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Recommendations on network architecture for first responders in emergency environments. We will attempt to offer solutions for each of the 4 items specified in the request for comments. This will be brief and hopefully succinct.

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Firstnet has presented three overview network architecture choices: 1.) standalone, 2.) nationwide single carrier contract, 3.) multi-operator contract. What is missing is the architecture which optimizes the use of existing cellular AND broadband provides while owning and operating a private standalone network.
The key in this proposal is to utilize the power and diverse offerings from existing service suppliers in BOTH the cellular and broadband arenas while owning the 'last mile' in a private standalone network. This gives the advantages of both the first and last proposals while also allowing Firstnet the opportunity to NOT be tied to the offerings of carriers but rather be in command of their own destiny.

The first specification for the proposed architecture is: "Meets public safety's requirements for priority, quality of service, and preemption features". With the proposal of integrating a private standalone network into mainstream transport all the current public safety and proposed public safety centric applications can be handled independent of development restrictions and scheduling tasks in the contracted transport networks. Public Safety does the job it does best with Operators/Service providers operate in their core competency.

The second specification is: "Uses, to the extent possible, existing radio access network and core network infrastructure installed by commercial mobile operators in order to maximize the coverage and performance delivered to public safety while minimizing the capital expenditures". By the nature of the proposed architecture this is true. The operators will continue to build the networks that will follow their core designs without additional costs to Firstnet and where Firstnet will interface with the operators/service providers standards will be in force to define the interconnection and thereby decrease time to completion plus discussion time as to how the interconnection must be designed.

Specification three is: "Reaches operational capability as quickly as possible". Use of existing standards to construct the network will allow this to occur. It will also allow existing infrastructure to be used where the APIs are defined. However, all must bear in mind that as has been proved historically "haste makes waste". This needs to be built correctly the first time versus having to build it multiple times.

The last specification is: "Enables voice services (cellular telephony and push-to-talk (PTT)) both within the FirstNet network as well as to/from other commercial networks, including the public switched telephone network (PSTN)". I'm in opposition to this specification when the term "cellular telephony" is used as this has a differing definition to each reader and in turn becomes ambiguous. Even push-to-talk has differing definitions. Prior to this specification being included, it needs to be defined with standards and acceptance test scenarios that would apply. Moreover, this becomes an almost impossible task when including PSTN as required to have these features.

RPM is of course proposing the 4th network option. As can be reflected from occurrences of failures in the Northeast following Hurricane Sandy reliance on publicly available networks during emergencies may not be the optimal plan. When communication between close knit groups operating even in a constrained area require a remote repeater to complete the communication path this quickly becomes unworkable as power to and access to that repeater is removed. We would rather propose an architecture similar to a long past architecture used in public safety where the "host" (at one time the vehicle) would contain a self sustaining repeater that did not require connection to the base repeater to do near field communications. An example of how this works even in todays networks would be the "My-Fi" option supplied by Verizon where local communication between terminals in the near field can complete without interaction to the host network or even simpler how a router can allow communications between connected devices on the LAN side independent of the WAN connection.
As the WAN connection is defined by standards, this connection does not become a problem nor does the WAN connection to a remote LAN controlled by another router.