7000+ First Responders Have Something to Say:
Are we listening?

#PSCR2019  NIST Usability Team
NIST Usability Team

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*Please note, unless mentioned in reference to a NIST Publication, all information and data presented is preliminary/in-progress and subject to change.
Roadmap for Today’s Presentation

- Nationwide Survey Overview
- Survey Highlights
- Challenge Areas In Focus
Nationwide First Responder Survey Participation

7182 Respondents

- LE
- FF
- EMS
- 9-1-1 / Dispatch
Nationwide First Responder Survey Coverage

Respondents

- 400
- 300
- 200
- 100
- 0
Most Used Devices
Across Disciplines, Day-to-Day Use

- Radio
- Laptop/Computer
- Cellphone
- Mic
- MDT/MDC

7
Radio Problems

Across Disciplines

- Price: too expensive
- Coverage & dead zones
- Outdated
- Inter-operability
- Radio discipline
- Battery life
- Size: too bulky
- Audio quality
Laptop/Computer Problems
Across Disciplines

Price: too expensive
Battery life
Logging in
Internet connection

Software updates
Outdated
Size: too bulky
Durability
Cellphone Problems
Across Disciplines

- Price: too expensive
- Personal phone subsidy
- Subpoena possibility
- Battery life
- Coverage & dead zones
- Logging in
- Data plans, limits
- Durability
Microphone Problems
Across Disciplines

- Price: too expensive
- Outdated
- Placement on body
- Button issues
- Falling off
- Cord issues
- Durability
- Audio quality
MDT/MDC Problems
Across Disciplines

- Price: too expensive
- Use while driving
- Lack of portability
- Outdated
- Mapping, navigation
- Size: too bulky
- Logging in
- Inter-operability
Most Used Apps
Across Disciplines, Day-to-Day Use

- Email
- CAD
- RMS
- Mapping/driving directions
- Weather
Major Disaster/Large Event: Technology

90% worked a large event

<table>
<thead>
<tr>
<th>Large event vs day-to-day tech</th>
<th>Mostly the same</th>
<th>Somewhat the same</th>
<th>Very different</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>82%</td>
<td>16%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Special Tech Needs
- Mobile Command Center
- Deployables
- Generators
- Drones
- Helicopters
- Remote sensing
- Robots
Across Disciplines Future Tech

- One login: single sign-on
- Tracking: responders and vehicles
- Real-time on-scene video
- Indoor mapping
- Voice control
Law Enforcement Highlights

- Most used tech
- Future tech
Law Enforcement Highlights

Most Used Day-to-Day Devices
Law Enforcement Highlights

Most Requested Future Capabilities
Fire Fighting Highlights

- Most used tech
- Future tech
Fire Fighting Highlights

Most Used Day-to-Day Devices
Fire Fighting Highlights
Most Requested Future Capabilities
EMS Highlights

Most Used Day-to-Day Devices
EMS Highlights

Most Requested Future Capabilities
Unique problems

Most used tech

Future tech

Fairfax County, VA
9-1-1/Dispatch Problems

Caller information
Inaccurate or missing

Cellphone tracking
Inability to track

Overload
Too many calls, monitors, channels

Maps/databases
Inaccurate or missing data
9-1-1/Dispatch Highlights

Most Used Day-to-Day Devices
9-1-1/Dispatch Highlights

Most Requested Future Capabilities
In Focus: Rural and 9-1-1/Dispatch

Findings From In-Depth Interviews

Cambridge, MA (www.cambridgema.gov/emergencycommunications)
Rural Challenge Highlights

Distance, Size, Geography/topology

Incident type

Resources

U.S. Geological Survey
“We do have some **geographical challenges**. We have parts of our county where we have **no radio coverage** at all and it’s been that way for many, many years.” (LE-R-042)
Rural Challenges

Distance/Size/Topography

“We do have some geographical challenges. We have parts of our county where we have no radio coverage at all and it’s been that way for many, many years.” (LE-R-042)
“So there's rodeos ... There's white water stuff with kayaking ... all stuff that just comes with the summer ... **suddenly we have 30,000 extra people in town.**” (EMS-R-007)
Rural Challenges

Seasonal Nature of Incidents

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(EMS-R-007)
“The only volunteers we're getting are the young college-age level kids that want a fire job, and so they're using this as a gateway to get experience and get in. And then as soon as they have the opportunity, they're gone.” (FF-R-019)
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“...we got gear that’s been out of date for ten years.” (FF-R-048)
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9-1-1/Dispatch Challenges

Behind the scenes

Caller-related issues

NG 9-1-1

City of Strongsville, OH
9-1-1/Dispatch Challenges

Behind the Scenes

“Many times overwhelmed… with the amount of responsibilities that they have…There are many, many police officers that walk into this room, firemen that sit here and go, God, I never thought it was like this. I mean I thought you were just a secretary. Just answering the phone. And I couldn't sit here all day and do that.” (COMMS-R-016)
9-1-1/Dispatch Challenges

Behind the Scenes

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(COMMS-R-016)
9-1-1/Dispatch Challenges

Behind the Scenes

“So, you've got 10 new radio channels but you've got one dispatcher. Are you expecting that one person to handle 10 channels? So, what is the limit?” (COMMS-R-019)
9-1-1/Dispatch Challenges

Behind the Scenes

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(COMMS-R-016)
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(COMMS-R-016)
9-1-1/Dispatch Challenges

Caller-Related Issues

“Location information sometimes is difficult to get from a cell phone. …we have a lot of visitors here. And they never know where they're at. Had no clue.”

(COMMS-R-002)
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(COMMS-R-002)
9-1-1/Dispatch Challenges

NG 911

[Re: texting] “I can’t tell if you’re crying or--that's my fear with the Next Generation 9-1-1, are we going to lose that important piece of our communications with technology? … 90% of all communication is nonverbal in nature. And hearing that voice… the background noise of a particular call gives us so much more information than just the words.” (COMMS-R-016)
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(COMMS-R-016)
“We have so many young alcohol induced stupid people, **our thought is we're probably going to get a lot of pictures of [...]**. ...But is that something that we can choose not to look at. ...Or is it going to be something that's always there, regardless of what is sent and whether it makes any difference to the call or not?” (COMMS-R-002)
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Focus on User Needs

RESPONDERS
Needs must drive all technology R&D

AFFORDABLE
#1 problem is price, across technologies, disciplines

CURRENT
Fix current tech first – it must be reliable and work as expected

FUTURE
First responders can envision utility of new tech if it meets their needs
Searchable Interview Quotes Online

First responders said...

https://publicsafety.nist.gov/QuotesSearch
Contact Us

usability@nist.gov

PSCR UI/UX Site
THANK YOU
Break for Lunch
BACK AT 1:00PM
Nationwide First Responder Survey Coverage

Percent participation by area type

- Urban: 20%
- Suburban: 45%
- Rural: 25%
Nationwide First Responder Survey Coverage

Urban
Suburban
Rural

- Total
- LE
- FF
- EMS
- 9-1-1 / Dispatch
Nationwide First Responder Survey Coverage

- Coverage: 0% to 70%
- Levels: Local, County, State, Federal
- Types: Total, LE, FF, EMS, 9-1-1 / Dispatch

Map of the United States showing coverage percentages across different levels and types.
Nationwide First Responder Survey Coverage

7182 Respondents

- LE
- FF
- EMS
- 9-1-1 / Dispatch

- Female
- Male
Nationwide First Responder Survey Coverage

Age categories: all respondents
Nationwide First Responder Survey Coverage

Total years of service: all respondents

- < 1 year: 0%
- 1-5 years: 5%
- 6-10 years: 10%
- 11-15 years: 15%
- 16-20 years: 20%
- 21-25 years: 20%
- 26-30 years: 15%
- 31-35 years: 10%
- 36-40 years: 5%
- 41-45 years: 2.5%
- 46-50 years: 2.5%
- 51+ years: 0%