FirstNet's Edge

APCO Emerging Technology Forum
Raleigh, North Carolina

February 28, 2017
This version of the deck has poll results and graphs
from the interactive polling at the event.

Introduction

Bill Schrier

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- **Former Chief Information Officer, Seattle Police**
- **Former State Point of Contact (SPOC) for the State of Washington**
- **Former Chief Technology Officer, City of Seattle**

First of All
The Legal Stuff …

I'm not going to talk about the procurement and will not take any questions about the procurement.

Last of the Legal Stuff

The services, applications and capabilities discussed in this presentation are under consideration by FirstNet as capabilities to be offered in the future Nationwide Public Safety Broadband Network (NPSBN). However, the presence of these capabilities in this presentation is not an indication that FirstNet will offer them or will offer them in the manner described.

Instructions for using Poll Everywhere

and the cards on your chairs

Poll Everywhere

Overall results from 8 interactive questions during this presentation:

8	93	69	73%
Polls	Participants	Average responses	Average engagement

Poll Question 1:

What is your job function (text just the letter)?

Response options	Count	Percentage
A = 911	38	48%
B = Consultant	7	9%
C = First Responder Agency, incl. EM	8	10%
D = Government	12	15%
E = Vendor	11	14%
F = Other	4	5%

84%
Engagement

80
Responses

Public Safety, Associations & Private Companies Fought to Create FirstNet

International Association of Chiefs of Police
International Association of Fire Chiefs
National Sheriffs' Association
Major Cities Chiefs Association
Metropolitan Fire Chiefs Association
Major County Sheriffs' Association
Association of Public-Safety Communications Officials, International
National Emergency Management Association
International Association of Emergency Managers
Police Executive Research Forum
National Criminal Justice Association
National Association of Police Organizations
National Volunteer Fire Council
National Troopers' Coalition
National Organization of Black Law Enforcement Executives
Association of Air Medical Services
Advocates for Emergency Medical Services
Emergency Nurses Association
National Association of Emergency Medical Services Physicians
National Association of Emergency Medical Technicians
National Association of State Emergency Medical Service Officials
National Emergency Medical Services Management Association
International Municipal Signal Association
American Probation and Parole Association
InterAgency Board for Equipment Standardization and Interoperability
Congressional Fire Services Institute
Wichita Falls Texas Fire Department
Oregon Fire Chiefs Association
National Association of Attorneys Generals

State and Local Government

National Governors Association
National Association of Counties
National League of Cities
United States Conference of Mayors
Council of State Governments
International City/County Managers Association
National Conference of State Legislatures
National Association of Regional Councils
The National Association of State Chief Information Officers
State of New York
State of Nevada
State of Oregon
State of Iowa
State of Illinois
State of Maryland
Louisiana Governor Bobby Jindal

… and more …

9

Public Safety Challenges

2001

D.C. woman's number of 911 calls prompt city to request that she be given a guardian

Lakewood, Washington

Arizona, 2013

Crime | Local News | Northwest | Puget Sound

Seattle police have 'embraced' crisis-intervention training, report says

Originally published August 17, 2015 at 10:01 pm | Updated August 18, 2015 at 5:59 pm

How do Public Safety Agencies view their current service providers?

"BETTER"

50% believe they're getting special Public Safety network features from Commercial carrier.

ENTRENCHED

Nearly all agencies have existing relationships with each carrier.

MOBILE CENTRIC

40% said their carrier has exceptional technical expertise.

KNOWLEDGE

Majority say their carrier has government selling expertise.

CUSTOM

Thought Leader Agencies are getting custom solutions from carriers.

PREDATORY

Carriers offer discounts to anyone in Public Safety.

LEGACY

Vast majority have been with Existing carrier for more than 5 years.

PRICE-CENTRIC

75% say that price is the number one factor that would prevent them from switching to any carrier.

Question for Today:

Given this competitive landscape, what unique capabilities should FirstNet implement to improve first responder safety and the safety and quality of life of 340 million Americans?

Minimum Capabilities

- **Coverage**

- **Reliability – 99.99%**

- **Electronic Mail and Contact Lists**

- **Messaging – SMS, MMS and more**

- **Voice/Video telephony**

- **Push-to-talk, non-mission critical**

- **Device management**

- **Location and Presence**

- **Device authentication and encryption**

- **Standard apps and features: cameras, maps, video calls**

- **And more …**

QPP: Quality of Service, Priority, Preemption

- **Quality of service** – The overall performance of a telephony or data network, particularly as seen by the users of the network

- **Priority** – A network capability that enables a user's application or usage of the network to take precedence over another user's application or usage of the network.

- **Preemption** – A network capability that permits authorized high priority traffic, e.g., coming from public safety or first responders, to take over resources assigned to lower priority traffic, e.g., private traffic.

TRUE PRIORITY

A wireless broadband connection when public safety needs it the most

- **Local Control** – through roles or APIs to, say, CAD

Poll Question 2:

In your experience, how important is priority, pre-emption and QoS to a public safety agency making a decision about a wireless service provider?
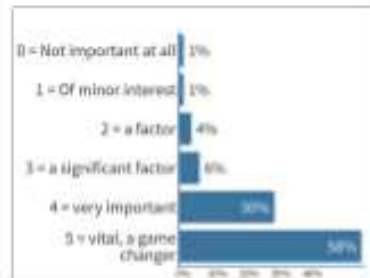
Response options	Count	Percentage
0 = Not important at all	1	1%
1 = Of minor interest	1	1%
2 = a factor	3	4%
3 = a significant factor	5	6%
4 = very important	24	30%
5 = vital, a game changer	46	57%

84%
Engagement

80
Responses

ICAM: Identity, Credentialing & Access Management plus Single Sign-On

Agency Apps

Identity Database

FirstNet Apps
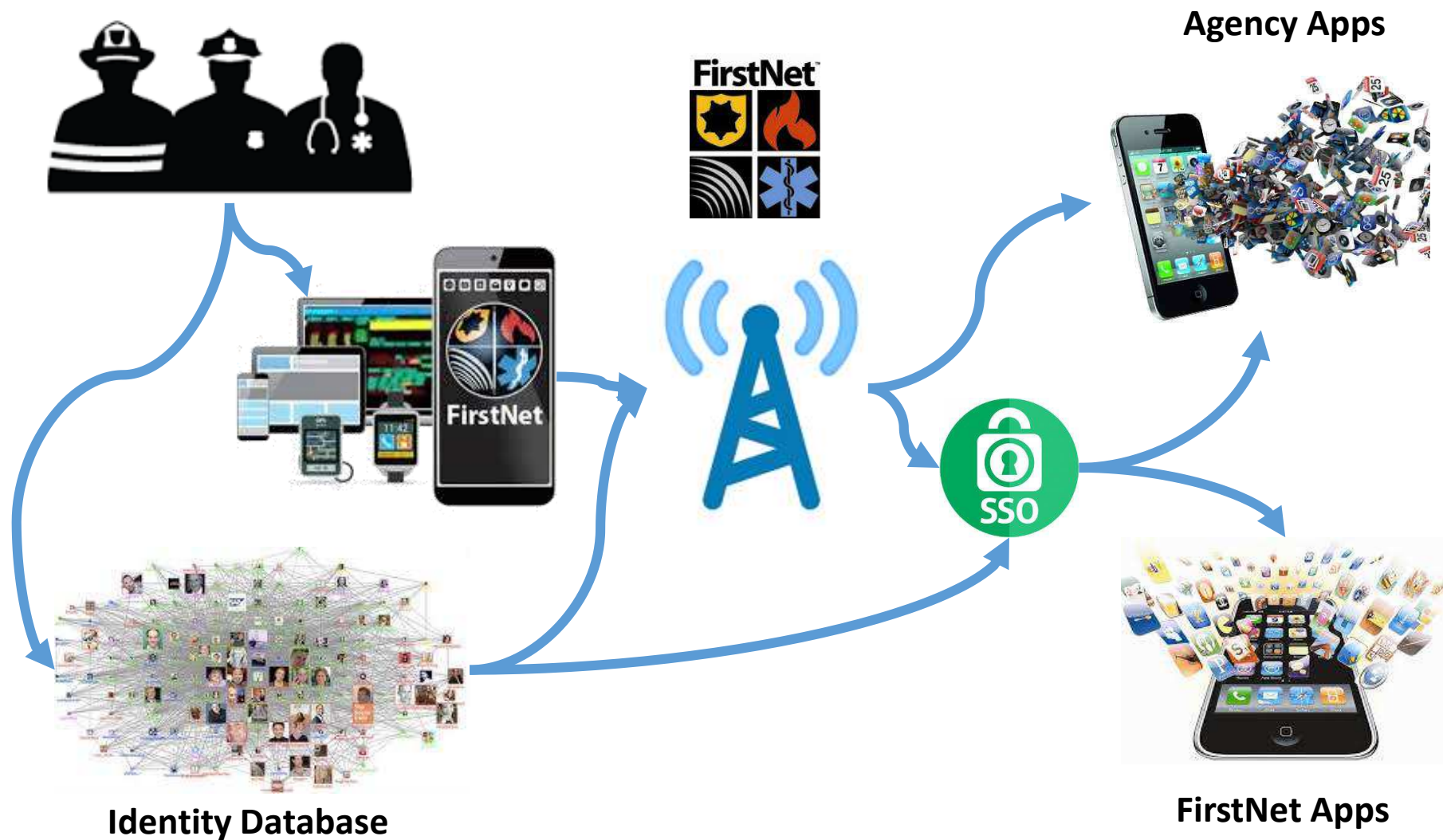
Poll Question 3:

In your experience, how important will a public-safety focused ICAM and Single-Sign-On solution be to an agency making a decision about a wireless service provider?
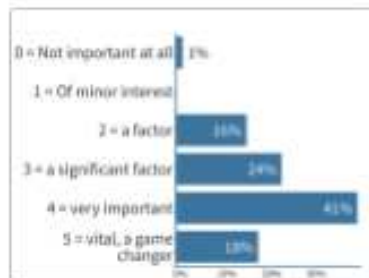
Response options	Count	Percentage
0 = Not important at all	1	1%
1 = Of minor interest	0	0%
2 = a factor	12	16%
3 = a significant factor	18	24%
4 = very important	31	41%
5 = vital, a game changer	14	18%

81% Engagement

76 Responses

Public Safety Applications

A Public Safety Applications Store including apps which can be used Nationwide

Basic Mobile Apps

- Voice Calling
- PTT
- Messaging (SMS / MMS)
- Web Browser
- Contact List
- Email
- Audio/Video Player
- Audio/Video Recorder
- Camera
- Image/Photo Gallery

Public Safety Specific

- FirstNet Store
- MDM / Local Control
- Public Safety Entity Homepage
- Mission Critical Voice
- MC PTT
- Immediate Peril/Responder Down
- Public Safety Virtual Assistant
- Situational Awareness / C2
- Public Safety Grade mVPN
- ICAM / SSO
- GIS / Nav / Location

PSEs have local control over applications

Applications and Services

An Applications Development Ecosystem to take advantage of FirstNet's other unique capabilities
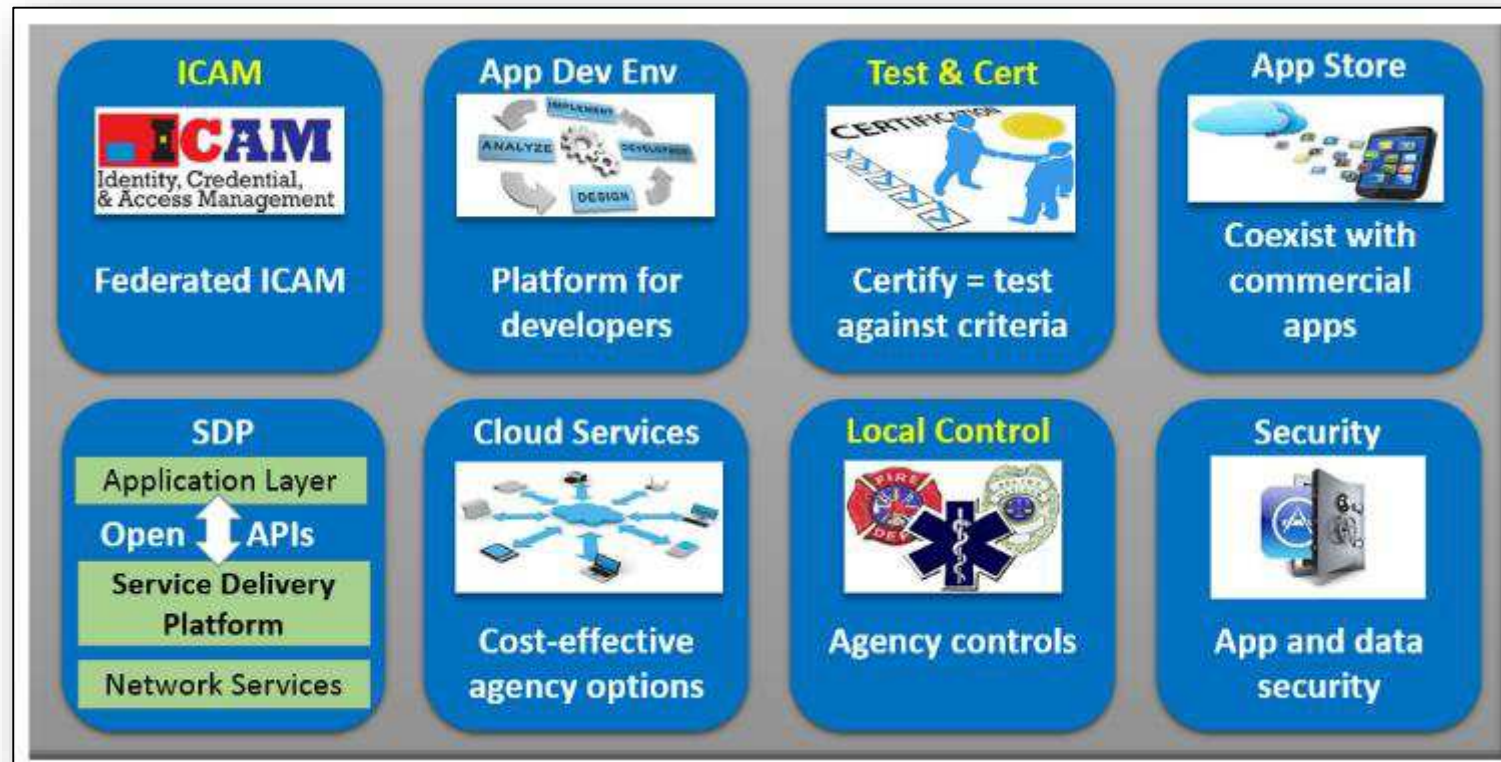
In your experience, how important will a public-safety focused applications store and ecosystem be to an agency making a decision about a wireless service provider?

Response options	Count	Percentage
0 = Not important at all	1	1%
1 = Of minor interest	3	4%
2 = a factor	7	9%
3 = a significant factor	18	24%
4 = very important	32	43%
5 = vital, a game changer	14	19%

78% Engagement

75 Responses

Streaming Video and Analytics

Drones:
- **Search and Rescue**
- **Firefighting**

Body-Worn Video

Dashcam

Poll Question 5:

In your experience, how important will live-streaming video, with network priority and pre-emption, be to a public safety agency making a decision about a wireless service provider?
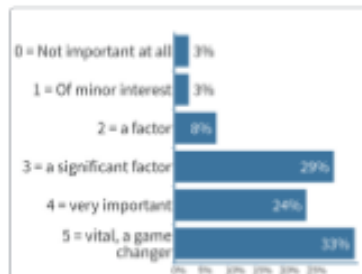
Response options	Count	Percentage
0 = Not important at all	2	3%
1 = Of minor interest	2	3%
2 = a factor	6	8%
3 = a significant factor	23	29%
4 = very important	19	24%
5 = vital, a game changer	26	33%

81% Engagement

78 Responses

INTERNET OF THINGS IN CONNECTED CITIES

TRANSPORTATION CONGESTION SENSORS
1. Smart transportation systems use sensors to detect congestion and bottlenecks in traffic patterns. They also rely on cameras to enforce speed and traffic infractions. In doing so, these tools gather real time information that can be used by city DOTs to make mobility networks safer and more efficient.

WATER AND WASTEWATER MONITORING
2. Monitoring devices can detect leaks as well as changes in water pressure to determine whether water infrastructure is working properly.

PARKING APPS AND KIOSKS
3. Apps coordinate with smart parking meters to inform drivers of where there is parking availability.

BRIDGE INSPECTION SYSTEMS
4. Sensors monitor the structural soundness of bridges and inform city engineers of any issues. Drones are used to inspect hard to reach areas.

SELF-DRIVING CARS
5. Self-driving cars shuttle people in and out of the city, providing rides for others and making deliveries while their owners are occupied with work or other activities.

WASTE MANAGEMENT SENSORS
6. Sensors detect the amount of garbage in receptacles around the city so that sanitation workers can maximize efficiency in their routes.

LIGHTING
7. LED lights are weather adaptive and communications are automatically sent to the Department of Public Works when the bulbs need to be changed.

FIRE DETECTION
8. Sensors monitor conditions in public parks and wooded areas that might be prone to fire. Sensors can also detect fires in buildings and initiate a call to the fire department in an emergency.

ENERGY MONITORING
9. Power plants can be monitored for safety and city officials can be informed of any influx in radiation levels.
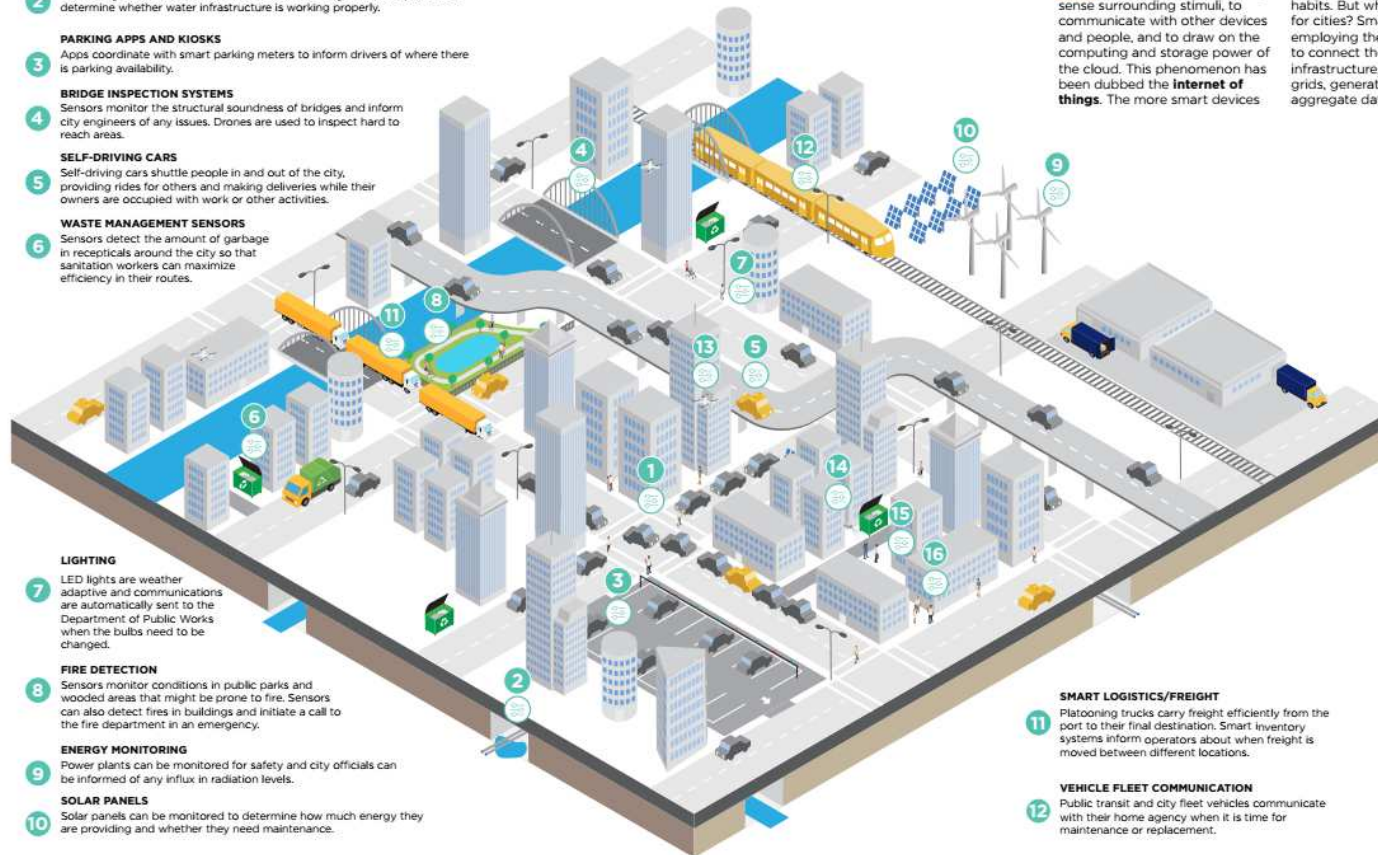
SOLAR PANELS
10. Solar panels can be monitored to determine how much energy they are providing and whether they need maintenance.

very consumer product and piece of infrastructure increasingly has the ability to sense surrounding stimuli, to communicate with other devices and people, and to draw on the computing and storage power of the cloud. This phenomenon has been dubbed the **internet of things**. The more smart devices and sharing platforms there are, the more data is generated about consumer's preferences and habits. But what does this mean for cities? Smart cities are employing the same technology to connect their disparate utility, infrastructure, and public service grids, generating real-time aggregate data. This, in turn, can help cities manage their programs and services more effectively and gauge their impact immediately. The city of the future is an interconnected one, where devices communicate with one another in a constant stream of data that provides real-time information to the public and to the municipality.

SMART LOGISTICS/FREIGHT
11. Platooning trucks carry freight efficiently from the port to their final destination. Smart inventory systems inform operators about when freight is moved between different locations.

VEHICLE FLEET COMMUNICATION
12. Public transit and city fleet vehicles communicate with their home agency when it is time for maintenance or replacement.

DRONES
13. Drones can be used for law enforcement and firefighting, as rural ambulances, for infrastructure inspections, and for environmental monitoring. Commercial uses include precision farming, aerial photography, and in the near future, package delivery.

SURVEILLANCE CAMERAS
14. Cameras ensure security by monitoring activity in areas that are not frequented by public safety officers. Areas that are not open to public access can be monitored to keep unauthorized personnel out.

BODY CAMERAS
15. Public safety officers can wear body cameras that capture footage of interactions between themselves and city residents to ensure safety for both parties.

WEARABLE DETECTION
16. Cities can build in smartphone and wearable detection sensors so that people can be an active part of the internet ecosystem, communicating with the city, and with each other.

BROADBAND INFRASTRUCTURE
17. A reliable internet ecosystem is the glue that holds the internet of things together.

Smart Cities

ITS — INTELLIGENT TRANSPORTATION SYSTEM

- **Signals**
- **Cameras**
- **Parking spaces**
- **Street Sensors**
- **Bridges**

Smart Street Lights:
- **Wi-Fi**
- **Digital Signs**
- **Sensors**
- **Cameras**
- **Speakers**
- **Kiosks**

- **Buildings**
- **Alarms**
- **HVAC**
- **Video**
- **Utilities**

Chicago Police Video

- **Smart grid**
- **Electrical**
- **Water, Gas**
- **Wastewater**

Smart Cities – Smart Public Safety
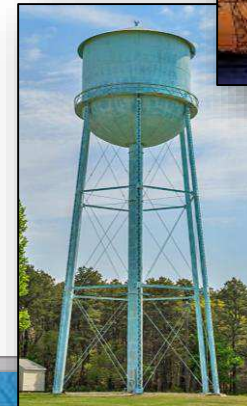
Poll Question 6:

In your experience, how important will support for smart cities, both sensor data collection and distribution of actionable information to responders, be to a government agency making a decision about a wireless service provider?
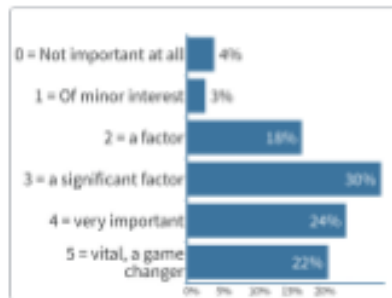
Response options	Count	Percentage
0 = Not important at all	3	4%
1 = Of minor interest	2	3%
2 = a factor	13	18%
3 = a significant factor	22	30%
4 = very important	18	24%
5 = vital, a game changer	16	22%

78% Engagement

74 Responses

Tailored Service and Service Centers for First Responders

Public Safety Grade Service Center

First Responder "Community" for Workflows and Improvements

Poll Question 7:

In your experience, how important will first responder-focused service centers and communities of interest be to a public safety agency making a decision about a wireless service provider?
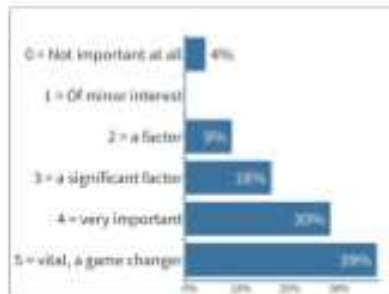
Response options	Count	Percentage
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1 = Of minor interest	0	0%
2 = a factor	7	9%
3 = a significant factor	13	18%
4 = very important	22	30%
5 = vital, a game changer	29	39%

77% Engagement

74 Responses

Conclusion
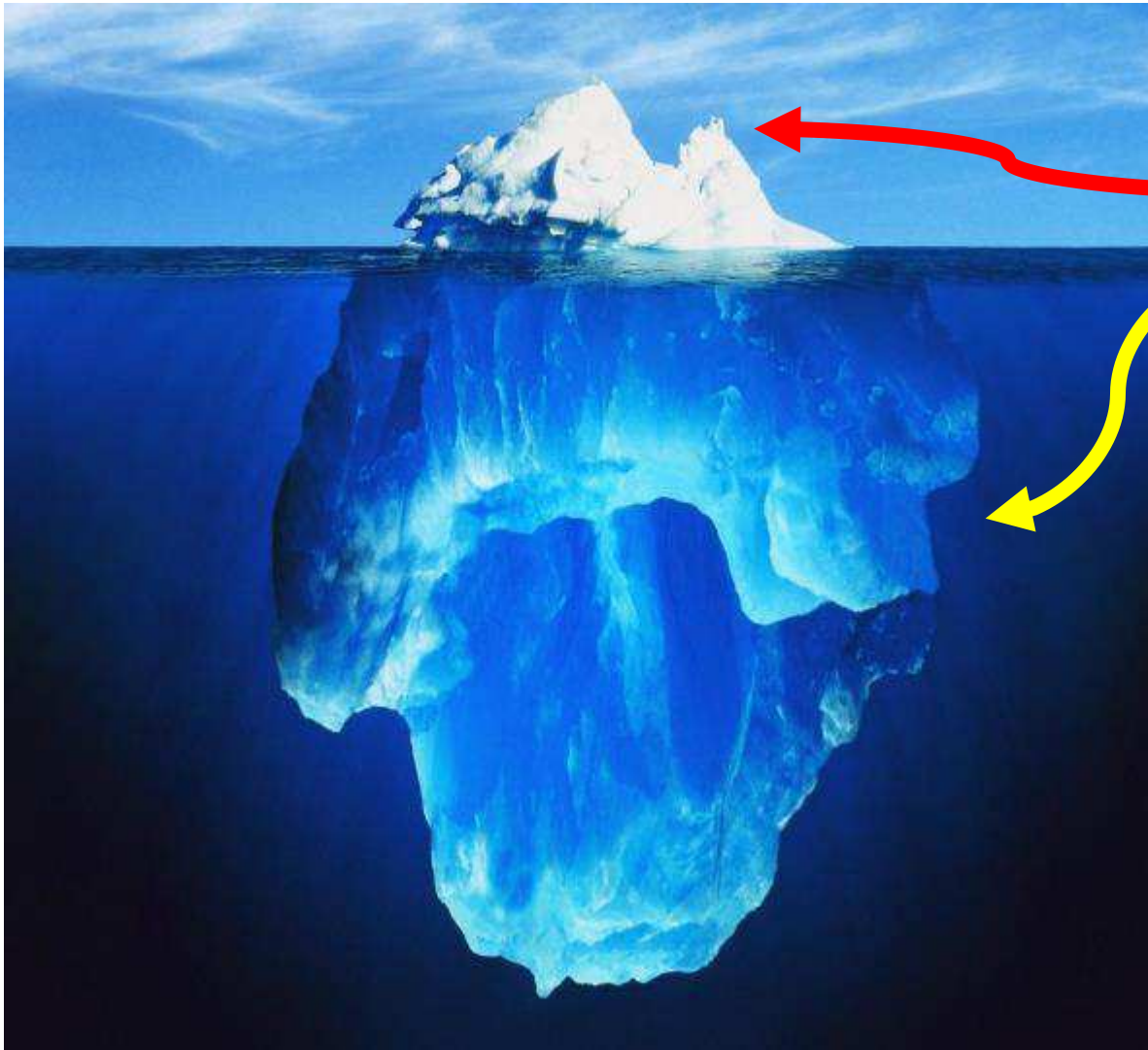
What we discussed Today

Other potential capabilities

- **Public Safety Grade**
- **Cybersecurity**
- **Deployables**
- **Drones**
- **Mission Critical PTT**
- **ProSe**
- **And more …**

Poll Question 8:

What other capabilities, that FirstNet might enable, would "move the needle" in improving the efficiency and effectiveness of public safety agencies?

Responses

EPB - the publicly owned utility in Chattanooga Tn - Gig City!
Their experience as a quasi-govt agency in a sea of commerical interests may be helpful as

LEAVE
James McGuinn

First Responder Location

Mission critical voice over LTE
LC

CAD App with limited capabilities for rural agencies

Tactical Dispatcher Database for Deployments or assistance with skill set info

Paging or dispatch of first responders

PSAP to First Responder IP or SMS Messaging

Independent Deployables

cybersecurity

Cost and reliability, very important.

Push to talk would be great

Sharing portal

Mission Critical PPT / ROIP

Public awareness

Paging

Interoperability with LMR

18%
Engagement

17
Responses

Public Safety Fought for FirstNet

Signing of the Legislation

FirstNet will Deliver

Contact Information

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