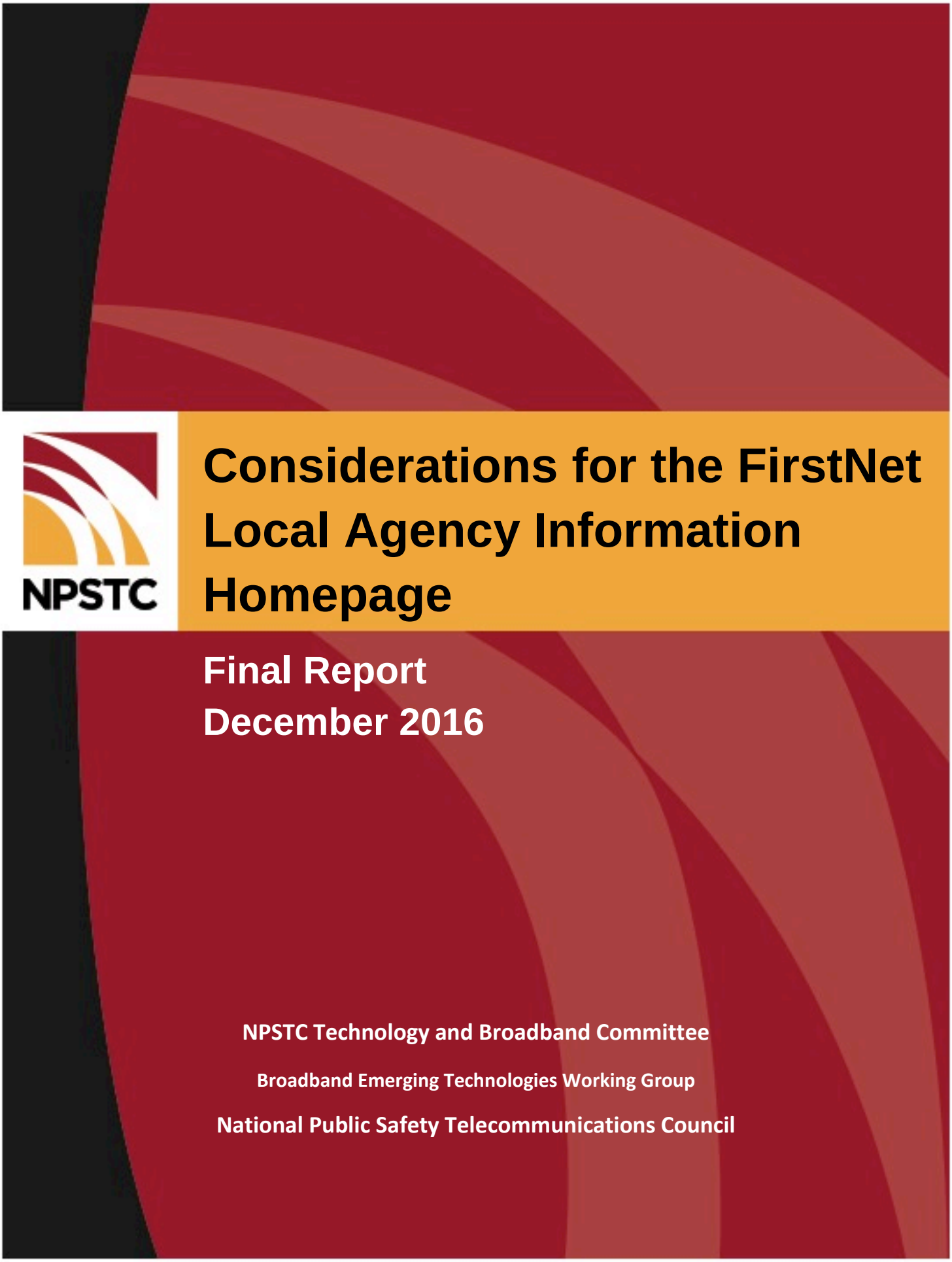

Considerations for the FirstNet Local Agency Information Homepage

Final Report
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NPSTC Technology and Broadband Committee

Broadband Emerging Technologies Working Group

National Public Safety Telecommunications Council

Introduction:

NPSTC's Broadband Emerging Technology Working Group studies a variety of public safety broadband initiatives to both educate the first responder community and to provide input on public safety requirements and capabilities. Areas of study include monitoring of 3GPP international standards regarding LTE, examination of the role that devices will play with the Nationwide Public Safety Broadband Network (NPSBN), review of work by other groups regarding analytics and sensors, discussion of unique issues associated with rural deployment of the NPSBN, and consideration of the role of the FirstNet Agency Status Web Page.

The Working Group recently undertook a multi-month examination of the proposed FirstNet Agency Information Homepage (Agency Information Homepage[1]) to review needed public safety functionality and additional requirements. This homepage capability is designed to display locally relevant information regarding incidents and FirstNet network availability to public safety users. The information page is also useful to alert first responders of urgent situations including notifications as they enter the specific geographic zone of a major incident. The status page would provide meaningful information to first responders including the incident description, assigned radio channels, staging locations, etc.

At a high level, the Agency Information Homepage will provide first responders with immediate access to:

- FirstNet network status
- Agency designated information and resources
- Incident information on active emergency events

It is important to distinguish that this report is speaking to the Agency Information Homepage and not discussing other web status page issues:

- The Public Safety Advisory Committee (PSAC) is discussing a web access page to provide **local control** input of features and functionality.
- There are also a variety of other web portals referenced in both NPSTC reports and in the FirstNet RFP related to **provisioning** of applications and other services.

There are three basic usage environments in which first responders will likely need to access an Agency Information Homepage:

1. First Responder in their own service area, needing access to data from their own agency's Agency Information Homepage.

[1] The FirstNet RFP refers to this capability as both the Agency Information Homepage and the Public Safety Entity Homepage. NPSTC has previously referred to this capability as a Status/Information Homepage or Status Web page.

2. First Responders traveling outside of their home area to assist another agency and needing access to information from that agency's Agency Information Homepage.

3. First Responders traveling through multiple jurisdictions (not relating to a mutual aid incident) who need to be aware of significant emergency events occurring in those areas.
    a. Awareness of critical incidents occurring anywhere in those jurisdictions.
    b. Awareness of major incidents occurring in their immediate area based on their present GPS coordinates.

This report will provide the following information:

1. Review of public safety requirements relating to the Agency Information Homepage as described in two separate NPSTC documents. [2]

2. Review of FirstNet RFP documents relating to the Agency Information Homepage.

3. Identification of additional public safety usage scenarios involving the Agency Information homepage.

4. Description on Agency Information Homepage functional details that should be considered when this capability is being designed by FirstNet.

1. NPSTC Public Safety Requirements Recommendations

NPSTC has produced a variety of reports that detail public safety requirements for the NPSBN. Two of these reports detail first responder use of a Status/Information Homepage. They include the 2009 *NPSTC Public Safety Broadband Task Force Report* and the 2012 *Broadband High-Level Launch Requirements Report.* Each of these reports describes the importance of the status page to assist public safety agencies.

2009 NPSTC Report: Public Safety Broadband Task Force Report

The following information contains direct excerpts from the 2009 NPSTC report that deals specifically with the status page are listed below. This report provides a comprehensive overview of the rationale for the status page. Note that information in this report was written prior to the creation of FirstNet and the allocation of spectrum for the NPSBN and references "network operators."

[2] Note that the NPSTC documents refer to this capabilty as the "Agency Status Web Page."

6.2.3 Status/Information “Homepage” - Required

Public safety or public/private partnership network operators shall provide a universal method to obtain a "home page" for visitors to the system. This "home page" will facilitate access to and distribution of available applications, alerts, incident-specific information, system status information, and information that the operator deems important to share with visitors to the system

Page 40, #3 Usage Scenario

A Public Safety user arrives on a visited network while responding for mutual aid operations. She opens her browser and automatically accesses an informational welcome page which provides general information and the ability to input credentials for authentication. The page may also warn of specific safety hazards on main roads in the area. Information provided after authentication may include such items as interoperable radio frequency, Incident Command System (ICS) facility locations, command assignment, and may also allow input of NIMS-compliant resource typing. A web page provides operational information and allows further access or input based on credentials.

Page 40, #3 Analysis

Users visiting a network will need a simple and universal way to obtain basic information. The method for reaching this home page should be straightforward and the same across networks. In addition to displaying basic information about the network itself, this page can and should be used to list available applications, incident information and updates, AMBER alerts, and so on. Some information may be on a need-to-know basis and should be protected by credentials issued to the visitor. As new incidents develop, network operators may re-capture users for updates

2012 NPSTC Report: Broadband High-Level Launch Requirements

In 2012, NPSTC was asked by FirstNet to examine the original NPSBN requirements report and extract information that would be relevant for the initial launch of the network. The original report had included a number of requirements across an evolving NPSBN deployment. The 2012 report included only those critical functions that would be necessary for public safety agency use (and adoption) during the initial NPSBN activation. This report also included a number of elements regarding the web status page. The following information contains direct excerpts from the 2012 NPSTC report that deals specifically with the status page are listed below.

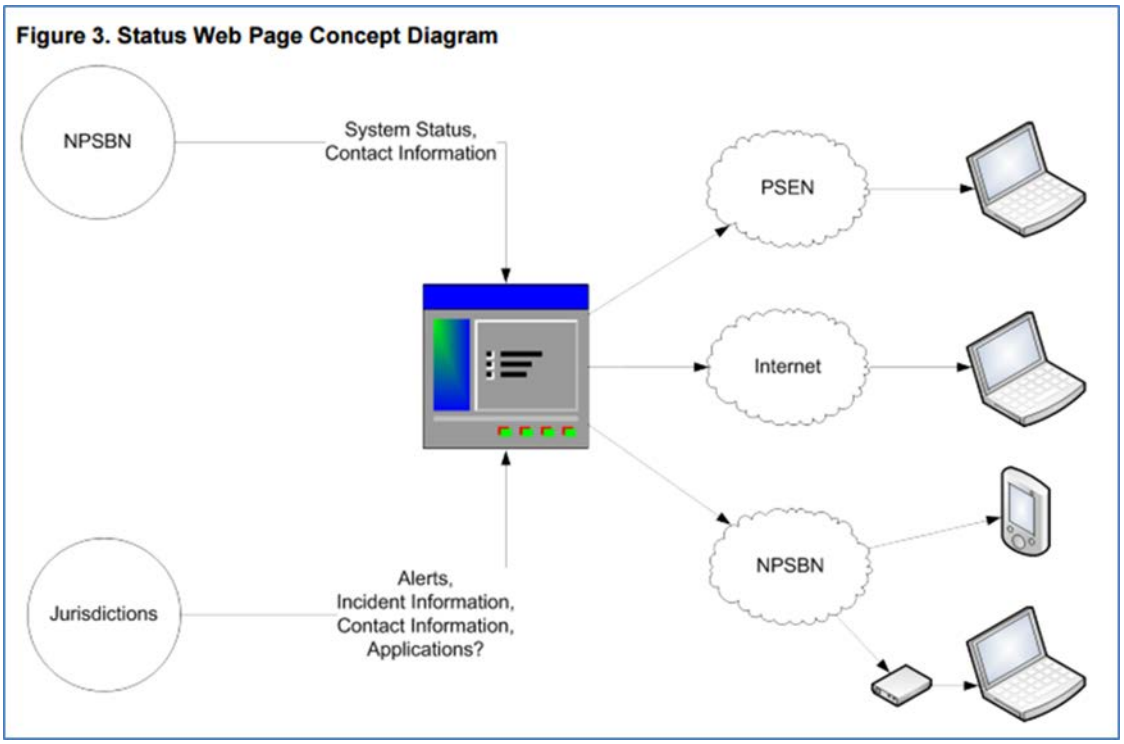
Page 34, 4.1.10 Status Web Page

The *2009 NPSTC 700 MHz Public Safety Broadband Task Force Report and Recommendations* identified the "Status/Information Home Page" as a 'required' application to be supported by the NPSBN (see information from prior section).

This section will hereafter refer to "Status/Information Home Pages" as "Status Web Pages." The term "visitor" is interpreted to mean an NPSBN user who has traveled to or is en route to a particular area, which may or may not be within the NPSBN user's home jurisdictional area, and who is authorized to access a given Status Web Page.

As Figure 3 illustrates, each Status Web Page instance receives relevant information from the NPSBN and one or more PSENs. In turn, this information is made available to other authorized PSENs, Internet users (e.g., public mission specialists, the press, etc.), and NPSBN-Us.

Figure 3. Status Web Page Concept Diagram



4.1.10.1 Accessing Status Web Pages

The primary use case envisioned for accessing each Status Web Page at launch is:

- A responder wishes to obtain relevant operational information relative to their current position (e.g., what incidents are taking place in the immediate area?).

Future development of the Status Web Pages should include:

- A responder wishes to become informed about operational status regarding a specific location (e.g., the responder wishes to become briefed on the incident prior to arriving on-scene).

- A responder wishes to become informed about network status relative to their current position, and/or regarding a specific location.

Different types of agencies may wish to deploy their own Status Web Page instances. For example, federal users may wish to have their own Status Web Page, which only federal users may access. This capability, while desirable over the long term, is not considered critical for launch.

Table 36. Accessing Status Web Page Requirements

#	Requirement
1	The information content of NPSBN Status Web Pages SHALL be accessible for both reading and writing by applications.
2	Prior to accessing privileged Status Web Page information, an NPSBN-U or application SHALL be authenticated. The term "NPSBN-U" in this requirement is intended to mean the human being's credentials, rather than the device's credentials to use the NPSBN.
3	The NPSBN SHALL allow an NPSBN-U or application to access the Status Web Pages relevant to the NPSBN-U's current location and function. The assumption is that the NPSBN-U is not required to know a specific address for a web page, given their location. Rather, a relative URL scheme (for example, https://local.police.gov) should be used. It should be noted that there might be many Status Web Pages governing a given area, which are differentiated by the NPSBN-U's function (e.g., police, fire, EMS, federal, etc.).
4	An authenticated NPSBN-U or application SHALL be able to access any Status Web Page from the Internet, PSEN, PSAP, or other IP network external to the NPSBN.

4.1.10.2 Status Web Page Content

The Status Web Page application is one of the key applications that differentiate commercial broadband networks from the NPSBN. Status Web Pages are required at launch and they will continue to evolve as different network use cases are developed and adopted. Status Web Pages will provide public safety with basic and enhanced situational awareness. Status Web Pages will assist responders in more effectively performing their normal function and allow agencies to work together more effectively through mutual aid. It is key that they evolve as the NPSBN evolves.

As one of the key applications which enable basic functionality of the NPSBN, the authors believe that a thorough detailed requirements collection process must be followed using industry standard software development and life cycle management processes to effectively design the

Status Web Page application. As previously articulated, the Status Web Page is a key application that makes the NPSBN functionally different from commercial broadband services. The authors believe that FirstNet should begin the process of application definition and design immediately. Any attempt to include detailed requirements for the content of the Status Web Page in this document could have potential damaging results on the application development process.

For the Status Web Pages to be useful, information pertinent to the responder's location and function must be provided. Thus, Status Web Pages must be adaptable based on the user's current role, function, and location. Because the Status Web Pages are anticipated to contain sensitive incident information, access to this information must be carefully controlled.

The Status Web Page content will eventually need to be adaptable based on the NPSBN-U's current role, function, and location. Dispatchers, CAD operators, and in-field responders are all envisioned to require the ability to post operational information to a given Status Web Page. While the enhanced capabilities of the future system are beyond the scope of launch requirements, it is important to note that the Status Web Page system should be designed with future needs in mind.

2. FirstNet RFP

The FirstNet Request for Proposals (RFP) document leveraged the NPSTC reports including their recommendations and requirements. The RFP sets the baseline features and capabilities for the NPSBN and is instructional for the eventual contractor who will build and manage the network.

The RFP contains a number of references to the Agency Information Homepage:

DI5PS00295: **Appendix C-7 Operational Architecture**

Develop and Manage Agency Information Homepage, A.3.4.2.9.1

Design, implement, and provide the customizable agency information homepage which is used to provide information to public safety users about their local agency. The information can include agency alerts, information about incidents that are in progress, etc. The status web page should be made available to public safety agencies as Software as a Service [3] that each individual agency can manage and tailor in a manner that will best suit their needs.

Manage Agency Information Homepage, **A.7.2.3.5.3**

[3] Software as a Service (SaaS) is a software licensing and delivery model in which software is licensed on a subscription basis and is centrally hosted. It is sometimes referred to as "on-demand software." SaaS is typically accessed by users using a thin client via a web browser

This function provides the operation and management of the agency configurable and customizable Information Home Page for each agency to use to serve as a landing page for its users. The Information Home Page must include the ability to authenticate users and restrict access to information based on user attributes. Additionally it must be able to expose agency incident and situational awareness information, as well as agency and network status and alerts. Agency administrators can add content to their home page, and tailor the out of box capabilities so the information that is displayed is relevant for their agency.

Public Safety Entity Home Page, L.3.2.2.2.2.2

The FirstNet RFP, Section L.3.2.2.2.2.2, describes the concept of a customizable agency home page.

The Offeror shall describe its proposed strategy pertaining to the following:

- A customizable home page that provides users with relevant information about their agency and current events and incidents. Describe the home page's timelines for delivery and proposed functionality, including but not limited to the following:

    o Display current status of the wireless network

    o Display critical information of a general nature (e.g., news, weather, traffic)

    o Display critical and/or tactical information of agency-specific information (e.g., incident status, internal alerts, situational awareness data)

    o Support customizable services and data feeds that users can subscribe to, including NPSBN network and service status, agency information, alerts, and basic situational awareness of recent nationwide and local incidents

- How the solution will ensure that the PSE home page meets the needs of public safety agencies and users and how agency/user feedback will be incorporated into new releases of the PSE home page.

- Other forms of status alerting that can be used to notify an agency, such as email, Short Message Service (SMS), Rich Site Summary (RSS), FirstNet status page (as opposed to the PSE status page), and any other such "push" alerts.

- How affected agencies will receive ongoing, timely alerts when an outage impacts them without receiving unnecessary alerts until final resolution.

- How the PSE home page supports Attribute Based Access control (ABAC) and the ability for local administrators to control what content is displayed and to whom. How

the home page can be used to provide access to non-local agency users during mutual aid scenarios.

3. Public Safety Usage Scenarios

In addition to the use case examples contained in the NPSTC Reports, the Broadband Emerging Technologies Working Group also identified a number of other usage scenarios:

1. A police officer can view a list of high-priority emergencies among all agencies in the area (his city, adjacent city, sheriff, and state patrol). This would allow a city police officer to be aware of a foot pursuit by a sheriff's deputy located one block outside the city limits.

2. A fire engine responding mutual aid to an incident in an adjoining city (or county) can access incident information prior to their arrival. This would include the ability to display the incident location, assigned radio channels, staging location for mutual aid units to report to, and a list of units assigned and on scene.

3. A paramedic ambulance can access an integrated list of hospitals and the readiness status of their Emergency Departments. Access to this type of resource information is critical to ensure that patients are transported to facilities that can treat them, including access to trauma, stroke, and cardiac care specialty hospitals.

4. A public safety user is alerted to the presence of a major incident occurring nearby based on their GPS proximity to the event. For example, a sheriff's deputy traveling through a city may pull into a gas station for coffee and be unaware that a robbery in progress has been reported at that location.

5. First responder agencies routinely travel outside their home area and may need to access or view information from multiple agencies. A first responder may route through several municipalities while traveling home or to training or while transporting a prisoner to detention.

6. A public safety user can easily visualize the status of the network and see any maintenance messages regarding planned and unplanned system outage.

7. A public safety user can access contact information and other resource information for other public safety agencies that they need to contact (including telephone numbers and monitored interoperable radio channels).

It should be noted that some of this information is shared today between different public safety agencies. Some organizations used shared Computer Aided Dispatch (CAD) systems while others share common web applications. Sharing of the data today is constrained by a number of factors and use of a common NPSBN network connection will enhance sharing by more agencies.

4. Status Page Functional Details

The Working Group examined a number of functional details that should be considered during the development of the Agency Information Status Page:

1. Scope of Web Status Page. The web status page is designed to allow first responders to access status and resource information. It may, or may not, additionally provide a portal to access or download applications being used by public safety users.

2. Access to information is based on user authentication. This is necessary to ensure that non-public safety personnel are not viewing sensitive or restricted information. It is also important to properly segregate the various public safety users. Certain types of information should be viewed only by law enforcement personnel (e.g., criminal history data and tactical information) while other information should only be viewed by Fire or EMS personnel (e.g., confidential patient information). Finally, access to information should be based on a "need to know" basis that follows user agency permissions.

3. Incident information (and other components) should be fed via agency interface and maintained in real time to be effective. It is envisioned that agency CAD systems could provide real time incident data to the Information Status Page via an interface. Local agencies would need to configure which types of incidents they share and what components of the incident are shared (e.g., location, incident type, units assigned, overview of incident details, etc.)

4. A common "default" status page should be provided. This page would be available to all first responders (regardless of their law enforcement, fire, or EMS affiliation) and would provide a summary of incidents as well as providing links to other agency specific Information Status Pages. It would also include basic information on the operational status of the NPSBN, a listing of high- risk emergency incidents, and links to agency resources. Content for the default status page would come from the agency specific information status pages and would be based on local agency input.

5. Agencies may create a status page accessible only for their agency personnel. This capability is clearly defined in the FirstNet RFP and allows a local agency to customize a local information status page. The use of a local status page allows agencies to provide more detailed information for their users as well as providing additional functionality.

6. The status page should provide links to commonly used resources. Public safety personnel increasingly rely on access to resource information that assists them in their specific role. For example, first responders may need to access a list of interoperable communications frequencies that are available in their devices and/or display contact information for other public safety and support agencies including their telephone numbers and/or

access agency specific SOPs for guidance on complex incidents. Some agencies provide access to this information via an agency intranet and data may be currently available on some agency mobile data terminals. This resource data is an example of information that does not need to be displayed but which should be accessible.

7. There should be some local control influence over the information that is shared and how it is displayed. Effective relationships among all public safety agencies in a given region are critical to the successful implementation of the NPSBN. Many local control issues should be resolved on a regional basis to ensure that the network provides the best possible interoperable experience. Regarding the Agency Information Status pages, each agency will need to tailor what information is shared and not all agencies will have interfaces to support data sharing. The local control influence should not distract from the need for a standardized approach to the deployment of the Information Status Page (see #8 below).

8. A common Agency Information Status Page template should be provided. Use of a common status page design will be necessary for ease of use across regions. A local agency should be able to tailor the look and feel of the data within their local template. The home page should be designed in a simple, easy to read format with quick access to needed information.

9. Certain alerts should result in an audible and visual signal. Alerts and messages involving emergency and high-risk events should be prominently displayed on the user's device. For example, the status page could be forced to the "front" of the display screen or there should be some immediately identifiable indication that an urgent message is pending. Users may want high-risk alerts transmitted to additional devices that they carry, (e.g., a text message to their portable LTE device).

5. Status Page Considerations:

The Working Group identified a number of issues that require additional consideration by the PSAC as FirstNet proceeds with the implementation of the Web Status Pages. These include:

1. Is the Agency Information Status page running as an application or as a web browser session?

2. Which devices will see the status screen (vehicle-based computer systems as well as any LTE device with a screen, including laptops, tablets, and handheld devices)?

3. How do you access and use the Information Status Page if you are using a device without a keyboard?

4. Status page output should display correctly for different device types (e.g., PC desktop screen, laptop screen, tablet and handheld). This may be similar to how web sites organize content display based on type of user device detected.

5. Regarding the display of NPSBN network status, a decision is needed to confirm what information is actually useful to the first responder. While network status could potentially be viewed at the cell sector it is unlikely that a first responder needs that level of specificity. The status display may be similar to today's network status display on a cell phone (e.g., number of bars and use of a green light or red light to denote service status).

6. Dynamic information regarding emergency events will likely come from agency CAD systems. Some translation of data/incident codes will be needed for common sharing. If an agency used a code "Signal 24" to denote a robbery, the display of "Signal 24" on the status page would likely result in confusion with other first responders.

7. The default status page (or regional status page) will need to provide quick access to agency specific status pages, based on user authentication.

8. Icons and links to applications which are not authorized for a particular user should not appear on their screen.

9. Several options may be configured by the local agency to control the display of their users when they are not located in their home jurisdiction. The user may initially still see their own home agency page, the home page for the visited agency, or a generic "out of agency" page. It may be preferable that the user always sees their home agency page initially, regardless of where the user is physically located. However, when the user is outside of the agency area, there should also be a notification with a link to a "visitor page."

10. Logging data should be captured which documents user access to the various web status pages. This would enable an agency to audit when external users accessed their data and when their users access data from other agencies.

11. The behavior of the Incident Status Page when a user is off network and operating in direct mode should be explored. For example, is there an option to provide some minimal cached data?

NPSTC recommends that the FirstNet Public Safety Advisory Committee (PSAC) review this document and make recommendations to FirstNet at the appropriate time.