First Responder Network Authority (FirstNet)

“It’s the Apps!”

Kevin McGinnis, Board Member

EM Forum
March 27, 2013
EMS Information Needs

- Situational Awareness
- Common Operating Picture
- Sequential Processing → Parallel Processing
- Inability to Adopt Available Diagnostic Applications
“Golden Hour”

≠ 20+20+10+30+120+40 Minutes

Trauma, Heart Attack, Stroke.....
Ridgeway EMS 1

2 Patients/45MPH
1001 Hendrix Highway (Nash/Oak Sts.)
Toyota Prius/Object/Head On
++Airbags ++Belt(s)
++Severity

NEW SHARON FD
1ST RESPONDERS

MVC

RIDGEWAY FD
EXTRICATION/HAZ MAT

RIDGEWAY HOSP.

RIDGEWAY EMS

VERNON FD
VOLUNTEER AMBULANCE

EMERGENCY MEDICAL SERVICES

MERCY HOSP.
CITY TRAUMA CTR.
LIFE FLIGHT
UNITED AMB.
CITY FIRE/RESCUE
CITY TRAUMA CTR.

Other Medical Alarms

MVC
Probability of Injury: 92%

DeltaV: 30 mph

Recommended action based on probability of injury calculation:
- Provide information to PSAP and suggest vehicle extrication, helicopter request and closest and/or receiving hospital early notification.
Ames St. to Clark St. to Old Highway (E); 15.2 Mi.s; #3945 Old Highway

Parallel Processing

ED On Alert for Pt: +

ED On Alert for Pt: +

ETA: 10 Min’s.

ETA: 12 Min’s.

Team On Alert for Pt: +

MVC

ROAD CLEARANCE
Lights + /Cars ++
2 Patients/45MPH/Head On/Object

2004 Toyota Prius

Driver Priority

MVC

New Sharon FD

MVC

Ridgeway EMS

Ridgeway FD

City Fire/Rescue

MVC

United Amb.

Vernon

Ridgeway
At Scene: More Parallel Processing
Wireless Patient Monitoring

Electronic Health Record

Portable PSCD Type Platform

Speech Recognition
Input

Diagram content courtesy of the Department of Defense, Telemedicine & Advanced Technology Research Center
Click to Play EMS Video
Other Technologies

- 2 Way Video (Virtual MD/Community Paramedicine)
- Stand Off VS Monitoring
- Portable CT Scan (Images)
- Portable Ultra Sound (Video & Images)
Other Technologies

– Multiple Patient Monitoring (Mass Casualty Incident)
– Multiple Responder VS Monitoring
– Infra Red Crowd Disease Detection
Other Predicted Technologies

- EMS Based Routine Patient Monitoring
- Automated Dispatching Based on Monitored Patients and Vehicles
- Audio/Video/Data Interfaces with “I’ve fallen” Systems
- Access to Searchable Patient Records/Images/Data
- Real-Time Vehicle Extrication Hazards Alerting Based on AACN Including Video/Images as Necessary
- Syndromic Surveillance and Quick Alerting to Specific Populations
- Physician Mediated Interface Between EMS Dispatch, EMS Crews and Nurse Call Centers
FirstNet

- 2006 – Public Safety Broadband Network Concept
- 2007 – Public/Private Concept
  - FCC
  - Public Safety Spectrum Trust
- 2008 – Failed Auction
- 2009 – Public Safety Community Organizes
  - Public Safety Alliance
- 2012 –
  - Middle Class Tax Relief and Job Creation Act of 2012
  - FirstNet Public Safety Broadband Network
FirstNet Assets

Assets

- Congressional mandate to establish a nationwide Public Safety network
- 2 x 10 MHz of nationwide spectrum (700 MHz, Band 14)
- $2B of current funding; potential for $5B of additional funding
- An experienced Board of Directors motivated to bring NPSBN into service
- Substantial industry collaboration around user requirements, interoperability and technology
FirstNet is very grateful for the:

- NPSTC Statement of Requirements (SoR)
- NPSTC Assessment of Future Spectrum and Technology
- NPSTC Public Safety Broadband High-Level Launch Requirements - Statement of Requirements for FirstNet Consideration
- SafeCom Statement of Requirements (Version 2.1)

Thank you to all Public Safety professionals who have contributed their time and effort to develop these documents to help guide our work at FirstNet.
Meeting 1,300+ Detailed Requirements

FirstNet plans to:

- Leverage all of the good work already done in these areas by the relevant PS groups:
  - Start from a baseline of 1,300 requirements and then add the full FNN specific suite
- Seek vendors who will meet or exceed the key PS needs, but broaden the requirements to increase flexibility and decrease costs.

### NPSTC Requirements

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### FCC Minimum Interopability Specifications

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<td>Considerations (Should)</td>
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<td>Recommended Interfaces Requirements</td>
<td>9</td>
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</table>
The FirstNet Public Safety Broadband Network Concept

The FirstNet Network concept leverages the significant investments and combined efforts of the public sector and the commercial wireless industry:

- **Public Safety** - integrates inter-agency communications services, reduces costs, and improves efficiency and response time

- **Wireless operators** - have the opportunity to participate; serve a critical US nationwide need; and increase their subscribers, usage, and commercial coverage

- **Network & handset suppliers** - have the opportunity to participate; serve a critical US nationwide need; and increase their network & handset product lines, sales volumes and revenues

- **Application developers** - have the opportunity to develop apps that increase our security and safety across the US; and increase their product lines, user bases and sales volumes
FirstNet “3-in-1” Nationwide Network Concept

**FirstNet**

**Distributed Core Network**
- **EPC**
  - Evolved Packet Core network
- **SDP**
  - Service Delivery Platform

**Operator A**
- Core Network
  - FirstNet RAN
  - A RAN
- Terrestrial Mobile Systems

**Operator N**
- Core Network
  - FirstNet RAN
  - N RAN

**Operator A**
- Satellite Core Network
  - Mobile Satellite Systems

**Operator N**
- Satellite Core Network
  - Deployable Systems

**System On Wheels**
- Cell On Wheels
FNN Solves Several Critical Issues

- Instant inter-agency communication and collaboration
- Interoperability with existing public safety systems
- Group communications on a nationwide scale
- Mission-critical reliability through multi-network access
- Coverage extension into unserved/underserved rural areas
- Lower cost subscriber equipment based on LTE and other international standards
- Deployable infrastructure to address large-scale emergencies
- Ubiquitous US coverage provided through satellite network integration
## Network Guiding Principles

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<th>Network Principles</th>
<th>Description</th>
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</table>
| Ubiquitous Coverage              | 1) “Every Square Meter” - - Coverage “Where Public Safety needs it” from multiple terrestrial, satellite and deployable mobile networks  
2) Continental US, Alaska, Hawaii, Puerto Rico, US territories, including tribal areas & coastal waters - - 56 geographic areas |
| 7 x 24 Availability / Uptime     | “You can bet your life on it” - - Always on, fault-tolerant, non-stop, integrated Public Safety grade network                                                                                                    |
| High Reliability                 | Network resilience, fault tolerance, public safety grade hardening, redundancy, diversity in all aspects of network and its operations                                                                               |
| Nationwide Distributed Network   | 1) Leverages multi-billion dollar investments in American terrestrial and satellite mobile networks  
2) National distributed FirstNet Core Network directly interfacing with public, private and government networks for instant inter-agency coordination |
| “3-in-1” Network Platform        | Combines three (3) types of networks for highest possible availability - - multiple terrestrial fixed mobile networks, multiple satellite mobile networks with terrestrial subnets with rapid-deployment FirstNet mobile terrestrial subnets |
## Network Guiding Principles (Cont.)

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| **Priority Access and Local Management** | 1) Instant, automatic priority access for first responders & PS users  
2) Local Network Operation Centers (NOCs) and real-time control of user prioritization and incident command |  |
| **Excellent Voice Quality**         | QOS on all mission-critical voice services, QOS greater than LMR, QOS equal to or better than commercial wireless networks |  |
| **Fast Data Speeds / Throughput**   | Peak rates, burst rates, fixed rate speeds provide high speed data delivery and throughput                                                                                                                      |  |
| **Best Available Speed**            | 1) Network provides the best available data speed / throughput  
2) Instant, automatic “fallback” to lower speed/quality of service to get the information / call through in case of network congestion, impairment or outage |  |
| **Extensive Advanced Services**     | A large, growing number of advanced wireless services which meet or exceed PS user requirements                                                                                                               |  |
| **Flexible Service Delivery**       | Three service delivery options - - 1) “Real-Time” (less than 50 msec end-end delay); 2) “ASAP” (as soon as possible but greater than 50 msec); 3) “Scheduled” (prior to a future time) |  |
| **Instant Group Communications**    | Offers a wide range of group text, voice, data and video services across all agencies and geographies at the touch of a button                                                                               |
## Network Guiding Principles (Cont.)

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<td><strong>Multiple RAN Diversity</strong></td>
<td>Leverages alternative radio access routing through multiple 3G and 4G RANs for maximum geographic coverage, lowest cost, RAN diversity</td>
</tr>
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</table>
| **1000’s of PS Applications**       | 1) FirstNet App Store will provide latest App downloads instantly  
                                   | 2) Apple, Android, Microsoft application ecosystems                                                                                     |
| **Latest 4G LTE**                   | Pursuing and pressing future development of leading-edge 4G LTE technology as national standard for PS broadband services and applications       |
| **Highly Secure Communications**    | Dedicated, diverse core network interconnecting facilities; No dependence on the PSTN or public Internet                                      |
| **Dual-Track Network Deployment**   | Two separate network teams give Priority #1 to:  
                                   | “First Responders in Un-served/Under-served Areas” and to “First Responders in High Risk / High Density Areas”,                          |
| **Low Cost**                        | Provide excellent services & applications at less than commercial costs                                                                      |
FirstNet exists to serve first responders and the Public Safety community with highly-reliable, nationwide wireless services, applications and user devices, at the lowest possible fees.
“What can public safety users do?”

- Never forget where FirstNet came from
- Be the owners as well as the users
- Identify your state point of contact
- Get involved in the process
- Think “Apps”!
Thank You!

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