



**FirstNet™**

# FirstNet Combined Committee Meeting

September 13, 2017





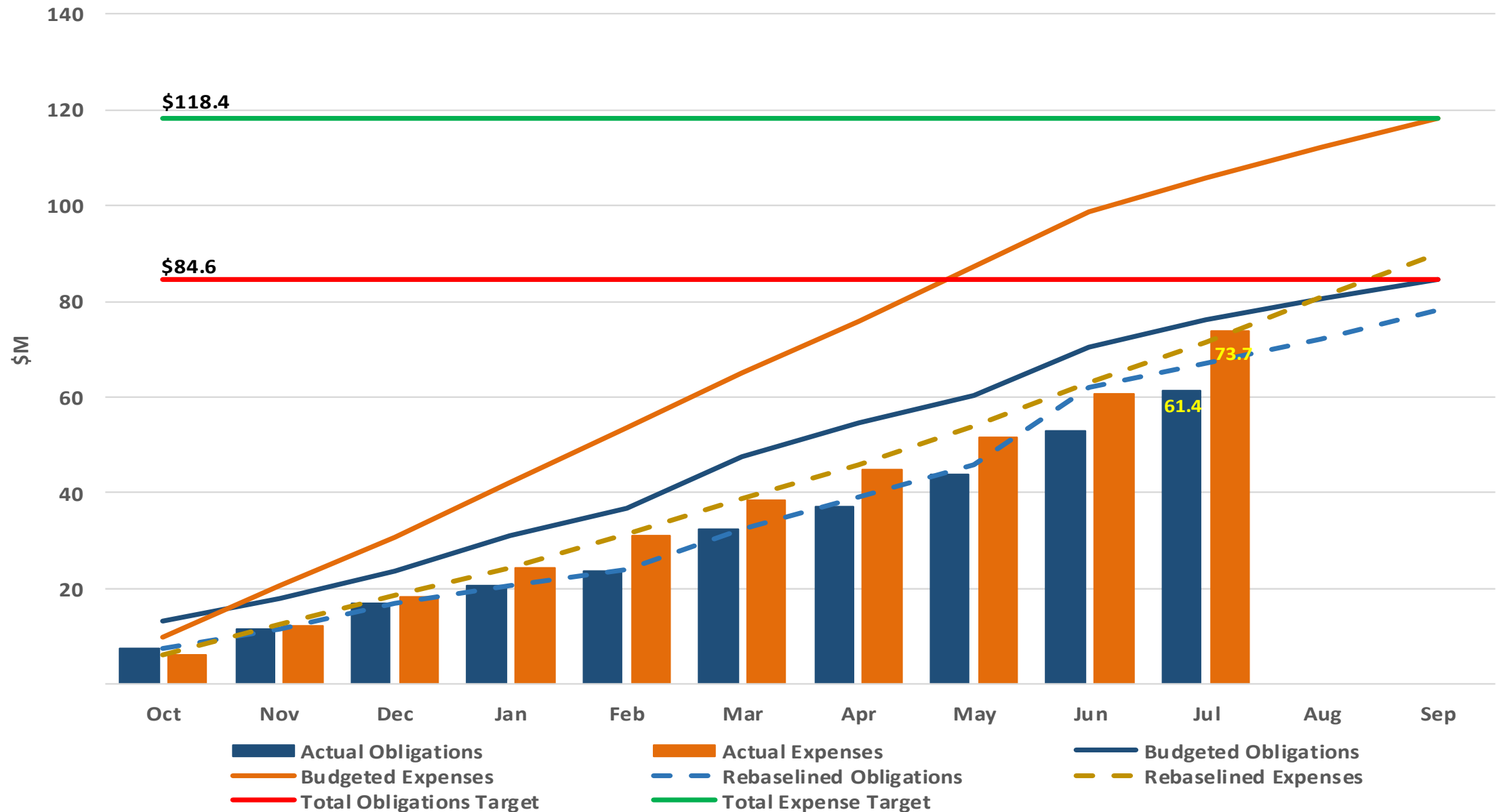
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# Finance Committee Update

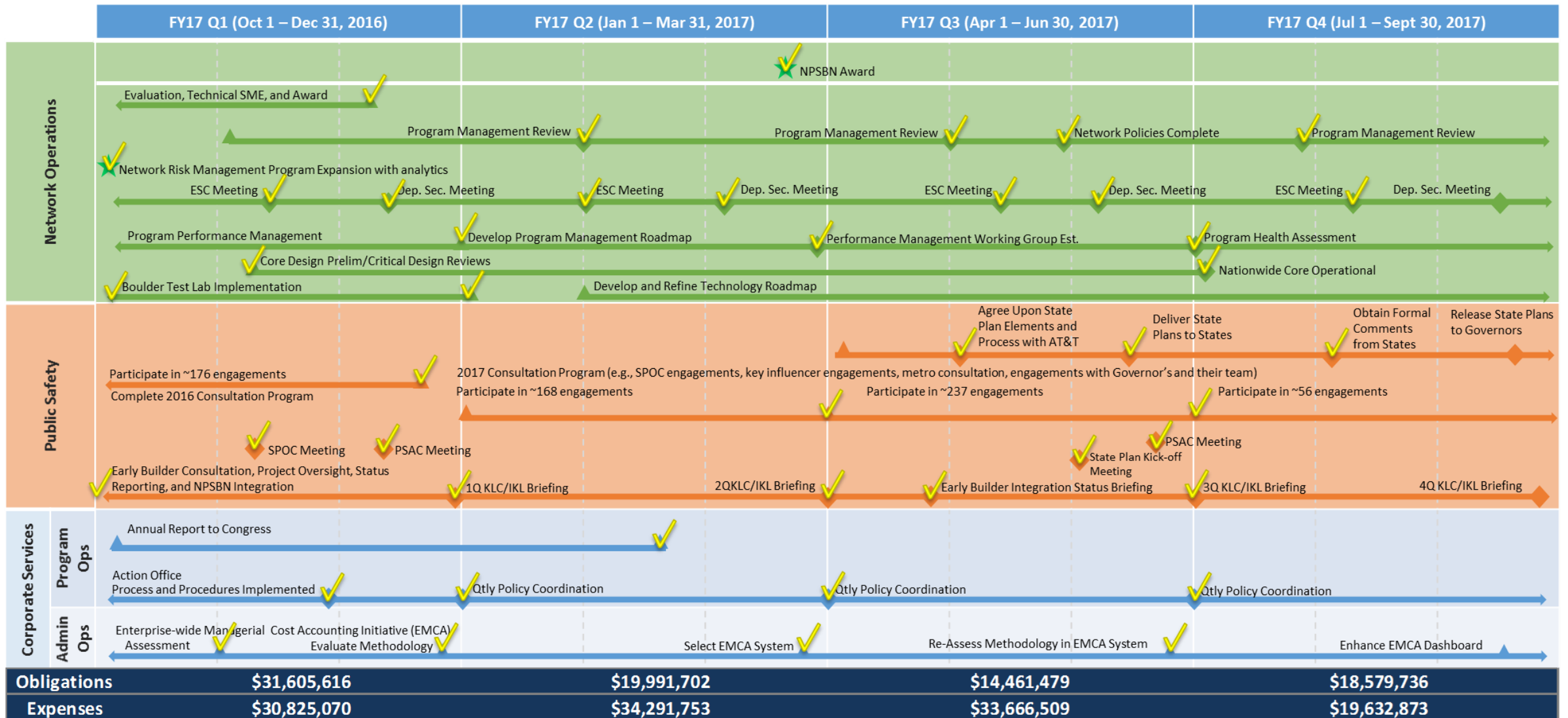
James Douglas, Finance Committee Chair  
Kim Farington, Chief Financial Officer



# FirstNet Overall FY 2017 Cumulative Status

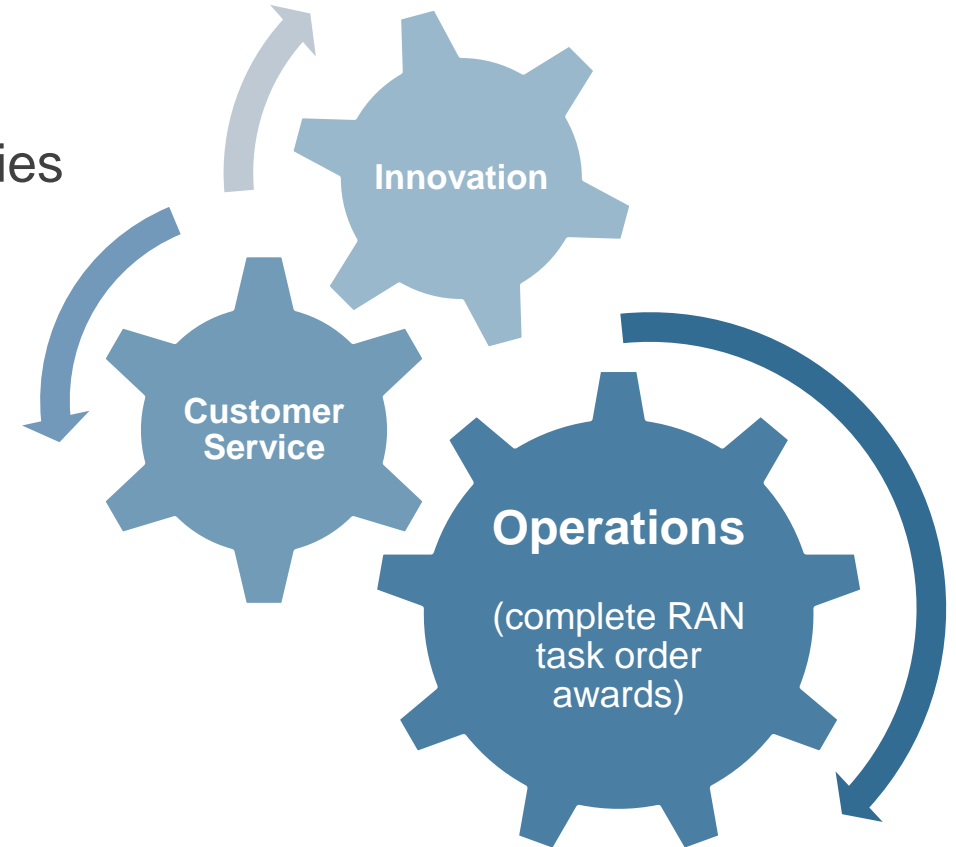


# FirstNet Summary FY 2017 Completed Milestones



# FirstNet Strategic Plan – FY 2018 Priorities

- Initiate RAN build-out for opt-in states
- Testing current and future network features and capabilities
- Evolve and deliver applications
- Complete FirstNet Core
- Update services and security enablers of the core
- Initiate Band 14 network and FirstNet field operations





# Management Recommendation – FY 2018 Budget

- FY 2018 recommended operational budget request: \$73.5 million
  - 13% decrease from FY 2017 budget (\$84.6 million)
- Reduction based on
  - Streamlining processes in post-award environment
  - Focusing on improved resource optimization
  - Reducing reliance on contractors and more on full-time staff
- Assumptions driving FY 2018 budget total include funding for
  - Staff
  - Board expenses
  - Resources needed to achieve all FY 2018 goals and objectives, and meet FirstNet mission

# FY 2018 Workstreams

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## Network operations

- Activities related to the implementation, operations, and oversight of NPSBN

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## Public safety

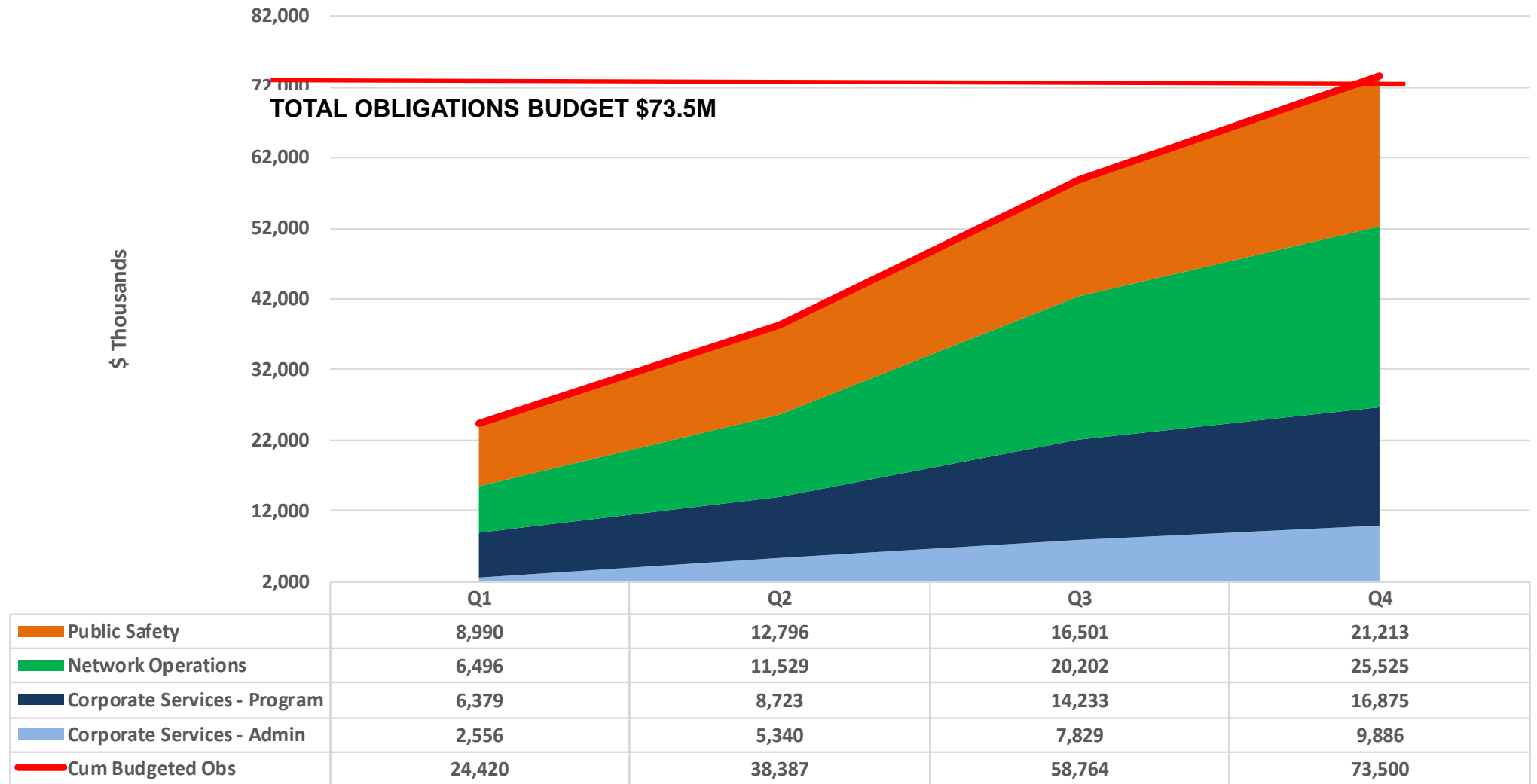
- Activities related to customer outreach, product management communications, and government affairs

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## Corporate services

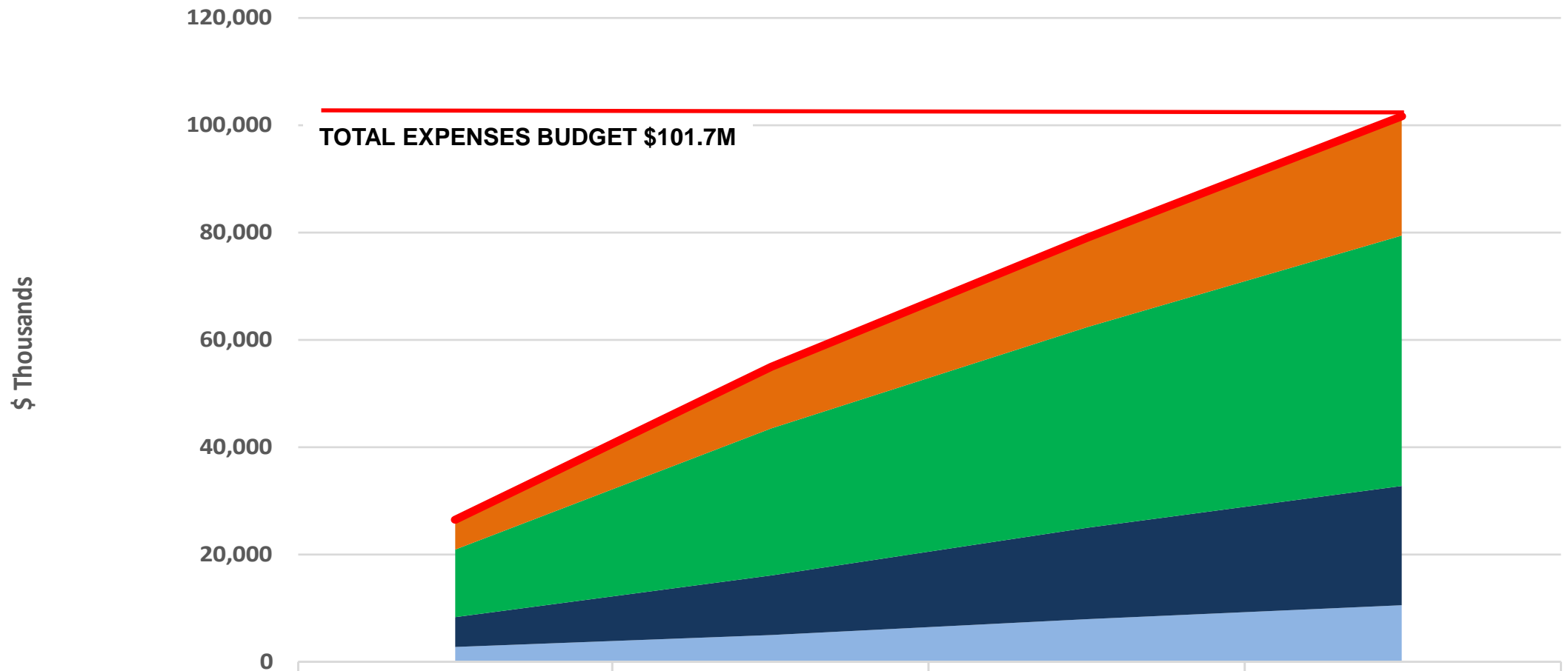
- Program operations
  - Administrative costs related to network operations and public safety
- Administrative operations
  - Administrative costs of maintaining the FirstNet enterprise not directly assigned to network operations or public safety delivery
  - Administrative expenses subject to the \$100 million, 10-year cap

# FY 2018 Cumulative Obligations by Workstream

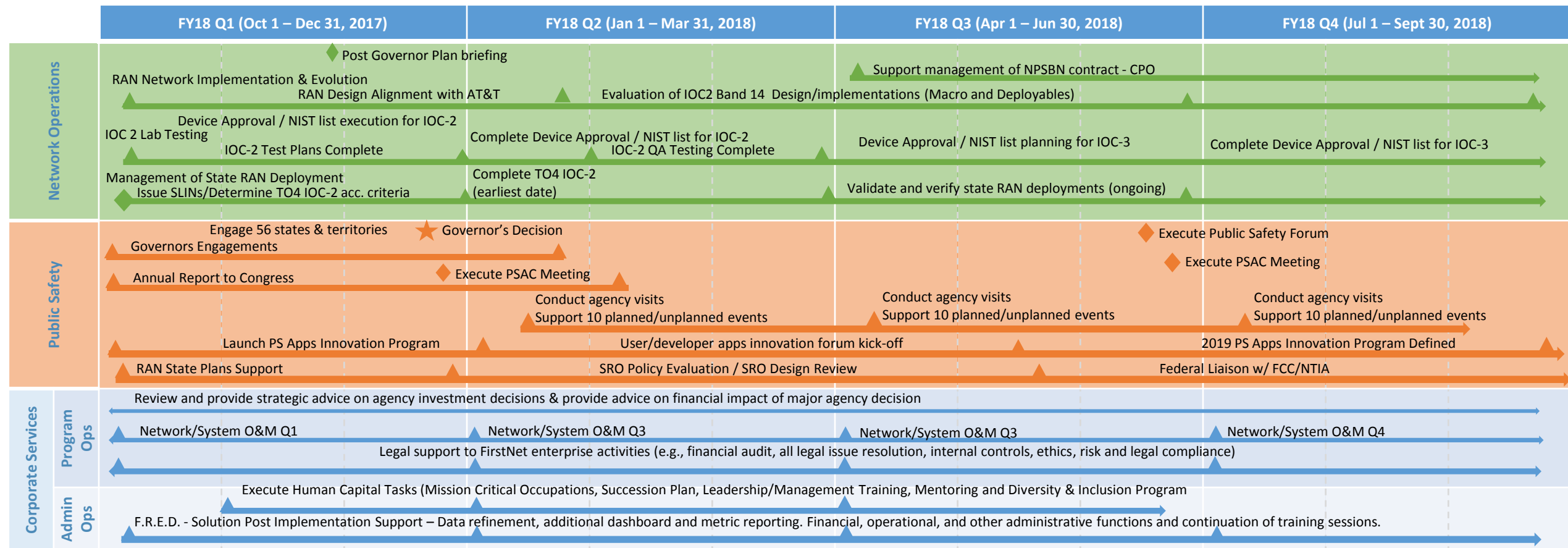




# FY 2018 Cumulative Expenses by Workstream



# FirstNet Summary FY 2018 Milestones



Obligations	\$24,420,261	\$13,967,173	\$20,376,353	\$14,736,316
Total Expenses	\$26,254,119	\$28,716,290	\$24,168,441	\$22,656,486

# Finance Committee Resolution 18

1. **Recommend** the Board approve the proposed FY 2018 budget of \$73.5 million on an obligations basis.
2. **Recommend** the Board authorize management to enter into the necessary agreements to meet the FY 2018 FirstNet work stream milestones.
3. **Recommend** the Board authorize management to reallocate up to 10% of the funds from any of the 3 major activity categories to another major activity category. Management may exceed the approved obligation level of the 3 major activity categories by no greater than 10% in the aggregate or by 15% in any individual major activity category.



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# Governance and Personnel Committee Update

Sue Swenson, Governance and Personnel Committee Chair



# Board Member Nomination Update

- Board member terms extended until 2017 appointments or Dec. 31, 2017, whichever is earlier
- National Telecommunication and Information Administration (NTIA) received 31 submissions of interest in response to the April 2017 *Federal Register* notice
- The Governance and Personnel Committee has interviewed and made a formal recommendation to NTIA.
- NTIA has made a formal recommendation to the Secretary of Commerce
- **Next steps:** Appointments shall be made and announced by the Secretary of Commerce
  - Projected timeline for appointment: September or October 2017

# FirstNet team wins Commerce Gold Medal Award



## Recipients: FirstNet RFP Team

- **Mouncef Belcaid**  
Director, Solutions Services
- **Terri Callahan**  
Contracting Officer
- **Brian Hobson**  
Director, State Plans
- **Brian Kassa**  
Director, Tech. Planning & Development
- **Paul Madison**  
Deputy Chief Counsel
- **James Mitchell**  
Senior Director, Network Program Office
- **Peggy O'Connor**  
Director, Relationship Services
- **John Quinlan**  
Deputy CFO, Strategic Planning
- **Matt Schiller**  
Director, Financial Strategy & Development
- **Patrick Schwinghammer**  
Director, RAN

## About the award

- Team received award in **Personal and Professional Excellence** category for implementing/executing an innovative acquisition and public-private partnership model for the Nationwide Public Safety Broadband Network
- Highest honorary award given by Commerce Dept.
- Awarded for distinguished performance characterized by extraordinary, notable, or prestigious contributions
- Commerce Secretary **Wilbur Ross** to present award at the 69<sup>th</sup> Annual Honor Awards Ceremony, Sept. 26, Washington, D.C.





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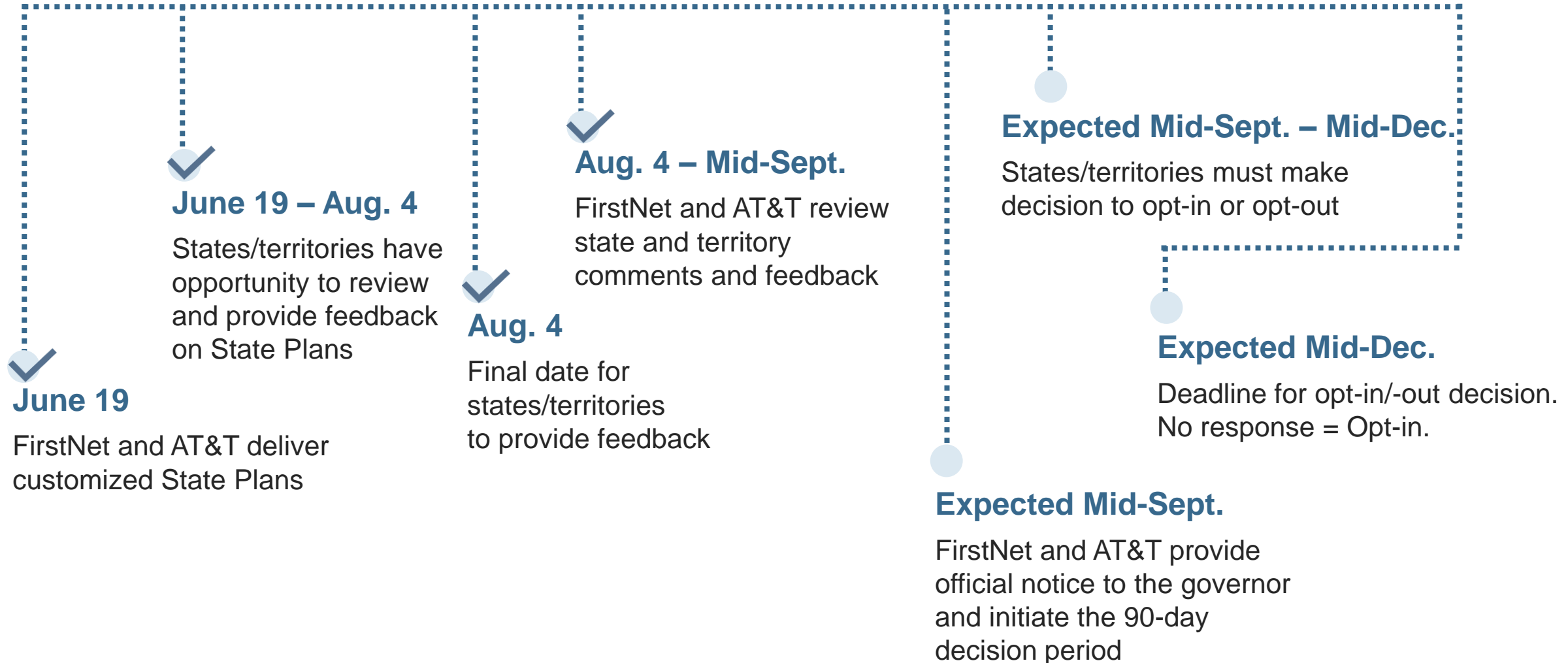
# Consultation and Outreach Committee Update

Jeff Johnson, Consultation and Outreach Committee Chair

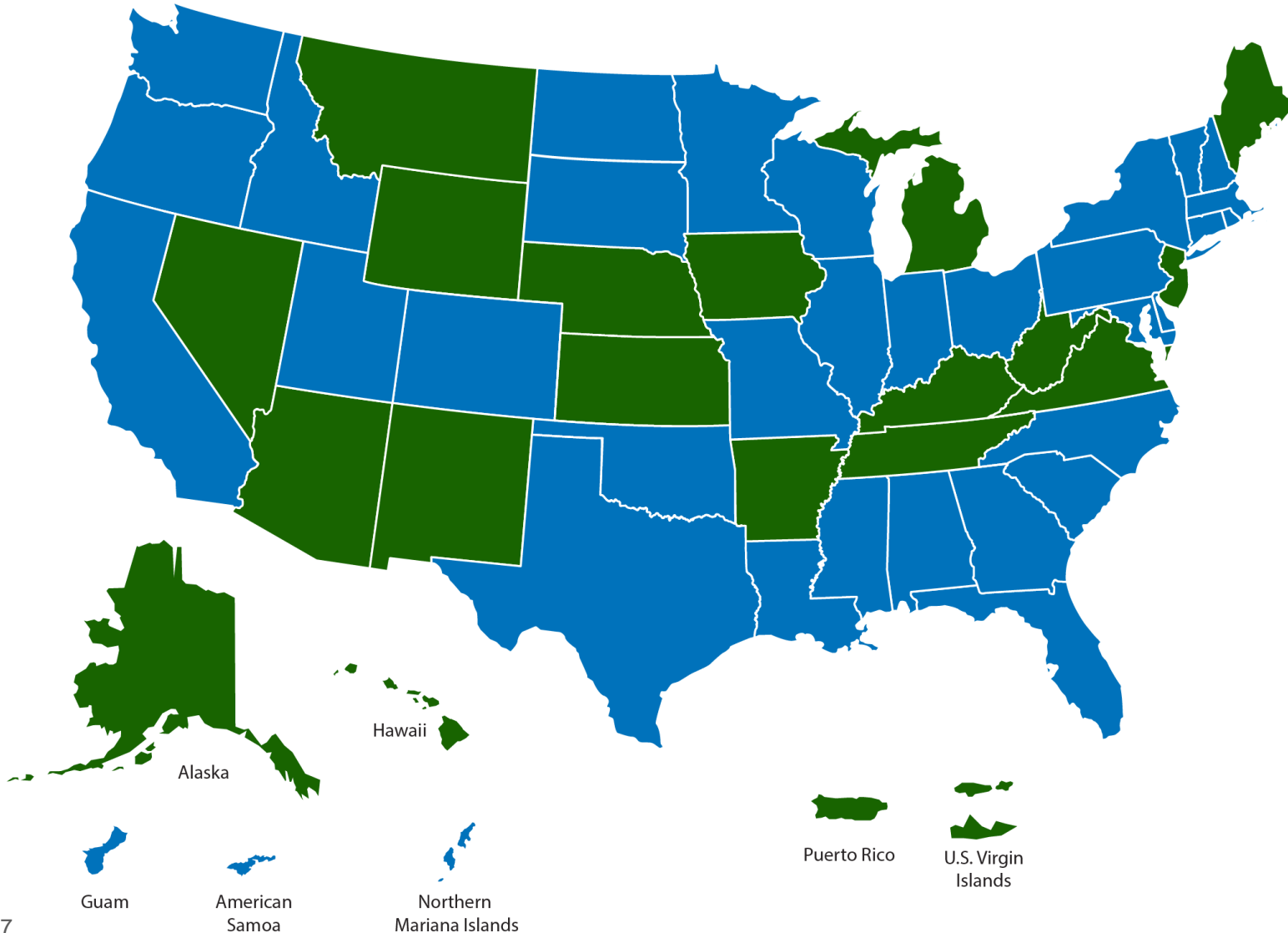
Rich Reed, Chief Customer Officer



# FirstNet State Plan Timeline



## 20 “Opt-In” States/Territories



- **Alaska**
- **Arizona**
- **Arkansas**
- **Hawaii**
- **Iowa**
- **Kansas**
- **Kentucky**
- **Maine**
- **Michigan**
- **Montana**
- **Nebraska**
- **Nevada**
- **New Jersey**
- **New Mexico**
- **Puerto Rico**
- **Tennessee**
- **U.S. Virgin Islands**
- **Virginia**
- **West Virginia**
- **Wyoming**

# State Plan Portal Updates Summary



WHAT IS FIRSTNET?	STATE PLAN CONSULTATION	GOVERNOR'S DECISION	COVERAGE	NETWORK ARCHITECTURE	PRODUCTS & SERVICES
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## What is FirstNet?

## About FirstNet

## State Plan Overview

## Acquisition Overview

## Value of FirstNet

## Governor's Decision

## State Exec Summary

## Acceptance Guide

## Opt-in Process

## Opt-out Guide

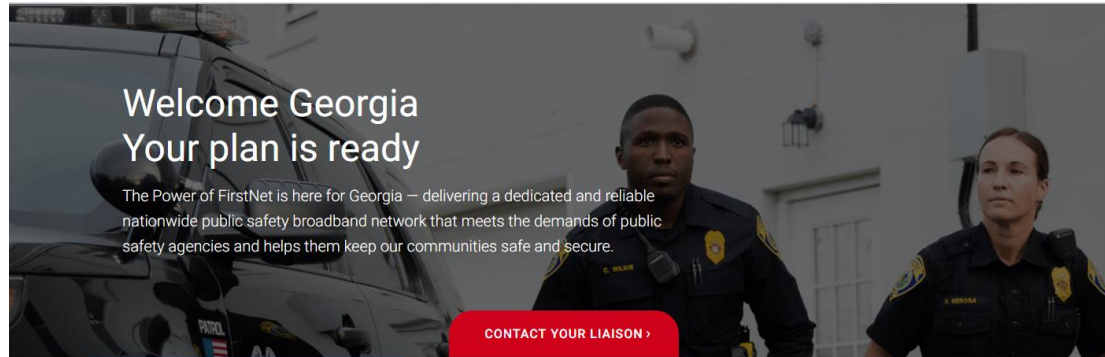
## Network Architecture

## Radio Access Network

## Core Network

## Network Implementation

## Security



## GEORGIA COVERAGE

100%

Population - FirstNet enables public safety to better serve their communities with a dedicated broadband network

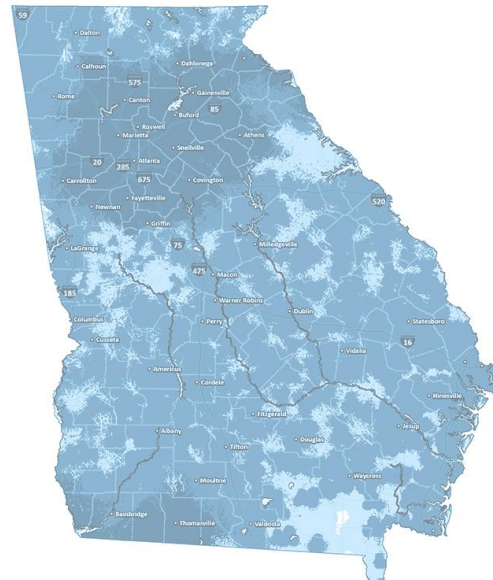
99.7%

**Geography - FirstNet delivers a dedicated public safety network across your state**

99.9%

Coverage Objectives - FirstNet provides broadband services at locations your public safety identified as priorities

**CHECK YOUR STATE COVERAGE**



## Coverage

## Nationwide Coverage

## Rural Providers

## Interactive Coverage Map

## Products & Services

## Features

## Devices

## Wireless Rate Plans

## Applications

## Business Operations

## State Plan Consultation

## State Consultation

## Nationwide Engagement



# Post State Plans: Promoting Innovation

- **ENGAGE with public safety agencies**
  - Products and services individuals/agencies need to improve/enhance their experience with FirstNet network
  - Engaging public safety organizations to identify existing uses/needs
- **COLLABORATE with public safety innovators and entrepreneurs**
  - Work with public safety innovators and entrepreneurs to solve public sector issues
  - Convene companies to promote developing public safety apps that meet user community needs
- **CONNECT FirstNet to innovation community**
  - Increase national dialogue on public safety technology with innovation community
  - Recently participated in Smart Cities Connect Conference and NIST's Global Cities Team Challenge; worked with city and regional technology incubators; presented at Department of Commerce NACIE
- **LAUNCH Applications Development Ecosystem and developer program**
  - Kick off public safety applications developer program with AT&T (IOC-1), including development, testing, certification, and publishing processes
  - Identify standards to drive innovation and interoperability





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# Technology Committee Update

**Neil Cox**, Technology Committee Chair

**Jeff Bratcher**, Chief Technology Officer





# Applications Ecosystem

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## Strategy

- Create apps that enable public safety user adoption
- Leverage scale and technologies of the commercial market

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## Vision

- Innovate continuously to meet the needs of public safety
- Support a vibrant public safety developer community
- Enable development of a growing portfolio of public safety apps

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## Ecosystem

- Facilitate secure coexistence of FirstNet and commercial apps on devices
- Offer best-of-breed solutions

# Applications Ecosystem

## ICAM



Federated  
ICAM

## APP DEV ENV



Platform for  
developers

## TEST & CERT



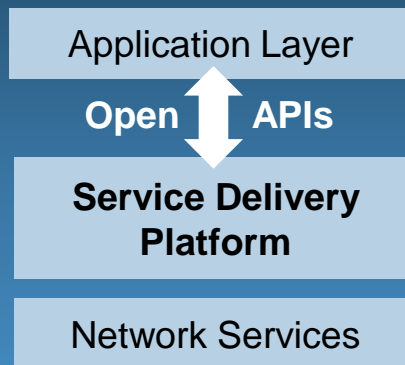
Certify = test  
against criteria

## APP STORE



Coexist with  
commercial apps

## SDP



## CLOUD SERVICES



Cost-effective  
agency options

## LOCAL CONTROL



Agency  
Controls

## SECURITY



App and  
data security

# Applications Standards Strategy: Pillars for Driving Standards

TECHNICAL	MARKETING	LEGISLATIVE	STAKEHOLDERS
<ul style="list-style-type: none"><li>• Drive adoption of existing standards or creation of new ones</li><li>• Drive economies of scale</li><li>• Improve user experience</li><li>• Minimize interoperability challenges</li></ul>	<ul style="list-style-type: none"><li>• Create strategies to encourage development and use of apps that employ standards</li><li>• Lower barriers to entry for new public safety app developers</li></ul>	<ul style="list-style-type: none"><li>• Advocate changes to grant programs encouraging (requiring) selection of apps that employ standards</li></ul>	<ul style="list-style-type: none"><li>• Include PSAC, public safety users, agencies, developers, AT&amp;T, academia, associations, and federal partners</li></ul>

# 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

# Emerging Applications Technologies

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## Virtual Assistant (VA)

- Software agent that can perform tasks or services for an individual
- Envision VAs that understand the language of public safety

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## Virtual Reality (VR)

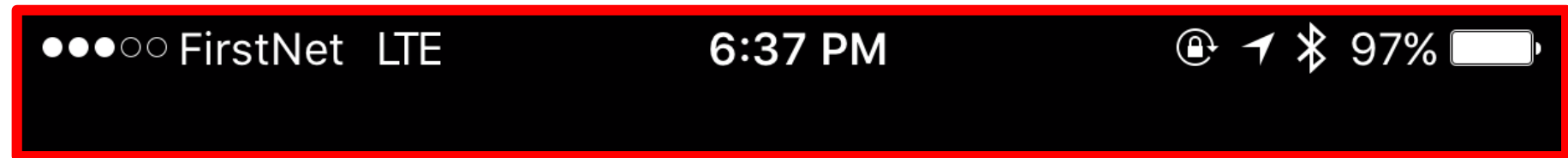
- Use of computer technology to create a simulated environment
- Envision increasing use of VR in public safety training

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## Augmented Reality (AR)

- Augmentation of the real world with digitally generated sensory inputs like visuals, sound, or GPS data, to enhance perception of reality
- Envision AR providing real-time, actionable intelligence

# FirstNet: For Public Safety, by Public Safety





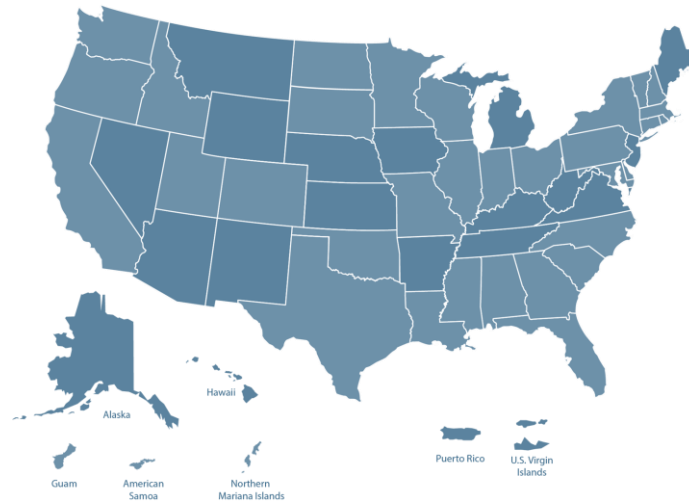
## 27



# Device Portfolio Roadmap Influencing Strategy



**PUBLIC SAFETY  
ADVISORY COMMITTEE**



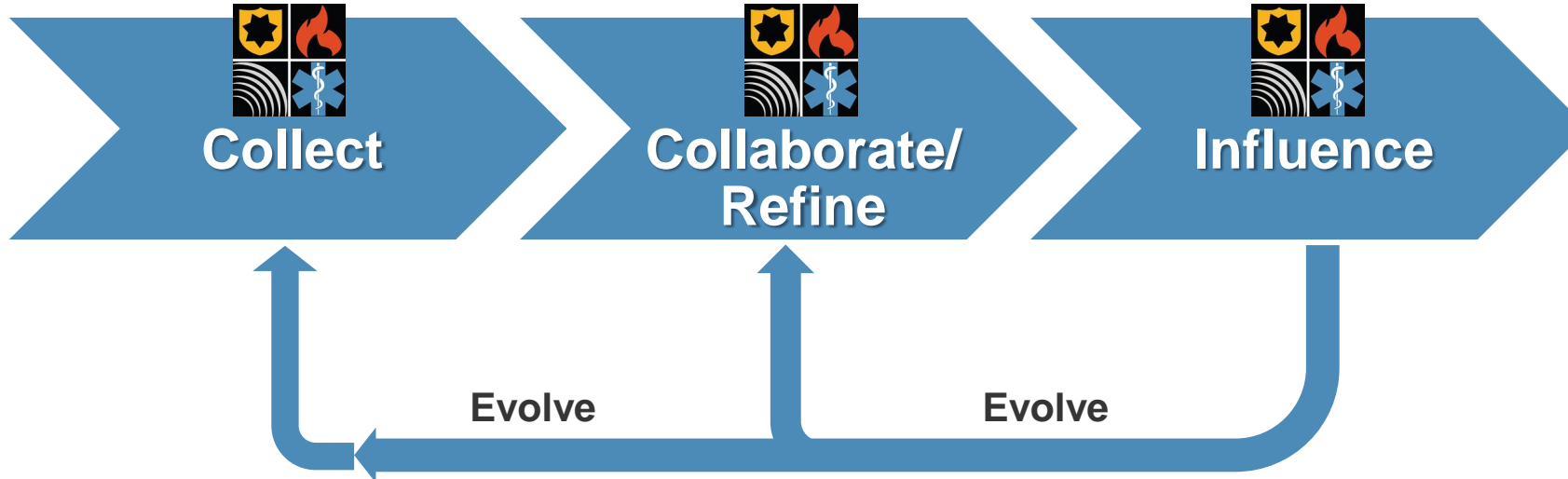
**Protect**



**Connect**



**Situationally  
Aware**



Distilling the needs of public safety to influence  
the FirstNet Device Ecosystem

# Fire Fighter Vision

## Protect



- Real-time monitoring of firefighter's well-being
- Embedded VOCs, chemical, and radiation sensors in firefighters clothing
- Locating firefighters and victims, ideally to <1m



Health monitoring



Location Tracking



VOCs and particle sensors

## Connect



- Rugged devices and accessories that can withstand the tough environments\*



Rugged Devices  
NFPA 1802



Reliable Accessories



FLIR



PASS\*\*  
NFPA 1982

- Wirelessly enabling existing frontline devices to share data in real-time e.g. PASS

\*Meets NFPA's codes and standards

\*\* Personal Alert Safety System

## Situationally Aware



- Surveillance and search and rescue using effective payloads e.g. camera, IR, LIDAR



IR Roof hotspots

- Hands-free, timely presentation of contextual information e.g. hazards, environment and assets



Augmented Reality  
/ Heads-up display

For fire, the focus is rugged devices, hands-free operation and presentation of contextual information

# Law Enforcement Vision

## Protect



- Evidence-based policing: body-worn and vehicle video



Body and Vehicle Cams



Smart Holster and Gun

- Instant identification of suspects



Facial Recognition

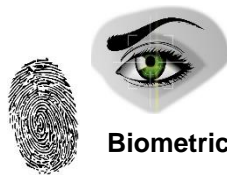


DNA Biochips

## Connect



- Secure, ease-of-use access to sensitive information – license, criminal, medical databases



Biometrics



High Security Hardware Module

- Ad-hoc connection of all body worn devices to the NPSBN



PAN Smart Hub

## Situationally Aware



- IoT for intelligence-led policing
  - Urban area deployed license plate readers, gun spotter sensors, CCTV



Real-time Intelligent Sensing



- Hands-free, timely, contextual virtual assistance



Virtual Assistance



For law enforcement, security is an emphasis together with the presentation of contextual information

# Emergency Medical Services (EMS) Vision

## Care/Protect



- Patient tracking for complex incidents potentially linking to existing PHRs



On-Patient ID Band

- Telemedicine for post-discharge care by community paramedics
- Integration of telemetry, incident and personal health record information



## Connect



- Share diagnostic and monitoring information to enhance decision-making and treatment capability

Ultrasound



Ambulance CT Scan

ECG



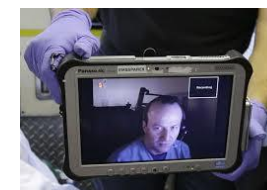
- NPSBN enabled rugged MDTs/tablets for dispatch and clinics



## Situationally Aware



- Exchange real-time audio/video feeds with hospitals and physicians while on the scene and during transport

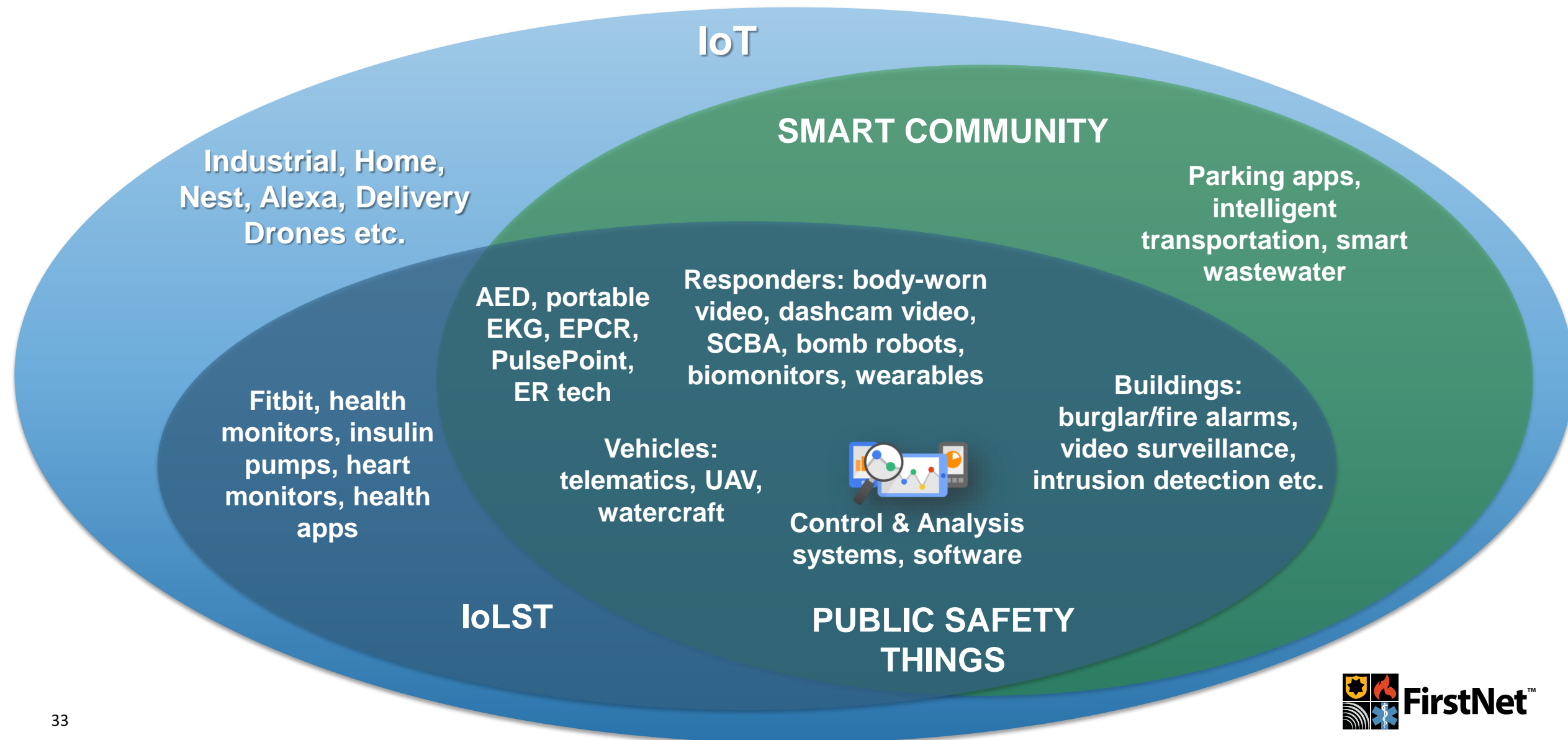


- AED location and “readiness” information with CAD



For EMS the focus is the timely delivery of on-scene, in-transit and post-discharge telemedicine

# The Internet of Life-Saving Things (IoLST)





# 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 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



# RAN Future Innovation/Technology



- **Mobile diagnostics:** Monitoring public safety's network experience and extent of coverage 7x24x365 by device. Would also help understand the unique behaviors and needs of public safety in guiding future network reinvestment.

## ➤ Aerial strategy

- **Deployables:** Analyzing available aerial eNB site deployable technologies, potential applications of those technologies and what business case may support these aerial deployable range extension technologies
- **User equipment:** Analyzing how a device could be utilized mid-flight (e.g., in a helicopter or with a drone)
- **Data comms in aerial** (non-LTE): Network access when LTE is unavailable for manned aircraft

## ➤ Coverage extension options: Analyzing what equipment configurations may extend or augment coverage

- Vehicle Network System (VNS)
- Satellite services
- Bi-Directional Amplifiers (BDA)
- High Power User Equipment (HPUE)
- Device-to-Device (D2D) services

# RAN - Innovation Initiative – Aerial Strategy

## Purpose:

- Aerial units are and continue to be an **essential tool** for Public Safety
- The ability to provide data communications to those aerial units is a **growing** need for first responders.
- Aerials with the capability to augment coverage can be faster and more cost effective than the traditional means.
- FirstNet OCTO is exploring how the NPSBN can support the best use of there aerial units.

## Aerial Scenarios:



### Aerial LTE User Equipment

- LTE access for drones and low altitude aircraft



### Providing Terrestrial Coverage via Aerial

- Deployable flying cell site to augment LTE coverage



### Data Comms. Inside Aerial (non-LTE)

- Access when LTE is unavailable for manned aircraft

## FY2018 Goals:

- Market Research for Use Cases Development
- Study Industry Tech. & Equip. Roadmap
- Explore National Partner Capabilities
- Complete Aerial RF Modelling Study

## Example Use Cases

Search &  
Rescue

Medical  
Supply  
Delivery

Surveillance

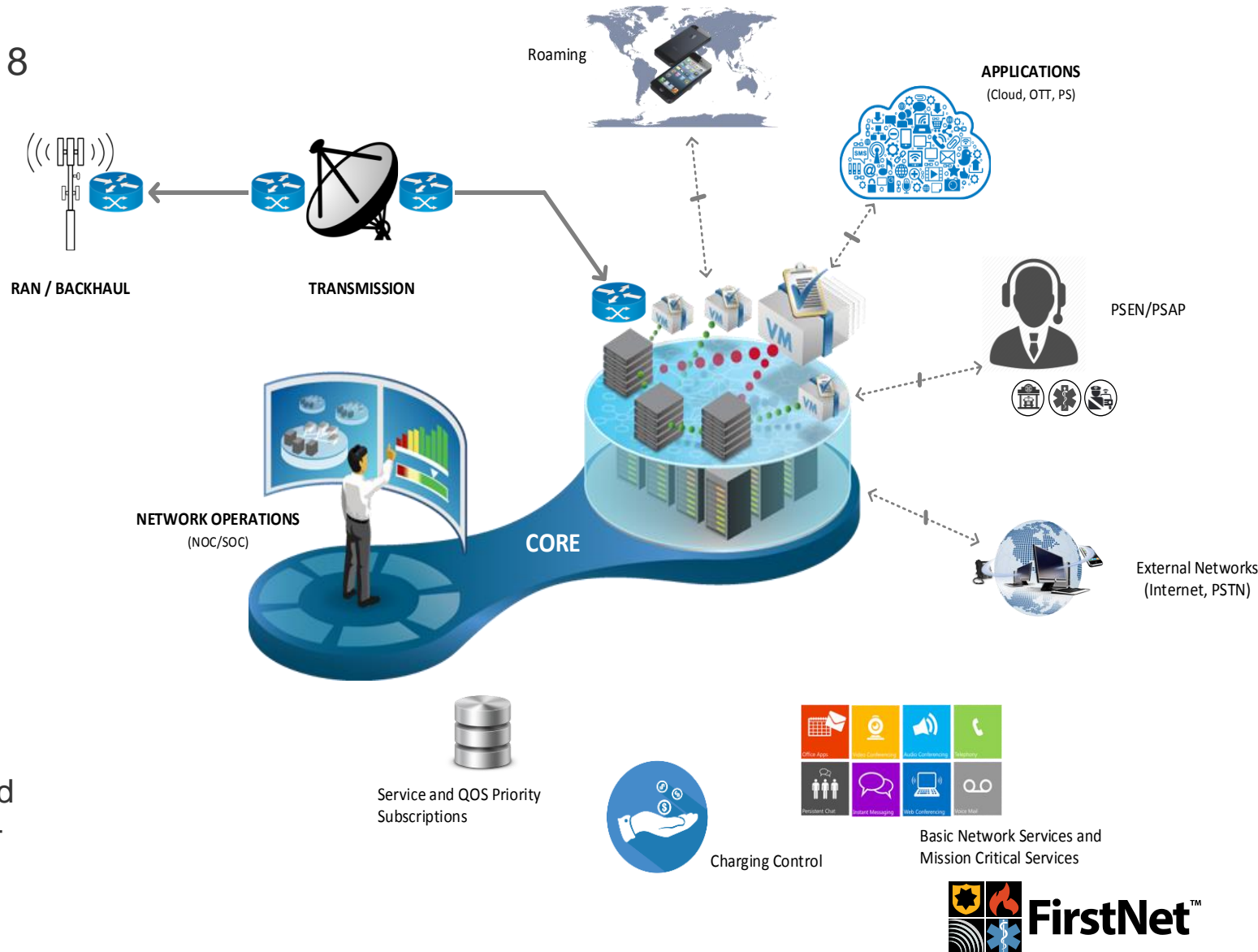
Fire  
Detection

Temporary  
Coverage

Mid-Flight  
Comms

# Dedicated FirstNet Public Safety Core Network

- FirstNet Core fully implemented March 2018 (IOC-2)
- Based on 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
  - 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 (MOCN)
  - QoS, priority and preemption across **all** AT&T LTE bands



# 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





# Planned FirstNet Demonstrations for Board Members

- 1) Priority Services Demonstration
- 2) Current Push-to-Talk Solutions
- 3) FirstNet Application Store, Agency Home Page, and App Developer Portal
- 4) National Disaster Recovery SATCOLT - Satellite Based Cell on Light Truck
- 5) FirstNet Devices Offerings
- 6) Inmarsat Satellite Services / Devices
- 7) Applications Demonstrations
- 8) PSCR Demos: Virtual Reality and Airborne Deployable Research Platform

# PSCR Innovator Accelerator Update

September 13, 2017



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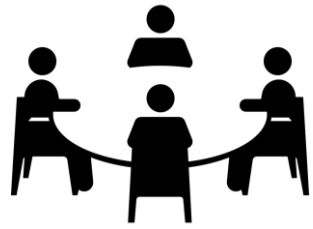
# PSCR Innovation Accelerator Program

- Section 6303 of the Middle Class Tax Relief and Job Creation Act of 2012 provides \$300M to NIST to perform R&D critical to the success of a dedicated, nationwide LTE broadband network (FirstNet). NIST will focus the funding provided from the Public Safety Trust Fund on the following critical areas:
  - Development of broadband requirements, standards, technologies, and applications for public safety, including:
    - Mission Critical Voice over LTE
    - Land Mobile Radio (LMR) to LTE integration and eventual migration
  - Addressing R&D necessary for critical features identified by public safety entities beyond current generation of broadband technology
  - Launch an open innovation program, consisting of contract awards, grants, and competitive research funding and prizes to address some of the highest priority public safety R&D needs

# PSCR R&D Planning and Roadmapping

- In November 2013, PSCR hosted a 3-day Public Safety Broadband R&D Roadmap Workshop that brought together 150 representatives from industry, public safety, academia, and State/Local/Federal government
- The workshop successfully identified needs for public safety broadband R&D in the near-term (2+ years) and longer term (5-10+ years)
- A number of critical needs were identified including:
  - Location-based Services
  - Data Analytics
  - Enhanced User Interfaces

# PSCR Roadmap Process



Roadmap  
Working  
Group

Roadmap  
Publication

Roadmap  
Summit

Summit  
Report

Ընդունված  
Գործունեության  
Կարգադրություն

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# 2017 PSCR Stakeholder Engagements

## **Completed Stakeholder Engagement:**

- Enhanced User Interface Technology Roadmap finalized on January 31, 2017
- MCV Roundtable – March 9, 2017
- Public Safety Broadband Stakeholder Meeting - June 13-15, 2017
- Next Generation Deployable Systems Roundtable - July 13-14, 2017
- UI Summit – July 18-19, 2017

## **Upcoming Stakeholder Engagement:**

- Next Generation Deployable Systems Summit – October 18-19, 2017
- Building the PSCR Security Community
  - Security Virtual Roundtable – November, 2017

# PSCR Internal Initiatives

- **MCV:**
  - Mouth to Ear Latency (CTL)
  - Evaluate the performance of LTE device-to-device services (i.e. discovery and communication) and develop guidelines to support mission critical applications such as MCPTT (CTL)
- **Security:**
  - Mobile Single Sign On (SSO) for Public Safety (ITL)
- **UI:**
  - VR/AR virtual test environment (CTL)
  - Identifying Communications and Data Needs from Station to Scene (ITL)
- **LBS:**
  - Indoor Localization for First Responders (PML)
  - Creating an indoor localization and tracking system test and evaluation consortium (ITL)



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# Prizes & Challenges





# VR/AR Ideation Prize Competition



- Contest was open for 64 days
- 703 people indicated interest via HeroX online community
- 103 competitors registered
- 21 total entries
- 793 votes cast during public voting
- **5 Winners totaling \$50,000 and one Honorable Mention Prize**

# Tongal Video Challenge

Inspire Americans everywhere to help develop the Public Safety communications technology of tomorrow with a Video series about the Public Safety Prizes Crowdsourcing Competitions being launched by NIST and the Open Innovation Accelerator.

- Evaluating Concepts beginning on August 28, 2017
- Includes a Pitch, Pre-Production, Video, and Revision phase
- Winning Video Selected on December 13, 2017



# Data Deidentification Prize Challenge

## Problem:

- As Public Safety moves towards advanced analytics, the sharing of data sets will become more common – necessitating the ability to properly de-identify data sets with tested, validated, high-speed algorithms to ensure the protection of Personally Identifiable Information (PII) for both Public Safety personnel and the community.

## State of the Art:

- Given a data set containing private information, the Multiplicative Weights and Exponential Mechanism (MWEM) algorithm can be used to create a synthetic data set that closely models the statistical properties of the original data set while maintaining a formal privacy guarantee. However, the performance of MWEM is currently insufficient for practical applications. It will be used as a baseline for the challenge.

# LBS Grand Challenge

## Challenge Goal:

- Design and execute a grand challenge to rapidly accelerate technologies in the fields of indoor mapping, localization and tracking, and navigation to meet the extremely challenging requirements of first responders.

## Timing:

- RFP for vendor to assist in design and execution will be released Fall 2017
- Anticipate announcing Grand Challenge Spring/Summer 2018
- Several phases of competition with final phase to be held in April 2020



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# PSCR Grant Update





# 2017 PSIAP Grant Program

- In December 2016 PSCR released a Notice of Federal Funding Opportunity that covers a broad range of research and development objectives across many technical areas
- Grants are for research, advanced engineering, and product development
- The Notice of Funding Opportunities identified the following focus areas that will drive R&D for the Innovation Accelerator
  - Mission Critical Voice
  - Location-Based Services
  - Public Safety Analytics
  - Public Safety Communications Demand Model
  - Research & Prototyping Platforms
  - Resilient Systems



# 2017 PSIAP Grant Program

- PSCR received over 162 applications
- In June 2017 awards were made to 33 grant recipients, totaling more than \$36 million
  - Mission Critical Voice – 6 Grants
  - Location-Based Services – 8 Grants
  - Public Safety Analytics – 10 Grants
  - Research & Prototyping Platforms – 4 Grants
  - Resilient Systems – 5 Grants
- Recipients represent industry, academia, and public safety institutions/organizations

# Mission Critical Voice (MCV) 2017 PSIAP Grant Awards

**George Washington University** – Coverage, Capacity, and Resilience Enhancement in Limited PSN

- \$700,000

**Harris Corporation** - ProSe

- \$200,464

**Sonim Technologies, Inc.** - End to End Mission Critical Push to Talk with Direct Mode Operation

- \$1,398,950

**Universidad del Pays Vasco/Euskal Herriko Unibertsitatea** - Mission Critical Open Platform (MCOP)

- \$1,259,142

**University of Southern California** - Propagation channel models and system performance for device-to-device communications for public safety applications

- \$449,101

**Vencore Labs, Inc. dba Applied Communications Science** - Device-to-Device System for Public Safety (DDPS)

- \$1,962,779

# Location Based Services (LBS) 2017 PSIAP Grant Awards

## **Carnegie Mellon University**

1. An Infrastructure-Free Localization System for Firefighters
  - \$782,280
2. Hyper-Reality Helmet for Mapping and Visualizing Public SafetyData
  - \$642,039

## **Chancellor, Masters and Scholars of the University of Oxford** – Pervasive, Accurate and Reliable Location Based Services for Emergency Responders

- \$1,182,903

## **Massachusetts Institute of Technology** – Situational Awareness for Emergencies Through Network- Enabled Technologies (Safe T-Net)

- \$799,000

# Location Based Services (LBS) 2017 PSIAP Grant Awards

**TRX Systems, Inc.** – TRX First Responder Location and Mapping Services

- \$1,414,606

**University of California, Irvine** – Ultimate Navigation Chip (uNavChip): Chip-Scale Personal Navigation System Integrating Deterministic Localization and Probabilistic Signals of Opportunity

- \$1,960,613

**University of Cincinnati** – First Responder Indoor Location Using LTE Direct Mode Operations

- \$398,869

**University of Michigan** – Decimeter Accurate, Long Range Non-Line-of-Sight RF Localization Solution for Public Safety Applications

- \$997,873

# Public Safety Analytics (PSA)

## 2017 PSIAP Grant Awards

**Carnegie Mellon University** – Real-Time Video Analytics for Situational Awareness

- \$1,800,000

**New Jersey Office of Homeland Security and Preparedness** – Fiscal Year 2017 Public Safety Innovation Acceleration Program

- \$1,701,657

**Prominent Edge LLC** – StatEngine: A real-time open source data analytics and visualization platform for Public Safety

- \$500,218

**Southern Methodist University** – SAFE-NET: An Integrated Connected Vehicle and Computing Platform for Public Safety Applications

- \$1,334,852

**University of Cincinnati** – Information-Driven Video Communication for Public Safety Networks

- \$500,364

# Public Safety Analytics (PSA)

## 2017 PSIAP Grant Awards

**University of Houston** – Multi-tiered Video Analytics for Abnormality Detection and Alerting to Improve Response Time for First Responders Communications and Operations

- \$1,577,626

**University of Michigan** – Body-Worn Camera Analytics (BOCA) in Public Safety

- \$688,938

**University of Virginia** – Towards Cognitive Assistant Systems for Emergency Response

- \$1,119,854

**Voxel51 LLC** – ETA: Extensible Tools for Analytics in Public Safety

- \$1,241,189

**Western Fire Chiefs Association, Inc.** – Creation of a Unified Analysis Framework and the Data Comparison Center

- \$1,741,548



# Research and Prototyping Platforms (RPP) 2017 PSIAP Grant Awards

**New York University** – End-to-End Research Platform for Public Safety Millimeter Wave Communications

- \$2,265,051

**Software Radio Systems Limited** – OpenFirst

- \$1,453,100

**University of Colorado** – SDR LTE Network Testbed and RESPONS

- \$1,502,795

**University of Washington** – Modeling, Simulation and Performance Evaluation for Future Public Safety Networks

- \$1,000,000

# Resilient Systems Prototyping (RS)

## 2017 PSIAP Grant Awards

**Cornell University** – Towards an Emergency Edge Supercloud

- \$1,241,825

**Michigan Technological University** – Resilient Systems Solutions for Data Sharing for Wildland Fire Incident Operations

- \$1,007,049

**Misram LLC dba Spectronn** – Heterogeneous Fog Communications and Computing for Resilience

- \$649,984

**University of California** – Modeling and Development of Resilient Communications for First Responders in Disaster Management

- \$1,223,527

**Texas A&M Engineering Experiments Station** – DistressNet-NG: Resilient Mobile Broadband Communication and Edge Computing for FirstNet

- \$1,800,000

# Upcoming Grants - 2017-2018

- **VR/AR Grant**
  - AR/VR Technology Development and Prototyping
  - Research Effectiveness and Transferability of AR/VR Simulations
- **MCV**
  - Measure human subjective task and job performance when measurable MCPTT performance (including voice intelligibility, access time, access success rate, etc.) are varied
- **LBS**
  - Provide funds to create a 'model city' (Indoor City) demonstrating the value of generating an extensive catalog of indoor 3D point-clouds for mapping, localization, and navigation. Recipients will also be required to participate in the NIST Global Cities Team Challenge community as the lead city for an Action Cluster.



**2017**

FIRSTNET TECHNOLOGY  
COMMITTEE MEETING

# PSCR 2018 Stakeholder Conference Update



# PSCR 2018 Stakeholder Conference Update

- Location: San Diego Convention Center
- Date: June 5 - 8, 2018
- New Meeting Structure
  - Multiple Tracks
  - Significant participation from Grantees and Prize Winners
- 3 Possible Prize Challenges:
  - Drone Load Lifting for LTE Systems
  - Security Hack a (wearable, ota, mobile app)
  - UI for In Building Navigation
- MOU with PSCR, FirstNet, and AT&T in review





# Questions?



**2017**

FIRSTNET TECHNOLOGY  
COMMITTEE MEETING





# VR/AR Ideation Prize Competition



## 1<sup>st</sup> Place \$20,000

FirstSimVR: Measuring  
Future Tools Using  
Today's VR

- NextGen Interactions,  
Chapel Hill, NC



## 2<sup>nd</sup> Place \$12,000

Reconfigurable Vehicle  
Training System

- Design Interactive,  
Orlando, FL and  
Williamsburg, VA



## 3<sup>rd</sup> Place \$8,000

MultiVRse: Parallel  
Physical and VR  
Universes

- UNSN

# VR/AR Ideation Prize Competition



## 4<sup>th</sup> Place \$5,000

Augmented Reality  
Emergency Response  
System

- Cosumnes Community  
Services District, Elk  
Grove, CA



## Popular Vote \$5,000

The Future is Hidden in  
the Success of the Past

-Variable Labs Team,  
Oakland, CA



## Honorable Mention

PerSim Team: Realistic,  
Portable, Low Cost  
Simulation

- MedCognition, San  
Antonio, TX