



**FirstNet™**

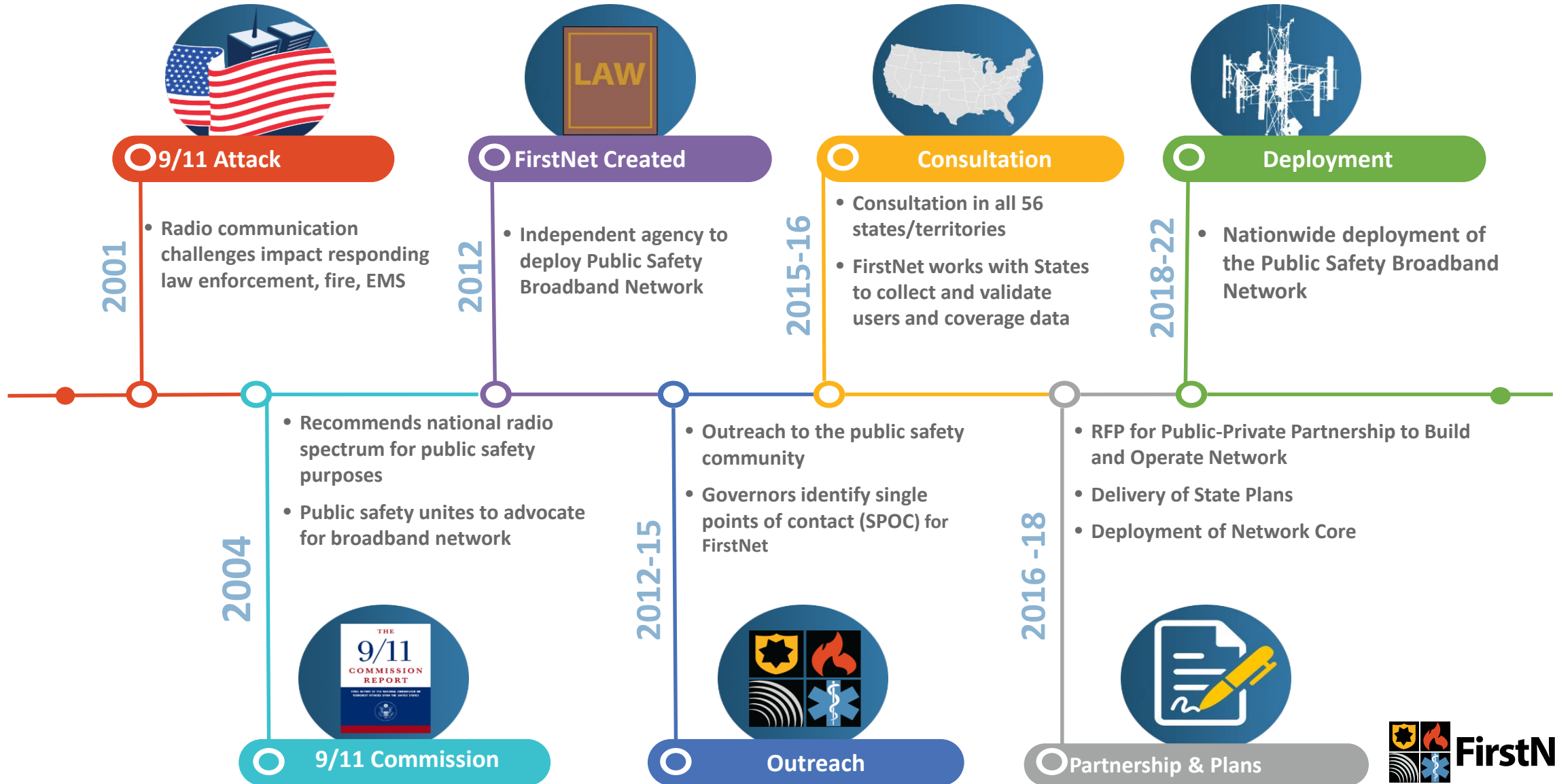
# FirstNet Data Collection and Outreach

Obtaining the Needs and Wants of Public Safety for Their Network

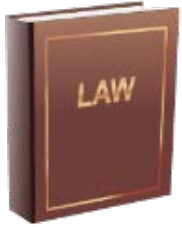
Mr. Richard Reed, FirstNet Chief Customer Officer



# FirstNet's Journey



# Overview of FirstNet



## THE LAW

2.22.12

FirstNet becomes law  
(Public Law 112-96)

## FUNDING



**\$7B** authorized to the FirstNet network  
– all funded via spectrum auctions

## GOVERNANCE



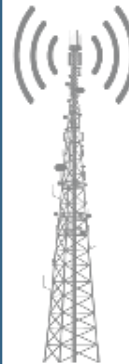
FirstNet **Board** has **15 members**, including those with telecommunications and public safety backgrounds.

Each Governor appoints **1 Single Point of Contact (SPOC)** and governing body to represent the State's interests to FirstNet.

**43** member **Public Safety Advisory Committee (PSAC)** advises FirstNet on public safety intergovernmental matters.

## NATIONWIDE SPECTRUM

**20MHz** of bandwidth dedicated to public safety in prime **700MHz** frequency range (**BAND 14**).



BC 17		BC 17		BC 13		BC 14	LMR	BC 13	BC 14	LMR
T-Mobile	AT&T	AT&T	Dish	T-Mobile	AT&T	Verizon	PS Narrowband	Verizon	PS Broadband	PS Narrowband
UL	UPLINK	DL	DOWNLINK	DL	DOWNLINK	DOWNLINK	PS Narrowband	UPLINK	UPLINK	PS Narrowband
6 MHz	12 MHz	12 MHz	6 MHz	12 MHz	11 MHz	10 MHz	6 MHz	11 MHz	10 MHz	6 MHz

1 MHz Guard Bands

# Transforming Public Safety Communications



IN



ACROSS



## FirstNet - Dedicated to Excellent Customer Experience (CX)

### MODERNIZED



Innovative apps and large devices ecosystem



Network improvements and upgrades over 25 years



Multi-layered, proven, cybersecurity and network security solutions

### PRIORITIZED



Emergency communications receive highest Quality Priority & Preemption



Rapid deployment of network



Instant nationwide coverage leveraging existing infrastructure

### SPECIALIZED



Nationwide coverage with access to deployables



Aggressive pricing for public safety



Dedicated 24/7/365 public safety helpdesk



# Consultation and Outreach Built the Network



# Consultation Occurs Across All Phases



# Consultation Elements

**2013**

**Preliminary  
Regional  
Planning**

**2014-2015**

**Initial  
Consultation**

**2016**

**Governance  
and Planning  
Consultation**

**2017**

**State Plans  
Consultation**

NATIONAL OUTREACH

FEDERAL CONSULTATION





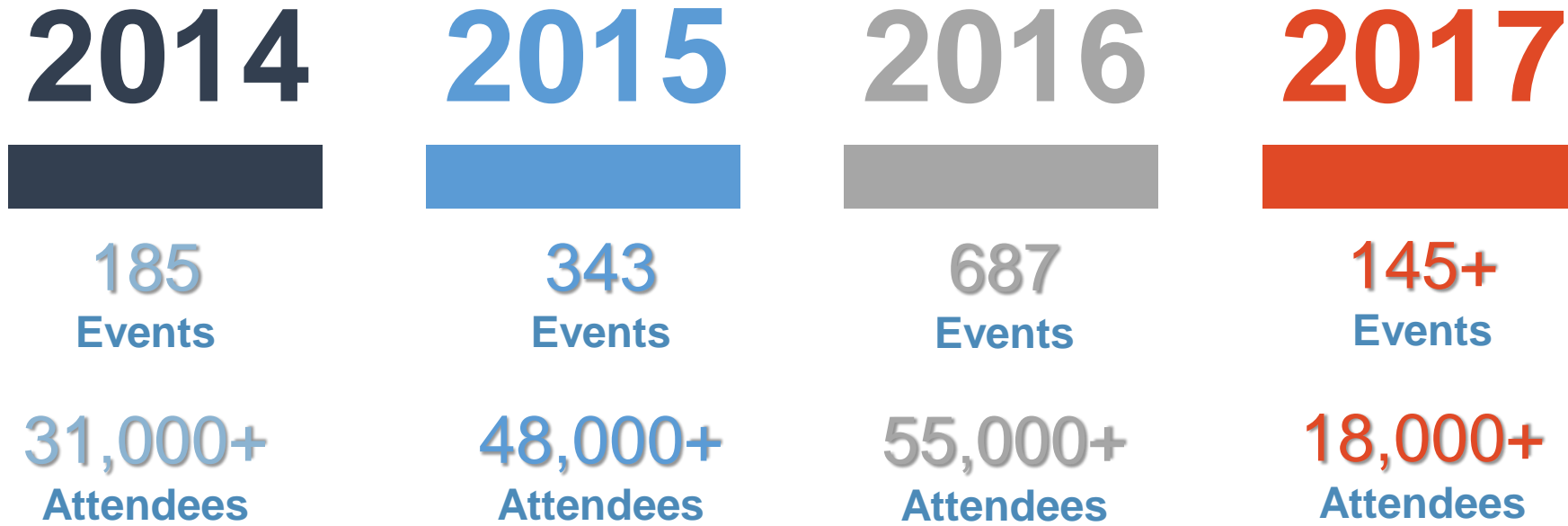
# Consultation Numbers

To ensure all the inputs of public safety were heard, FirstNet did the following outreach and consultation activities:





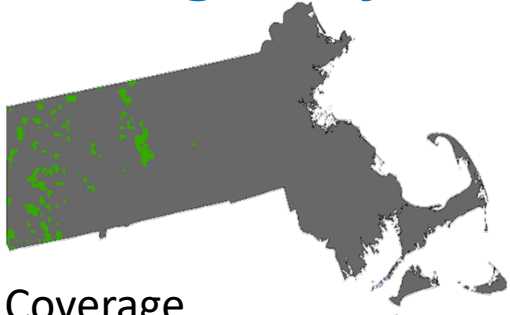
# Summary of 2014-2017 Outreach



\* 2017 Attendees and Event Counts continue to grow

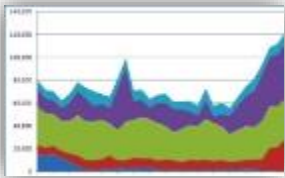
# Data Collection Priorities

## Coverage Objectives



- Coverage
- Phased Deployment

- Applications
- Data Usage



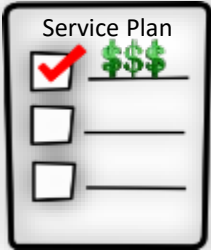
## Capacity

## Users and Operations



- Public Safety Entity Info
- Devices
- Operational Areas

- Current Service
- Procurement Vehicles
- Service Plans



## Current Service

# Public Safety's Priorities

## What We Heard in Consultation

- "Coverage must be the same or better"
- "Same or lower cost"
- "We need this now"
- "Rural coverage critical"
- "Device & Apps Ecosystem"

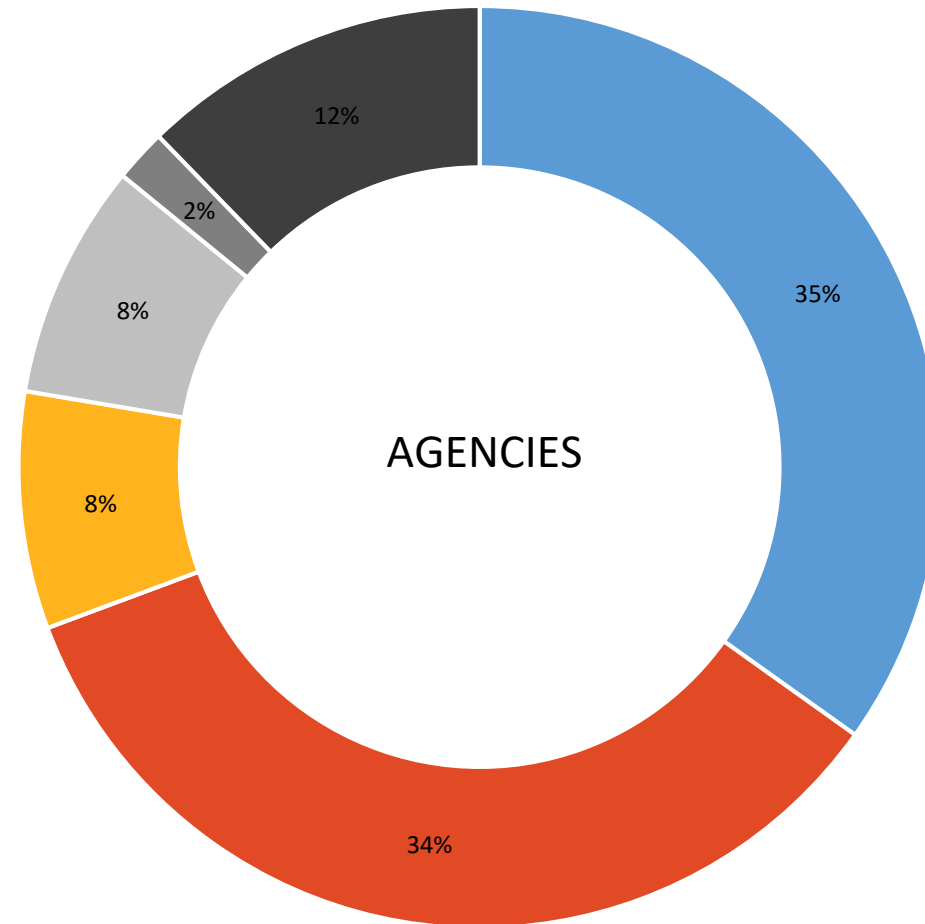


## What We Plan to Deliver

- More than 99% of Americans covered post Governor's Decision
- Aggressive public safety pricing
- By early 2018, QPP on all AT&T LTE bands
- Network evolution and access to 100s of AT&T deployables + 72 Band Class 14 FirstNet dedicated deployables
- Robust Device & Apps Ecosystem

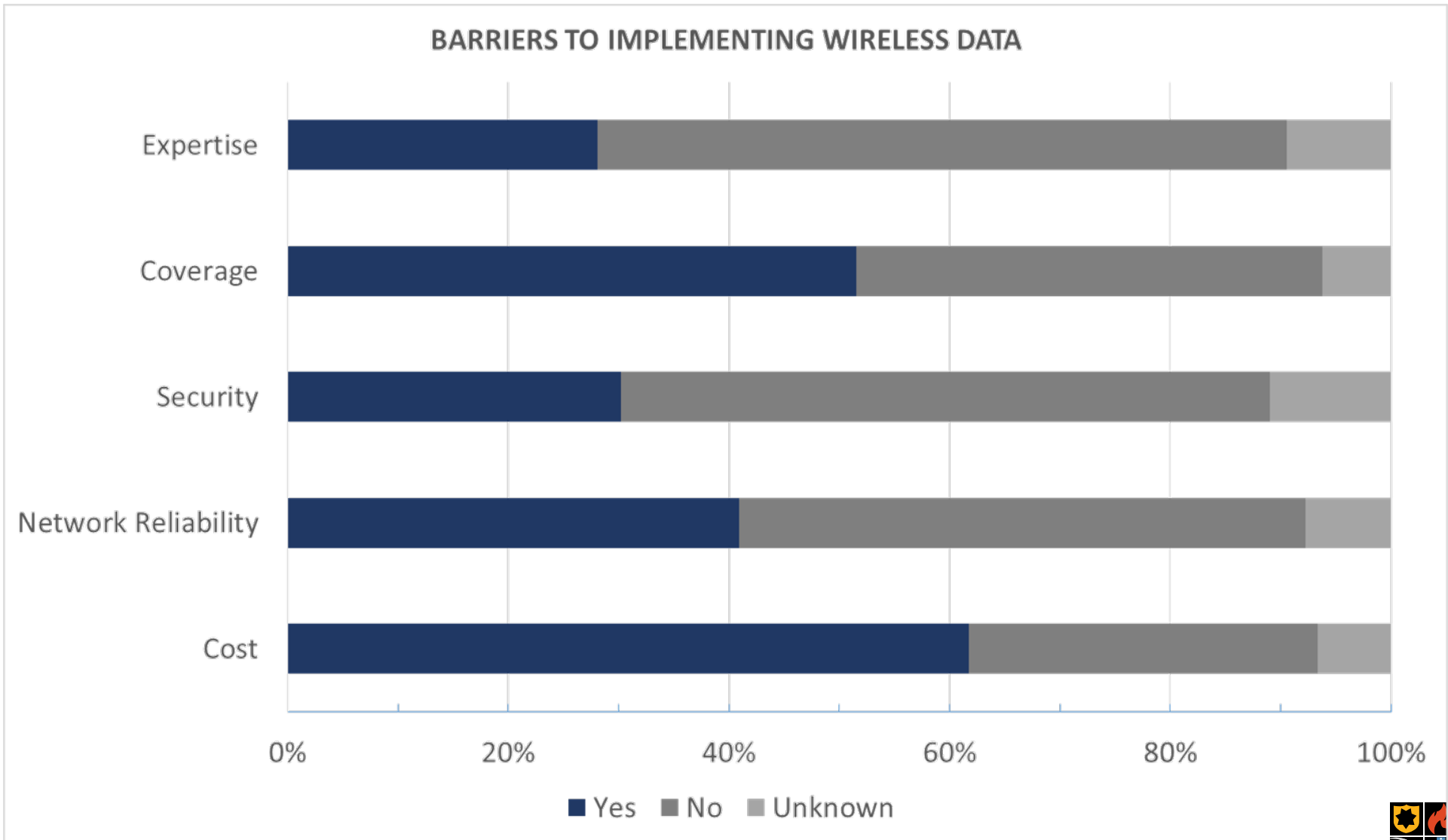
# Survey Breakdown by Discipline

- Law Enforcement  
590,414
- Fire Service  
246,167
- EMS  
67,288
- Emergency Mgmt  
65,696
- Public Health/Med  
150,399
- Other Allied Services  
72,546



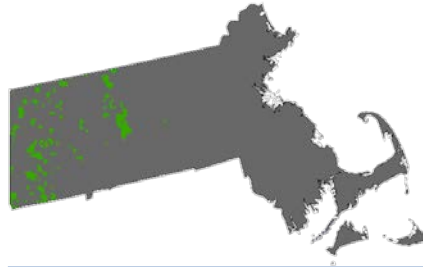


# Barriers to Adopting Wireless Data (per Survey Responses)

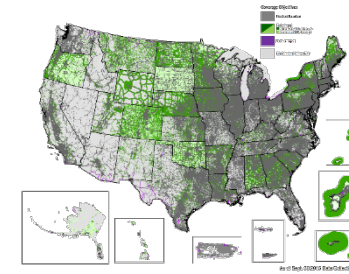


# Informing the RFP

## Coverage Objectives



Nationwide Objective

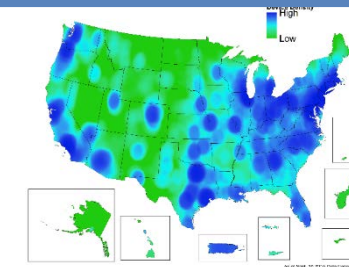


## User Survey Data

User, device and tonnage estimates informed capacity evaluation and total addressable market

2c. Objective: Estimate the total number of eligible Public Safety Entities, associated personnel and devices within the State/Territory. Use surveys, interviews and samples to help estimate the totals.

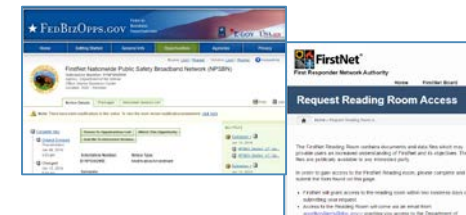
Discipline Examples	Surveyed Data (Sampling)				Estimated Totals			
	Agencies	Personnel	Devices	Use/Other	Agencies	Personnel	Use/Other	Devices
Law Enforcement (Municipal Police, State Police, Sheriff, Highway Patrol)	270	25,000	15,000	0.8	4,000	80,000	0.8	96,000
Fire Service	110	1,000	800	0.8	800	60,000	0.8	48,000
Emergency Medical Services	50	500	750	1.5	500	20,000	1.5	20,000
Courts, Corrections and Security				No Entry			No Entry	
Emergency Management				No Entry			No Entry	
Facilities and Land Management				No Entry			No Entry	
Highways and DOT				No Entry			No Entry	
Hospitals and Medical Facilities				No Entry			No Entry	
National Security/Intelligence				No Entry			No Entry	
Public Administration and Support Services				No Entry			No Entry	
Public Health				No Entry			No Entry	
Public Safety Communications				No Entry			No Entry	
Public Utilities (Electricity, Gas, Water, Telecommunications)				No Entry			No Entry	
Specialized Law Enforcement (Investigative, Intelligence, Signal Protection, etc.)				No Entry			No Entry	
Transportation Operations (Air, Pipeline, Rail, Sea and Waterway)				No Entry			No Entry	
Other Government Agencies				No Entry			No Entry	
Other Regulatory Agencies				No Entry			No Entry	
Other Non-Specified				No Entry			No Entry	
<b>TOTAL</b>	<b>400</b>	<b>26,500</b>	<b>11,500</b>	<b>1.2</b>	<b>1,300</b>	<b>140,000</b>	<b>1.3</b>	<b>174,000</b>



## Submission Files



RFP Reading Room



# FirstNet Request for Proposals - 16 Objectives



Building, Deployment, Operation & Maintenance of the NPSBN



Financial Sustainability



First Responder User Adoption



Device Ecosystem



Applications Ecosystem



Accelerated Speed to Market



User Service Availability



Service Capacity



Cyber Security



Priority Services



Integration Of Opt-out State RANs



Integration of Existing Commercial/Federal/State/Tribal/Local Infrastructure To Support NPSBN Services



Life-cycle Innovation



Program and Business Management



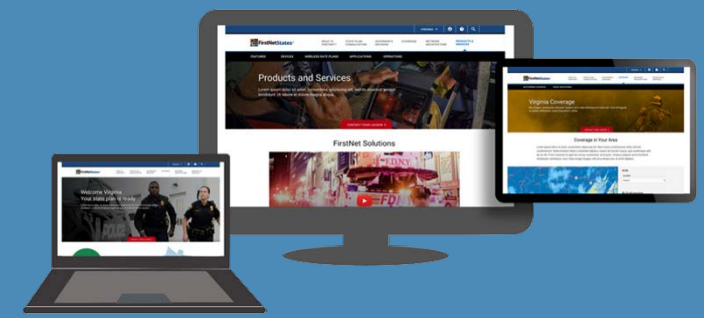
Customer Care and Marketing



Facilitation of FirstNet's Compliance With The Act & Other Laws

# About FirstNet State Plans

States and territories receive a customized, digital State Plan outlining how the FirstNet network will be deployed in the state or territory



## Each state's or territory's plan includes key information about FirstNet



### FirstNet Overview

- About FirstNet
- Value of FirstNet



### State Plan Consultation

- State/territory consultation
- Nationwide outreach



### Governor's Decision

- Executive summary
- Acceptance and opt-out guides



### Coverage

- Nationwide coverage
- Rural providers



### Network Architecture

- RAN
- Core network
- Implementation
- Security



### Products & Services

- Features
- Devices
- Rate plans
- Applications

## Based on the State Plan, the state/territory governor can:



FirstNet and AT&T will deploy, maintain and operate the state/territory Radio Access Network (RAN) at no cost to the state for 25 years. Once a state/territory opts in, FirstNet services will be available to public safety agencies and personnel in that state or territory.

## To create customized plans, FirstNet consulted with:

**140,000+**  
PUBLIC SAFETY STAKEHOLDERS  
NATIONWIDE



**50**  
STATES  
**5**  
TERRITORIES & DC



**2** MILLION  
PUBLIC SAFETY PERSONNEL



THROUGH A **12,000**  
AGENCY DATA COLLECTION EFFORT



Opt-out means the state/territory is responsible for deployment, operation, maintenance, and improvement of a public safety RAN in that state/territory – including costs and risks.



# For Public Safety, By Public Safety



# THANK YOU



# FirstNet™







**FirstNet™**

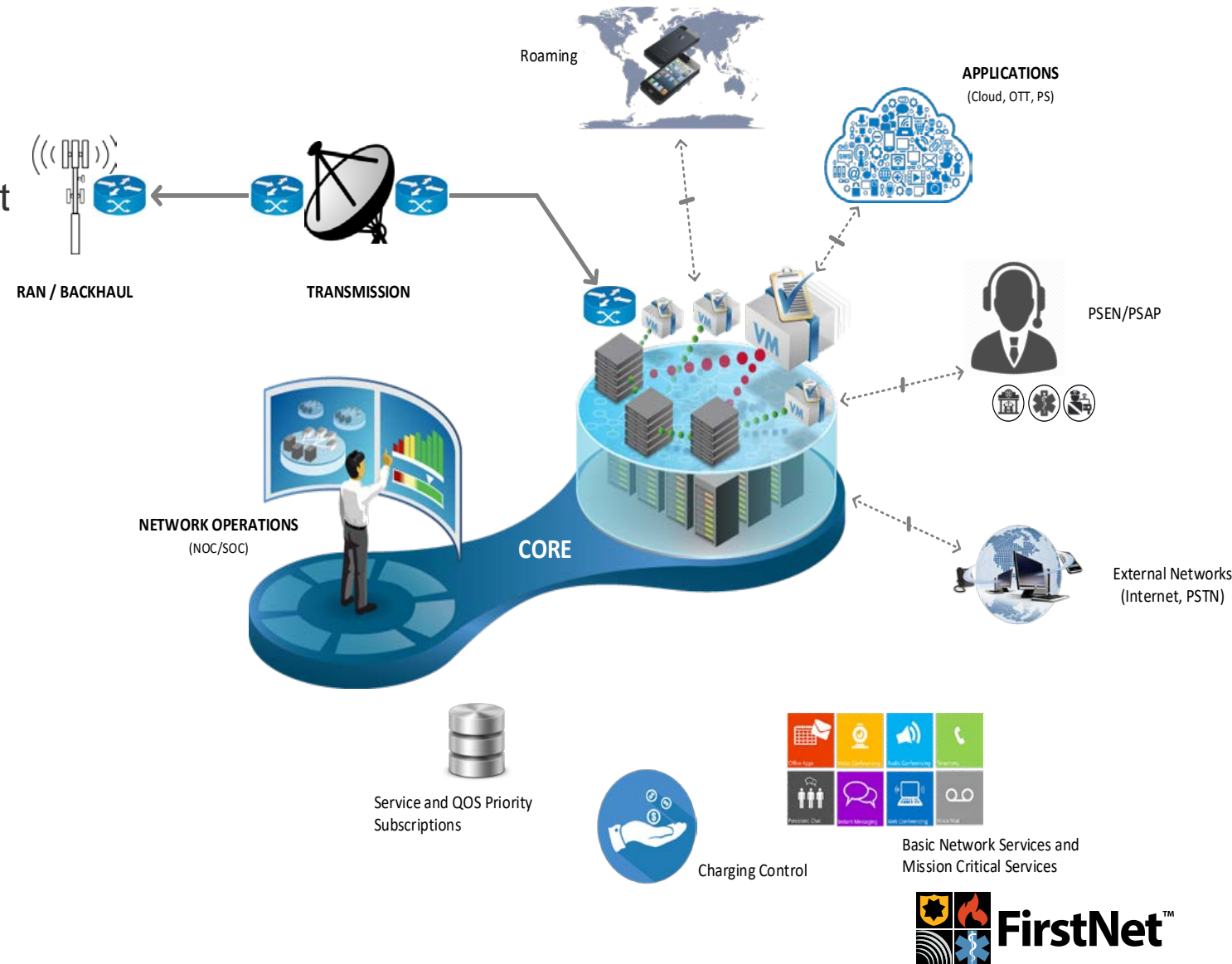
# The Technology of FirstNet

**Mr. Jeff Bratcher, FirstNet Chief Technology Officer**



# Dedicated FirstNet Public Safety Core Network

- FirstNet Core to be fully implemented March 2018
- Based on 3GPP standardized Evolved Packet Core (EPC) and IP Multimedia Subsystem (IMS)
- Dedicated core for opt-in and opt-out states/territories RANs
- FirstNet Core to provide:
  - Basic network services (phone/text/mms)
  - Mission-critical services (future)
  - Secure access to private/public networks, PSEN/PSAP, enterprise and cloud applications
  - Enables full network sharing among Band 14 and AT&T commercial bands while enabling Band 14 secondary use
  - QoS, priority and preemption across all AT&T LTE bands



# Radio Access Network – Multi-Band Solution for Public Safety

## Capacity

- Additional bandwidth
- Lower cost/bit as can often deploy more spectrum vs. new sites to add capacity

## Coverage

- More sites & in-building DAS available to Public Safety communications

## Time To Market

- Utilizing an established RAN network with legacy spectrum allows FirstNet to launch Public Safety services sooner

## Resiliency

- Wireless interference tends to be band specific & multiple spectrum bands allows for alternative communication paths if one has interference

## Faster Data Speeds

- Combining separate LTE bands (Carrier Aggregation) allows faster data speeds by combining multiple LTE spectrum

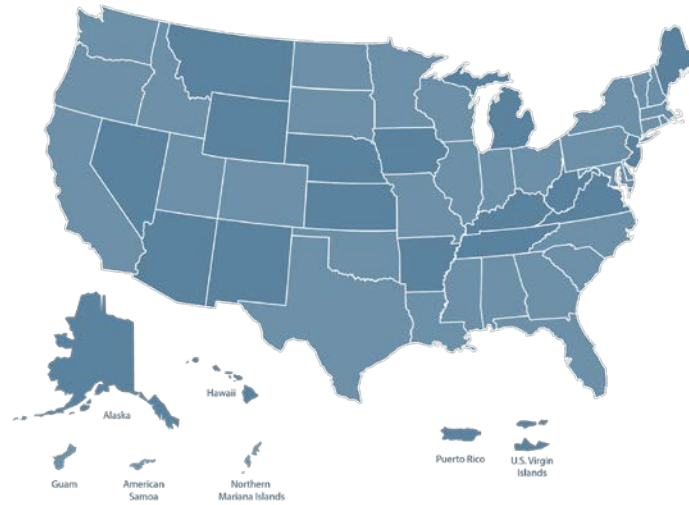




# Devices Portfolio Roadmap – Public Safety Input



**PUBLIC SAFETY**



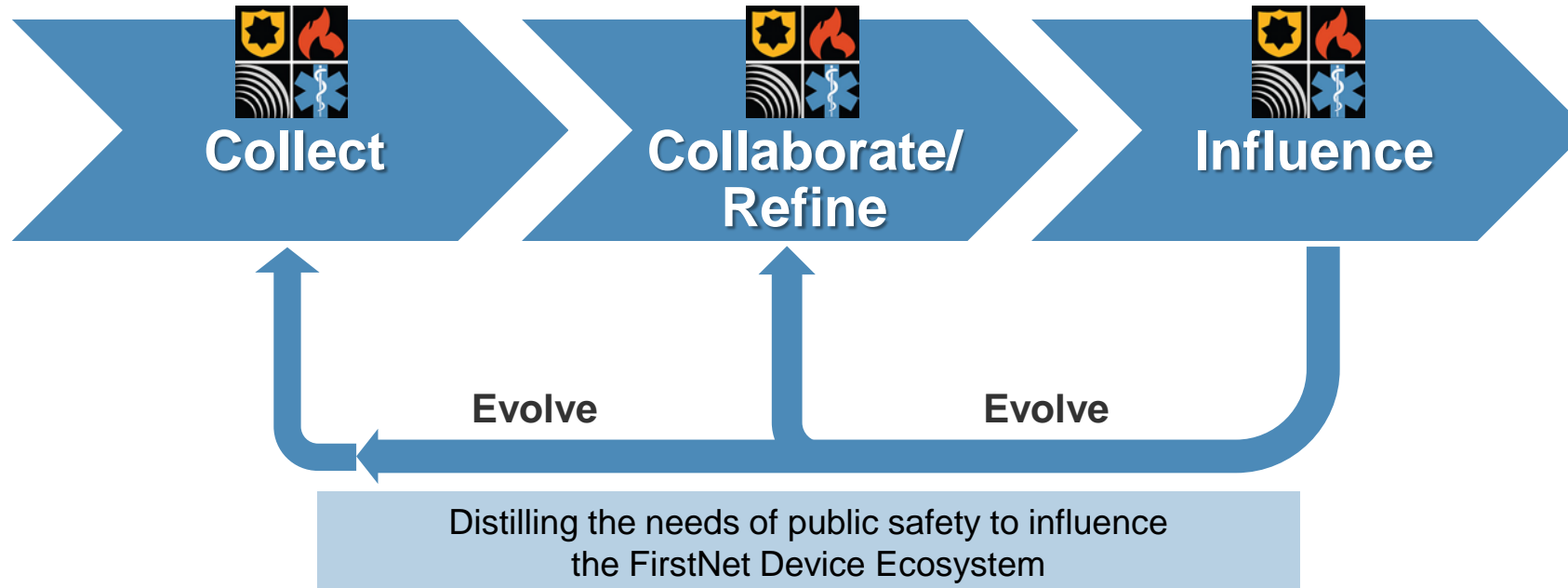
**Protect**



**Connect**



**Situationally  
Aware**





# Accessories Vision

Must support the device portfolio and roadmap



Headsets



Vehicle chargers



Rugged cases



Remote speaker mics



Wired speaker mics



Belt clips



Multi-bay chargers



Car cradles



Car kits



Wearables



External Batteries and other sleds



Scanners



Sensors

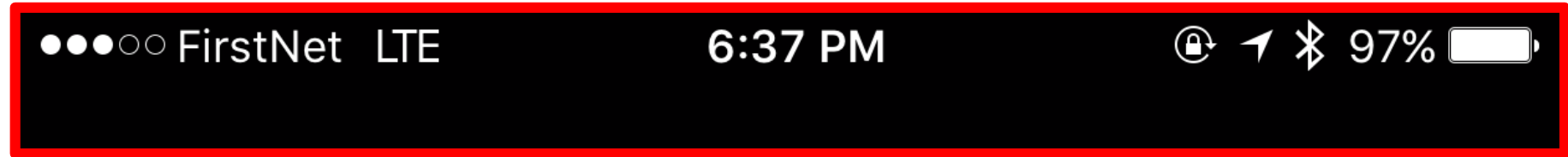


Cameras



eCitation terminals

# FirstNet: For Public Safety, by Public Safety



# Applications Ecosystem Vision

ICAM



Federated ICAM

App Dev Env



Platform for developers

Test & Cert



Certify = test against criteria

App Store



Coexist with commercial apps

SDP

Application Layer

Open APIs

Service Delivery Platform

Network Services

Cloud Services



Cost-effective agency options

Local Control



Agency controls

Security



App and data security



# Applications Ecosystem

**FirstNet Developer Portal**

DEVELOPER PROGRAM | PROGRAM GOVERNANCE | EVENT CALENDAR | API CATALOG | [DISTRIBUTE APPS](#)

## Develop Apps for FirstNet. Help Build a Safer World.

[JOIN NOW](#)

- MEMBERSHIP**  
Be part of an innovative team of public safety community developers that develops apps to help save lives every day being used by millions of first responders nationwide. Open to all developers. Join now.
- DEVELOP**  
Develop innovative cutting-edge apps using advanced APIs and award-winning optimization tools. All these available to you at no charge through the FirstNet Developer program.
- CERTIFICATION**  
Learn about certification process and approval guidelines to publish your app in the FirstNet App Store.
- DISTRIBUTE**  
Use App Control to publish, manage and receive feedback on your apps through the entire lifecycle.

**FirstNet App Control** | MY APPS | RESOURCES

## Submit and Manage Your Apps

CERTIFICATION & APPROVALS FORM | DEVELOPMENT & DISTRIBUTION GUIDE

### Submit An App

App Name\* Max 30 characters

Platform\*\*

IOS  ANDROID

[SAVE & CONTINUE](#) [DISCARD & GO BACK](#)

1 APP DETAILS | 2 APP PACKAGE | 3 IMAGES | 4 REVIEW | 5 SUBMIT

#### App Details

App approval type\*

- General
- FirstNet Certified

\*Indicates a more rigorous assessment of availability, usability, and resilience.

[Want to know more about certification? FirstNet Certification Details ES](#)

**FirstNetApps™**

## Fast. Reliable. Safe.

Apps that provide the information you need so you can focus on what matters: keeping people safe.

### Recommended

- Kodiak PTT** Kodiak 4.0 ★★★★★
- AT&T Fleet Complete** AT&T 4.0 ★★★★★
- Mobile Iron** MobileIron 4.0 ★★★★★

### Fire Fighting

- First Aid Q&A** (McGraw Hill)
- AID** (McGraw Hill)

### Law Enforcement

ZOOM | SEARCH | HELP

# Applications Ecosystem cont'd

The screenshot shows the 'Administration' section of the FirstNet Local Control interface. It features a top navigation bar with 'ADMINISTRATION' and 'NETWORK STATUS' tabs. The main content area is divided into two columns: 'Management' and 'Purchasing & Provisioning'. The 'Management' column includes cards for 'Manage users', 'Manage services & billing', and 'Manage apps'. The 'Purchasing & Provisioning' column includes cards for 'Shop standard devices & rate plans', 'Shop specialized devices', and 'Shop public safety solutions'. A 'View wireless reports' card is also present. Each card contains a brief description and a 'MANAGE' or 'SHOP' button with an icon.



**ICAM**  
Identity, Credential,  
& Access Management

The screenshot displays a network monitoring dashboard. At the top is a weather radar map of the Southeastern United States, showing precipitation intensity in shades of green, yellow, and red. Below the map are three control panels: 'SEARCH' with a location input field, 'LAYERS' with checkboxes for Network, Weather, Traffic, and Alerts, and 'NETWORK' with radio buttons for 4G LTE, 4G, 3G, and 2G. At the bottom are two color-coded legends: 'WEATHER' (Light Rain, Heavy Rain, Snow, Ice) and 'TRAFFIC' (Fast, Normal, Slow, Construction, Vehicle Incident). A 'Report Network Issue' link with a phone icon and number is also visible.

# Applications Innovation and Interoperability





# Applications Standards Focus Areas

## Applications Base Technologies

- Location apps
- Information exchange
- Situational awareness
- Data analytics
  - Social media
  - RT video



- E-citations & court systems
- Digital evidence
- Facial recognition
- Field reporting



- CAD systems
- Integrated dispatch
- NG 9-1-1
- Electronic citizen reporting
- Government records
- Alarm management



- Personnel biometrics
- Personnel location
- 3D building plans



- Electronic health records
- En-route collaboration
- Telemedicine

## Future Technologies

- Z-axis acquisition
- MC-PTT
- MC-Data
- MC-Video
- P2P Apps
- IoT
- Virtual Assistants
- AR/VR
- ICAM



# Standards Technology Evolution: Network Capabilities

Common API  
framework

ProSe

MBMS/IOPS

Mission-  
critical  
services

QPP

GCS

## Focus on supporting mission critical services and enablers

### Services

- ❑ Mission-critical push-to-talk
- ❑ Mission-critical video
- ❑ Mission-critical data



### Enablers

- ❑ Proximity services (ProSe)
- ❑ QoS, Priority and Preemption (QPP) and Dynamic Controller
- ❑ Group Communication Services
- ❑ Isolated E-UTRAN Operation for Public Safety (IOPS)
- ❑ Multimedia Broadcast Multicast Services (MBMS)
- ❑ Common API framework

# Internet of Life-Saving Things (IoLST)



# Internet of Life-Saving Things used by First Responders





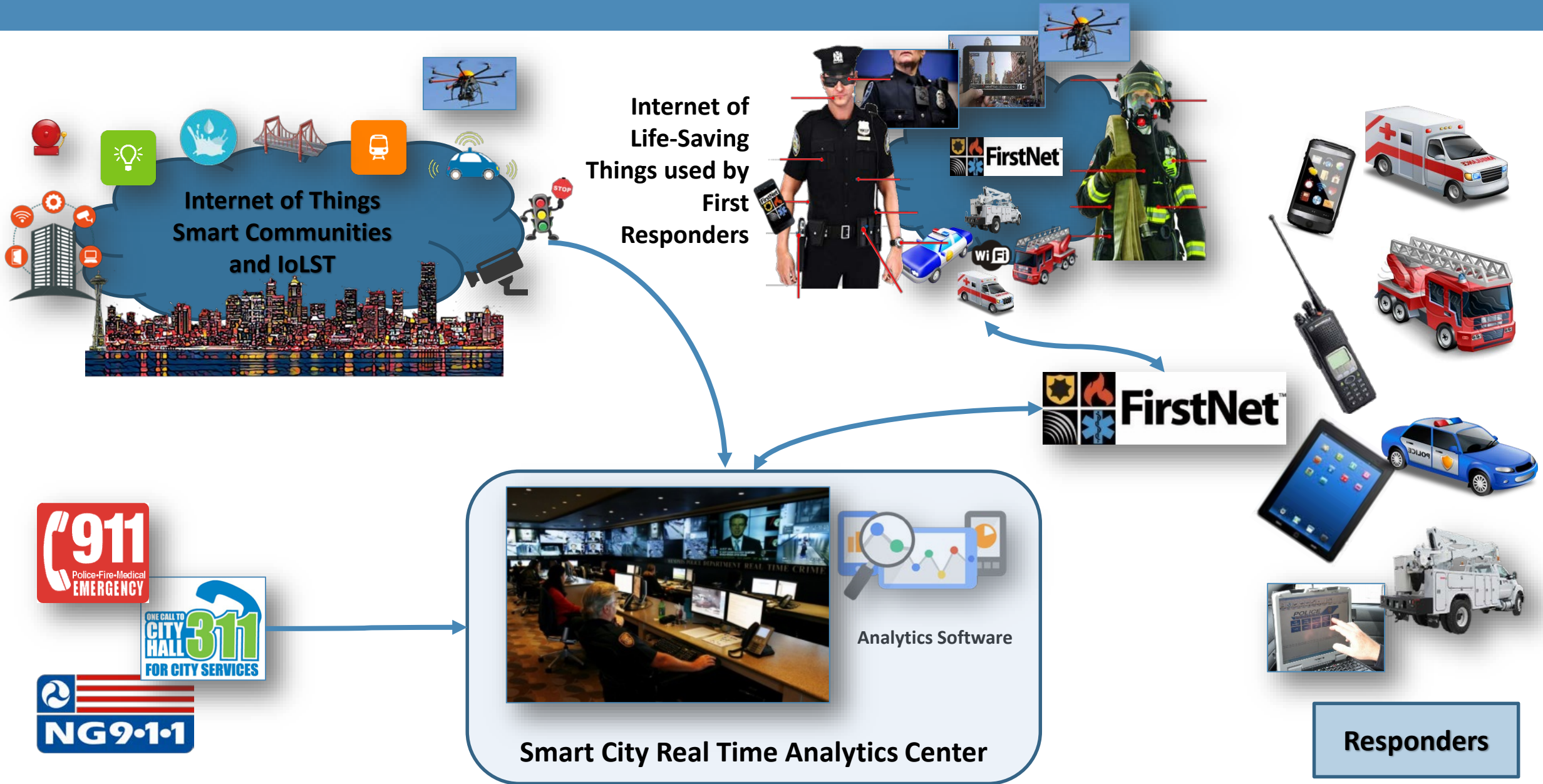
# Smart Communities

(Cities, Towns, Counties, States, Tribes, Rural Areas)





# FirstNet, Public Safety and Smart Cities – Simplified View



# FirstNet Boulder – Innovation and Test Lab



## Focus Areas:

- ✓ Quality of Service
- ✓ Priority
- ✓ Preemption
- ✓ Mission-Critical Services and Application



Visit [Firstnet.gov](https://www.firstnet.gov) for videos and more information



# Where to go for FirstNet Information:

Two sites provide you complete information about this first-of-its-kind initiative:

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

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



## FirstNet program, activities and the First Responder Network Authority

### On this site:

- FirstNet mission and guiding principles
- FirstNet board and leadership
- FirstNet Public Safety Advisory Committee
- Consultation with public safety, states and territories
- State Plans Process and State Points of Contact
- The law that created FirstNet
- FirstNet Innovation and Test Lab

## FirstNet network products and services and advantages for public safety

### On this site:

- Quality of service, priority and preemption
- Local control features
- Application ecosystem
- Devices and accessories for FirstNet
- Coverage and rate plans
- FirstNet network FAQs
- Contact a FirstNet specialist





For Public Safety, By Public Safety



THANK YOU



FirstNet™

