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Textron NOI Response - Outline

National Telecommunications and Information Administration
Department of Commerce
1401 Constitution Avenue, NW
HCHB Room 7324
Attn.: FirstNet NOI
Washington, DC 20230

RE: Department of Commerce's National Telecommunications and Information Administration (NTIA) published "notice of inquiry" in the Federal Register ([77 FR 60680-60681](https://www.federalregister.gov/documents/2011/07/27/77-fr-60680-60681)) c

Comments from: Claudia Rose President BBII and President California Chapter of the Association of Enterprise Architects.

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As the president of the California Chapter of aEA as well as the owner of a small business providing Systems Engineering and Enterprise Architecture services to commercial and government entities, I became aware of the NTIA's notice of inquiry and became concerned that extensive previous work to capture lessons learned and incorporate them into the current networks seems to be lacking in the current discussion. I would like to support the use of the existing architectural frameworks, the current Public Safety Architectural Framework and the previously captured requirements and program management processes into this effort to save costly errors and rework.

Although FirstNet may be a new entity its members and stakeholder are clearly experienced. Perhaps they have taken for granted that the enterprise views and requirements development process are complete. When I have spoken to the potential stakeholders for the services, however, it appears there is a great gap. The systems developed locally, regionally and nationally to address previous lessons learned from 9/11, Katrina and local emergencies. Many responders are happy with their new radio systems that allow them to communicate across different groups such as military police, lifeguards, national guard and police. They fear new technology that does not account for what they have already learned and implemented. They describe great disasters and loss of life that arose from previous lacks in communications and fear the improvements may not be captured by FirstNet. In other words, before giving us something new, first do no harm, then ensure the requirements for the new system are well developed and expressed. To do

this FirstNet must first acquire a clear view of the current networks and systems. Much of this work has already been done.

- I. “FirstNet is particularly interested in receiving innovative ideas on how it can deploy a reliable, ubiquitous, redundant, and interoperable broadband network for public safety users.”

After viewing the NOI, the California chapter of aEA discussed the NOI and its apparent deficit in application of the long standing practices of Systems Engineering and Enterprise Architecture. These disciplines have developed and proven themselves in the need to avoid costly mistakes and program failures. In addition, members of the aEA chapter have been involved in previous public safety communications development including a specific architectural framework developed specifically for this purpose: the Public Safety Architectural Framework which had previously been utilized for developing a unified communications process http://www.pscr.gov/outreach/safecom/psaf/psaf_docs.php

We ask where is the previous enterprise architecture work for the current systems and why is it not referenced in this program? The use of Enterprise Architecture reaches far beyond PSAF and is mandated for government procurement. The department of defense procurement process routinely includes architectural frameworks developed for its use (Federal Enterprise Architecture Frameworks-FEAF and Department of Defense Architectural Frameworks-DODAF) and experts could be consulted to support this program. The DOD also has supporting communications structures in place for its first responders and needs to be integrated with this program.

Enterprise Architecture coupled with systems engineering supports innovative and emergent approaches to complex problems. Specifically by handling the complexity of a program, it allows vision of patterns and opportunities and the ability to test these against the needs and constraints of the system.

Since this type of approach was used for the current radio system, it would be wasteful and illogical to discard the previous architectures when developing the new First Net capabilities. There is no need or funding to reinvent the wheel and rediscover that square wheels do not work.

II. Response to Network Design Question

The stated goal of the First Responder Network Authority (FirstNet) is to ensure the building, deployment, and operation of a nationwide public safety broadband network (PSBN). In order to build, operate, and maintain such a network; and to leverage existing infrastructures so that they meet their requirements it is necessary to evaluate existing system architectures in order to determine the best way to facilitate evolution of the system where necessary, retain those parts of the structure that are working and reduce or replace those aspects of the system that are obsolete or that might be put to better use in another form or in another way.

Systems Engineering and Enterprise Architecture services can assess and create the models to handle this complex job. Mapping and modeling results in unique road maps that can help identify and mitigate existing risks and issues. Simultaneously these road maps also help engineer new protocols within systems that can address issues with innovative and cost effective approaches. New technologies can then be applied where they are most cost effective or beneficial and repairs or new systems can address existing issues as well as forecast new needs and technologies.

Using systems engineering methods it would be possible to open up old radio system architectures and look at the particulars in terms of structure and protocols in order to collect and collate information as is relevant to this particular rescue system.

Assessing systems Enterprise Architectures can also help implement changes in tools and in existing systems and support adaptation and improvement which in the end will result in more efficient program development. A strong enterprise level approach with systems modeling to handle necessary changes can balance cost and effect and unleash innovative thinking to solve problems.

Until a proper set of architectures and requirements are developed for this program (leveraging those already developed) the network design cannot be evaluated. It is absolutely critical that any new network mesh with the existing network. We cannot afford to repeat the failures of national and local disasters such as the Katrina response or the California Witch Creek Fire all both of which highlighted communications failures that have since been addressed using this type of disciplined approach. Developing our existing system that allows different departments, groups and organizations to communicate was a very large and expensive undertaking the underpinnings of this undertaking (PSAF and Systems engineering) should be used to ensure that First New develops the right solution to the right problem and enhances rather than conflicts with the existing networks.

III. Response to Application Development Question

Once a proper architectural framework is developed and a good set of requirements are implemented, then applications can be requested, developed and evaluated against the appropriate criteria. Experience has shown this is the best way to ensure that the supplier's efforts result in applications that will meet the needs of the users. Suppliers will be better able to suggest new solutions and the evaluators will be able to compare these to the needs of first responders and others who must use the system. If you want a good answer, you must first ask a good question.

IV. Recommendations- Based on Our experience

Understanding the requirements for this enterprise architecture is critical to the success of PSBN. In addition to the traditional methodologies for requirements elicitation, there are innovative approaches which would be of great value to understanding the needs directly from the users. These are:

Crowd Sourcing employs a strategy of interactive crowd-sourcing through the use of a wiki. Simply put, a wiki is a website that invites users to add, modify or delete content. Stakeholders of the first responder community, including police, fire, EMS, incident commanders, interagency collaborators, telecommunications providers, and others, may help to contribute and organize the capability requirements of the network. The community will work to define typical scenarios representing the activities and challenges that first responders face in carrying out their jobs. Telecommunications providers may provide experiential knowledge based on technical expertise about the implementation of communications networks applicable to the various scenarios. Textron has deployed the first version of a wiki on the website <http://connectingfirstresponders.com>.

Video Gaming puts contributors to the requirements virtually in the shoes of the first responder by way of a First Responder "Video Game." The game will place many simultaneous players in scenarios from normal daily operations to natural disasters and terrorist attacks while they compete with one another to perform the duties of the first responder. This could include fighting

crime, rescuing injured civilians, protecting property, and any other role a public safety user chooses to input. In the game they will request access to various types of information, coordinate with players in many roles across the community, and in the process virtually use the PSBN. The data, activities, responses, problems, and creativity of the players will be tracked to help characterize potential uses of the network and prepare for future needs that will prompt requirements updates if not addressed. The capabilities of the network are also modifiable, so that information can be developed on threshold and objective level performance.

Good program development and management practices have been established through careful development and expensive lessons learned in many areas of government and industry. These lessons should be incorporated with proper program development and management. This program needs strong management and architecture.

A good understanding of the problem space and existing solutions is essential to avoid waste. The first step is to understand and reuse the previous efforts captured in PSAF architectures as well as Department of Defense models (DoDAF) where necessary.

All of the stakeholders existing structures and needs should be integrated in the model to both “do no harm” by avoiding upsetting the delicate and painfully developed existing systems and to best serve the future. This is best captured in models and requirements using well established practices. FirstNet should utilize the existing expertise of enterprise architects and systems engineers who already support the government’s procurement processes.

Only after a good set of frameworks and requirements has been developed and approved by stakeholders should specific solutions be sought. Please utilize and reuse existing management structures and frameworks to create the best new offerings to enhance our First Responders capabilities.

Introduction: Who are BBII and the Association of Enterprise Architects, California Chapter

BBII is a small woman owned business that has been providing Enterprise Architecture and Systems Engineering Services to Government and Industry for over 12 years. BBII staff has over 25 years of industry experience. Staff includes FEAC certified instructors in Enterprise Architecture and TOGAF as well as employees and consultants with a broad range of experience in a variety of industries including Aerospace, Cloud Services, Communications, C4ISR, Cyber Security, Emergency Response, Software Development, and Transportation, with additional expertise in; Lighter than Air flight, Non-destructive Testing, Petroleum Industry, Heavy Manufacturing and Physics.

Extensive experience with high reliability systems such as aerospace, flight test, transportation and medical. We can also provide experts in Enterprise Architecture, UML, SysML, DoD-AF, Systems and Software Engineering and Architecture.

The president and CTO of BBII are also members of the California Chapter of the Association of Enterprise Architects. Claudia Rose the president is also the chapter president. (The Association of Enterprise Architects is a professional organization for certified Enterprise Architects which is incorporated in the State of Delaware as a non-stock/non-profit corporation. It is committed to advancing the enterprise architecture profession and professional excellence).