



# FirstNet™

[www.firstnet.gov](http://www.firstnet.gov)



**Cal OES**  
GOVERNOR'S OFFICE  
OF EMERGENCY SERVICES

## FirstNet Overview



**Brian Hobson**

State Plans – Technical Lead

August 13, 2014

# Why FirstNet



# Why FirstNet



# Middle Class Tax Relief and Job Creation Act of 2012



- Act implements key Administration priorities
  - Public Law No. 112-96 (enacted February 22, 2012)
- NTIA to establish the First Responder Network Authority (FirstNet)

Purpose	To create a nationwide, wireless, interoperable public safety broadband network
Network	Single nationwide network architecture
Technology	LTE: the most advanced, proven technology
Spectrum	Reallocated 700 MHz D Block
Coverage	Nationwide along with rural, underserved areas
Funding	\$7B through spectrum auctions proceeds
Sustainability	Self-funded through fees
Governance	Specifications for the FirstNet Board

***The First Responder Network Authority  
shall hold the single public safety wireless license  
and take all actions necessary to  
ensure the building, deployment, and operation  
of the nationwide public safety broadband network***

# Public Safety Needs FirstNet



***Police officers, firefighters and paramedics need a dedicated nationwide wireless broadband network. They need a network that they can count on during emergencies and to meet their everyday missions.***

First Responders Deserve the Best Network	Flying Blind is Dangerous
Reliability Must Be Built In	Sharing One Network Improves Communication
Public Safety Needs Priority Access	Mass Markets Fuel Innovation
Special Events Attract Big Crowds	Budgets are Tight
Rural Emergencies Pose Coverage Challenges	Battling Threats Requires a Coordinated Response

# First Responders Deserve the Best Network



- FirstNet will provide a reliable and resilient broadband network to perform life saving missions
- Rugged, easy to use devices designed to meet public safety requirements and provide a rich set of applications and services that will enhance their ability to do their jobs
- FirstNet will improve communications and save lives



# Reliability Must Be Built In

- FirstNet is delivering a highly resilient and reliable network
  - Priority
  - Preemption
- Public safety-grade design
  - Extended life battery systems
  - Back-up power systems
  - Diverse routing of cell site links
  - Diverse cell site link technology



*The Majority of Cell Site Outages are Due to Loss of Power and Loss of Data Links*

# Public Safety Needs Priority Access



- FirstNet will provide public safety with priority communications so they can communicate without interruption
- Commercial networks do not permit preemption of commercial users during a disaster, making it inappropriate for emergency services today



*Communications Shortcomings  
Are Amplified During Emergencies*

# Rural Emergencies Pose Coverage Challenges



- FirstNet will provide first responders a network connection in the most remote regions of the country, enabling rescue and response support in life-threatening emergencies



*Reliable, Mobile Coverage Solutions Because Emergencies Don't Just Happen Where People Live*

# Special Events Attract Big Crowds

- FirstNet will deliver mobile and robust capacity, as well as enhanced coverage to keep citizens safe during
  - Concerts
  - Art festivals
  - Sporting venues
  - Political rallies



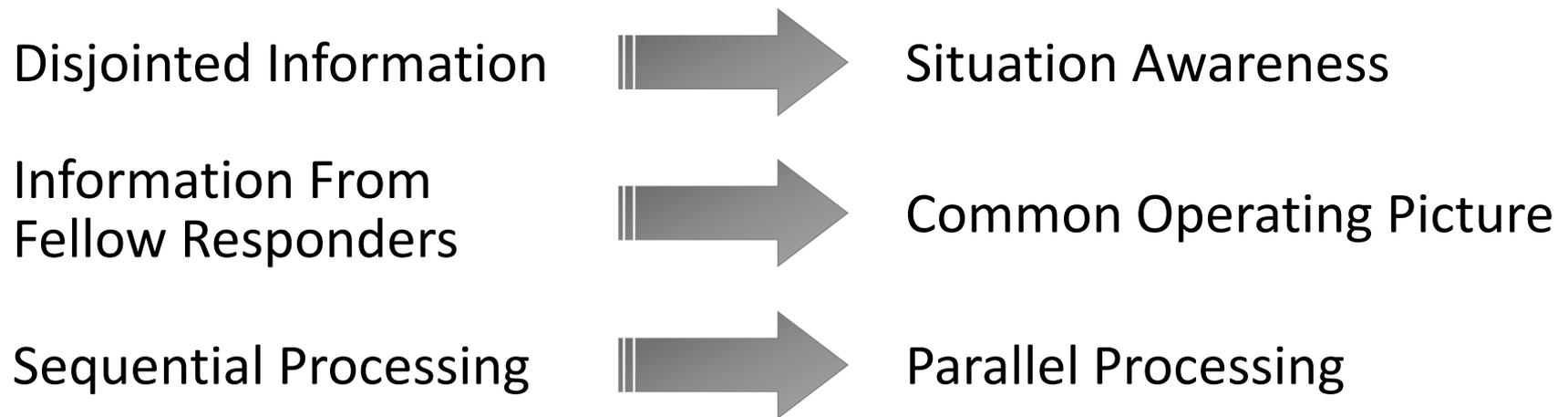
Credit: Eric Thayer/Reuters

*Capacity is Not Only an Issue During Emergencies*

# Flying Blind is Dangerous



- FirstNet will carry high-speed data, location information, images, and eventually streaming video that can mean the difference between life and death



*Information/Data From a Broad Range of Connected Alert Systems Can Help Save Lives Once Directed to 9-1-1 Centers and First Responders*

# Battling Threats Requires a Coordinated Response



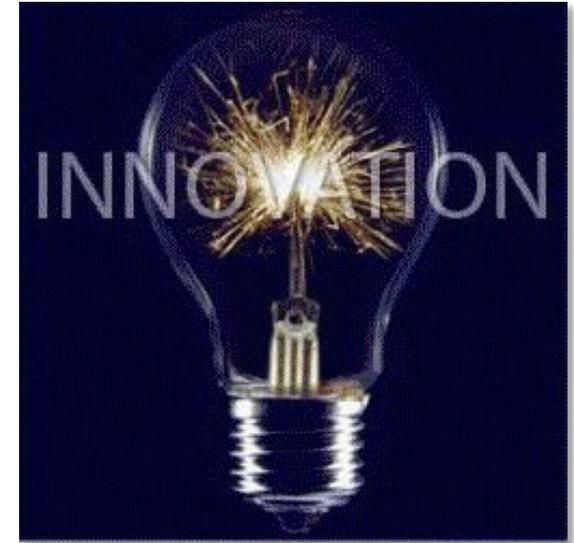
- FirstNet will create a single platform for public safety communications
- One network with interoperability built-in from day one will enhance public safety's ability to protect and serve
- In the face of terrorist attacks or natural disasters, public safety must have a nationwide network



Credit: Town of Oyster Bay PIO

# Mass Markets Fuel Innovation

- A single nationwide network will drive development of new ways to perform public safety roles that are safer, more effective, and more efficient
- New applications will be created, new purpose-made devices will be available, and public safety will be able to serve our nation more efficiently than ever before



*Increased Vendor Competition and Economies of Scale  
Will Drive Down the Final Cost to the Public Safety User*

# Sharing One Network Improves Communication



- Today, first responders rely on more than 10,000 separate and often proprietary land mobile radio networks
- FirstNet's network will provide the latest communication technologies on a single nationwide network dedicated to public safety, ensuring interoperable communication among first responders



# Budgets are Tight



- FirstNet will be able to offer a dedicated public safety service at a highly attractive rate that will in turn enable state and local governments to save on operating costs
- Costs for public safety entities will be reduced by leveraging the value of excess network capacity with partners

# FirstNet Data Capabilities will Complement Existing LMR



- Download floor plans to burning buildings before arriving at the scene to improve preparedness
- Biometric applications and sensors sending info to handheld devices instantly
  - Sensors attached to harnesses and face masks relay location and vital signs (heart attacks account for half of all firefighter deaths)
  - Portable sensors registering room temperature which could warn of flashover before it occurs
  - Identification tools used to assist in detecting potential medical threats
- Videos and photos forwarded to hospitals to receive initial treatment advice, as well as, preparing the emergency room for incoming casualties



# Challenges

## Challenges: Nationwide Coverage

1. Network must cover and connect 100% of U.S. geography and territories
2. The network must be designed to public safety-grade standards
3. FirstNet must build and operate a core

DC    Puerto Rico    Virgin Islands    American Samoa    Guam    Northern Mariana

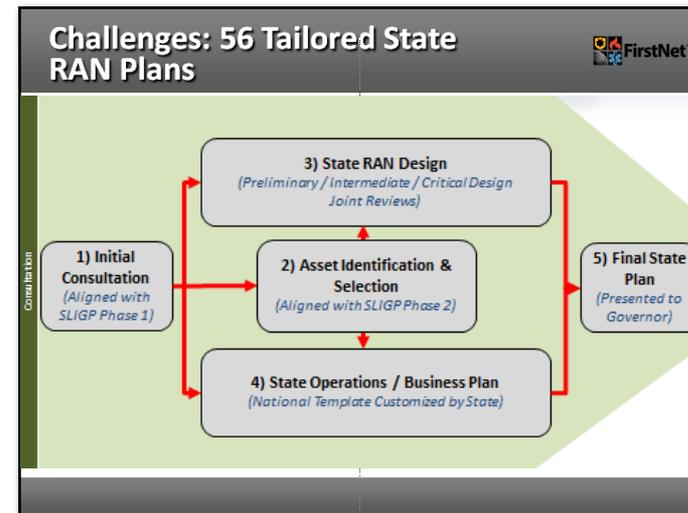
## Challenges: Capital and Cost

- Cell Site Capital Investment
- Site Operating Costs
- Hardening Investment
- Limited Number of Public Safety Users
- City, County, State, Federal Financial Constraints

## Challenges: Multiple Partnerships

Partnership

FEDERAL ACQUISITION REGULATION



# Five Unique Coverage Categories

Unique Geography and Demographics Require Multiple Solutions – Seamless Operation



Wilderness/  
No Coverage



Rural



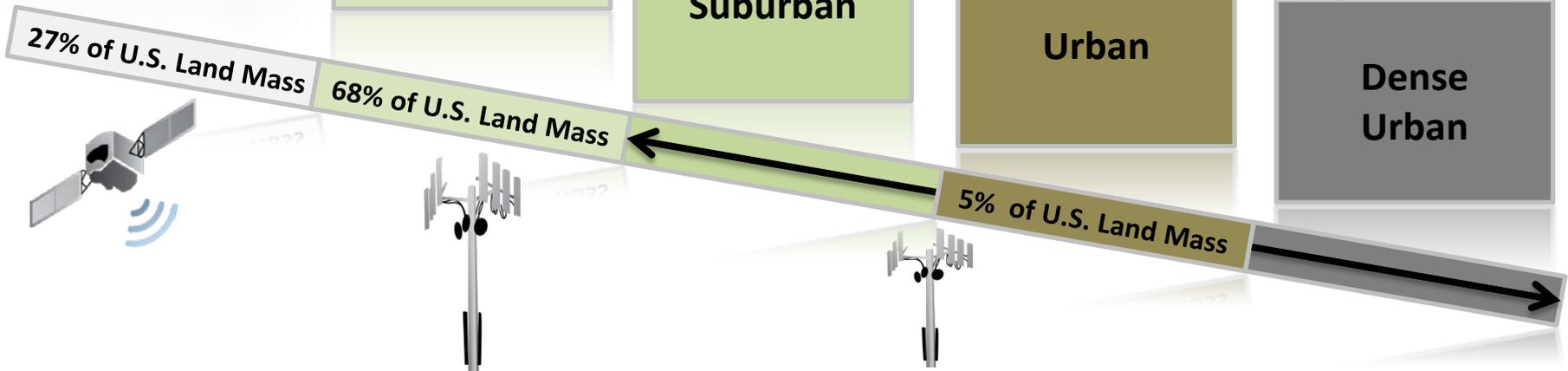
Suburban



Urban



Dense  
Urban



# Leveraging an Evolving Landscape



## Aggregate LTE Coverage 2Q 2014

All coverage illustrated is derived from public information provided by terrestrial mobile operators. Not all operators choose to market coverage information. Standards for coverage representation vary among operators. Mosaik Solutions provides no warranty to the accuracy of the data. Analysis reflects 2010 U.S. Census Data.

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## Benefits of Industry

- Existing Infrastructure
- Global Standard
- Economy of Scale
- Built & Maintained

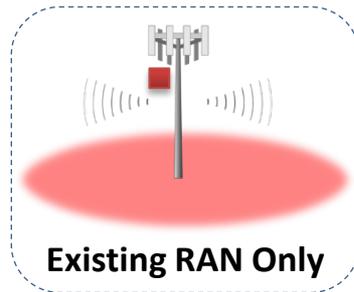
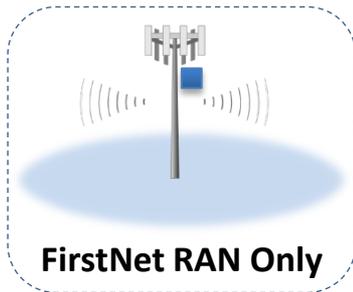
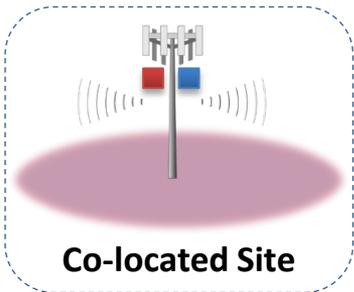
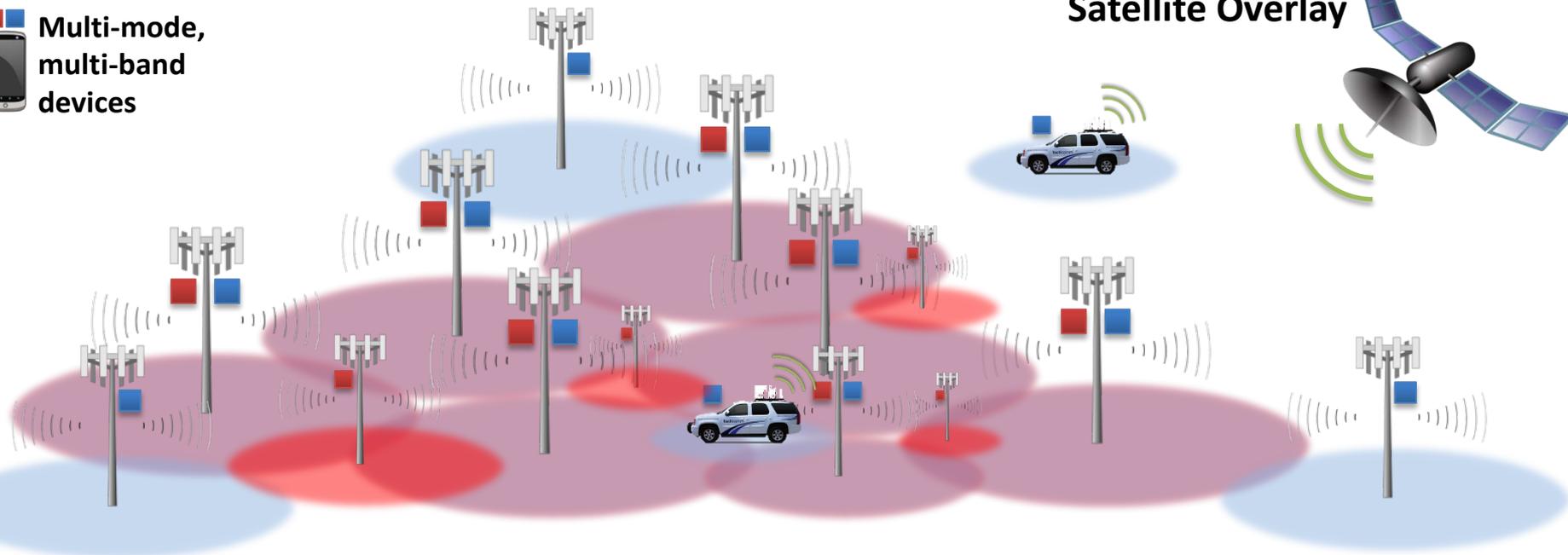
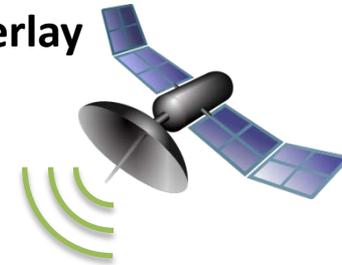
## Public Safety Requirements

- Dedicated Spectrum
- Hardened Infrastructure
- Specialized Devices
- Cybersecurity
- Public Safety Applications

# Conceptual Design

 Multi-mode, multi-band devices

Satellite Overlay



 = FirstNet RAN (Band 14)  
 = Existing RAN (Band ??)  
 = Satellite Overlay

# Required State Consultation Topics

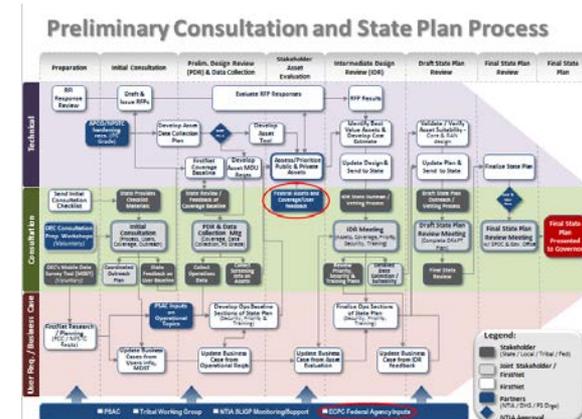


- Construction of a core network and any radio access network build out
- Placement of towers
- Coverage areas of the network, whether at the regional, State, tribal, or local level
- Adequacy of hardening, security, reliability, and resiliency requirements
- Assignment of priority to local users
- Assignment of priority and selection of entities seeking access to or use of the network
- Training needs of local users

# Overview Of Consultation Process



- Consultation is an iterative process, not a single event
- FirstNet will communicate the consultation process and necessary roles and responsibilities
- Consultation will focus on critical information and data
- Plan development will be iterative
- Consultation culminates with the creation of the state plan

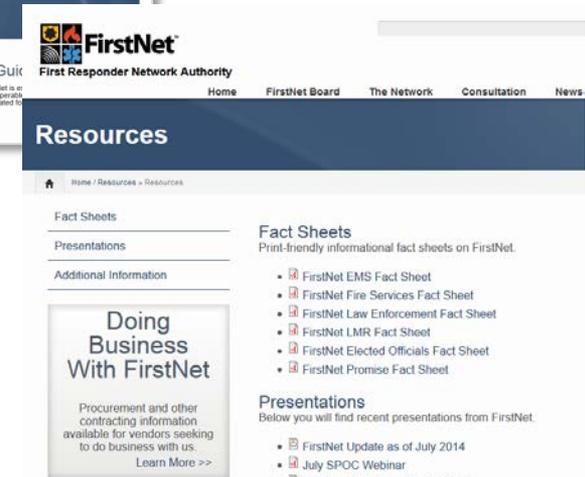
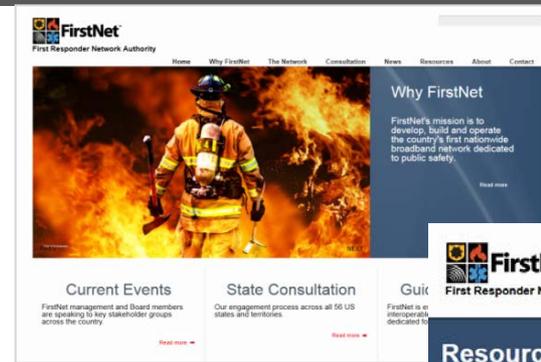


*Together, stakeholders and FirstNet will have engaged in a process that provides meaningful and thorough information for the state plans*

# Outreach and Communications



- FirstNet.gov website
  - Fact Sheets
  - Blogs
  - Presentations
  - Upcoming speaking engagements and current events
  - Board meeting materials and webcast



- Social media presence
  - Twitter @firstnetgov
  - Flickr

<https://www.flickr.com/photos/firstnetgov/sets/>



# Thank You



[www.firstnet.gov](http://www.firstnet.gov)

