

MissionCritical Communications, Radio Resource International, and Public Safety Report - wireless voice and data communications for mobile, remote and public safety operations

FirstNet Board Outlines Public-Safety Broadband Network Architecture

By Sandra Wendelken

A member of the First Responder Network Authority (FirstNet) board laid out the expected network architecture for the nationwide public-safety broadband network. The concept relies heavily on terrestrial coverage by multiple operators in a geographic area, supplemented by satellite services and rapidly deployable vehicles.

FirstNet board member Craig Farrill, a wireless executive who founded inOvate Communications Group and Kodiak Networks, described the FirstNet architecture composed of an enhanced packet core (EPC) for switching, routing, push to talk (PTT), scheduling and other functions and a service delivery platform (SDP) for storing, processing and sending data. He said the board expects to commence network implementation in 2013 or 2014.

He said the first step will be to add a terrestrial mobile partner with a radio access network (RAN) with direct, secure transmission from FirstNet to the mobile operator's facilities that are hardened. The second step is to add band 14 to that operator's RAN.

Farrill said the FirstNet board of directors will work with the Public Safety Communications Research (PSCR) team in Boulder, Colo., to test the concept.

Then additional terrestrial mobile partners can be added to the model for each geographic area. "Our job at the FirstNet core network is to speak all the languages," he said. "We're going to move out quickly for terrestrial service. Certifying and testing handsets will be critical. We will hire laboratories and bring that together to test operator A and operator B. Every device we buy will have band 14 in it."

Farrill said coverage will be addressed at state, county, city and tribal levels. "We will be looking at the coverage of each county and how we can serve that with terrestrial service," he said.

He said there are about 3,030 counties in the United States, and FirstNet will use a spreadsheet to track coverage county by county. "It will tell us how are we doing," Farrill said. "Population coverage is important but geographic coverage is important too. The rural part of this is important. The dual track is how we'll get there, and we'll look at it county by county."

He said the process for satellite operators being integrated into the network will be similar to terrestrial operators. Then deployable vehicles that contain a band 14 EPC, SDP and generator can also be used during emergencies if the terrestrial and satellite services are down. Deployable systems can also be used to enhance coverage.

The FirstNet vision provides the following:

1. Instant interagency communications and collaboration
2. Interoperability with existing public-safety systems
3. Group communications on a nationwide scale
4. Mission-critical reliability through multinet access
5. Coverage extension into unserved/underserved rural areas
6. Lower cost subscriber equipment based on Long Term Evolution (LTE) and other international standards
7. Deployable infrastructure to address large-scale emergencies
8. Ubiquitous U.S. coverage provided through satellite network integration

Farrill also said FirstNet will offer the following benefits:

- High reliability and redundancy through multiple networks: terrestrial, satellite and deployable micro networks
- Extensive mission-critical services required by public safety

- Accelerated buildout and service availability
- Meets public-safety user requirements for applications, communications, priority and control
- Extends coverage and capacity to unserved and underserved rural areas
- Superior economics from leveraging existing carrier infrastructure and global economies of scale
- Efficiently using FirstNet spectrum

“We’ve offered concepts,” said Sam Ginn, FirstNet chairman. “We understand the community wants to come back to us and offer points of view. We’re ready to modify our concepts if you have better ideas than we do. You’ll be seeing the presentations and you’ll have a chance to comment.”

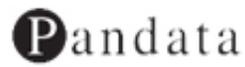
Ginn said offering input sooner rather than later is best because the board is moving things forward quickly. “We are going to take this project with a sense of urgency, and we’re going to run with it,” he said. “We have a mission here, and we’re going to get it done.”

The Sept. 25 board meeting kicked off with the adoption of a number of organizational and administrative items. In addition, Ginn outlined two concepts for applications development, one of which was an application concept similar to smart phone apps. The board will define interface and certification requirements and then invite companies to develop public-safety applications.

An “open highways” concept will allow federal and local officials to provide access to their information to other public-safety officials. “You give us the requirements, and we’ll set up the communication package to do it,” Ginn said. “Conceptually we’re talking about a whole new model for how we provide applications to public safety, and it’s a concept that’s pretty exciting. In the next meeting, we’ll have a serious update for you.”

“The confluence today of three critical factors marks a real difference in our ability to ex-

ecute against FirstNet goals,” Ginn said. “The contribution of extremely useful nationwide spectrum; the allocation of funding by the Congress; and the rapid development and deployment of LTE wireless technology will all serve FirstNet well as we collaborate with interested parties to chart the best path forward.”



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