and transport protocols for the IMS environment according to *Recommendation T2.1: Minimum Required Set of Codecs and Transport Protocols* and *Recommendation T4.2: Availability of Calling Terminals*.

**Recommendation T2.6: Collaboration with ATIS, Consumer Groups, and Industry to Develop Standards for IMS Environments:** For IMS implementations, work is in progress in 3GPP to standardize NG9-1-1 emergency service access for IMS Multimedia Telephony and messaging services. The EAAC recommends that industry and consumer advocacy collaborate on this work through ATIS (the Organizational Partner to 3GPP from North America), using a process fully open to both groups, to provide the standardized base for accessible emergency service calls in the IMS environment that meet the recommendations in this report. The EAAC recommends that the industry establish interoperability with NG9-1-1 emergency services using the ATIS supplements to the NENA i3 when completed to support IMS-based origination networks.

**Recommendation T2.7: Procedure to Adopt New Protocols:** The EAAC recommends that the standard industry approach to phasing out minimum required codecs and transport protocols be used to phase out accessibility or interoperability standards as follows. New approaches to accessibility or interoperability (e.g., codecs or transmission protocols) should be allowed when they can be demonstrated to provide equivalent accessibility and to not introduce any backward compatibility problems. Where backward compatibility is involved (e.g., for interoperability), standard industry practice is to support both standards until the original standards are no longer in use by devices, or everything supports the new standards (so the old one is redundant on all devices).

### ***III. Technical standards for use by public safety answering points, designated default answering points, and local emergency authorities;***

**Recommendation T3.1: IMS Multimedia for PSAPs:** The EAAC recommends the NENA i3 Stage 3 and the expected ATIS supplement for IMS environment, be used by public safety answering points, designated default answering points, and local emergency authorities.

**Rationale:**

There are an endless number of protocols. PSAPs must have a good, complete, but reasonable set of protocol-environments defined that it can build toward.

**Recommendation T3.2: Standardization Coordination:** The EAAC recommends that the FCC establish procedures for letting NENA, ATIS, or assigned standardization bodies maintain the specifications, while FCC maintains and shares a list of functionality that the FCC is ensuring are included with regard to the accessibility related parts of the specifications to assure continued or improved accessibility.

**Rationale:**

Eventually, other interface specifications for NG9-1-1 emergency services may appear, or new versions of NENA i3 Stage 3.

**Recommendation T3.3: Persistent-Data Conference Calls:** The EAAC recommends that the FCC, relevant emergency and standards groups explore the possibility of having NG9-1-1 calls handled as “persistent-data” calls where people joining a call can see all past communication and public notes on the call so that users do not have to repeat information as new parties are brought into the call to help interpret or understand communications. The FCC should ensure that any such capability is consistent with applicable federal and state privacy laws, and ensure that security and confidentiality concerns are addressed.

**Recommendation T3.4: Automatic Interpretation Services:** The EAAC recommends that standards and mechanisms are needed to provide the following two capabilities in a user-controlled fashion and should be explored for feasibility:

- Automatic invocation of interpretation or assistance services even before the call is answered by NG9-1-1
- Automatic provision of information about the caller and/or their living situation that might affect emergency responses

This needs to be done with attention to both privacy and liability issues.

***IV. Technical standards and requirements for communication devices and equipment and technologies to enable the use of reliable emergency access***

**Recommendation T4.1: Familiarity:** The EAAC recommends that the FCC create its regulations regarding 9-1-1 accessibility based on the assumption that users will only be able to effectively call 9-1-1 when under stress of an emergency if they are able to do so using the same devices mainstream and/or purpose-built solutions, features or programs that they use daily for communication where there is a reasonable expectation that emergency communications will be supported. Any regulations should be based on and use industry standards where they exist. However they should not require callers to use special devices, programs or actions that are not part of daily calling behaviors in order to conform, unless they can be 100% transparent to the caller.

**Recommendation T4.2: Availability of Calling Terminals:** The EAAC recommends that the FCC require that all terminal hardware-software platforms and standalone software that are able to call NG9-1-1 with voice, and whose design would (for other purposes) have the hardware (or run on hardware) capable of supporting real-time text, messaging, images, and/or video, must support the standard minimum set of codecs and transport-protocols defined for their

environment for each of these media types for all calls, so that they are familiar to users and available when calling NG9-1-1 services. Terminal hardware shall not be required to add video or text display or video or text origination if their design does not already call for it for some other purpose. However, if video or multiline text display or generation is present in the design for other purposes then they must support the generation and display of video, text, and image using the minimum set of protocols defined. (See **Recommendation T2.1: Minimum Required Set of Codecs and Transport Protocols.**)

**Recommendation T4.3: Test Calls:** The EAAC recommends that the FCC work with the DOJ, consumers, and industry to explore whether a standards-based mechanism can be created that allows users with disabilities (or all users) to make 9-1-1 test calls (automatic replies) so they can feel confident that they know how to use it for real 9-1-1 calls.

**Recommendation T4.4: Emergency Bypass of Equipment Locks:** The EAAC recommends that covered equipment must allow all types of media on a multimedia NG9-1-1 call to bypass equipment locks and other restrictions on equipment use, as is done with voice 9-1-1 calls. This requirement should be limited to native applications on the phone. For instance, if a user has locked his mobile phone with a PIN code, no normal function of the phone can be used except for voice calls to 9-1-1. This functionality needs to be extended to cover video and text calls to 9-1-1, as well.

**Rationale:**

In emergencies, any means for contacting 9-1-1 must be available and accessible to anyone, from anywhere without delay.

***V. Procedures to ensure that IP-enabled network providers do not install features, functions, or capabilities that would conflict with technical standards needed to achieve 9-1-1 emergency access by individuals with disabilities***

*The following recommendations shall apply only to IP-enabled network providers.*

**Recommendation T5.1: Maintenance of Text Communication in Congestion:** The EAAC recommends the FCC require that text communication not be impeded or impaired in a crisis any more than is true for voice transmissions, and also encourage industry and public safety to develop standards and/or implementation guidelines for meeting these requirements for different IP-based telecommunication or advanced communication service environments.<sup>65</sup>

*The following recommendations shall apply only to IP-enabled network providers.*

**Recommendation T5.2: Maintenance of Video Communication in Congestion:** The EAAC recommends the FCC require that video communication not be impeded or impaired in a crisis any more than is true for voice transmissions, and also encourage industry and public safety to develop standards and/or implementation guidelines for meeting these requirements for different IP-based telecommunication or advanced communication service environments.

**Note:**

The intent here is to allow people who must use video to communicate to be able to use it for direct video NG9-1-1 calls and calls to VRS that become calls to NG9-1-1. There

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<sup>65</sup> See 47 U.S.C. § 617 (e)(1)(B) (covered entities have a duty not to impair or impede the accessibility features of advanced communications services).



are industry concerns that in some networks (especially Mobility Broadband Networks), even if you could identify video communications from individuals with disabilities, there is no guarantee that you could maintain a service quality level during times of crisis at the same level as voice because video communication easily uses many times the bandwidth of voice.

*The following recommendations shall apply only to IP-enabled network providers.*

**Recommendation T5.3: Not Impair or Impede:** The EAAC recommends that the FCC require that all components and systems (including but not limited to terminals, network repeaters, routers, gateways), within and between each environment involved in transporting communication over IP-based telecommunication and advanced communication services, from the originating device through to delivery to the NG9-1-1 services not impair or impede the transmission of media types used by individuals with disabilities (including video, real-time text, images or messages) at any time more than is true for voice transmissions. This requirement against impairing or impeding the transmission of media types used by individuals with disabilities also applies to the configuration or reconfiguration of the devices, services or systems. To support this requirement the EAAC also recommends that industry and public safety develop standards and/or implementation guidelines for meeting these requirements for different IP-based telecommunication or advanced communication service environments.

**Note:**

If the media types do not work for everyday calls, it is believed that most users with disabilities would not think they could be used to call 9-1-1.

*The following recommendations shall apply only to IP-enabled network providers.*

**Recommendation T5.4: Successful Transport Across Boundaries:** The EAAC recommends that FCC require that the interface between two different IP-based telecommunication and advanced communication service environments must transcode any voice, video, real-time text, images or messages between the ‘common’ minimum set of formats for these media types for the two protocol-environments. The FCC should work with industry to define best practices for implementation of the rules. For PSTN to IP systems selected gateways that can be reached automatically via dialing 9-1-1 must be available for users and may be used instead of requiring all PSTN gateways to transcode. (See **Recommendation T2.1: Minimum Required Set of Codecs and Transport Protocols.**)

**Note:**

Best practices being developed should avoid transcoding by encouraging support of a minimum set of common codecs.

*The following recommendations shall apply only to IP-enabled network providers.*

**Recommendation T5.5: Successful Transport of Location Information:** The EAAC recommends that FCC create a requirement for location conveyance in NG9-1-1 that would be applied to all communication modalities, including those that provide accessibility to NG9-1-1, rather than just applying them to voice, and also encourage industry and public safety to develop standards and/or implementation guidelines for meeting these requirements for different IP-based telecommunication or advanced communication service environment.

**Recommendation T5.6: Emergency Multimedia Calls Without Service Plan:** The EAAC recommends that covered entities must allow all types of media that the service environment



supports to go through to NG9-1-1 emergency services, even if they are not normally included in the user's service plan to the same extent that voice calls are allowed to. This requirement should be limited to native applications on the phone. Just like voice calls to 9-1-1 are allowed from phones that have a data-only plan, and from phones that have had their services disconnected, all audio, video, and text communications must still be allowed to reach 9-1-1 emergency services, irrespective of whether the service plan normally includes any of these. It is understood that there are technical challenges for supporting this, especially on legacy networks, as many of the video and text services require a subscription prior to establishing the service, and a feasibility study needs to be undertaken within the industry standards to identify the economic and technical feasibility of such a requirement. To meet this requirement, the EAAC recognizes that industry standards or modifications to industry standards are necessary to enable users without a valid service plan to utilize NG9-1-1 emergency services utilizing audio, video and text communications over IP.

**Rationale:**

In order for 9-1-1 emergency services to be accessible, video and text also must go through if the terminal supports them. Thus, the same considerations as for why voice calls to 9-1-1 must be allowed to complete, irrespective of the service plan, apply here.

***VI. Deadlines by which interconnected and non-interconnected VoIP service providers and manufacturers shall achieve the actions required in the above paragraphs, where achievable, and for the possible phase out of current-generation TTY technology to the extent that this technology is replaced with more effective and efficient technologies and methods to enable access to 9-1-1 emergency services by individuals with disabilities***

**Recommendation T6.1: Timing of Requirements:** The requirements recommended by the EAAC above should be timed so that they are available when the NG9-1-1 services begin to come online – but should not be required to be in place much in advance of the beginning of the NG9-1-1 service rollout.

**Rationale:**

The NG9-1-1 service standards seem to keep evolving and requiring rollout of all the other elements too far in advance risks that they will not be compatible with the final NG9-1-1 system when it come out.

**Recommendation T6.2: Stable 9-1-1 Test Point:** EAAC recommends that a stable prototype NG9-1-1 PSAP that can be used by terminal and network developers to test for compatibility. Any changes to this prototype, once relied upon by industry for testing, would have to be backward compatible.

**Recommendation T6.3: Baudot (TTY) Support:** The EAAC recommends that Baudot (TTY) be supported by all PSAPs with VCO and HCO capabilities until there are no more TTYs in use – or until there is a gateway between every TTY user and the PSAP, that converts TTY into the proper real-time text format for VoIP systems supported by the PSAPs including support for VCO/HCO functionality. Because of the risk for deterioration of TTY tones by IP transport, actions to secure the transmission must be made close enough to the TTY so that no TTY-non-supporting network path is between the TTY and the securing point. Best practice guidelines should be developed for such actions.

**Note:**

A deadline is not suggested because there is no deadline for abolition of PSTN and TTY is the only RTT method that works on PSTN.

**VIII. Rules to update the Commission's telecommunications relay services regulations with respect to 9-1-1 services, as new technologies and methods for providing such relay services are adopted by providers of such relay services**

**Recommendation T7.1: Direct Connect in 9-1-1 Relay Calls:** The EAAC recommends that the FCC examine the proper mechanisms (regulatory or funding) to ensure that Relay Systems are updated as part of the NG9-1-1 rollout so that they can support 3-party/conference calls with NG9-1-1 so that NG9-1-1 services can see callers directly if they call the Relay first and are then connected to NG9-1-1.

**Recommendation T7.2: Standard Transport Formats:** The EAAC recommends that IP-based Relay services of all types (e.g., text, video, captioned telephony, and speech-to-speech) be required to support the same standard formats as NG9-1-1 PSAPs for both communication with users and with NG9-1-1 PSAPs.

**Recommendation T7.3: Location Gathering in IP-based Relay:** The EAAC recommends that IP-based relay providers be required to build automatic location gathering features into IP-based relay client applications so that this information can be used to rapidly connect the caller to the proper 9-1-1 service.

**Recommendation T7.4: Successful Transport of Location Information:** The EAAC recommends that IP-based Relay services of all types (e.g., text, video, captioned telephony, and speech-to-speech) must pass any location information and other emergency service specific information if they are in the call path, and add their own information. This should be done automatically if possible but by voice in the interim if the call to PSAP is a voice only call.

**Recommendation T7.5: PSAP, TRS, and Carrier Cooperation:** The EAAC recommends that Telecommunications Relay Service providers, PSAPS and entities delivering calls to and between them must work together to design and implement their equipment and services so as to ensure that PSAPs are able to handle all NG9-1-1 calls, including relay initiated conference calls.

**Rationale:**

PSAP must be able to handle 9-1-1 calls whenever necessary to resolve the calls, including the ability to transfer calls to appropriate responders, as well as to invoke assistance services. PSAPs must have access to interpretive and assistance services (e.g., sign language, speech to speech assistance, captioned telephony etc.) 7 days/24 hours.

**Recommendation T7.6:** The EAAC recommends that Telecommunications Relay Service providers must release control of the 9-1-1 call to the PSAP on request, so that NG9-1-1 telecommunicators will be able to handle the call in the way that they deem necessary without undue delay. For instance, when a telecommunicator finds a VRS operator unqualified to handle the particular call, the telecommunicator must have the ability to use the sign language assistance line.

**Rationale:**

If the relay service gets disconnected, the call still can proceed, and the telecommunicator will be able to connect the sign language assistance line, without having to disconnect the relayed call due to a switch from the VRS operator to the sign language assistance line.

**Recommendation T7.7: Relay Service Call Control Transfer:** The EAAC recommends that Telecommunications Relay Service providers make modifications to their policies, procedures, and practices to transfer the control unit to the PSAP once the relayed call is connected.

**Recommendation T7.8: TRS Support of NG9-1-1 Standards:** The EAAC recommends that Telecommunications Relay Service providers must support the same media types codecs and transmission protocols as NG9-1-1 for audio, video, real-time text and other NG9-1-1 required text for the respective types of terminals, and be fully interoperable and interconnectable with the adopted standards for NG9-1-1. Users must be able to employ the same equipment they use for their everyday calls for 9-1-1 calls.

**Rationale:**

If relay service equipment is not interoperable, it would force users who depend on relay services, or choose to use relay services for emergency calls, to do something special for a 9-1-1 call. This would run counter to the principle of familiarity.

**Recommendation T7.9: TRS and Caller Security and Privacy:** The EAAC recommends that Telecommunications Relay Service providers must implement systems such that callers do not lose security and privacy on a relay mediated call to NG9-1-1 that they would have had on a direct NG9-1-1 calls, and this must be true for all types of media and functions.

### **5.3 Education/Outreach Recommendations**

**Recommendation EO.1: EO Plan Part of NG9-1-1 Rollout:** The EAAC recommends that the FCC include a substantial education and outreach program as part of any actions to implement NG9-1-1 rollout.

**Recommendation EO.2: EO on Strength, Weaknesses, and Use:** The EAAC recommends that, upon formalizing the technological standards and deployment plans, the FCC should support a coordinated public education effort to ensure that citizens understand the strengths and weaknesses of the new system, and how to use it.

**Recommendation EO.3: Inclusion of People with Disabilities in EO:** The EAAC recommends that a targeted education campaign may be appropriate for individuals with disabilities, including those senior citizens with disabilities, to ensure that accurate information about the NG9-1-1 system is available.

**Recommendation EO.4: Contracting Out EO:** The EAAC recommends that the FCC work with the appropriate agencies to issue contracts and/or grants to knowledgeable organizations or agencies to do outreach programs for specific populations.

## **Appendix A: Section 106 – Emergency Access Advisory Committee**

(a) Establishment- For the purpose of achieving equal access to emergency services by individuals with disabilities, as a part of the migration to a national Internet protocol-enabled emergency network, not later than 60 days after the date of enactment of this Act, the Chairman of the Commission shall establish an advisory committee, to be known as the Emergency Access Advisory Committee (referred to in this section as the 'Advisory Committee').

(b) Membership- As soon as practicable after the date of enactment of this Act, the Chairman of the Commission shall appoint the members of the Advisory Committee, ensuring a balance between individuals with disabilities and other stakeholders, and shall designate two such members as the co-chairs of the Committee. Members of the Advisory Committee shall be selected from the following groups:

(1) STATE AND LOCAL GOVERNMENT AND EMERGENCY RESPONDER REPRESENTATIVES- Representatives of State and local governments and representatives of emergency response providers, selected from among individuals nominated by national organizations representing such governments and representatives.

(2) SUBJECT MATTER EXPERTS- Individuals who have the technical knowledge and expertise to serve on the Advisory Committee in the fulfillment of its duties, including representatives of--

- (A) providers of interconnected and non-interconnected VoIP services;
- (B) vendors, developers, and manufacturers of systems, facilities, equipment, and capabilities for the provision of interconnected and non-interconnected VoIP services;
- (C) national organizations representing individuals with disabilities and senior citizens;
- (D) Federal agencies or departments responsible for the implementation of the Next Generation E9-1-1 system;
- (E) the National Institute of Standards and Technology; and
- (F) other individuals with such technical knowledge and expertise.

(3) REPRESENTATIVES OF OTHER STAKEHOLDERS AND INTERESTED PARTIES- Representatives of such other stakeholders and interested and affected parties as the Chairman of the Commission determines appropriate.

(c) Development of Recommendations- Within 1 year after the completion of the member appointment process by the Chairman of the Commission pursuant to subsection (b), the Advisory Committee shall conduct a national survey of individuals with disabilities, seeking input from the groups described in subsection (b)(2), to determine the most effective and efficient technologies and methods by which to enable access to emergency services by individuals with disabilities and shall develop and submit to the Commission recommendations to implement such technologies and methods, including

recommendations—

- (1) with respect to what actions are necessary as a part of the migration to a national Internet protocol-enabled network to achieve reliable, interoperable communication transmitted over such network that will ensure access to emergency services by individuals with disabilities;
- (2) for protocols, technical capabilities, and technical requirements to ensure the reliability and interoperability necessary to ensure access to emergency services by individuals with disabilities;
- (3) for the establishment of technical standards for use by public safety answering points, designated default answering points, and local emergency authorities;
- (4) for relevant technical standards and requirements for communication devices and equipment and technologies to enable the use of reliable emergency access;
- (5) for procedures to be followed by IP-enabled network providers to ensure that such providers do not install features, functions, or capabilities that would conflict with technical standards;
- (6) for deadlines by which providers of interconnected and non-interconnected VoIP services and manufacturers of equipment used for such services shall achieve the actions required in paragraphs (1) through (5), where achievable, and for the possible phase out of the use of current-generation TTY technology to the extent that this technology is replaced with more effective and efficient technologies and methods to enable access to emergency services by individuals with disabilities;
- (7) for the establishment of rules to update the Commission's rules with respect to 9-1-1 services and E9-1-1 services (as defined in section 158(e)(4) of the National Telecommunications and Information Administration Organization Act (47 U.S.C. 942(e)(4))), for users of telecommunications relay services as new technologies and methods for providing such relay services are adopted by providers of such relay services; and
- (8) that take into account what is technically and economically feasible.

(d) Meetings-

- (1) INITIAL MEETING- The initial meeting of the Advisory Committee shall take place not later than 45 days after the completion of the member appointment process by the Chairman of the Commission pursuant to subsection (b).
- (2) OTHER MEETINGS- After the initial meeting, the Advisory Committee shall meet at the call of the chairs, but no less than monthly until the recommendations required pursuant to subsection (c) are completed and submitted.
- (3) NOTICE; OPEN MEETINGS- Any meetings held by the Advisory Committee shall be duly noticed at least 14 days in advance and shall be open to the public.

(e) Rules-

- (1) QUORUM- One-third of the members of the Advisory Committee shall constitute a quorum for conducting business of the Advisory Committee.
- (2) SUBCOMMITTEES- To assist the Advisory Committee in carrying out its functions, the chair may establish appropriate subcommittees composed of

members of the Advisory Committee and other subject matter experts as determined to be necessary.

(3) ADDITIONAL RULES- The Advisory Committee may adopt other rules as needed.

(f) Federal Advisory Committee Act- The Federal Advisory Committee Act (5 U.S.C. App.) shall not apply to the Advisory Committee.

(g) Implementing Recommendations- The Commission shall have the authority to promulgate regulations to implement the recommendations proposed by the Advisory Committee, as well as any other regulations, technical standards, protocols, and procedures as are necessary to achieve reliable, interoperable communication that ensures access by individuals with disabilities to an Internet protocol-enabled emergency network, where achievable and technically feasible.

(h) Definitions- In this section—

(1) the term `Commission' means the Federal Communications Commission;

(2) the term `Chairman' means the Chairman of the Federal Communications Commission; and

(3) except as otherwise expressly provided, other terms have the meanings given such terms in section 3 of the Communications Act of 1934 (47 U.S.C. 153).



## Appendix B: Sources and Documentation

### *Standards and Protocols*

This appendix contains references to standards that may be of relevance when deploying emergency services accessible by individuals with disabilities. The intention of the list is to provide a source of references mainly for the accessibility field, but also for central mainstream functions. The document list contains information about accessibility standards mainly for the purpose of enabling access to a user interface, as well as communication standards about functionality and communication technology in accessibility motivated functions in communication services.

### **Sources used:**

#### **Standards organizations:**

ITU-T: [www.itu.int](http://www.itu.int)  
ISO  
SWG-A  
ETSI: [www.etsi.org](http://www.etsi.org)  
IETF: [www.ietf.org](http://www.ietf.org)  
3GPP: [www.3gpp.org](http://www.3gpp.org)  
ATIS: [www.atis.org](http://www.atis.org)

#### **Consortia**

NENA: [www.nena.org](http://www.nena.org)

#### **Specific accessibility sources:**

Tiresias

Collection of general accessibility related standards  
<http://www.tiresias.org/research/standards/>

Proposal R1 by Telecom-RERC at Trace Center, University of Wisconsin-Madison

<http://trace.wisc.edu/docs/2008-RTT-Proposal/>

Realtimetext task force

General info: [www.realtimetext.org](http://www.realtimetext.org)

Standards list in <http://www.realtimetext.org/index.php?pagina=28>

ETSI TR 102 612 European accessibility requirements for public procurement of products and services in the ICT domain

[http://portal.etsi.org/stfs/stf\\_homepages/STF333/tr\\_102612v010101p.doc](http://portal.etsi.org/stfs/stf_homepages/STF333/tr_102612v010101p.doc)

A report with many references to various kinds of accessibility related standards.

### **Informative references:**

Preamble to the Electronic and Information Technology Accessibility Standards:

<http://www.access-board.gov/sec508/preamble.htm#Subpart%20C>

Electronic and Information Technology Accessibility Standards (Section 508):

[http://www.access-board.gov/sec508/standards.htm#Subpart\\_c](http://www.access-board.gov/sec508/standards.htm#Subpart_c)

Draft Information and Communication Technology (ICT) Standards and Guidelines:

<http://www.access-board.gov/sec508/refresh/draft-rule.htm#fpc>

CSRIC WG4B Report – Transition to NG911:

<http://transition.fcc.gov/pshs/advisory/csrc/>

Comments of the EREC-IT and RERC-TA:

<http://fjallfoss.fcc.gov/ecfs/document/view?id=7021651219>

## **Appendix C: Standards Related to Advanced Communication Equipment and Services**

Advanced communication equipment and services are comprised of a large set of technical standards and specifications. These standards and specifications are referred to at various points throughout this document.

- **Service level standards and specifications with accessibility motivated parts**

- **3GPP TS 22.173 IMS Multimedia Telephony**

Defines the IMS Multimedia Telephony service and the minimum set of capabilities required to secure multi-vendor and multi-operator inter-operability for Multimedia Telephony and related Supplementary Services. IMS Multimedia Telephony service includes the following standardized media capabilities:

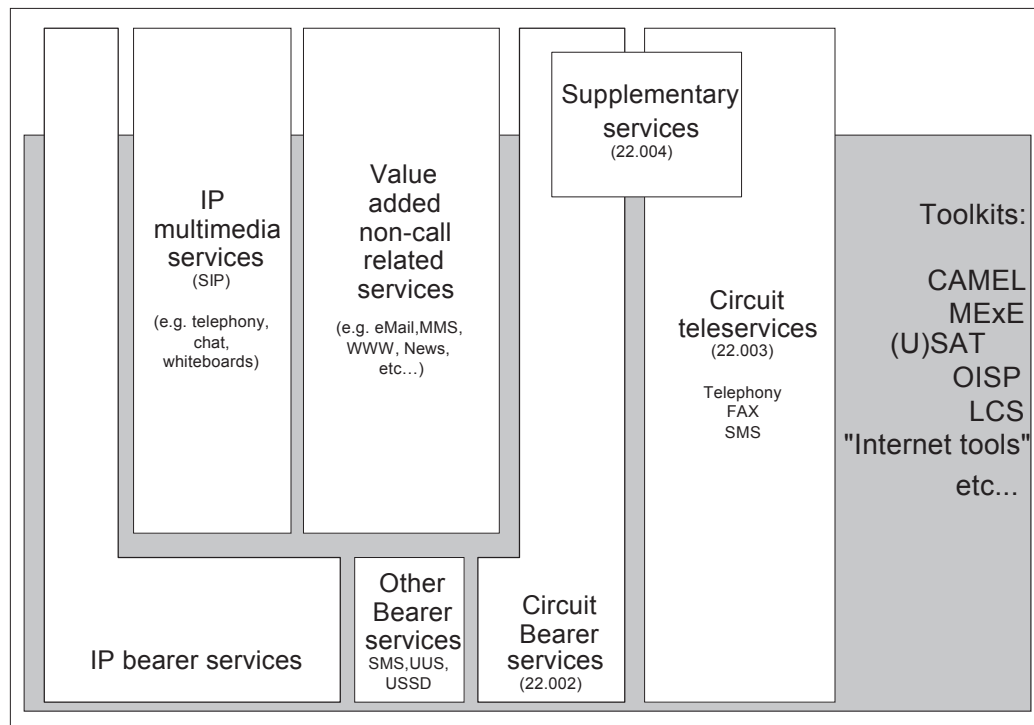
- Full duplex speech;
- Real-time video (simplex, full duplex), synchronized with speech if present;
- Text communication;
- File transfer;
- Video clip sharing, picture sharing, audio clip sharing. Transferred files may be displayed/replayed on receiving terminal for specified file formats;
- Fax;
- Data (CS)

IMS Multimedia Telephony service fulfills the service requirement for the Total Conversation in ITU-T F.703 (including video, real-time text and audio).

- **3GPP TS 22.101 Service Principles**

This document describes the Service Principles specified by 3GPP. Note that this specification is a principles document only and does not provide the full set of standards required to support the capabilities described in this specification.

In the Circuit Switched Core Network domain, the basic services are divided into circuit teleservices (3GPP TS 22.003) and bearer services (3GPP TS 22.002) and they can utilize standardized supplementary services (3GPP TS 22.004). The Packet Switched Core Network Domain provides IP bearer services. Short Message Service (SMS) can also be considered as bearer services for some applications. IP multimedia services are the IP-based session related services, including voice communications. IP multimedia sessions use IP bearer services provided by the Packet Switched Core Network Domain.



**Figure 1: IMS Service Architecture**

The document defines the general principles and brief descriptions of Multimedia emergency Services (aka NOVES), GTT = Global Text Telephony, Packet Switched Streaming Service, and IMS Multimedia Telephony. This specification also defines the principles for emergency services, including general requirements, identification of emergency numbers, emergency calls in the Circuit Switched, Packet Switched and IMS domains (including multimedia emergency services), and mobile phone and originating network requirements. The principle is it shall be possible to establish an emergency speech or GTT call, subject to national requirements. If a mobile phone supports IMS Multimedia Telephony service with speech media as specified in 3GPP TS 22.173 via an access network, then it shall also support IMS emergency calls via that access network. To support IMS emergency calls towards IP PSAPs, other media types in addition to voice or GTT may be supported by the User Equipment or the IMS, subject to regulatory requirements. IMS emergency calling does not include support for legacy store and forward messaging such as Short Messaging Service (SMS).

○ **ITU-T Y.2201 Next Generation Networks – Service aspects: Service capabilities and service architecture; Requirements and capabilities for ITU-T NGN**

This Recommendation specifies the high-level requirements for the development of a set of ITU-T Recommendations which will constitute NGN.

The high-level requirements and related capabilities specified in this Recommendation are aligned with the general goals and objectives captured in [ITU-T Y.2001] and are based on the objectives of NGN release 2 [b-ITU-T Y.Sup-7].

<http://www.itu.int/rec/T-REC-Y.2201-200909-1>

The Next Generation Network (NGN) standards from ITU are intended as coordination standards for all regional and consortia NGN standards. In this standard, the following is stated about emergency services. It contains this section on users with disabilities:

“20.7 Users with disabilities

Users with disabilities have a general need to be provided with means to control and use terminals and services in alternative ways and modes, suiting varied capabilities and preferences. Such requirements are best met by inclusive design of the general provision of terminals and services.

1) NGN is required to provide the means needed for invocation of relay services. Relay services translate between various modes of telecommunication that are of interest for individuals with disabilities (e.g., sign language, lip reading, text, voice). Invocation of relay services may be based on user preferences, address resolution or user commands.

2) NGN is required to have the capability to invoke relay services by either party in an emergency telecommunication.

NOTE 1 – Other needs for users with disabilities to use emergency telecommunication services are handled in clause 20.4.

NOTE 2 – See also [b-ITU-T Accessibility] and [b-ITU-T F.790].”

○ **ITU-T Y.2211 IMS-based real-time conversational multimedia services over NGN**

This Recommendation defines the service requirements, service features, service architecture and implementation scenarios of IMS-based real-time conversational multimedia services.

<http://www.itu.int/rec/T-REC-Y.2211-200710-I>

This standard contains this general requirement:

“NGN is required to support various media resources during sessions to enable a wide range of IMS-based real-time conversational multimedia services, including voice, video, real-time text, data, etc.”

○ **ITU-T F.703 Multimedia Conversational Services**

Standard setting the basic definition and quality requirements from a human perspective of Total Conversation and text telephony for any network environment.

○ **ETSI ES 202 975 Harmonized Relay Services**

A standard that describes service level characteristics of relay services.

Also informally recommends protocols. IETF SIP, video, T.140/RFC 4103 real-time text and audio.

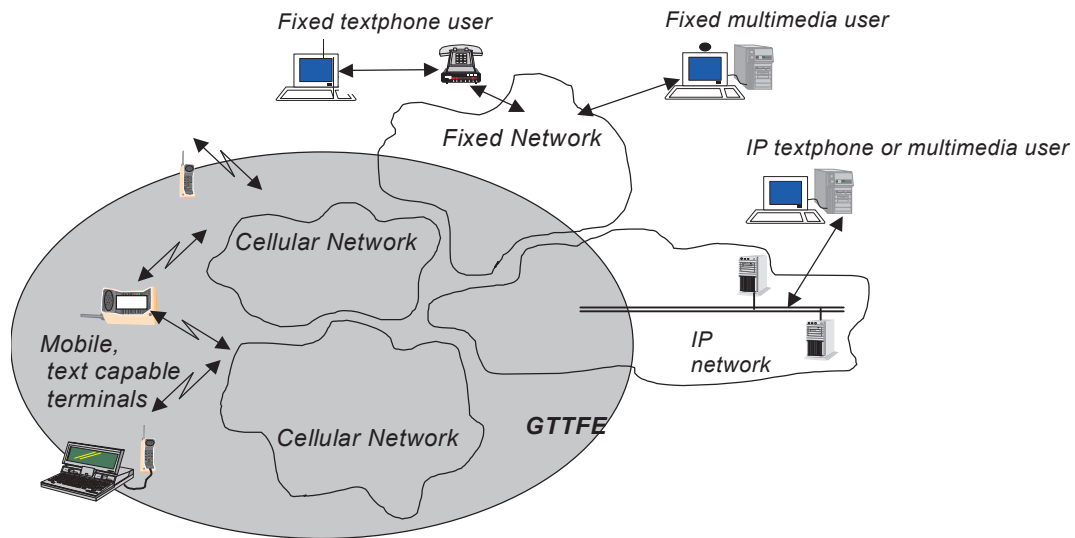
[http://www.etsi.org/deliver/etsi\\_es/202900\\_202999/202975/01.02.01\\_60/es\\_202975v010201p.pdf](http://www.etsi.org/deliver/etsi_es/202900_202999/202975/01.02.01_60/es_202975v010201p.pdf)

○ **3GPP TS 22.226 Global Text Telephony, Stage 1**

Global Text Telephony is a feature that adds the capability to use a text conversation component in a session. It is called Global Text or GTT here. Real-time, character by character text conversation is a component that increases usability in a conversational session.

Interworking with corresponding features in other networks is an important part of Global Text. Specifically, the different kinds of PSTN text telephone systems supported by the international text telephone modem standard ITU-T V.18 are included in the modes for interworking.

One important reason to offer the Global Text feature is to enable emergency service access to people who are depending on a written dialogue.



**Figure 2: Global Text Telephony Service Environment**

○ **3GPP TS 23.226 Global Text Telephony; Stage 2**

This specification defines the stage 2 description of the real-time Text Conversation Feature called Global Text Telephony, GTT. GTT Stage 2 identifies the functional capabilities needed to support the service described in GTT Stage 1. Stage one is the set of requirements which shall be supported for the provision of the real-time text conversation feature, seen primarily from the subscriber's and service providers' points of view. This specification contains the core functions for a real-time Text Conversation Feature GTT, to be used in combination with other media in conversational services. GTT offers real-time conversation in text, to be used alone or in combination with other conversational media, and interworking with current and emerging text conversation features in the fixed networks and other mobile networks. As far as possible, The existing protocols shall be used for the realization of the Global Text Telephony Feature. This may include e.g., SIP, 3G.324, or Circuit Switched Voice service as protocol environments, and CTM, AL1 and RTP/text as transmission protocols. It also means usage of existing text presentation format ITU T Recommendation T.140 [5], common to all GTT text conversation environments. Considerations for an IP Multimedia host environment:

GTT:IP – “IP Multimedia, supported by the IPMM subsystem, is a suitable environment for real-time text conversation. It shall use IETF SIP, with text coded according to ITU-T T.140 and transported with IETF RTP-text as indicated in 3G TS 26.235. This allows conversation in a selection of simultaneous media, such as text, video and voice.”



- **Mixed level standards and specifications with accessibility motivated parts**

Mixed level standards and specifications with accessibility motivated parts  
ITU-T T.140 – is the ITU standard for encoding real-time text. It is based on Unicode and can handle text in all languages covered by Unicode. It is used in most real-time text implementations.

- **Protocol level standards and specifications with accessibility motivated parts**

- **IETF RFC 4103 RTP Payload for text conversation**

- “**Abstract**

- This memo obsoletes RFC 2793; it describes how to carry real-time text conversation session contents in RTP packets. Text conversation session contents are specified in ITU-T Recommendation T.140. One payload format is described for transmitting text on a separate RTP session dedicated for the transmission of text. This RTP payload description recommends a method to include redundant text from already transmitted packets in order to reduce the risk of text loss caused by packet loss.”

- **ITU-T J.161 Audio and video codec requirements and usage for the provision of bidirectional audio services over cable television networks using cable modems.**

- “When text is combined with audio, the real-time communication may be established as described in [ITU-T F.703], [ITU-T T.140] and [IETF RFC 4103].”

- **IETF MSRP (RFC 4975)**

- A messaging standard for SIP networks to be used during calls.

- **IETF RFC 4504 SIP Telephony Device Requirements and Configuration.**

- Has the following requirement:

- “Req-55: SIP telephony devices that include a display, or have a facility for connecting an external display, MUST include protocol support as described in RFC 4103 for real-time interactive text.”

- **IETF RFC 5194 Framework for Real-Time Text over IP Using the Session Initiation Protocol (SIP)**

- This document lists the essential requirements for real-time Text-over-IP (ToIP) and defines a framework for implementation of all required functions based on the Session Initiation Protocol (SIP) and the Real-Time Transport Protocol (RTP). This includes interworking between Text-over-IP and existing text telephony on the Public Switched Telephone Network (PSTN) and other networks.

- It refers to IETF RFC 4103 for transport of real-time text.

- **3GPP TS 26.114 IP Multimedia Subsystem IMS; Multimedia Telephony; Media handling and interaction**

Multimedia Telephony Service for IMS (MTSI), here also referred to as Multimedia Telephony, is a standardized IMS telephony service in 3GPP that builds on the IMS capabilities.

The user experience of multimedia telephony is expected to be equivalent to or better than corresponding circuit-switched telephony services. Multimedia telephony also exploits the richer capabilities of IMS. In particular, multiple media components can be used and dynamically added or dropped during a session.

This document specifies a client for the Multimedia Telephony Service for IMS (MTSI) supporting conversational speech (including DTMF), video and text transported over RTP with the scope to deliver a user experience equivalent to or better than that of Circuit Switched (CS) conversational services using the same amount of network resources. It defines media handling (e.g., signaling, transport, jitter buffer management, packet-loss handling, adaptation), as well as interactivity (e.g., adding or dropping media during a call). The focus is to ensure a reliable and interoperable service with a predictable media quality, while allowing for flexibility in the service offerings. The client may also support the IMS Messaging service. The scope therefore also includes media handling for non-conversational media using MSRP.

The Multimedia Telephony Service for IMS supports simultaneous transfer of multiple media components with real-time characteristics. Media components denote the actual components that the end-user experiences.

The following media components are considered as core components. Multiple media components (including media components of the same media type) may be present in a session. At least one of these components is present in all conversational multimedia telephony sessions.

- **Speech:** The sound that is picked up by a microphone and transferred from terminal A to terminal B and played out in an earphone/loudspeaker. Speech includes detection and generation of DTMF signals.
  - AMR speech codec (3GPP TS 26.071, 3GPP TS 26.090, 3GPP TS 26.073 and 3GPP TS 26.104) including all 8 modes and source controlled rate operation 3GPP TS 26.093. The MTSI client in terminal shall be capable of operating with any subset of these 8 codec modes.
- **Video:** The moving image that is, for example, captured by a camera of terminal A, transmitted to terminal B and, for example, rendered on the display of terminal B.
  - MTSI clients in terminals offering video communication shall support:
    - ✓ ITU-T Recommendation H.264 / MPEG-4 (Part 10) AVC Constrained Baseline Profile (CBP) Level 1.2.
  - In addition they should support:
    - ✓ ITU-T Recommendation H.264 / MPEG-4 (Part 10) AVC Constrained Baseline Profile Level 3
  - MTSI clients offering video shall support AVPF (RFC 4585) configured to operate in early mode.

- H.264 (AVC) video codec RTP payload format according to RFC 3984, where the interleaved packetization mode shall not be used.
  - Text: The characters typed on a keyboard or drawn on a screen on terminal A and rendered in real-time on the display of terminal B. The flow is time-sampled so that no specific action is needed from the user to request transmission.
    - MTSI clients in terminals offering real-time text conversation shall support:
      - ✓ ITU-T Recommendation T.140.
      - ✓ T.140 specifies coding and presentation features of real-time text usage. Text characters are coded according to the UTF-8 transform of ISO 10646-1 (Unicode).
    - The following RTP payload format shall be used:
      - ✓ T.140 text conversation RTP payload format according to RFC 4103.
  - **IETF RFC 6120, Extensible Messaging and Presence Protocol (XMPP): Core**
  - **IETF RFC 6121, Extensible Messaging and Presence Protocol (XMPP): Instant Messaging and Presence**  
<http://tools.ietf.org/html/rfc6121>  
 These define a standardized and widely used protocol for Instant Messaging. There are mentioned in NENA i3 as a possible extension of NENA i3.
- **User interface and usability standards with accessibility motivated parts**
  - **ISO/IEC PDTR 29138-2: “Accessibility considerations for people with disabilities - Part 2: Standards inventory”**  
 This specification contains a comprehensive list of standards including accessibility aspects. A large part of the contents is about user interface accessibility, but also includes communication and other topics.
  - **Section 508: Information and Communication Technology Standards and Guidelines.**  
<http://www.access-board.gov/sec508/standards.htm>  
 Standards for accessible procurement in USA. Dominating part is about user interface requirements. Note that this is under revision. The draft new rules are listed under “Ongoing work” below.
  - **ETSI TR 102 612 European accessibility requirements for public procurement of products and services in the ICT domain**  
[http://portal.etsi.org/stfs/stf\\_homepages/STF333/tr\\_102612v010101p.doc](http://portal.etsi.org/stfs/stf_homepages/STF333/tr_102612v010101p.doc)  
 A report with many references to various kinds of accessibility-related standards.
  - **ITU-T FSTP-TACL Telecommunications Accessibility Checklist**  
 “This Telecommunications Accessibility Checklist for standardization activities intends to ensure that the specified services and features are usable by as many as possible including people with disabilities.  
 It is suggested that this checklist be used early on as part of the standards development process.”  
<http://www.itu.int/pub/T-TUT-FSTP-2006-TACL>

The basic requirements for accessibility of telecommunication features, both for access to the user interfaces, and for media access and inclusion of relay services in an accessible way.

- **Ongoing standardization work of specific accessibility interest**

- **XEP-0301: In-band Real-time text**

<http://xmpp.org/extensions/xep-0301.html>

A draft extension to XMPP Instant Messaging to introduce real-time text functionality in the XMPP Instant Messaging environment.

- **Section 508 Refresh: Draft Information and Communication Technology Standards and Guidelines**

<http://www.access-board.gov/sec508/refresh/draft-rule.htm>

Standards for accessible procurement in USA. Dominating part is on user interface requirements. This is a draft revised set of requirements for both accessible procurement and accessible communication products (Section 508 and Section 255). A new draft revision is announced for late September 2011.

- **TTY access**

- **TIA 825A A Frequency Shift Keyed Modem for Use on the Public Switched Telephone Network**

Specification of the analogue technique used in PSTN TTYs in USA.

<http://standardsdocuments.tiaonline.org/tia-825-a.htm>

- **ITU-T V.18 Operational and Interworking Requirements for DCE:s Operating in the Text Telephone Mode**

<http://www.itu.int/rec/T-REC-V.18/en>

The international standard for PSTN text telephones, including TTY for USA as Annex A.

- **ITU-T V.151 Procedures for the end-to-end connection of analogue PSTN text telephones over an IP network utilizing text relay**

A standard describing how PSTN textphone communication (TTY) can be reliably transported through IP networks between PSTN network segments. Including the IP transmission aspects. For full functionality also line echo cancelling performance and coding/decoding must be considered.

<http://www.itu.int/rec/T-REC-V.151/en>

- **TIA-1001 Transport of TIA-825-A Signals over IP Networks**

A standard describing how PSTN TTY communication can be reliably transported through IP networks between PSTN network segments including the IP transmission aspects. For full functionality also line echo cancelling performance must be considered.

- **ITU-T H.248.2 Packages for fax, text and call discrimination**

Standard for gateway control over gateways with textphone and TTY functionality between IP and PSTN networks.  
<http://www.itu.int/rec/T-REC-H.248.2/en>

## Appendix D: Documents Related to Direct Access to PSAPs

A key recommendation of this document talks about ways that individuals with disabilities can directly access NG9-1-1. There are currently a number of existing standards as well as standards under development that would be used for providing direct access to NG9-1-1 using different communication modalities (e.g., voice, text, and video).

- **ITU-T Y.2205 Next Generation Networks – Emergency telecommunications - Technical considerations**

<http://www.itu.int/rec/T-REC-Y.2205-200809-S>

This Recommendation specifies technical considerations that can optionally be applied within the Next Generation Network (NGN) to enable emergency telecommunications (ET). In addition, the Recommendation also outlines the underlying technical principles involved in supporting ET. It specifies requirements and capabilities for ET beyond the ones specified in [ITU-T Y.2201] in the context of NGN (as defined in [ITU-T Y.2001] and further outlined in [ITU-T Y.2011]).

This standard contains the following statement:

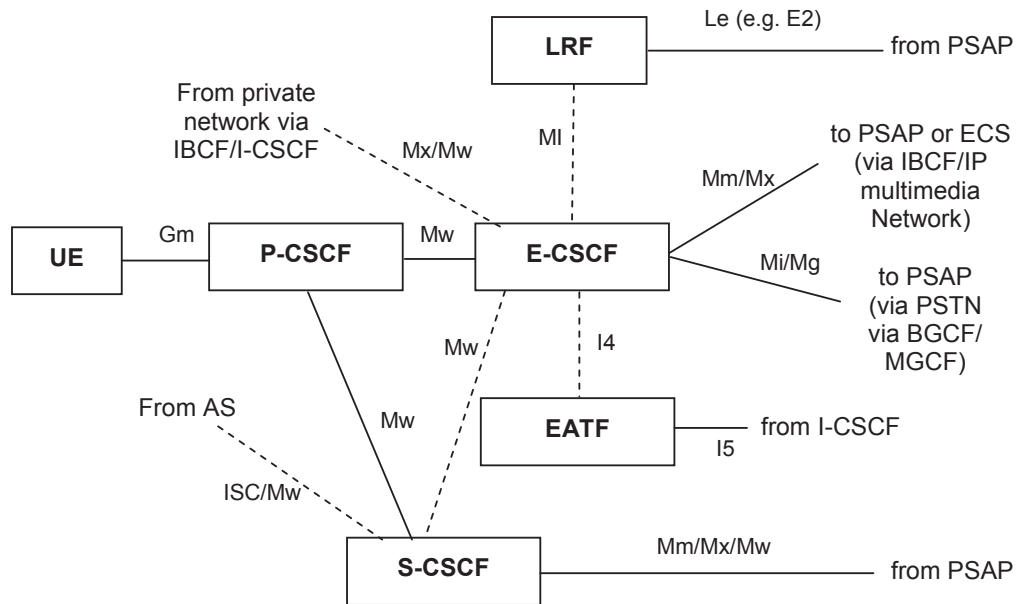
“The participants in emergency telecommunications can communicate with each other using multiple types of media including voice, video, real-time text and instant messaging.”

- **3GPP TS 23.167 IP Multimedia Subsystem (IMS) emergency sessions**

This specification defines the stage 2 service description for emergency services in the IP Multimedia Core Network Subsystem (IMS), including the elements necessary to support IP Multimedia (IM) emergency services. Also covered are the Access Network aspects that are crucial for the provisioning of IMS emergency services.



The IMS Emergency Calls architecture is defined with the introduction of an Emergency Call Session Control Function (E-CSCF):



**Figure 3: IMS Emergency Calls Architecture**

This specification defines the architecture and functional description of the mobile device and the IMS components: Proxy and Emergency CSCF, Location Retrieval Function (LRF), Media Gateway Control Function (MGCF), and the Emergency Access Transfer Function (EATF).

The specification also defines the procedures related to establishment of IMS emergency session, which includes IMS Registration for Emergency Session and Emergency Session Establishment in the Serving IMS network, as well as Interworking with PSAP.

Other 3GPP specifications that are related to the IMS emergency services are TS 23.228 on IMS in general, including fixed broadband access aspects, TS 23.060 describing General Packet Radio Service (GPRS) (UTRAN), TS 23.401, TS 23.060; TS 23.402 describing Evolved Packet System (UTRAN and E-UTRAN); TS 23.234 describing 3GPP/WLAN Interworking; TS 23.271 that covers location services and TS 23.216 and TS 23.237 describing Single Radio Voice Call Continuity for IMS Emergency session.

- **IETF RFC 5012 Requirements for Emergency Context Resolution with Internet Technologies**

Contains:

“Emergency calling must support a variety of media. Such media should include voice, conversational text (RFC 4103 [RFC4103]), instant messaging, and video.”

- **NENA i3 Detailed Functional and Interface Standards for the NENA i3 Solution**  
[http://www.nena.org/?page=i3\\_Stage3](http://www.nena.org/?page=i3_Stage3)  
 This is a specification on protocol level for NG9-1-1. This specification contains a media chapter 4.1.8 with requirements to support H.264 video, RFC 4103 and RFC 5194 real-time text and G.711 and AMR-WB wideband audio, an Instant Messaging section, 4.1.9, requiring support of RFC 4975 MSRP and RFC 3928 SIP Message. An indication that an XMPP extension may be of interest is included. A specification for handling of TTY (TIA 825A) through gateways is also included.
  
- **ATIS IMS ESInet**  
 This ongoing standardization work supplements the NENA i3 specification to support IMS-based originating networks. The output will be an ATIS Standard for Implementation of 3GPP Common IMS Emergency Procedures for IMS Origination and ESInet/Legacy Selective Router Termination. The scope of this standard is to identify and adapt as necessary 3GPP common IMS emergency procedures for applicability in North America to support emergency communications originating from an IMS subscriber (fixed, nomadic, or mobile) and delivering to an ESInet or to a legacy selective router. While the main focus of this standard is IMS emergency service origination and in particular the associated impacts to an originating device and originating IMS network, the standard also covers related support from the access network and for location acquisition, subscriber home networks in the case of roaming, and considers support for service origination (e.g., call back) from a PSAP.
  
- **IETF Framework for Emergency Calling using Internet Multimedia draft-ietf-ecrit-framework-13**  
<http://tools.ietf.org/html/draft-ietf-ecrit-framework>  
 This is an approved Internet-draft specification for the interface to emergency services in IP networks, based on the IETF SIP (RFC 3261) call control protocol. (This is the service side, matching the draft-ietf-ecrit-phonebcp specification for the terminal side). The Media chapter 14 contains requirements to support audio according to ITU-T G.711, real-time text according to RFC 4103, video, Instant Messaging according to IETF RFC 3428 SIP Message and RFC 4275 MSRP. Relay service access is mentioned in Chapter 11, Mid-call behavior. General location and routing procedures are also described.
  
- **IETF Best Current Practice for Communications Services in support of Emergency Calling**  
<http://tools.ietf.org/html/draft-ietf-ecrit-phonebcp>  
 An approved draft specification for IP terminals or communication services access to IP-based emergency services. Requires the SIP (IETF RFC 3261) call control protocol to be used for emergency service access. The Media chapter 14, contains requirements for the support of RFC 4103 and RFC 5194 for Real-time text, H.264 for video, G.711 for audio, and recommends G.722 and AMR-WB (G.722.2) for wide band audio.  
  
 Requires either RFC 3428 SIP Message or RFC 4725 MSRP to be used if IM is to be used. Mentions that XMPP may be added in the future for messaging. General location and routing procedures are also described.

**Ongoing standardization work of specific accessibility interest**

- **ETSI DTS 103 170 Total Conversation access to emergency services**  
A draft specification for Total Conversation (=call with video, real-time text and audio) access to emergency services.
- **3GPP TR22.871 Study on Non-Voice Emergency Services**

*Note:* NOVES is now called Multi Media Emergency Services or (MMES).

Non-voice communication such as text messages and instant messaging via wireless devices has been very successful and continues to expand. Many consumers assume that they can utilize these types of non-voice communications as mechanisms to communicate with emergency services whenever emergency assistance is required. Such mechanisms currently do not exist. The Emergency Services community has a desire to have multimedia emergency services supported with the same general characteristics as emergency voice calls.

Before release 11, TS 22.101 service requirements for emergency calls (with or without the IP Multimedia Core Network) was limited to voice media. The Non-Voice Emergency Services is intended to be an end-to-end citizen to authority communications. The Non-Voice Emergency Services could support the following examples of non-voice communications to an emergency services network:

1. Session-based text messages (which does not include SMS) from citizen to emergency services.
2. Session-based and session-less instant messaging type sessions with emergency services.
3. Multi-media (e.g., pictures, video clips) transfer to emergency services either during or after other communications with emergency services.
4. Real-time video session with emergency services.

In addition to support the general public, this capability would facilitate emergency communications to emergency services by the deaf and hard of hearing individuals and those with speech disabilities.

NOVES as defined in this document focuses on Next Generation Network (NGN) technology and does not include legacy messaging services, such as Short Messaging Service (SMS). In addition, NOVES only supports human initiated devices.

While text messaging is expected to remain popular, the underlying technology will shift from legacy SMS to IP-enabled messaging (including various forms of instant messaging (IM)) to support NOVES. Increasingly, both smart phones and feature phones support multiple technologies for text messaging. It is important not to confuse a specific underlying technology such as SMS with functionality such as text messaging.

All use cases may have some relation to accessibility, but of specific accessibility interest are the following use cases:

1. Session-based text message to emergency services.
  2. Multimedia Telephony communication with real-time text to Emergency services.
  10. Multimedia Telephony mainly in sign language to Emergency services.
- **ATIS Interim Non-Voice Emergency Services (INES) Incubator**  
The Interim Non-Voice Emergency Services (INES) Incubator is an ATIS initiative to identify an interim robust text-based replacement for the text telephone devices (TTY) while the next generation solution is under development. The goal is to enable TTY users to move beyond the use of TTY devices with mobile phones.
  - **ATIS Applying 3GPP Common IMS to NG9-1-1 Networks**  
Common IMS standards have been undergoing development and enhancement in 3GPP for some period of time. However from a Next Generation Emergency Services (NG9-1-1) network perspective, the Common IMS architecture only defined Emergency Service call processing for the originating network (wireless, wireline or converged), and has not defined call processing, transport, or delivery of Emergency Service calls within the NG9-1-1 network to the appropriate PSAP. Goal is to produce a standard describing in the context of applying Common IMS to NG9-1-1 networks:

Clarify and define terminology such as NG9-1-1, ESInet, and Emergency Services networks for consistent and clear usage.

Use cases for:

- NG9-1-1 in the Common IMS network.
- Unique Common IMS service capabilities.

Based upon the use cases, and building upon the NENA i3 requirements (i.e., NENA 08-751 Issue 1), define the requirements for applying Common IMS to the NG9-1-1 environment. NG9-1-1 network deployment scenarios showing Common IMS operating in conjunction with other deployed service architectures such as NENA i3.

## Appendix E: Glossary of Terminology and Acronyms

3GPP	3 <sup>rd</sup> Generation Partnership Project <a href="http://www.3gpp.org">www.3gpp.org</a>
AMR	Adaptive Multi-Rate
AMR-WB	Adaptive Multi-Rate Wideband
ANPRM	Advance Notice of Proposed Rule Making
APCO	Association of Public-Safety Communications Officials <a href="http://www.apco911.org">www.apco911.org</a>
ATIS	Alliance for Telecommunications Industry Solutions <a href="http://www.atis.org">www.atis.org</a>
AVC	Advanced Video Coding
AVPF	Audio-Visual Profile with Feedback
Baudot	A seven bit code, only five of which are information bits. Baudot is used by some text telephones to communicate with each other at a 45.5 baud rate. [CVAA]
CA	Communication Assistant A person who transliterates or interprets conversation between two or more end users of TRS. CA supersedes the term “TDD operator.” [CVAA] In the deaf community, the term video interpreters (VI) is often used for a CA because their skills are very different from that of CAs in traditional (TTY) relay services where typing skills are of essence.
Call	As used in this document, it refers to a generic call that may include any or all of the following media, voice, real-time text, messages, video or images.
Common Carrier or Carrier	Any common carrier engaged in interstate Communication by wire or radio as defined in section 3(h) of the Communications Act of 1934, as amended (the Act), and any common carrier engaged in intrastate communication by wire or radio, notwithstanding sections 2(b) and 221(b) of the Act. [CVAA]
Conference Call	A telephone call in which the calling party wishes to have more than one called party participate in the audio, video, or text portion of the call. The conference calls may be designed to allow the called party to participate during the call, or the call may be set up so that the called party merely listens to, or views the call video or text and cannot contribute. Conference calls can be designed so that the calling party calls the other participants and adds them to the call - however, participants are usually able to call into the conference call themselves, by dialing into a special telephone number that connects to a “conference bridge” (a specialized type of equipment that links telephone lines). Companies commonly use a specialized service provider who maintains the conference bridge, or who provides the phone numbers and PIN codes that participants dial to access the meeting or conference call. [adapted from Wikipedia.com]
Covered Entities	Within the FCC’s jurisdiction, covered entities refers to providers of and manufacturers of equipment used for: <ol style="list-style-type: none"> <li>1. Wireline, wireless and interconnected VoIP services (see 47 C.F.R. §§ 20.18(b), 64.3001);</li> <li>2. Telecommunications and Internet-protocol based relay services, including TRS, VRS and IP-Relay (see 47 C.F.R. § 64.604); and</li> <li>3. Advanced communications services, including interconnected VoIP, non-interconnected VoIP, electronic messaging, and interoperable video conferencing services (see CVAA § 716).</li> </ol>

CPE	Customer Premises Equipment Equipment employed on the premises of a person (other than a carrier) to originate, route, or terminate telecommunications or interconnected VOIP service.
CS	Circuit Switched
CSRIC	Communications Security, Reliability and Interoperability Council <a href="http://transition.fcc.gov/pshs/advisory/csric/">http://transition.fcc.gov/pshs/advisory/csric/</a>
CVAA	Communications and Video Accessibility Act <a href="http://transition.fcc.gov/cgb/dro/cvaa.html">http://transition.fcc.gov/cgb/dro/cvaa.html</a>
Direct Access to NG9-1-1 Call	Calling NG9-1-1 and being connected directly with the NG9-1-1 telecommunicator without anyone between and getting service equivalent to what the public in general gets. Connection may include an assisting service that is also included in a three-party call arrangement - but the key is the user has no one between them and the PSAP.
DOJ	Department of Justice <a href="http://www.justice.gov">www.justice.gov</a>
DOT	Department of Transportation <a href="http://www.dot.gov">www.dot.gov</a>
DTMF	Dual Tone Multi Frequency
E9-1-1	Enhanced 9-1-1
E-CSCF	Emergency Call Session Control Function
E-UTRAN	Evolved UMTS Terrestrial Radio Access Network
EAAC	Emergency Access Advisory Committee <a href="http://transition.fcc.gov/cgb/dro/EAAC/">http://transition.fcc.gov/cgb/dro/EAAC/</a>
EATF	Emergency Access Transfer Function
EENA	European Emergency Numbering Association <a href="http://www.eena.org">www.eena.org</a>
Equivalent Service	Service that works equally well for the person who gets the service as for the public in general, so that the service is equally rapid, efficient and accessible and can be used with the ways to communicate that work best for the person using the service.
ESInet	Emergency Services IP-networks
ETSI	European Telecommunications Standards Institute <a href="http://www.etsi.org">www.etsi.org</a>
FCC	Federal Communications Commission <a href="http://www.fcc.gov">www.fcc.gov</a>
GPRS	General Packet Radio Service
GTT	Global Text Telephony
HCO	Hearing Carry Over A form of TRS where the person with the speech disability is able to listen to the other end user and, in reply, the CA speaks the text as typed by the person with the speech disability. The CA does not type any conversation. Two-line HCO is an HCO service that allows TRS users to use one telephone line for hearing and the other for sending TTY messages. HCO-to-TTY allows a relay conversation to take place between an HCO user and a TTY user. HCO-to-HCO allows a relay conversation to take place between two HCO users. [CVAA]
HTTP	Hypertext Transfer Protocol
ICT	Information Communications Technology
IETF	Internet Engineering Task Force <a href="http://www.ietf.org">www.ietf.org</a>
IM	Instant Messaging
IMS	IP Multimedia Subsystem
INES	Interim Non-voice Emergency Services



Interconnected VoIP Service	An interconnected Voice over Internet protocol (VoIP) service is a service that: (i) Enables real-time, two-way voice communications; (ii) Requires a broadband connection from the user's location; (iii) Requires Internet protocol-compatible customer premises equipment (CPE); and (iv) Permits users generally to receive calls that originate on the public switched telephone network and to terminate calls to the public switched telephone network. [CVAA]
IP	Internet Protocol
IP Captioned Telephone Service	Internet Protocol Captioned Telephone Service (CTS) A telecommunications relay service that permits an individual who can speak but who has difficulty hearing over the telephone to use a telephone and an Internet Protocol-enabled device via the Internet to simultaneously listen to the other party and read captions of what the other party is saying. With IP CTS, the connection carrying the captions between the relay service provider and the relay service user is via the Internet, rather than the public switched telephone network. [CVAA]
IP Relay	Internet Protocol Relay Service (IP Relay). A telecommunications relay service that permits an individual with a hearing or a speech disability to communicate in text using an Internet Protocol-enabled device via the Internet, rather than using a text telephone (TTY) and the public switched telephone network. [CVAA]
ITU-T	International Telecommunication Union - Telecommunication standardization sector <a href="http://www.itu.int">www.itu.int</a>
IP-based telecommunication or advanced communication service environment	A set of codecs, control, and transport technologies and standards that are defined in either a standardized fashion by a standards organization or in a proprietary fashion by a company or an organization and that are used for IP Telecommunication or Advanced communication services. Examples of these environments (both public and proprietary) would include IMS, public internet IP multimedia (native SIP), Skype, and AVAYA or CISCO enterprise solutions.
Language Assistance Line (or Services)	Service that provides spoken or written language translation when the 9-1-1 telecommunicator does not understand the spoken or written language of the caller.
Late-deafened	Deafness which occurred any time after the development of speech and language; often it means after the age of adolescence. Usually a late-deafened adult has identified with hearing society through schooling, social connections, etc. They are usually unable to understand speech without hearing technology and/or visual aids such as speech-reading, sign language and/or Communication Access Realtime Translation Services (CART). FL Coordinating Council for the Deaf and Hard of Hearing ( <a href="http://www.fccdhh.org">www.fccdhh.org</a> ).
LTE	Long Term Evolution
MGCF	Media Gateway Control Function
MMES	Multi-Media Emergency Services
MPEG	Motion Picture Editors Guild
MSRP	Message Session Relay Protocol
MTSI	Multimedia Telephony Service for IMS
NENA	National Emergency Number Association <a href="http://www.nena.org">www.nena.org</a>
NG9-1-1	Next Generation 9-1-1
NG9-1-1 PSAP	A PSAP providing NG9-1-1 functionality
NGN	Next Generation Network

Non-English Language Relay Service	A telecommunications relay service that allows persons with hearing or speech disabilities who use languages other than English to communicate with voice telephone users in a shared language other than English, through a CA who is fluent in that language. [CVAA]
Persistent-Data Conference	Persistent-data conference: Conference where participants can review some or all communication that has taken place prior to joining the conference.
PSAP	Public Safety Answering Point As defined in 47 CFR 64.3000
Relay Service (Telecommunication) and Relay Conference Call	Traditionally this service involved a person in the middle who would “relay” communication from one person to another, translating it from one form to another. Types of Relay Service today include text-to/from-voice, sign-to/from-voice, speech-to-speech (re-voicing of hard to understand speech) and captioned telephony. There are also both PSTN and IP (Internet) forms of many of these.  With NG9-1-1, this can change. VoIP and more modern telecommunication systems “Relay Services” have the potential to operate in a “relay conference call” mode as well as a traditional “relay call” mode. In a “Relay Conference Call” mode, all parties on the call can communicate with each other directly. For example in a Video Relay Conference Call the NG9-1-1 telecommunicator could directly see the person calling them even though the call was completed through a relay service. In this way the “relay operator” acts as an “assistant” on the call rather than as a person who is “relaying” the message.
RERC	Rehabilitation Engineering Research Center
RFC	Request for Comment
RTP	Real-time Transport Protocol
RTT	Real-Time Text
Sign Language	A visual language based on hand shape, position, movement, and orientation of the hands in relation to each other and the body. [CVAA]
Sign Language Assistance Line (or services)	A service similar to the Language Assistance Service that provides sign language translation when the 9-1-1 telecommunicator does not understand the sign language of the caller.
SIP	Session Initiation Protocol
SMS	Short Message Service
Speech Assistance Line	Services that provides specialized trained communication assistant who understands impaired speech patterns and then repeats what the caller says when the 9-1-1 telecommunicator does not understand the speech of the caller.
Speech to Speech (STS) Relay Service	Speech-to-Speech (STS) Relay Service A telecommunications relay service that allows individuals with speech disabilities to communicate with voice telephone users through the use of specially trained CAs who understand the speech patterns of persons with speech disabilities and can repeat the words spoken by that person. [CVAA]
SWG-A	Special Working Group on Accessibility <a href="http://www.jtc1access.org/">http://www.jtc1access.org/</a>
TAC	Technology Advisory Council <a href="http://transition.fcc.gov/cgb/dro/tac.html">http://transition.fcc.gov/cgb/dro/tac.html</a>
Telecommunicator	Telecommunicator covers call takers, dispatchers, and those who perform dual functions in handling 9-1-1 calls.
Text Telephone (TTY)	A machine that employs graphic communication in the transmission of coded signals through a wire or radio communication system. TTY supersedes the term “TDD” or “telecommunications device for the deaf,” and TT. TTY is a term used in North America. The international name is Text Telephone.

TIA	Telecommunications Industry Association <a href="http://www.tiaonline.org">www.tiaonline.org</a>
TRS	Telecommunications Relay Services Telephone transmission services that provide the ability for an individual who has a hearing or speech disability to engage in communication by wire or radio with a hearing individual in a manner that is functionally equivalent to the ability of an individual who does not have a hearing or speech disability to communicate using voice communication services by wire or radio. Such term includes services that enable two-way communication between an individual who uses a text telephone or other non-voice terminal device and an individual who does not use such a device, speech-to-speech services, video relay services and non-English relay services. TRS supersedes the terms “dual party relay system,” “message relay services,” and “TDD Relay.” [CVAA]
TS	Technical Specification
TTY	Teletypewriter An abbreviation for teletypewriter. Machinery or equipment that enables interactive text-based communications through the transmission of frequency-shift-keying audio tones across the public switched telephone network according to TIA-825-A (A Frequency Shift Keyed Modem for Use on the Public Switched Telephone Network). As used in this part, the term //TTY// includes devices for text-to-text communications along with voice and text intermixed communications such as voice carry over and hearing carry over. TTYs may include computers with special modems. TTYs are a subset of devices called text telephones.
UMTS	Universal Mobile Telecommunications System
UTF	Unicode Transformation Format
UTRAN	UMTS Terrestrial Radio Access Network
VCO	Voice Carry Over A form of TRS where the person with the hearing disability is able to speak directly to the other end user. The CA types the response back to the person with the hearing disability. The CA does not voice the conversation. Two-line VCO is a VCO service that allows TRS users to use one telephone line for voicing and the other for receiving TTY messages. A VCO-to-TTY TRS call allows a relay conversation to take place between a VCO user and a TTY user. VCO-to-VCO allows a relay conversation to take place between two VCO users. [CVAA]
Video Interpreter	A person who translates sign language into and back from another form of communication (typically voice) for people who do not understand sign language. Video Remote Interpreting (VRI) uses video or web cameras and telephone lines to provide sign language interpreting services through an offsite interpreter. In a typical VRI situation, the deaf and hearing parties are together at one location with a videophone or web camera, and a television or computer screen. The interpreter works from another location—either an office, home-based studio or call center—also using a videophone or web camera and television or computer screen. (from Sensagent Corporation: Online Encyclopedia, Thesaurus, Dictionary definitions) With Video Relay Service (VRS) both the caller and the Video Interpreter can be located remotely with the relay operator in the middle (old model) or all three on the line together in a conference connection where all can see all (new IP and NG9-1-1 model).
VoIP	Voice over IP

VRS	<p>Video Relay Service</p> <p>A telecommunications relay service that allows people with hearing or speech disabilities who use sign language to communicate with voice telephone users through video equipment. The video link allows the CA to view and interpret the party's signed conversation and relay the conversation back and forth with a voice caller. [CVAA] Video Relay Services currently refers to a generic telephone service handling regular phone calls.</p>
WLAN	Wireless Local Area Network
XMPP	Extensible Messaging and Presence Protocol

December 6, 2011

Statement of Technology Access Program Gallaudet University, Christian Vogler

The Technology Access Program at Gallaudet University votes YES.

We would like to thank the committee for the hard work and perseverance required to find common ground toward a strong set of recommendations. We would like to draw attention to a few key issues, which we believe are of utmost importance:

1. All three real-time communication methods - voice, video, and real-time text - must be equal players in NG9-1-1. Wherever there is voice, there needs to be video and real-time text, to give the users who rely on the latter the same equal opportunity to communicate. Real-time text methodologies can be used to emulate messaging technologies that communicate in words, sentences, or entire paragraphs. Conversely, however, messaging technologies that do not also support real-time text cannot be used to meet the needs of those who need real-time text, including but not limited to captioned telephony.
2. The minimum functional requirements for video, audio, and text quality for people with disabilities may be different from the requirements of the mainstream – in establishing minimum criteria for the quality for each environment, the needs of people with disabilities, such as sign language users, lip readers, and hearing aid users, must be specifically addressed and tested.
3. Minimum standards or protocols are a prerequisite for interoperability of accessibility functions. The industry defines these for audio, and this minimum set must be supported by all elements on the network and by all gateways between networks. To ensure access by those who rely on video (e.g., sign language users and lip readers) or real-time text, there needs to be a similar minimum set of codecs and transport protocols for video and real-time text (at least one for each) that is supported by all components and gateways, so as to provide the same interoperability as for what is available for voice. This interoperability has not taken place among the networks based on normal market pressures. A recommendation that the FCC create a requirement for industry to define and support these standards and protocols is included in this report, and constitutes one of its major strengths.

Christian Vogler

## **Accompanying Statement of the Industry Members of the EAAC December 7, 2011**

The release of the Emergency Accessibility Advisory Committee (“EAAC”) Recommendations represents an important milestone in the implementation of the Twenty-First Century Communication and Video Accessibility Act (“CVAA”) of 2010. In the CVAA, Congress tasked the EAAC with developing recommendations to ensure persons with disabilities can access future emergency communication services. The undersigned EAAC members (“Industry”) wish to express our sincere appreciation to all of the EAAC members and Federal Communications Commission (“FCC” or “Commission”) staff for the considerable effort and resources devoted to the development of the EAAC’s recommendations since the EAAC was created one year ago.

While the undersigned EAAC members fully and equally support the goal of ensuring that Internet Protocol (IP)-enabled emergency communications are accessible to persons with disabilities, we have profound reservations about several of the recommendations presented to the Commission. At every opportunity that was afforded, Industry members of the EAAC have noted procedural and substantive concerns. We support these recommendations because of our overwhelming support for the core principles of access to emergency communications for individuals with disabilities, but note that this statement reflects our concerns with the EAAC recommendations as drafted and submitted.

With respect to procedural issues, the EAAC had to surmount significant time constraints imposed by Congress in the CVAA. The EAAC recommendations presented in this report would have benefited from the type of review and discussion typically afforded groups addressing policies of such a diverse and important topic. For example, some of the EAAC’s recommendations may be inconsistent or in conflict with each other (i.e., P2.2 and T1.2) but these could not be reconciled by the deadline imposed by Congress. In addition, the ability to present alternative recommendations with different perspectives would have provided the Commission with a better understanding of the diverse views of the EAAC members. Given that the EAAC has a two year mandate, it would have been preferable to issue the current report as a “draft”, with additional time utilized to refine the recommendations, and document potential alternatives to a greater level of detail, with input from the full membership of the EAAC.

Substantively, the Industry members of the EAAC have significant concerns about the scope of the EAAC’s recommendations in relation to the CVAA. Many of the EAAC recommendations address issues well beyond those contemplated by Congress in Section 106 of the CVAA, while others do not reflect the careful balance and flexible approach that Congress intended by the CVAA or would prejudice the outcome of Commission pending rulemakings such as PS Dockets 07-114 and 10-255.

Specifically, the Industry members of the EAAC wish to highlight concerns with the following recommendations as drafted and recommend further study in 2012:

**Recommendation P2.2: Types of Direct Access.** Item 5 includes a recommendation relating to “transitioning to IP-based text communication, SMS.” In general, Industry prefers the language in Recommendation T1.2 to the language in this item. There are significant and well-documented concerns with the reliability, scalability and timeliness of SMS to 9-1-1 solutions, which are under consideration as part of PS Docket 10-255. We therefore have concerns about



whether this recommendation is technically feasible.

**Recommendation P2.3: Video, Voice and Text Quality.** The quality of video, text and voice communications is dependent on many factors, particularly when wireless communications is involved. These include radio propagation and medium access characteristics, bandwidth availability, codec negotiation, implementation response to congestion, and network management practices. This recommendation is therefore more appropriate for further study by a body like the FCC's CSRIC and development of industry best practices, rather than new Commission regulations at this time. The recommendation also does not appear to be limited to emergency communications, in which case it would exceed the scope of the EAAC's mandate.

**Recommendation P2.4: User Choice of Media.** The requirement for "end-to-end support of voice, real-time text, messaging and video in a single call" (or Total conversation) may not be feasible, even where device hardware support may be available. For example, the network may not offer sufficient bandwidth to support multi-media calling or where the mobile device screen real-estate or keyboard capabilities are insufficient (e.g., typing on an on-screen keyboard while simultaneously displaying video(s) and real-time text). Further study and industry best practices are necessary, as well as further consideration in the NG911 NPRM, before concluding that this recommendation should be implemented.

**Recommendation P2.5: Availability of Calling Terminal.** While this recommendation states that all hardware and software that can call NG9-1-1 via voice be required to communicate with NG9-1-1 in all modalities, this recommendation could result in a requirement to support capabilities which were not intended (e.g., handsets that support streaming video might be required to support video calls as well). We believe that the caveat included in Recommendation T4.1 about "a reasonable expectation that emergency communications will be supported" should apply here. This recommendation also does not appear consistent with the CVAA's industry flexibility provisions, as it would seem to preclude a service provider from making the software available to the subscriber for free or at a nominal charge.

**Recommendations P3.1 & T5.3: Not Impair or Impede.** Within Session Initiation Protocol (SIP) trunking services, it is common for Session Border Controllers (SBCs) to modify Session Description Protocol (SDP) offers and answers so as to provide the contracted media types or codecs. While it is desirable for services to enable advanced capabilities over time such as High Definition (HD) voice, video or text communications, we do not believe that lack of such support should be viewed as "impairing or impeding" support for accessibility. Aspects of this recommendation may therefore lie outside the scope of the CVAA.

**Recommendations P7.1, P7.2, P7.3, T7.1, T7.2, T7.5, T7.6, T7.7 & T7.8: TRS Support of NG9-1-1 Standards.** We note that all the technical details required for Telecommunications Relay Services (TRS) support of NG9-1-1 standards have not yet been worked out. We therefore recommend that the FCC work with industry to develop best practices.

**Recommendation T1.2: Interim Mobile Text Solution:** There are significant and well-documented technical challenges associated with the use of SMS to contact 9-1-1 emergency services (such as latency and lack of reliability), with life threatening implications to the end-users. We strongly recommend that the FCC acknowledge and consider these issues and trade-offs carefully. In addition, we recommend further study in this area if the FCC wishes to consider the use of SMS as an interim (as opposed to a interim) solution later on.

**Recommendation T1.3: Interim Solution for Location-Aware Relay Services.** This recommendation refers to the use of location Application Programming Interfaces (APIs) by IP-enabled relay services. Since operating system or browser location APIs (such as the W3C Location API) were typically developed to support location-based services, not emergency uses, they may not provide the location accuracy or reliability required for emergency services. Addressing the limitations of today's location APIs would require additional research and development that is unlikely to be completed prior to the availability of IP-enabled text messaging services supporting location conveyance. Related issues are also raised in PS Dockets 07-114 and 10-255. We recommend further study in this area.

**Recommendation T2.1: Minimum Required Set of Codecs and Transport Protocols.** As with Recommendations P1.1 and P1.4, this recommendation appears to assume that 9-1-1 obligations will be broadened beyond today's definition of "interconnected VoIP". To the extent that the "minimum set of codecs" includes codecs requiring payment of licensing fees, it may be difficult to support this recommendation within open-source software or services that do not charge usage fees.

**Recommendation T4.2: Availability of Calling Terminals.** We believe that the caveats from Recommendation P1.4 relating to proprietary or closed environments should apply to this recommendation as well.

**Recommendation T5.1-5.2: Congestion.** Performance in a congested environment is dependent on factors such as radio propagation, medium access, bandwidth availability, codec negotiation, implementation response to congestion, and network management practices that are more appropriate for further study by the FCC's CSRIC and development of industry best practices, than new Commission regulations. The recommendation also does not appear to be limited to emergency communications, in which case it would exceed the scope of the EAAC's mandate.

**Recommendation T5.4: Successful Transport Across Boundaries.** This recommendation goes beyond the scope of the CVAA to requirements relating to the interface between service environments. We believe this is outside the EAAC's scope of authority and would be better addressed by development of industry best practices rather than Commission regulation.

**Recommendation T5.5: Transport of Location Information.** This requirement as worded would require the transmission of location information for "all communication modalities," not just those that would be supported in the NG9-1-1 environment, and touches on issues raised in Dockets 07-114 and 10-255.

**Recommendation T5.6. Emergency Multimedia Calls Without Service Plan.** While enabling multimedia emergency calling over IP without a data plan represents a potentially useful capability, further development of industry best practices is required to address concerns relating to prank emergency calls and fraud prevention. In terms of protocols to be supported for making an emergency multimedia call without a service plan, the caveat included in Recommendation T4.1 about "a reasonable expectation that emergency communications will be supported" should apply.

**Recommendation T7.9: TRS and Caller Security and Privacy.** Due to the need to support

intermediaries, providing equivalent security and privacy on a relayed call as compared with direct calling of NG9-1-1 may be difficult.

In conclusion, we support the EAAC's recommendations because the sum of our concerns does not outweigh the value that accessible IP-enabled emergency communications will provide to individuals with disabilities and there will be further opportunities through the Commission rulemaking process, standards development, and other collaborative efforts with NG911 stakeholders to address many of these concerns. The Commission must recognize that some of the recommendations may not be achievable and may be beyond the Commission's authority. We ask that the Commission provide all interested parties with the opportunity to further explore the EAAC's recommendations and provide information and alternatives to the FCC, especially on these critical topics. We also hope the FCC will consider these and future concerns in the development of regulations going forward.

The undersigned Industry members of the EAAC look forward to further collaborative efforts with the Commission and the EAAC.

Respectfully,

- Alliance for Telecommunications Industry Solutions – Steve Barclay
- AT&T – Brian Daly
- CTIA- The Wireless Association® – Matthew Gerst
- Microsoft – Bernard Aboba
- Research in Motion (RIM) – Daniel Fok
- Telecommunications Industry Association and the Mobile Manufacturers Forum – David J. Dzumba
- T-Mobile – Jim Nixon
- Verizon Communications – Kevin Green
- Vonage Holding Corporation – Brendan Kasper

December 6, 2011  
Statement of Sheri Farinha

It was a pleasure to have the opportunity work with all members of the EAAC, and I further appreciate the hard work by the FCC staff, and Coordination Team, our Co-Chairs along with everyone's effort to work on common goals for this report.

As the Deaf Consumer representative on the EAAC, in order to see true commitment by EAAC to ensure equal access for all becomes a reality, the FCC must take a stronger role to see that the political and fiscal barriers promulgated by the industry, are removed. The EAAC was not able to develop consensus recommendation to meet the December 7<sup>th</sup> deadline for interim text-based solutions for direct access to current 9-1-1 centers for individuals who are Deaf or disabled, who use wireless smartphones for daily communications due to the industry having doubts whether or not it is technically feasible to implement direct SMS text communications to 9-1-1, it has been my experience that once a service is required, suddenly solutions are viable and sound. We live in a country where a growing majority of Americans, including young teens, use SMS on daily basis, and paramount is the importance to fill the technological gap for consumers to have access. In fact, just a year ago, the CTIA shared that it did not wish to reveal specific numbers on data use, but "it did reveal that Americans traded 822 billion text messages – 5 billion per day – for the second half of 2009 and over 1.5 trillion for the whole year. MMS messaging is more than double year-over-year for the last half of 2009, with 24.2 billion photos, videos, and audio clips moving from one mobile device to another in just six months".

(<http://arstechnica.com/telecom/news/2010/03/wireless-survey-91-of-americans-have-cell-phones.ars>). This tells consumers clearly the goal is to have advanced communications using video, text, and voice to access to NG9-1-1 is indeed possible and technically feasible. Hence the disappointment in seeing the industry choose to block the interim solution for SMS and other mobile text based communication. Lack of 911 access via SMS affects all of us. This issue must be resolved as expeditiously as possible with reassurance to meet the liability, fiscal, and other concerns the industry has shared with the EAAC throughout the past year. I support Gallaudet/Tap's statement which cut to the chase to define what is needed to be done to see direct access happen; the importance of voice, text, and video must be equally supported, and achieve the functional requirements needed for minimum standards to be developed, especially if the industry can't or won't agree.

The FCC cannot afford to see Americans who are deaf or disabled access to 9-1-1, continue to be denied.

Look forward to solutions in 2012.

My best,  
Sheri A. Farinha