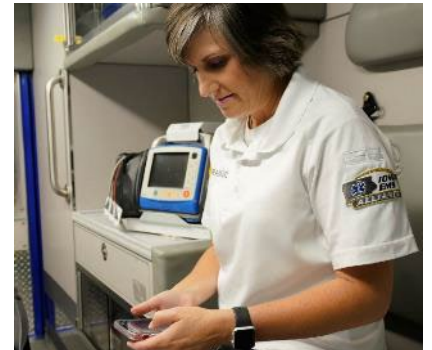# FirstNet: Our Nation's Public Safety Network

Tiffany Perry

Senior Public Safety Advisor

June 14, 2023
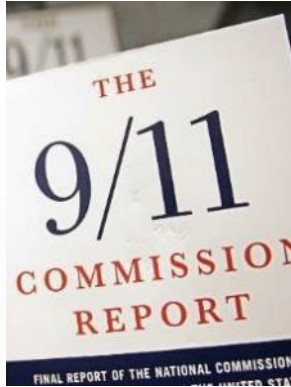
FirstNet 101: History, Partnership and Strategy

1. **History, Partnership and Strategy**

2. The Network: Developments and Technologies

3. The Solution: Apps, Devices, Security, and Services

4. Roadmap and Investments

5. Public Safety Engagement

The FirstNet Journey

2001
9/11 attacks

- Radio communication challenges affect first responders

2004
9/11 Commission

- Recommends national radio spectrum for public safety purposes
- Public safety unites to advocate for nationwide broadband network

2012
The FirstNet Authority Established

- Independent agency to deploy Nationwide Public Safety Broadband Network

2012–16
Initial Outreach and Consultation

- Governors identify FirstNet single points of contact
- Consultation in all 56 states and territories
- FirstNet works with states to collect and validate users and coverage data

2016–17
Partnership and State Plans Created

- Network RFP released
- Award to AT&T
- Delivery of 56 state/territory plans
- 56 Governors Opt-In decisions
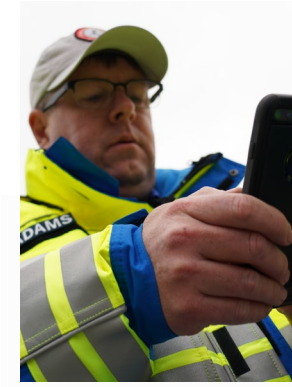
2018–19
Network Deployment Begins

- FirstNet core launched
- Band 14 buildout nationwide
- Roadmap released to advance FirstNet, guide future investments

2020 and beyond
Roadmap and Investment

- Engage and collaborate with public safety and industry
- Execute the FirstNet Authority Roadmap
- Invest in the network
- Continue Band 14 buildout

FirstNet 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

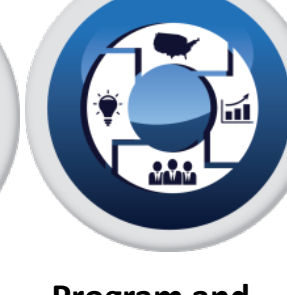**Cyber Security**

Priority Services
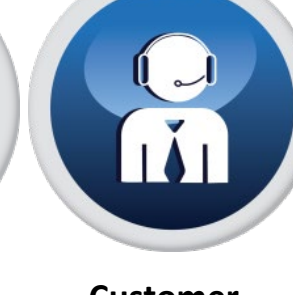
Integration Of Opt-out State RANs

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

An Innovative Public-Private Partnership

FirstNet.GOV

FirstNet.COM

First Responder Network Authority

- Partner oversight and support
- Public safety advocate
- Technical expertise
- Innovation strategy and investment

AT&T

- Nationwide core
- RAN build-out
- Adoption and customer care (24x7x365)
- Security operations center
- Mission-critical services
- App and device ecosystems

Strength in a Partnership

Public private partnership provides:

Relationship between public safety stakeholders and the network so FirstNet is built with public safety input

Existing infrastructure and economy of scale

Assets, capabilities and synergies to meet FirstNet Authority stated objectives

Public safety subscribers get:

Nationwide public safety mission achieved with priority, preemption and a resilient network
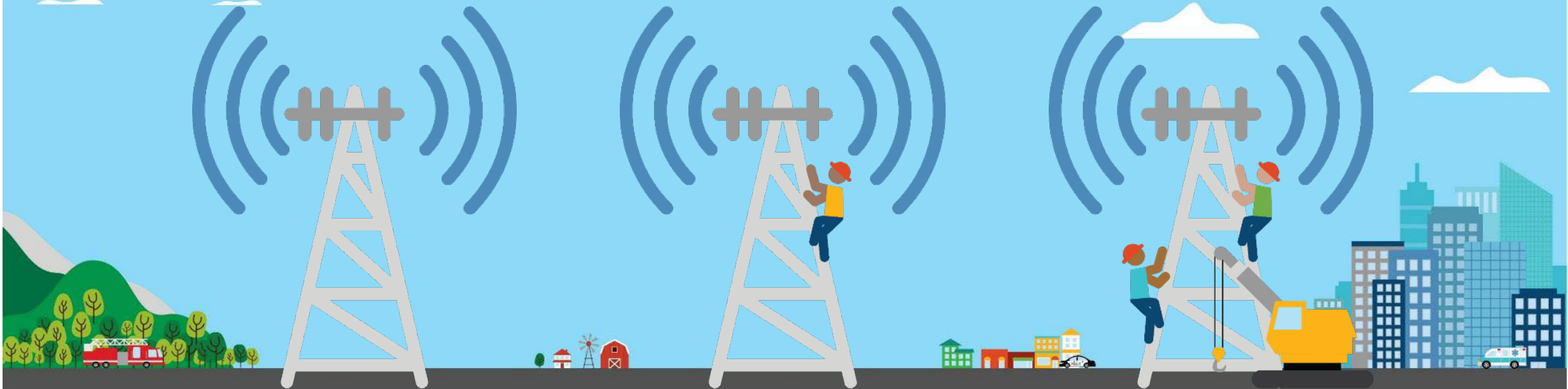
Dedicated 20 MHz of prime spectrum

Responsive ecosystem of apps, devices, and services

Building Out the Network

FirstNet, Built with AT&T covers more than 2.91 million square miles

Use existing AT&T towers

Add Band 14 to existing towers

Build new Band 14 FirstNet cell sites with public safety input

*These numbers have not been validated by the FirstNet Authority

FirstNet 101: The Network: Developments and Technologies

1. History, Partnership and Strategy

2. **The Network: Developments and Technologies**

3. The Solution: Apps, Devices, Security, and Services

4. Roadmap and Investments
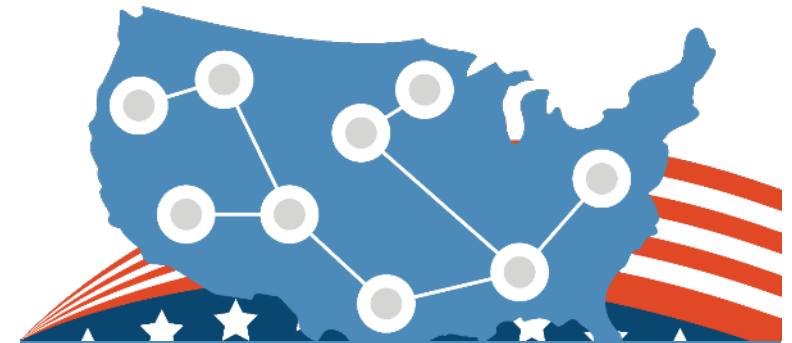
5. Public Safety Engagement

The Nationwide Public Safety Broadband Network

Police, Fire, EMS, 911, Emergency Management

Counties, Cities, Tribal, Rural

50 states, 5 territories and DC

FirstNet Delivers for Public Safety
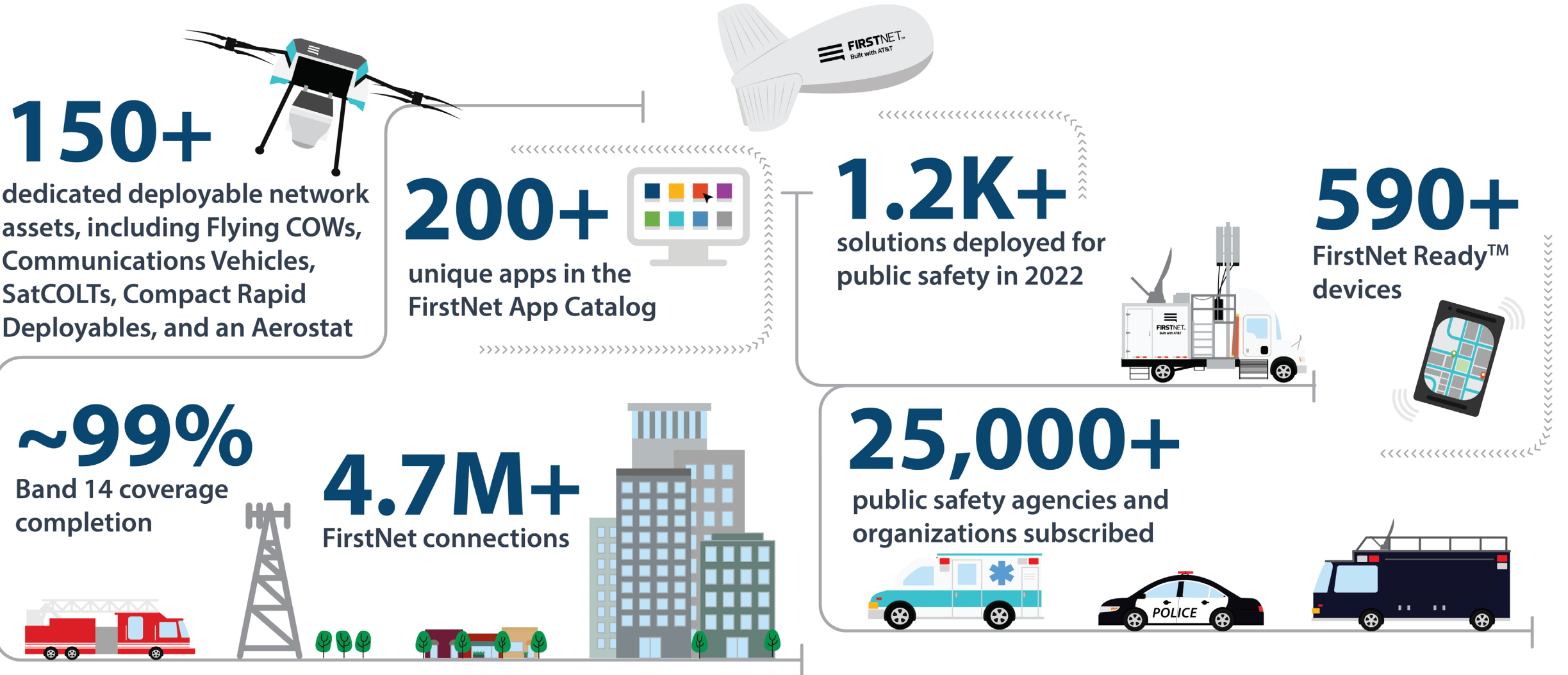
MODERNIZED

- Innovative apps and large devices ecosystem

- Network improvement and upgrades over 25 years

- Multi-layered, proven, cybersecurity and network security solutions

PRIORITIZED

- Emergency communications receive highest Quality of Service, Priority, and Preemption

- Rapid deployment of network

- Nationwide coverage leveraging existing infrastructure

SPECIALIZED

- Built to public safety's needs and requirements

- Nationwide coverage with access to deployables

- Dedicated 24/7/365 public safety helpdesk

FirstNet Momentum

150+
dedicated deployable network assets, including Flying COWs, Communications Vehicles, SatCOLTs, Compact Rapid Deployables, and an Aerostat

200+
unique apps in the FirstNet App Catalog

1.2K+
solutions deployed for public safety in 2022

590+
FirstNet Ready™ devices

~99%
Band 14 coverage completion

4.7M+
FirstNet connections

25,000+
public safety agencies and organizations subscribed

Source: https://investors.att.com/financial-reports/quarterly-earnings/2023 , https://www.att.com/es-us/sdabout/story/2022/firstnet-emergency-response-innovations.html, about.att.com/pages/media-assets

*These numbers have not been validated by the FirstNet Authority

PRIORITY

Public safety devices gain access to the network first. Public safety is at the front of the line.

The Power of the Core

- The FirstNet Core serves as the brain and nervous system of the network, separates public safety traffic from commercial traffic, and supports FirstNet functions, including quality of service, priority, and preemption.

- It is the foundation for the delivery of advanced public safety features that are unique to FirstNet, including end-to-end encryption, continuous security monitoring, superior reliability and availability, local control, and mission critical services.

- It is built on separate physical hardware for a highly secure network.

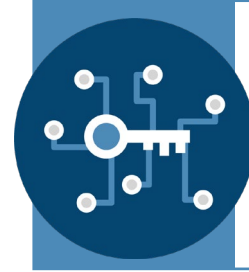- It is tested and validated by the First Responder Network Authority.

FirstNet Core Features
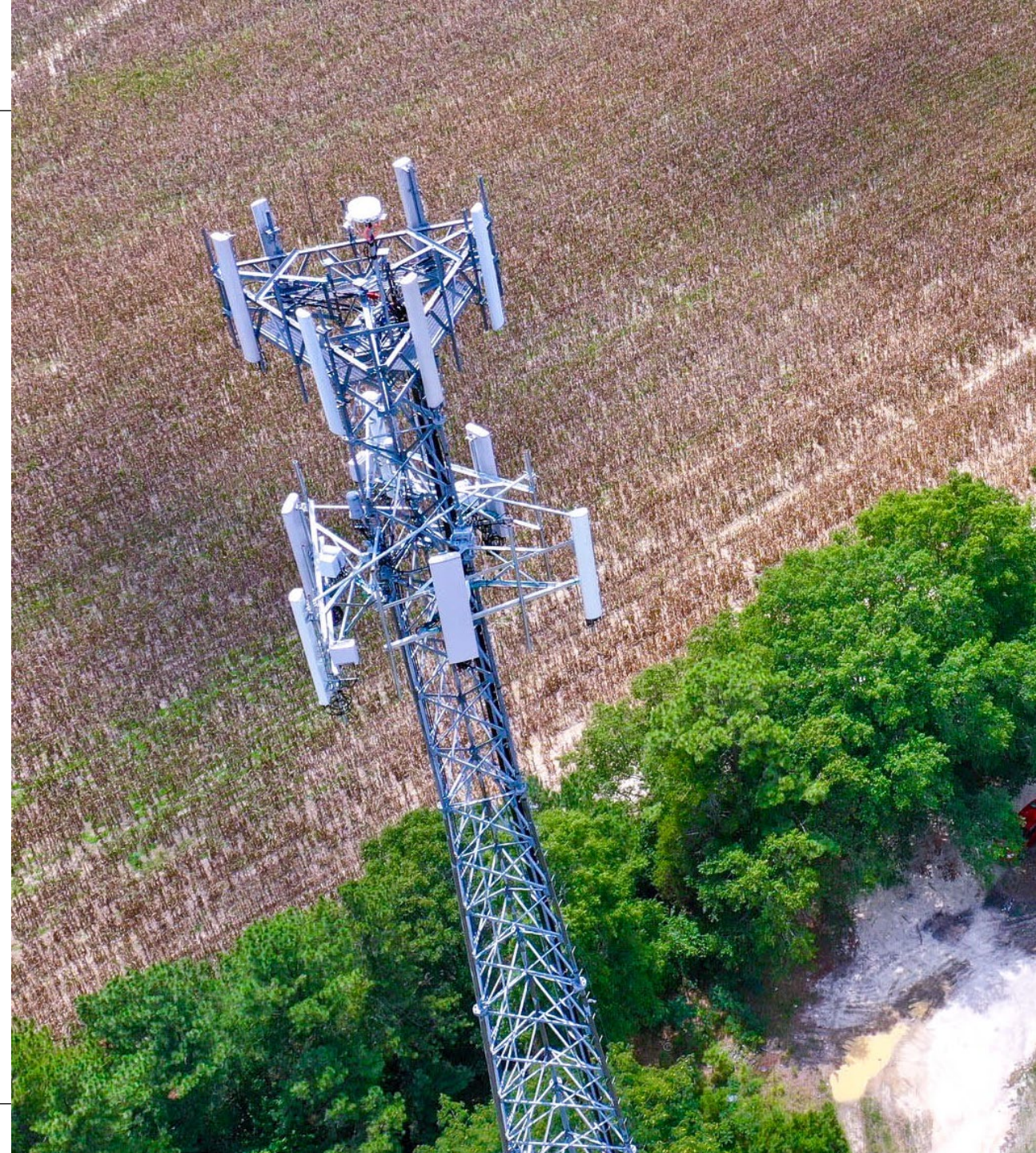
Priority/Preemption
Always on priority and preemption, so first responders will have dedicated access to the network when and where they need it

Security
24/7/365 security monitoring through a Security Operations Center staffed with a dedicated team

Local control
Enabling local leaders to boost priority levels when needed to keep their first responders connected

Encryption
End-to-end encryption, so public safety can transmit data securely

Reliability
Superior reliability and availability, so the network is as dependable as first responders themselves

Mission-critical Functions
Making a range of technologies available to public safety in the future, like push-to-talk and location based services

Deployable Fleet

100+ deployable assets dedicated to public safety and available nationwide, including 3 Flying COWs, 3 Communications Vehicles, 4 Compact Rapid Deployables, and an Aerostat

Subscribing agencies can request at no cost to support scenarios, from **disasters to critical incidents and planned events** via FirstNet Customer Support.

Service included: All expenses directly associated with FirstNet deployables are included **at no cost to subscribing agencies**
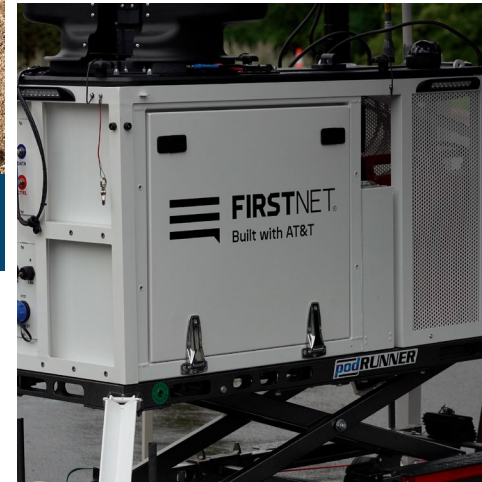
Types of deployables in the fleet

SatCOLT

Communications Vehicle

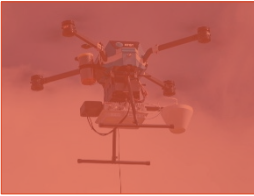Flying COW

Compact Rapid Deployable

Aerostat

FirstNet Deployable Program

Aerostat

Antenna Height: **1000 feet**
Coverage Radius: **~10 miles**
Spectrum/Backhaul: **Multi-Band/Satellite or Fiber**
Capacity: **~350 (Sat)/350+ (Fiber) Active Users**
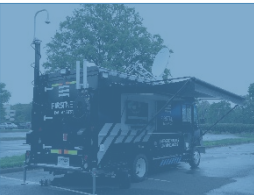
Cell on Wings

Antenna Height: **400 feet**
Coverage Radius: **~5 miles**
Spectrum/Backhaul: **Band 14/Satellite or Fiber**
Capacity: **~350 (Sat)/350+ (Fiber) Active Users**

SatCoLT

Antenna Height: **60 feet**
Coverage Radius: **~1-3 miles**
Spectrum/Backhaul: **Multi-Band/Satellite**
Capacity: **~350 Active Users**
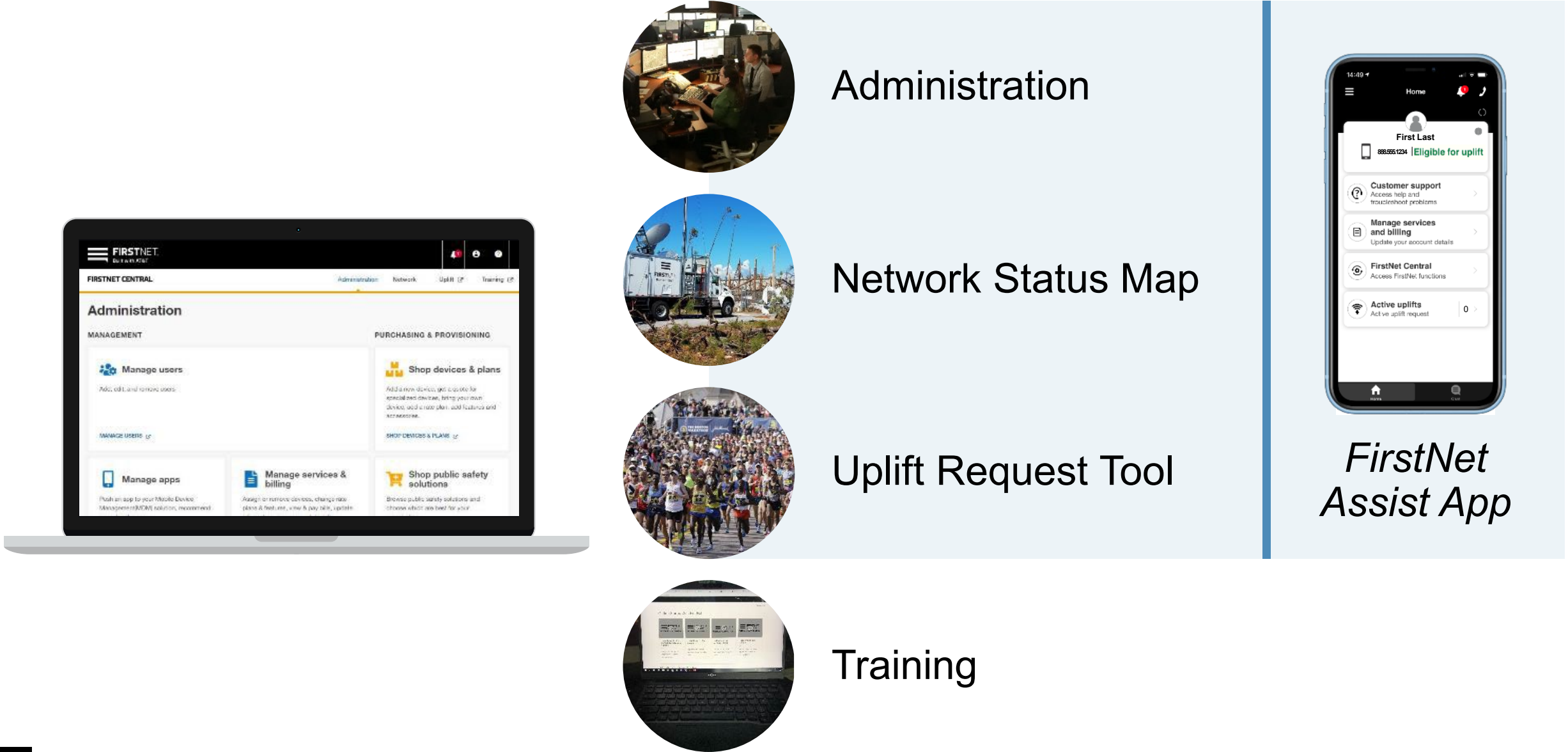
Communications Vehicle

Antenna Height: **30 feet**
Coverage Radius: **~1+ miles**
Spectrum/Backhaul: **Band 14/Satellite, Ethernet, or LTE**
Capacity: **50+ Active Users**

Compact Rapid Deployable

Antenna Height: **16 feet**
Coverage Radius: **up to 1 mile**
Spectrum/Backhaul: **Band 14/Satellite, Ethernet, LTE, or WiFi**
Capacity: **~50 Active Users**

*Coverage Range will vary by deployment
**Connected Users & Backhaul are upper limits

FirstNet Central: Key Capabilities

Administration

Network Status Map

Uplift Request Tool

Training

FirstNet Assist App

Mission Critical Services

MC Services are key components of the commitment to a differentiated public safety network experience

FirstNet Authority Roadmap priorities include operationalizing FirstNet PTT

FirstNet Authority is actively engaging public safety and AT&T FirstNet to improve MC services

On-going, collaborative effort with AT&T FirstNet to ensure successful roll-out of first MC solutions

Continued Innovation for Public Safety

Z-Axis for FirstNet
Measuring device altitude via barometric pressure

FirstNet MegaRange™
High power user equipment exclusively on Band 14

5G for FirstNet
Access to AT&T's 5G spectrum for public safety
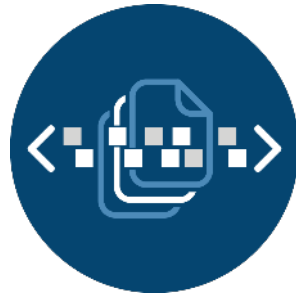
CRD™ for FirstNet
Low-cost portable cell site with Band 14 connectivity

FirstNet Messaging App
Unified, dedicated messaging gateway and platform

Data Priority
Rich, detailed multi-media messages at the highest priority on the network

FirstNet PTT to LMR
Communications between LMR and the FirstNet PTT solution

Tower-to-Core Encryption
S1U encryption creates secure tunnel from tower and backhaul to FirstNet Core

FirstNet Push-to-Talk

Announced and released into controlled introduction on March 31, 2020

Initial client released with Samsung® Xcover FieldPro device

First ever nationwide mission critical standards-based PTT solution to launch in US

Highest priority traffic on the FirstNet network.

Focused on augmenting LMR and not replacing

Pricing set at $10/month + $5/month for LMR interoperability*

What is it?

- 3GPP standards-based solution
- Only PTT solution integrated into the FirstNet network
- First-of-its-kind offering
- Evolutionary, growing product

What is it not?

- Replacement for LMR
- A perfectly mature product
- Just another over-the-top product

This slide does not constitute an endorsement by FirstNet Authority of any product or service, organization or company.

* Source: FirstNet.com, April 2020. See FirstNet.com for latest information on pricing

Security

- **Dedicated** Security Operations Center (SOC) for FirstNet subscribers

- **Coordinates** with AT&T's Global Network Operations Center (GNOC)

- **24x7x365** situational awareness
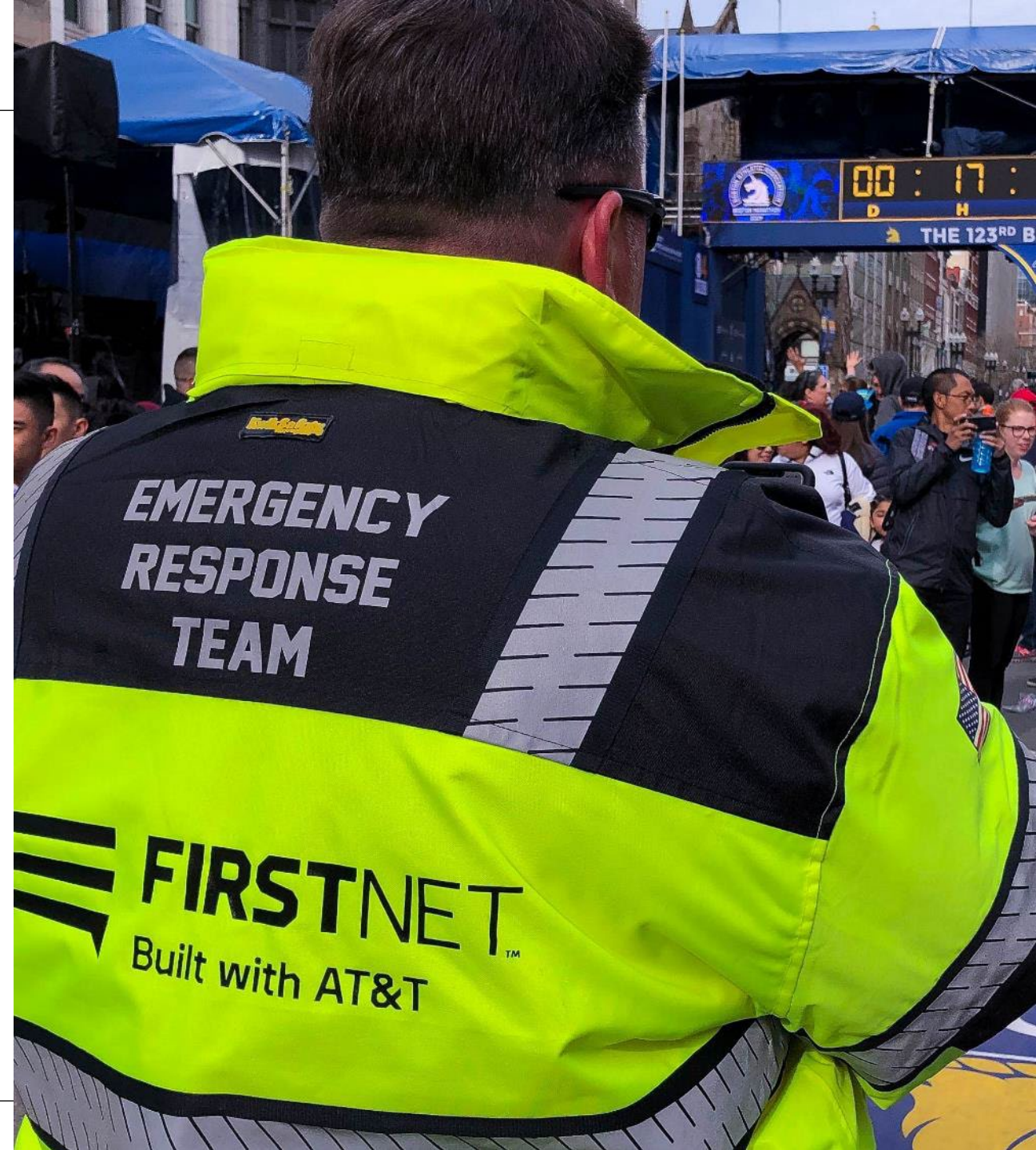
Service Plans

- Agency- or subscriber-paid
- Flexible
  - Unlimited plans pooled
  - Smartphones or data-only
  - Machine-to-machine options
- Multiple contract options
  - NASPO
 - NPPGov
  - GSA Schedule 70
  - Custom Government

Customer Care

- 24x7x365 technical support

- Single phone number

- Chat and email available

- U.S.-based public safety-specific reps

- Training available

Unique FirstNet Network Benefits
for Primary Users

- Band 14 → 20 MHz Spectrum
- Contract oversight by the FirstNet Authority, a federal agency
- Priority, Preemption on Band 14 + all AT&T LTE Spectrum
- Uplift Tool: local control
- S1U Encryption of Network Traffic
- Expanding network coverage
- Network Status Tool
- Cell sites on Unmanned Aerial Vehicles (Drones)
- FirstNet Deployable Program: 100+ dedicated assets (SatCOLTs, CRDs, Comms Vehicle and more) with 14-hour response for emergencies
- App Catalog/Curated Public Safety Apps
- App Developer Program
- Dedicated Customer Service 24x7 for FirstNet Users
- Dedicated 24x7 Security Operations Center (SOC) for FirstNet)
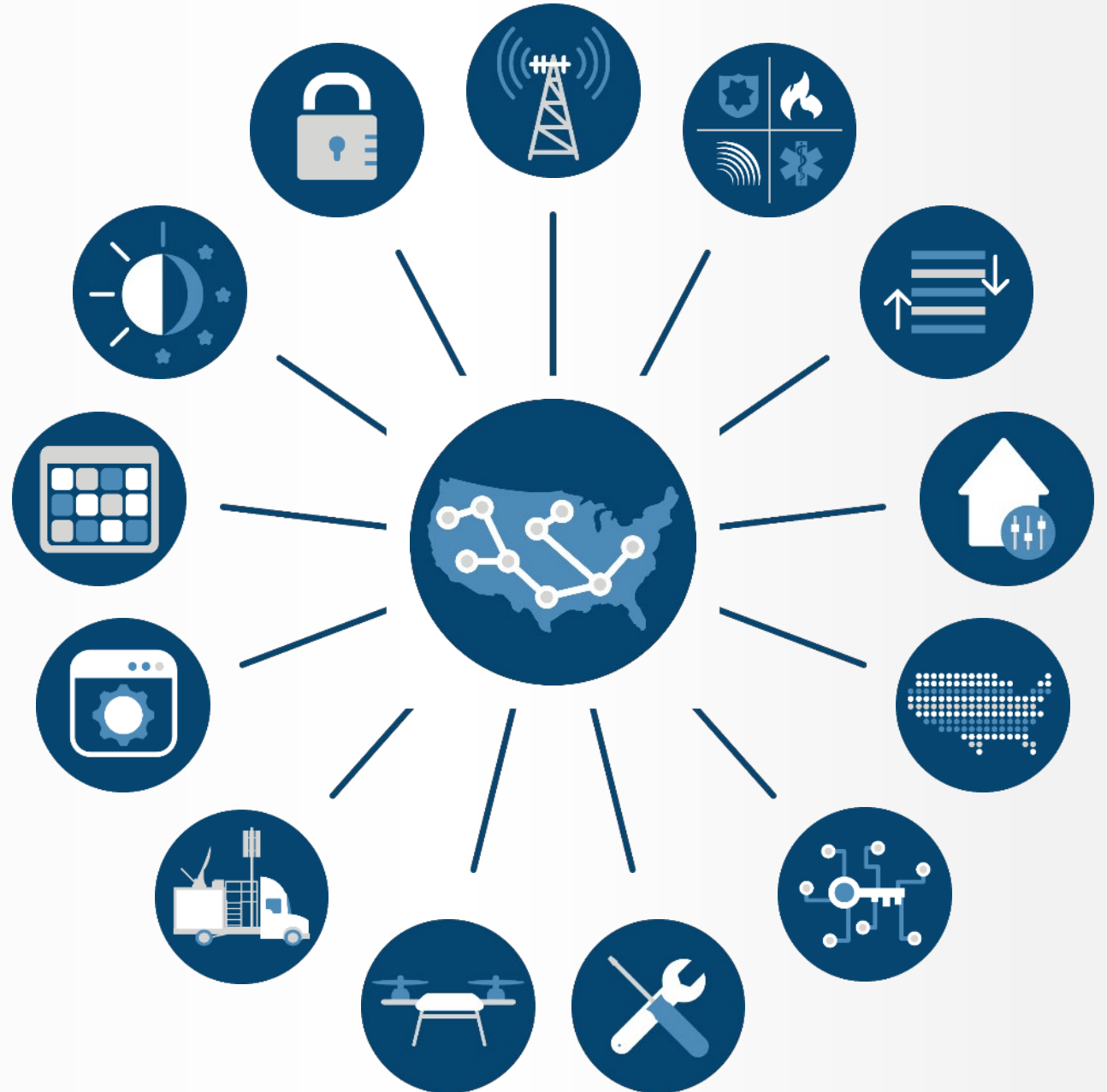
1. History, Partnership and Strategy

2. The Network: Developments and Technologies

3. **The Solution: Apps, Devices, Security, and Services**

4. Roadmap and Investments

5. Public Safety Engagement

Enabling Public Safety with Robust Device Ecosystem

smartphones | tablets
feature phones | ruggedized

In Vehicle Routers (IVR)
Mobile Data Terminals (MDT)
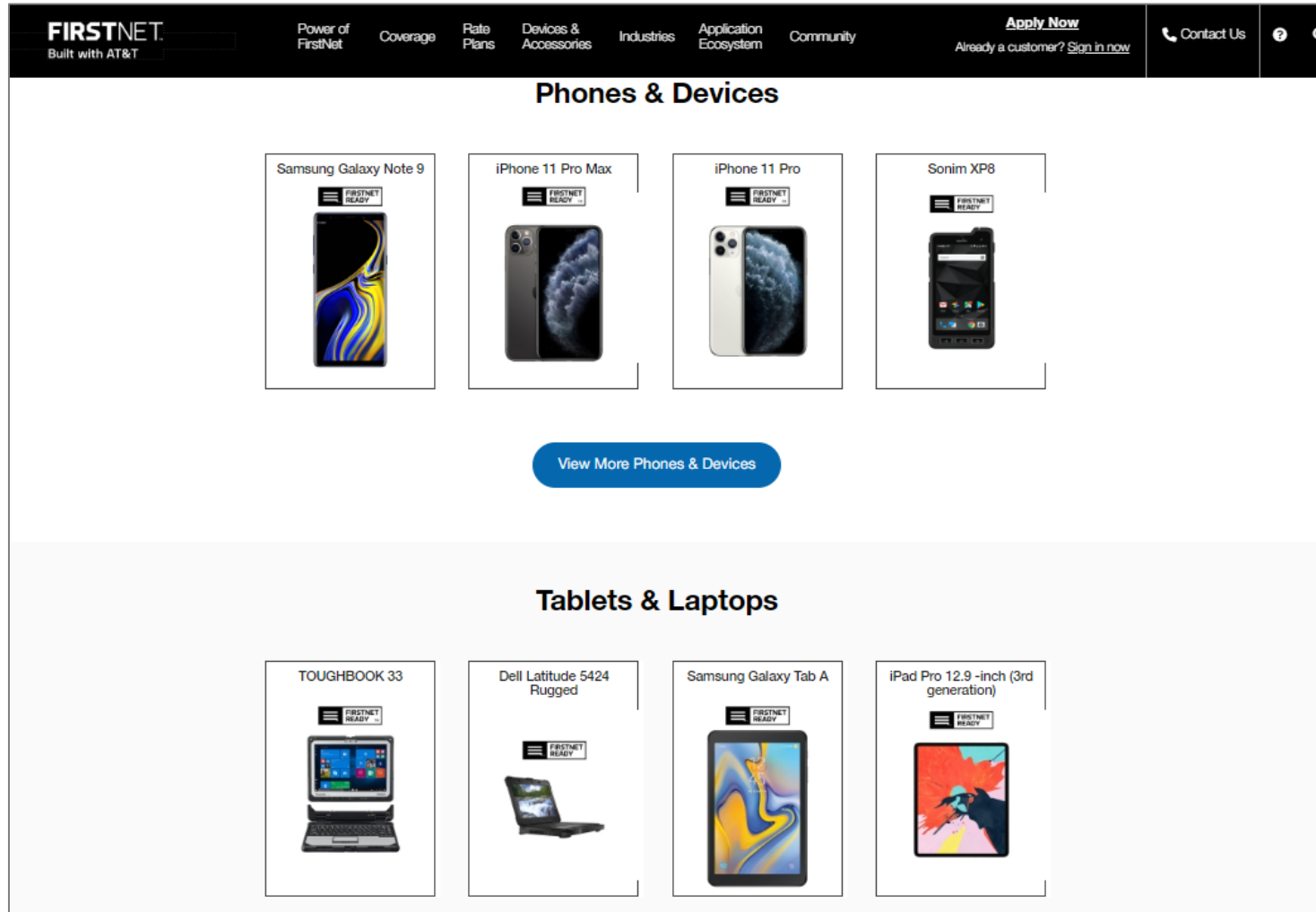ruggedized laptops | modems

cameras | wearables | special
and gloved usage | IoT

LTE | SATELLITE | ETHERNET | WI-FI | BLUETOOTH | TETHERING | RANGE EXTENSION

Built on economies of scale to reach COTS pricing and availability

FirstNet Devices Ecosystem

- Achieving rich, diverse user device portfolio

- Band 14 adoption ramping up, with FirstNet Ready device announcements

- Inclusive of public safety focused Internet of Things (IoT) devices and accessories

- SIM/UICC available to connect users to dedicated FirstNet Core

- See latest available devices at **FirstNet.com/devices**

Enabling Apps Ecosystem to Meet the Needs of Public Safety

FirstNet Authority

JOIN PROGRAM

- Open and free FirstNet app developer program membership
  - Developers
  - Policymakers
  - IT Specialists
  - First Responders

Connect, innovate and create opportunity

DEVELOP APPS

- Access to resources, e.g., APIs and code optimization tools
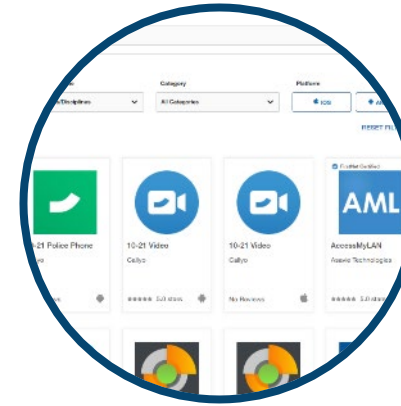- Complete checklist and source code scan

Events including conferences and workshops

TEST AND CERTIFY

- Submit app for FirstNet certification and review
- Receive and address results
- Review branding and media guidelines

Promote product and evangelize solution

APP CATALOG

- Use FirstNet tools for app distribution and management
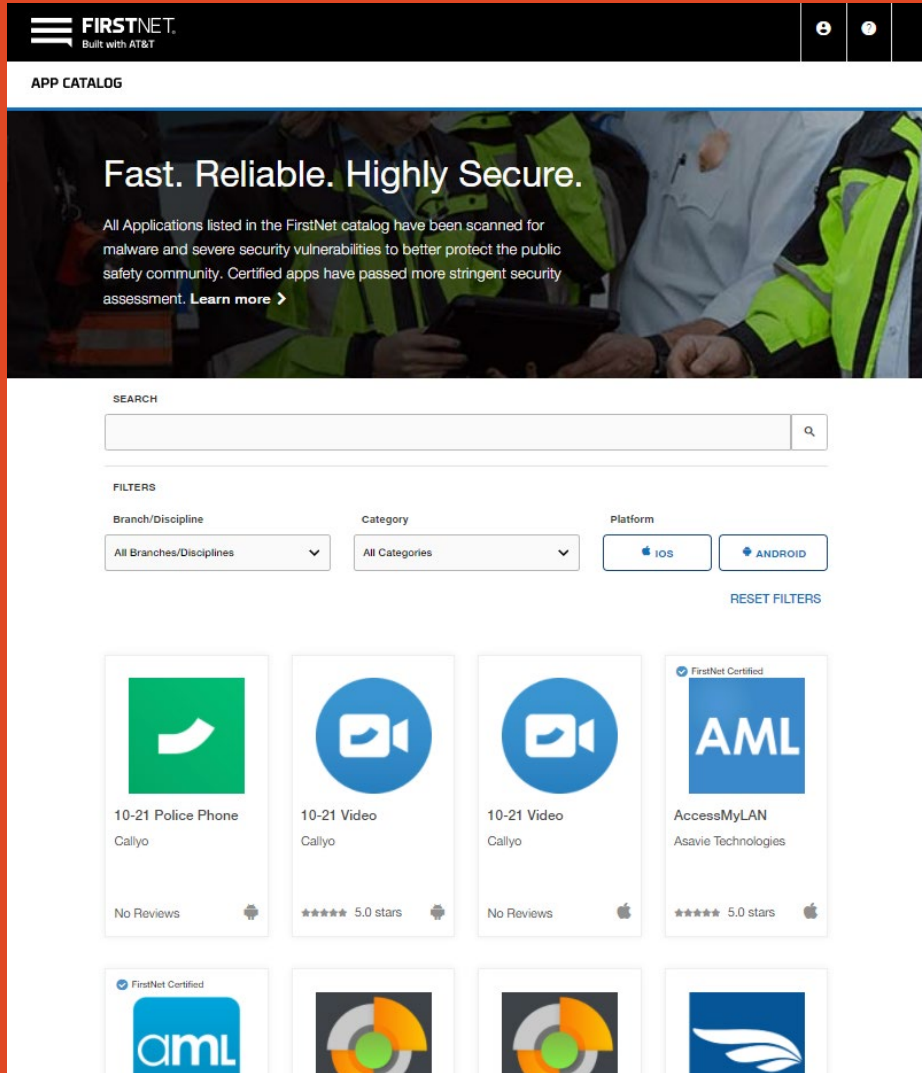- Collect participation points

Direct exposure to public safety market

MANAGE APPS
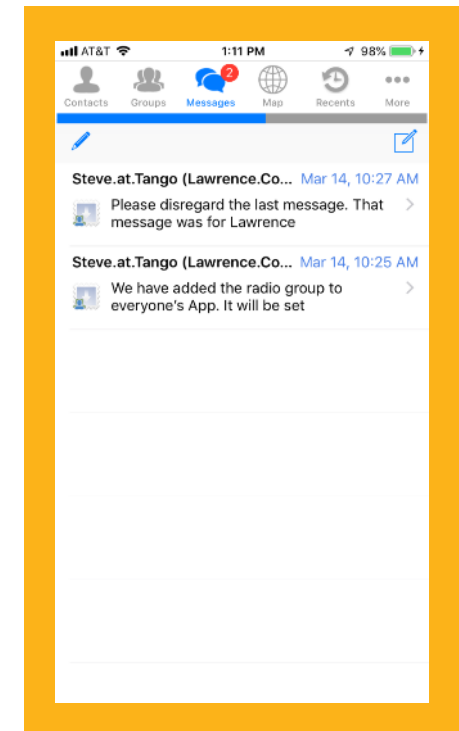
- Review user ratings and feedback
- Manage app versioning and metadata

Blogs and forums to advance innovation

*This slide does not constitute an endorsement by FirstNet Authority of any product or service, organization or company.

App Catalog for FirstNet

VIEW THE CATALOG:

apps.firstnet.att.com/?auth=false

This slide does not constitute an endorsement by FirstNet Authority of any product or service, organization or company.

FirstNet Application Catalog Levels: Verified
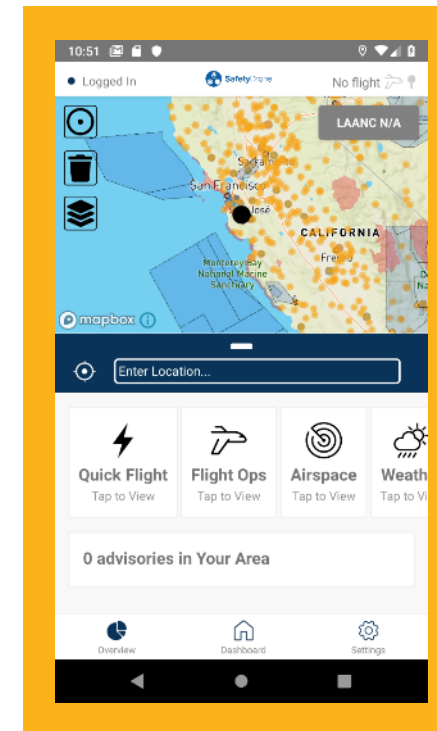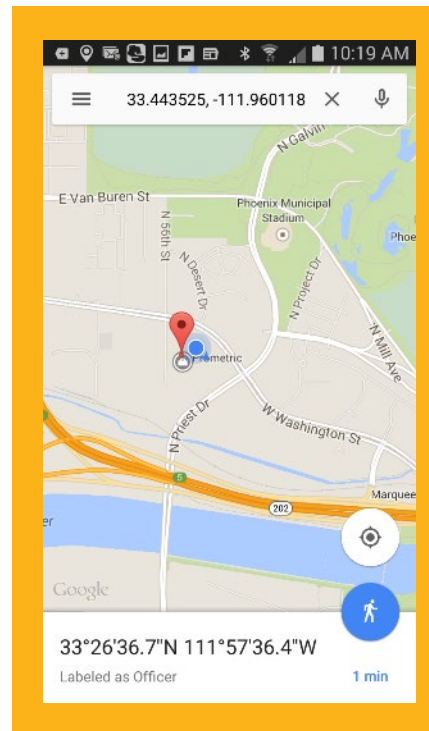
FirstNet Verified

RELEVANCE

Vetted and deemed relevant for use by first responders

SECURITY
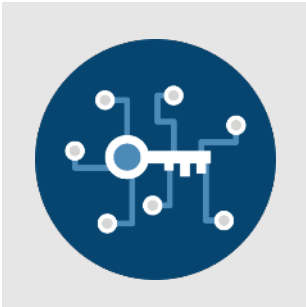
Inspected and adheres to strict security practices

DATA PRIVACY

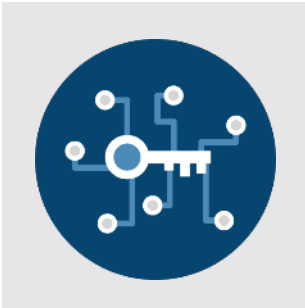Inspected and prevents unauthorized data access and use

AVAILABILITY

99.9%

Demonstrated availability of three 9s (99.9%)

FirstNet Application Catalog Levels: Certified

FirstNet Certified

RELEVANCE	SECURITY	DATA PRIVACY	AVAILABILITY	MOBILITY	RESILIENCE	SCALABILITY
Vetted and deemed relevant for use by first responders	Inspected and adheres to strict security practices **++Source code security scan report required**	Inspected and prevents unauthorized data access and use	Demonstrated availability of four 9s (99.99%)	Demonstrated that app does not waste resources (e.g., battery)	Demonstrated mechanisms to enable service and data recovery after a failure	Demonstrated mechanisms to accommodate surges in use

FIRSTNET
Built with AT&T
CERTIFIED

Building the Ecosystem: Apps and Devices that Align to the Roadmap

App Catalog Portfolio

FIRSTNET Built with AT&T **CERTIFIED** **FIRSTNET** Built with AT&T **VERIFIED**

189 Apps
as of 11/4/2021

- CAD Solutions, 3%
- In-Building Coverage and Mapping, 4%
- Device Security, 4%
- Secure Connections, 6%
- Other, 6%
- Cloud Solutions, 10%
- Public Safety (Comms) Tools, 25%
- Public Safety Community, 24%
- Situational Awareness, 18%

Devices by Type on NIST List

FIRSTNET READY ™

318 Band 14 Devices
388 total devices, as of 11/4/2021

- Other-IoT, 104
- Smartphone, 101
- Rugged Handheld, 27
- Tablet, 53
- Laptop, 66
- IVR, 32
- Hotspot, 5

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Graphs as of November 2021

FirstNet 101: Roadmap and Investments

1. History, Partnership and Strategy

2. The Network: Developments and Technologies

3. The Solution: Apps, Devices, Security, and Services

4. **Roadmap and Investments**

5. Public Safety Engagement

FirstNet Authority Roadmap Overview

The Roadmap illustrates how the FirstNet Authority plans to advance the FirstNet network over a multiyear horizon.

Available at FirstNet.gov/Roadmap

Provides a **technology framework** to understand all of the components and capabilities of the FirstNet Experience

Reflects **public safety's feedback** and needs based on a multitude of Roadmap engagements with the public safety community

Incorporates **analysis** of industry trends and drivers as well as AT&T's roadmap for the Network

Identifies the **priorities that will guide investments** and other opportunities based on FirstNet Authority analysis

FirstNet Authority Roadmap Priorities

CORE

- Generational Updates (e.g., 4G to 5G)
- Priority and Preemption, including Uplift on 5G
- Mission Critical Services Platforms and Enablers on 5G
- Network Security on 5G

COVERAGE & CAPACITY

- Outdoor Coverage Expansion
- Indoor Coverage Expansion
- Unique Coverage Solutions Advancement

SITUATIONAL AWARENESS

- Locate and Present Personnel Location
- Location Services Integration

VOICE COMMUNICATIONS

- Operationalize FirstNet Push-to-Talk
- Active Role in Standards
- Critical Features

SECURE INFORMATION EXCHANGE

- Database Integration
- Application Integration

USER EXPERIENCE

- Mission-Enabling Applications
- Mission-Capable Devices

arrangement to construct, manage, and operate the nation-wide public safety broadband network between the First Responder Network Authority and secondary user to permit—

(i) access to network capacity on a secondary basis for non-public safety services; and

(ii) the spectrum allocated to such entity to be used for commercial transmissions along the dark fiber of the long-haul network of such entity.

(3) LEASE FEES RELATED TO NETWORK EQUIPMENT AND INFRASTRUCTURE.—A fee from any entity that seeks access to or use of any equipment or infrastructure, including antennas or towers, constructed or otherwise owned by the First Responder Network Authority resulting from a public-private arrangement to construct, manage, and operate the nationwide public safety broadband network.

(b) ESTABLISHMENT OF FEE AMOUNTS; PERMANENT SELF-FUNDING.—The total amount of the fees assessed for each fiscal year pursuant to this section shall be sufficient, and shall not exceed the amount necessary, to recoup the total expenses of the First Responder Network Authority in carrying out its duties and responsibilities described under this subtitle for the fiscal year involved.

Review.

(c) ANNUAL APPROVAL.—The NTIA shall review the fees assessed under this section on an annual basis, and such fees may only be assessed if approved by the NTIA.

(d) REQUIRED REINVESTMENT OF FUNDS.—The First Responder Network Authority shall reinvest amounts received from the assessment of fees under this section in the nationwide public safety interoperable broadband network by using such funds only for constructing, maintaining, operating, or improving the network.

47 USC 1429. **SEC. 6209. AUDIT AND REPORT.**

(a) AUDIT.—

(1) IN GENERAL.—The Secretary of Commerce shall enter into a contract with an independent auditor to conduct an audit, on an annual basis, of the First Responder Network Authority in accordance with general accounting principles and procedures applicable to commercial corporate transactions. Each audit conducted under this paragraph shall be made available to the appropriate committees of Congress.

(2) LOCATION.—Any audit conducted under paragraph (1) shall be conducted at the place or places where accounts of the First Responder Network Authority are normally kept.

(3) ACCESS TO FIRST RESPONDER NETWORK AUTHORITY BOOKS AND DOCUMENTS.—

(A) IN GENERAL.—For purposes of an audit conducted under paragraph (1), the representatives of the independent auditor shall—

(i) have access to all books, accounts, records, reports, files, and all other papers, things, or property belonging to or in use by the First Responder Network

SEC. 6208. PERMANENT SELF-FUNDING

REQUIRED REINVESTMENT OF FUNDS

The First Responder Network Authority shall reinvest amounts received ... in the nationwide public safety interoperable broadband network."

Expand the NPSBN Deployables Fleet

Enhance the FirstNet Core for 5G network capabilities

Improve in-building coverage, resiliency

1. History, Partnership and Strategy

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4. Roadmap and Investments

5. **Public Safety Engagement**

The FirstNet Authority Commitment to Public Safety

UNDERSTAND

Engage, understand, and analyze public safety operational needs and opportunities

COLLABORATE

Include public safety, industry, government, and AT&T to determine the priorities we will address through the Roadmap and other efforts

TRANSFORM

Assist public safety in its adoption and use of FirstNet so that it realizes the advantages and benefits offered by the network

Public Safety Feedback Leads to FirstNet Solution Enhancements

Uplift Request Tool updates and feature additions

New Network Status Tool feature: Advanced Network View

Improved online sign-up experience

Agencies able to move subscriber paid users from general Foundation Account Number (FAN) to the agency FAN

Numbersync availability for smartwatch

Enhanced deployable request process

Static IP addresses

Multiple devices on subscriber paid accounts

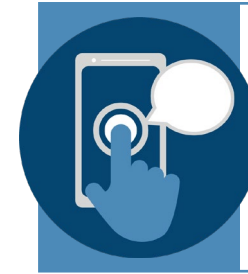Business Messaging to resolve blocked CAD messages

Public Safety Feedback Leads to Enhancements, Cont'd

Additional granularity in network status map

Expanded subscriber paid eligibility

Additional Push-to-Talk features
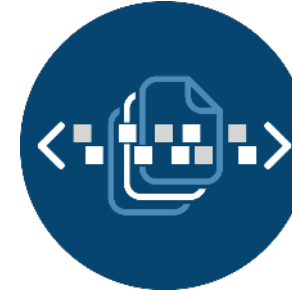
Availability of Compact Rapid Deployables

FirstNet Success Stories

Asset Tracking and Location Services

Push-to-Talk

Priority and Preemption

Secure Data Sharing

Customer Care and Engagement

RESULTS REPORTED FROM SUCCESS STORIES FROM PUBLIC SAFETY USERS

Increased efficiency/ time on patrol

Advance planning

Critical real-time information sharing

Platform for Innovation

LMR-LTE Integration

43

Connecting Rural Responders

"One of the challenges is the terrain that our deputies are operating in. For example, in Washington County, we have a large portion of our county, which is mountain ranges and forestry and there can be some gaps in communication. What FirstNet does for us is gives us the ability to stay connected."

Patrol Lt. Jim Wheaton
Washington County Sheriff's Office, Oregon

Get FirstNet help from a local expert

Find your Public Safety Advisor at
firstnet.gov/advisor

Q&A

Thank You