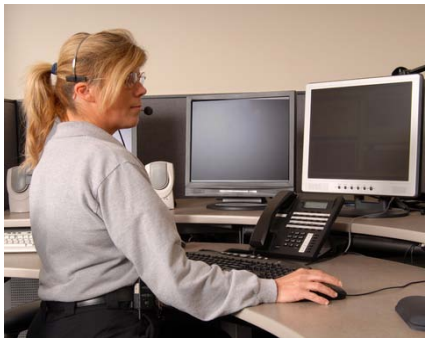

Central 911SMS & Central All-Text

For Emergency Mobile Text Communication For People Who Cannot Use Voice Calls

(Version 2.3 7-1-2011)

The quick, affordable, universal, no training approach to providing 911 access for those who cannot make a voice call to 911.

1. Quick to deploy (Less than 1 year for National System)
2. Lower cost to operate
3. Provides 911 access everywhere in US on day 1 of deployment
4. Does NOT require special equipment at each PSAP
5. Does NOT require special equipment at LECs (or anywhere in network)
6. Works for ALL 911 centers
    a. (even if PSTN only, no working TTY, no cellular and no Internet)
7. SMS directly to PSAP (but only if they can and want to handle it)
8. No training or special skills required of PSAPs - not even awareness
9. Consistent behavior for travelers wherever they are – even remote
10. Funding mechanism already in place

Why is Central 911SMS Relay needed?

Someday, all of 911 centers will have converted over to modern IP-based communication. As a part of that process a mechanism for using text to communicate with 911 centers will be standard. However, it will be many years before this conversion takes place – and many years after that before the last 911 center is converted. During this time it is essential that individuals who cannot use speech to communicate have some mechanism to communicate effectively with 911 centers to seek help for themselves and loved ones

What is Central 911SMS Relay?

Central 911SMS relay is a proposed way of providing individuals who cannot use voice to communicate with a mechanism to communicate with 911 centers through text. It is similar to regular text-to-voice relay except that

1. It is specially staffed and has an instant response to incoming SMS calls
2. It uses SMS for the text side of the conversation rather than TTY or IP text.

911SMS relay is the fastest, most reliable, and simplest mechanism for providing text communication in the short run. It would consist of the following components:

1. A universal 911SMS number to which emergency SMS messages could be sent by registered users. This could be "911SMS" or, 911 (see below for way to use 911 <u>without</u> having to make network changes)

2. A central relay center that would
    - receive the 911 SMS calls,
    - get the phone's location from the phone,
    - automatically look up the location of the appropriate 911 center
    - IF that center takes direct SMS communication – then automatically transfer the SMS 'call' to that center's SMS number and let it handle the call.
    - IF that center does NOT handle direct SMS emergency calls, make a voice phone call to that 911 center's normal emergency voice call line
    - then act as a relay service between the caller and the 911 center

Notes:

- Because 911SMS RELAY is a relay center, the whole system could be funded as relay program with specified rate plan (to ensure instant response).
- If funded by the Relay fund, 911SMS would be limited to those who qualify for relay services.
- The 911SMS Service COULD be open to anyone (with or without disabilities) if a different funding mechanism were created by congress.
- Users would be registered. This serves several purposes.
    - First it provides a means to communicate with them regarding any changes to the service over time.
    - Second it allows the service to be limited to those who would qualify.
    - Third it would allow installation of a special routine, or activation of special functions in a phone as well as establishing permission to allow instant location.

Why is it the best approach?

1. **Is the simplest** - There is no need to install special equipment in the networks, or require special equipment or training in any of the tens of thousands of PSAPs.

2. **Is the lowest cost** - Just the removal of the need for massive training reduces the costs. In addition, there is no need for specialized equipment or installation. Even the central relay operation can be created using modifications of existing equipment and software.

3. **It will be more consistent** - Any user traveling anywhere will have the same basic experience in contacting the 911 center via 911SMS.

4. **It will be more effective** - The 911SMS center will be staffed by people experienced in communicating with people who are deaf or have speech impairments, rather than having text communications going to small PSAP operators not familiar with deaf text communication syntax.

5. **It will be more immediate** - It can be deployed nationally quickly rather than a slow spotty rollout over years that leaves individuals who are deaf without 911 service if they live or travel in certain areas.

6. **Works with 9-1-1 centers that accept SMS as well as those that do not** - because this can immediately and automatically transfer the SMS conversation directly to any 9-1-1 center that accepts SMS directly, it will work with any other local or regional SMS programs that are set up. However it will also work with all the rest of the 9-1-1 centers (the vast majority?) that do not accept SMS and only support voice calls into their center.

7. **Funding and policy mechanism already in place** - Since this would be another form of text relay no new authorizing legislation or new fund(ing) mechanism would be needed.

8. **Can work with a new or with existing service providers** -A new entity could be created, or existing Relays could compete, or a way of federating the service among existing centers could be established. Or a hybrid where all that agree to a cost and response time would be federated.
    a. Using a larger pool of federated service providers (who can pull from regular relay operator pool in an emergency) can provide a much deeper pool of operators on call if a disaster occurs where many calls might come in at once. However the normal operators on the 911SMS lines should be specially trained to handle emergencies.

Expanding "Central 911SMS" to a "Central All-Text" (CAT) Solution

This approach could also be used with email, or IM or Real-time text with no real changes. This would expand the SMS-based solution to an "All-text" solution that could allow users to use any standard form of text communication, including real-time text, to call 911 without the centers having to support any of them (or only the ones they choose). As 911 centers implement support for any of the types of text the text calls could be automatically transferred to them.

Technical Notes

1. This approach can be used on existing phones that have the ability to know where they are through the addition of a routine that is triggered by a special SMS message (from the 911SMS center) and returns its position via SMS message.
    a. Triangulation methods can also be used when GPS does not.
    b. The 911SMS operator can then get more detailed location information from the caller through conversation. This method (asking the caller) can also be used to obtain location information when the phone does not support this.

2. If this approach is adopted standard SMS programs in all phones could add a standard feature to make them support the service. This feature would:
    1. **Automatically change 911 to 911SMS -** User types 911, and the SMS program sends to 911SMS can type a simple 911 without reprogrammed the network to handle 911 as an SMS address
    2. **Automatically includes the phone's location** - when an SMS was sent to 911 the location of the phone (using best method) would be sent in message.
        - Location would be in a compressed datagram that conveyed the location in a few bytes.
    3. **Automatically send a "preview" of the message** that was typed up to that point if there is a pause of more than 10 seconds in the typing -- while allowing the person to complete the message if they come back.
    3. OTHER NOTES
        - It could be shipped in new phones and uploaded to old phones as part up an update
        - This feature could be turned on when the person registered
            - A person who is registered could activate it on all phones they use.
            - It is possible that it could be active on all phones – if there was another way to ensure that only people who couldn't make a voice phone call would be able to use it.
            - If the service were available to all callers (ideal but would need another funding source than the relay fund) – then it would be turned on permanently in all phones.

4. A feature should be provided so that messages to 911SMS are not charged for. A dialog between the 9-1-1 center and the person with the emergency could easily run into a large number of messages.

5. A special multiplexing program would be needed (only at the Central location) to handle multiple calls coming into the 911SMS Relay center at the same time - so that the individual conversations could be sorted out and handled by different operators. This is pretty straightforward of the SMS and email approaches. It would be somewhat more complicated for the IM approach.

6. Email and IM Notes
    a. The automatic sending of location information would require the email and IM programs also be modified on the sending device same as SMS.
    b. If IM is used, it could use a universal client that would work across IM technologies. However it should support the Real-time text feature in AIM to allow this faster form of communication with those using AIM clients

c. In email – typing 911 in the address would automatically expand to 911SMS@etc .
d. In IM 911 would be a built in shortcut to the 911SMS site if IM works out

7. Real-time text Support
   As NG911 and real-time text are introduced, they will be taken up by 911 centers across the country at different times. This same Central facility could be used to support direct real-time text calls before the 911 center move to VoIP and IP based real-time text and they could continue to work for centers that are late to adopt VoIP technologies. Any VoIP-Real-time text calls that come into the central facility that could be handled locally could be automatically transferred instantly prior to answering.

8. Many centers as one
   In implementation, the Central facility may actually be a network of centers that act as one. That will provide better ability to work in a local disaster and also allow the service to be provided by multiple vendors.

For more information or the latest copy of this document
see http://tap.gallaudet.edu/911text or http://trace.wisc.edu/911text

Please send any errors or omissions to 911text@gallaudet.edu

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