

## Emerging Technologies Forum

# BROADBAND AND THE FUTURE USER'S EXPERIENCE

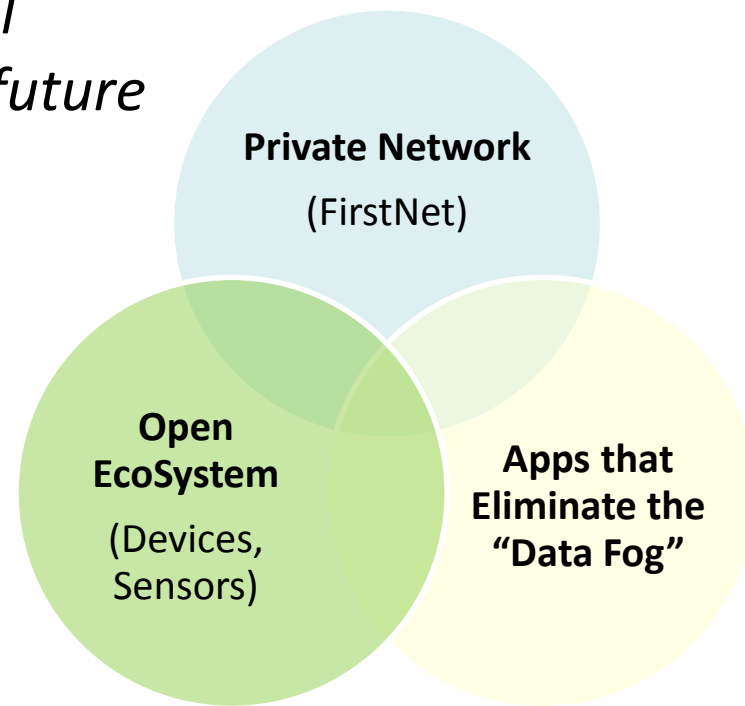
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**04 December 2013**

# Emerging Technologies in Public Safety

*Public Safety is beginning to discover a world of connected sensors and data that will transform the way you respond in the future*

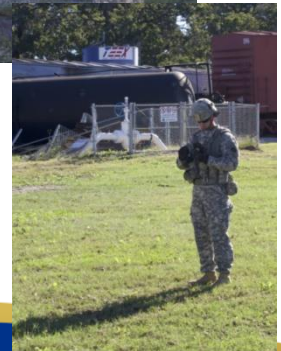
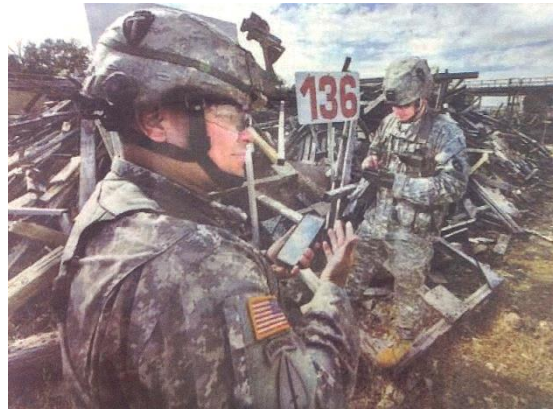
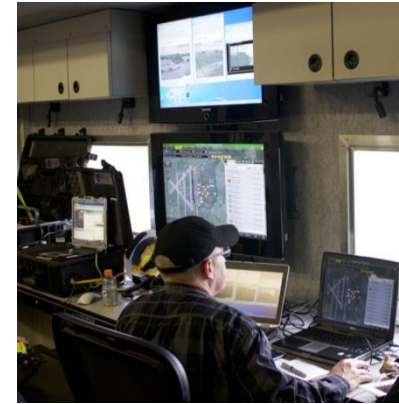
1. *Purpose-built private networks, meeting public agencies' demand for secure voice, data and video (the NPSBN by FirstNet)*
2. *Industry's offering of an open Eco-System of devices, end points and capabilities that run on the NPSBN*
3. *Unique visualization and collaboration apps that reduce the "Swivel Chair" paradigm, and manage the "Data Fog"*



# The Private Network

- Future Public Safety communications will rely on the 700 MHz LTE Network from FirstNet
- General Dynamics is a leading provider of 700 MHz LTE networks
  - Committed to research in 700 MHz LTE systems
  - Ongoing Internal Research and Development
  - Collaborative Research and Development with government, universities and industry partners

# The End in Mind – Better Connected Operations Between Dispatch, Incident Command and Responders



# How Do We Know?

- We have lived this digital transformation once before
- GDC4S has been at the forefront of the DoD transformation to “digital battle command” over the past 20 years






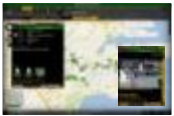


# A Look Back...

- Early 1990's – Gulf War triggers the need to better manage communications (networks) on the battlefield, for DATA, as well as Voice
- 1990's – Significant advancements in digital data networks, enable users to access far more data than they ever had before
- Late 90's, early 2000's – The surge of sensors, endpoints and raw data begins to consume the User's ability to make decisions → Creates the need for applications that “manage the complexity”
- 2005-2011 – Fielded systems (deployable networks, sensors, and applications) transform the ability to plan and execute the mission
- Today – New, Emerging Technologies continue to offer enhanced and expanded capabilities

## ... And A Look Ahead

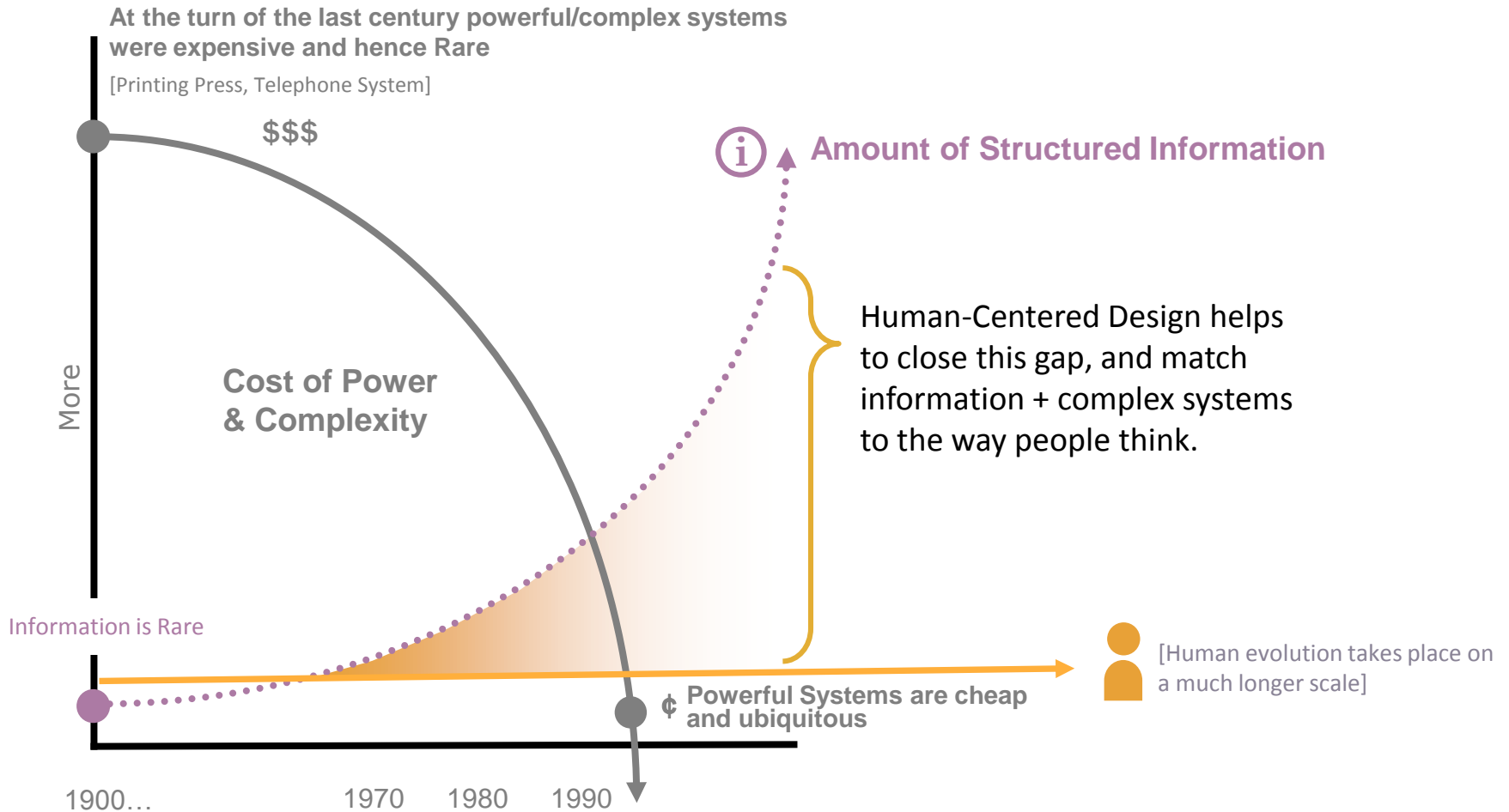
- Today – The Public Safety community articulates the need to better manage communications (networks) across the Nation, for DATA, as well as Voice
- 2013-2020
  - Realization of the NPSBN 700 MHz LTE data network, will enable users to see far more than they ever had before
  - The surge of sensors, endpoints and raw data will begin to consume the User's ability to make decisions → Creating the need for applications that “manage the complexity”
  - Applications key to the Public Safety and First Responder Mission will evolve, capable of access to all relevant data, but without undo burden on the PSAP or Responder

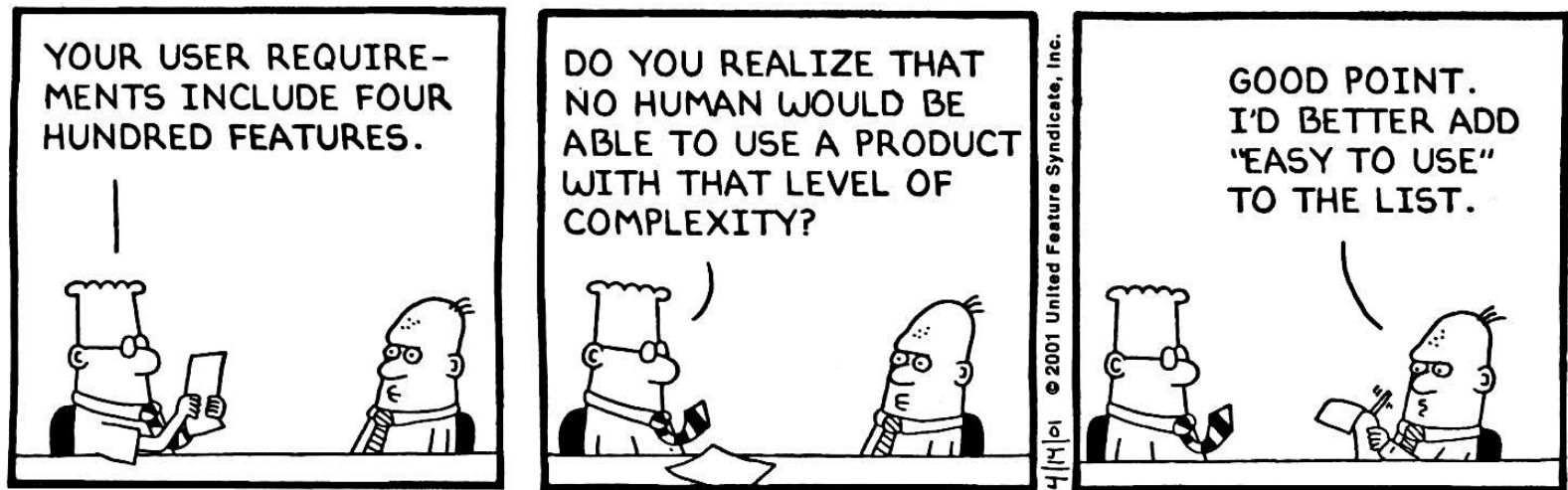
# Emerging Technologies That Enable Responders

<u>Enabler</u>	<u>Users</u>	<u>Location</u>	<u>Benefit / New Capability Offered</u>
 <b>Private , Assured 700 MHz LTE Network</b>	<ul style="list-style-type: none"> <li>• All Users</li> </ul>	<ul style="list-style-type: none"> <li>• Throughout Area of Operations</li> </ul>	<ul style="list-style-type: none"> <li>• Private, Secure, Broadband Data</li> <li>• Infrastructure to integrate sensors and assets</li> <li>• Ability to collaborate and share across all users</li> </ul>
 <b>In-Vehicle Modems</b>	<ul style="list-style-type: none"> <li>• First Responders in Proximity to Vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• Installed in First responder Vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• Connects to Private 700 MHz Broadband</li> <li>• Connects to Public Commercial LTE (Roaming / Fallback)</li> <li>• Integrates Vehicle Systems; Offers Position Location</li> <li>• Offers local WiFi around Vehicle</li> </ul>
 <b>Field Sensors and Devices</b>	<ul style="list-style-type: none"> <li>• Operators of Assets</li> <li>• Inc. Command Staff</li> <li>• PSAP / Dispatchers</li> <li>• All Networked Users</li> </ul>	<ul style="list-style-type: none"> <li>• Aerostat over Scene</li> <li>• Ground Robots in HAZMAT locations</li> <li>• Fixed or Mobile Video</li> </ul>	<ul style="list-style-type: none"> <li>• Offers video feeds that assist teams in situational awareness and better decision making</li> </ul>
 <b>Common Operating Picture</b>	<ul style="list-style-type: none"> <li>• All Networked Users</li> </ul>	<ul style="list-style-type: none"> <li>• Command Post</li> <li>• Vehicle MDTs</li> <li>• Field Laptops</li> <li>• Mobile Handhelds</li> </ul>	<ul style="list-style-type: none"> <li>• Map-Based Situational Awareness across all Users</li> <li>• Position Location of Networked Assets and Resources</li> <li>• Access to all data collected or interfaced from legacy systems</li> <li>• Access to all Video Feeds from Field Sensors and Devices</li> </ul>
 <b>Rugged Laptops / MDTs</b>	<ul style="list-style-type: none"> <li>• Any User in MDT-equipped Vehicle or with Rugged Field Laptop</li> </ul>	<ul style="list-style-type: none"> <li>• In-Vehicle Mobile Data Terminals</li> <li>• Rugged Field Laptops</li> </ul>	<ul style="list-style-type: none"> <li>• User Access to Broadband Applications and Video such as the Common Operating Picture</li> <li>• Field Access to back-end data systems and records</li> </ul>
 <b>Mobile Devices</b>	<ul style="list-style-type: none"> <li>• Any Mobile User equipped with a Networked Device</li> </ul>	<ul style="list-style-type: none"> <li>• Throughout Area of Operations</li> </ul>	<ul style="list-style-type: none"> <li>• User Access to Broadband Applications such as the Common Operating Picture</li> <li>• Ability to run future Apps to bring further value to Users in the Field</li> <li>• Voice over LTE</li> </ul>



# The Root Of The Problem





Adams, Scott. Dilbert, [www.dilbert.com](http://www.dilbert.com). 14 Apr. 2001, United Feature Syndicate.

# A Few Relevant Systems and Sensors...

## Data Systems

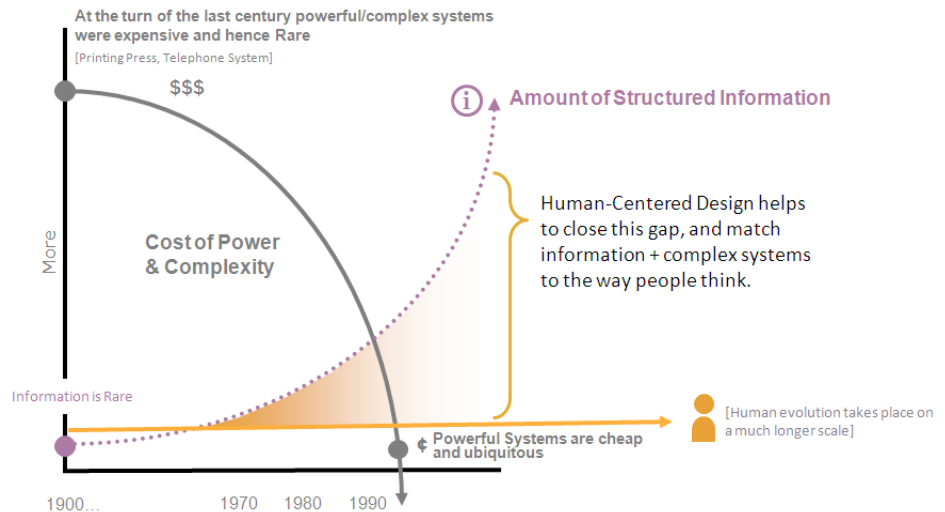
1. CAD
2. RMS
3. Warrants
4. Intelligence
5. Critical Infrastructure
6. Multi-Agency collaboration

## Sensors and End Points

7. Asset / Responder Location
8. Responders as a Sensor
9. Social Media Feeds
10. Cameras (Traffic, Security, News, Industry partners, etc)

# The Future Experience of the User

- The PSAP or Responder can't manage 10+ systems with thousands of sensor end points on their own
- The Future Experience of the User will be gaining the RIGHT information, at the RIGHT time, with the LEAST amount of effort.



***Less time trying to sift through the data, and more time to make decisions from the information provided to you***

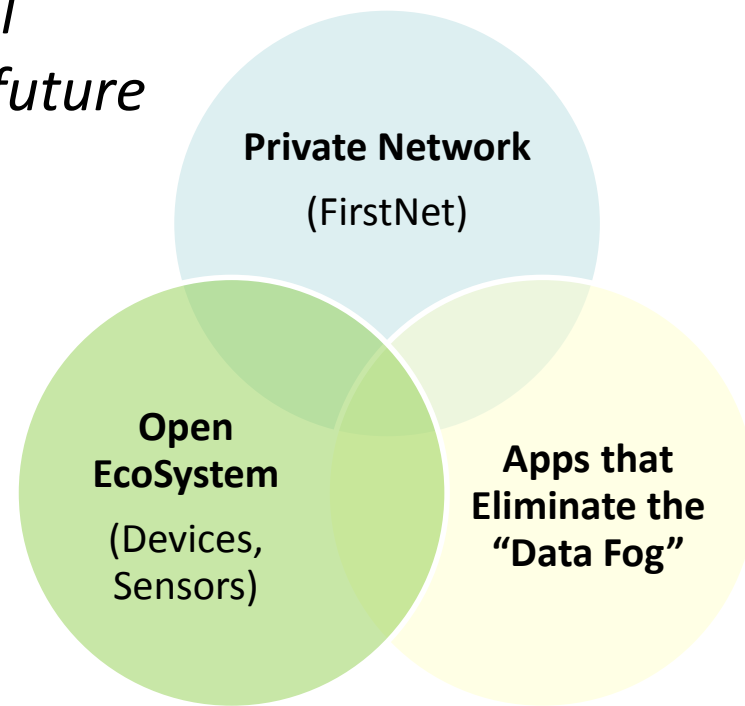
# Leveraging Prior Investments

- Public Safety Users benefit from the investments and maturity of Incident Command and Decision Support capabilities developed by others.
  - Individual Capabilities
  - Tools that Integrate Multiple Capabilities

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# Q & A



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