

# Overarching Wireless Location Information

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# Agenda

- Calling 9-1-1 from your wireless device
- Improving location accuracy
- Standards to Working Groups to Operations
- CTIA Working Groups' Goals
- Roadmap to Improve Wireless 9-1-1 Location Accuracy
- Creating the Test Bed Platform
- Creating the National Emergency Address Database (NEAD) Platform
- NEAD Functional Overview
- Timeline
- Questions

# Calling 9-1-1 From your Wireless Device

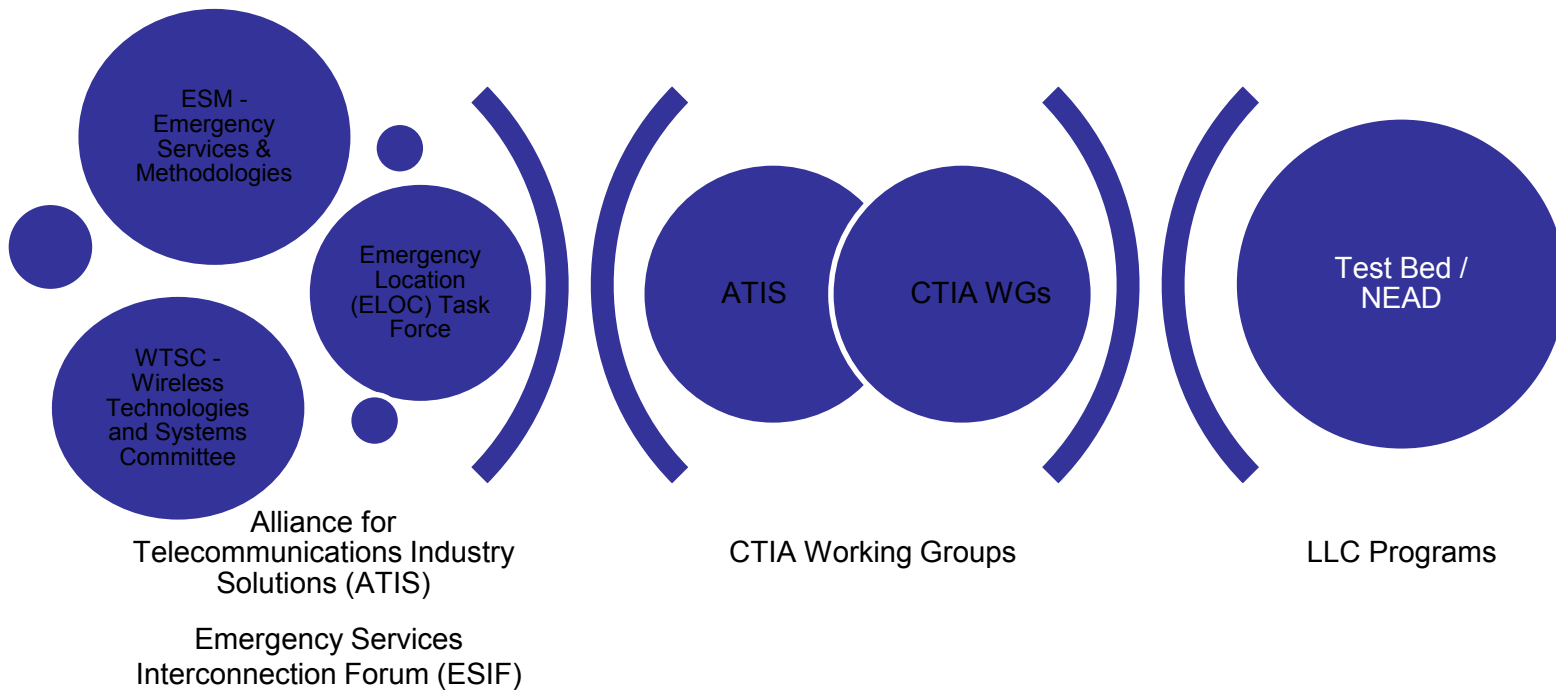


- 80% of the 240 million 9-1-1 calls made each year are wireless
- Emergency responders rely on location information provided by the carrier, consistent with FCC requirements.
- Automating location information for wireless calls placed indoors can be challenging, especially if the caller is in a multi-story or multi-use building where a floor, office suite, or apartment number may be needed to locate them.

# Improving Location Accuracy

- FCC's 2015 4th Report and Order directed wireless carriers to address this challenge and improve indoor location determination
- APCO, along with NENA and the major carriers developed the Roadmap for Improving 9-1-1 Location Accuracy
- Wireless carriers are testing the ability to leverage Wi-Fi and Bluetooth technologies and services to improve location accuracy.

# Standards to Working Groups to Operations



# CTIA Working Group's Goals

- Establish the framework for Test Bed LLC
- Establish the framework for NEAD LLC
- Determine how z-axis pressure sensor data will work and test delivery of that data to PSAPs
- Develop materials for outreach and to inform 9-1-1 professionals about new features
- Coordinate with standards groups like ATIS ELOC, APCO, NENA and other WGs
- Implementation and Demonstrate the technology

# CTIA PSAP Implementation Work Group Scope

- Assist PSAPs in implementation of higher-accuracy location solutions and related processes, e.g., presentation of location data (x-y, dispatchable location, uncompensated barometric pressure sensor and Z-axis data) as part of 9-1-1 calls, and standardized confidence and uncertainty data.

# PSAP Implementation Work Group Expanded Scope

- Develop initial recommendations for functional End-to-End calls through testing of dispatchable location from the NEAD to Public Safety. Limited to areas within the Atlanta and San Francisco monitoring regions, where test point for NEAD are being added, with recommended 'friendly' trial PSAPs. The WG recommendations would be shared with NEAD LLC TAC and ATIS ESIF ESM. It anticipated that the demonstration will occur in December of 2018.



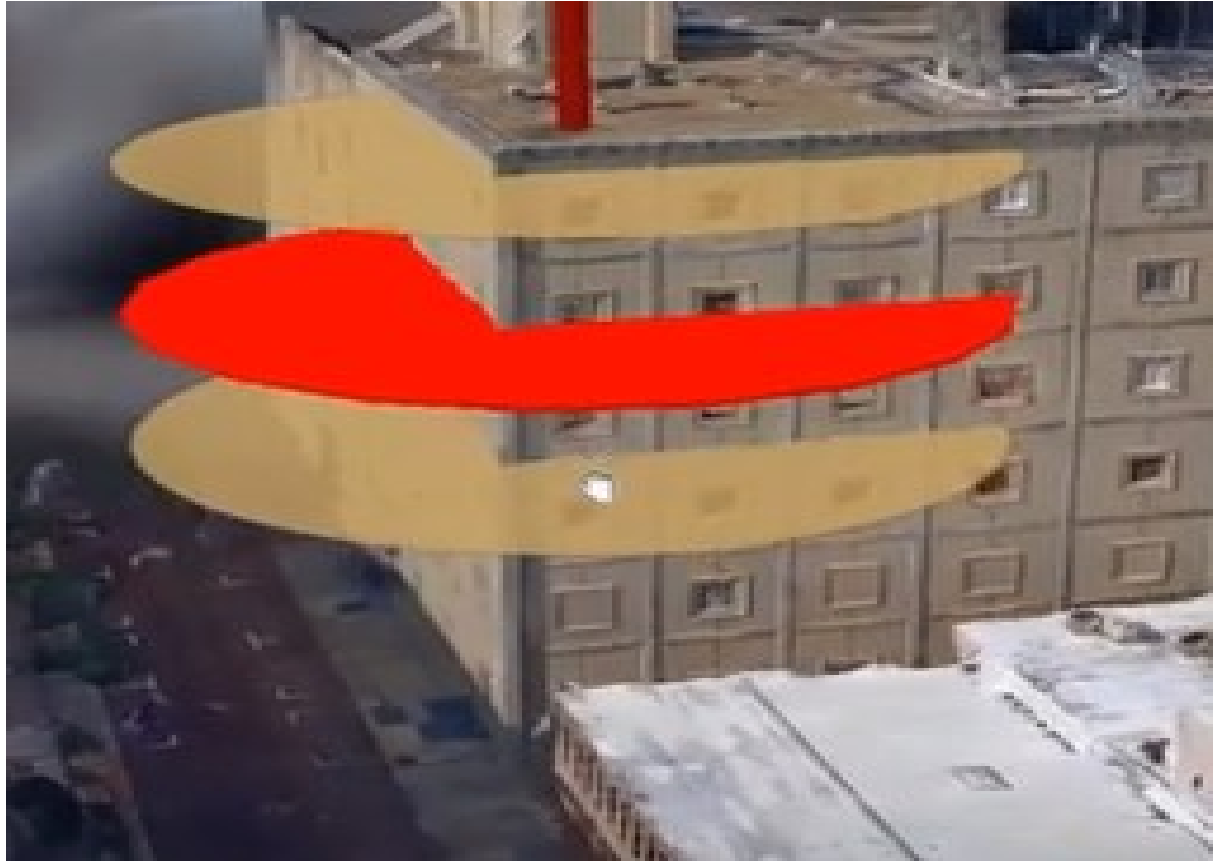
# What is Dispatchable Location?

- A location delivered to the PSAP by the CMRS provider with a 911 call that consists of the street address of the calling party, plus additional information such as suite, apartment or similar information necessary to adequately identify the location of the calling party. The street address of the calling party must be validated and, to the extent possible, corroborated against other location information prior to delivery of dispatchable location information by the CMRS provider to the PSAP.

# Building Types

- Residential Single Family Single story
- Residential Single Family Multi-story
- Multi-Tenant Residential – Single story
- Multi-Tenant Residential – Multi-story
- Commercial – Single story
- Commercial – Multi-story
- Multi-Use – Multi-story (building with both commercial and residential occupants)
- Multi-Use Single story (same as above)

# Mapping will need to represent altitude



# Class of Service

- WDL2
  - The civic oriented data is expected to meet the highest quality level criteria to be “dispatchable”, and indicates that the sub-address location within the building address (i.e., a street address plus sufficient information, such as floor and room number), to identify the location of the caller in the building.
- WDL1
  - The civic oriented data is expected to meet the medium-quality level criteria to be “dispatchable” by building zone quadrant but also indicates a less detailed location than WDL2.
- WCVC
  - Civic oriented data (address) in addition to traditional WPH2 geodetic X, Y and Uncertainty data associated with the caller’s location (where available).

# Creating the Test Bed Platform

- Test Bed, LLC was established to test and evaluate indoor location technologies
- Test Bed LLC is working to evaluate existing and emerging location technologies
- Tests are conducted in a variety of morphologies: dense urban, urban, suburban and rural
- Test results are confidential and proprietary, except for those results which, by prior agreement, will be released to the FCC

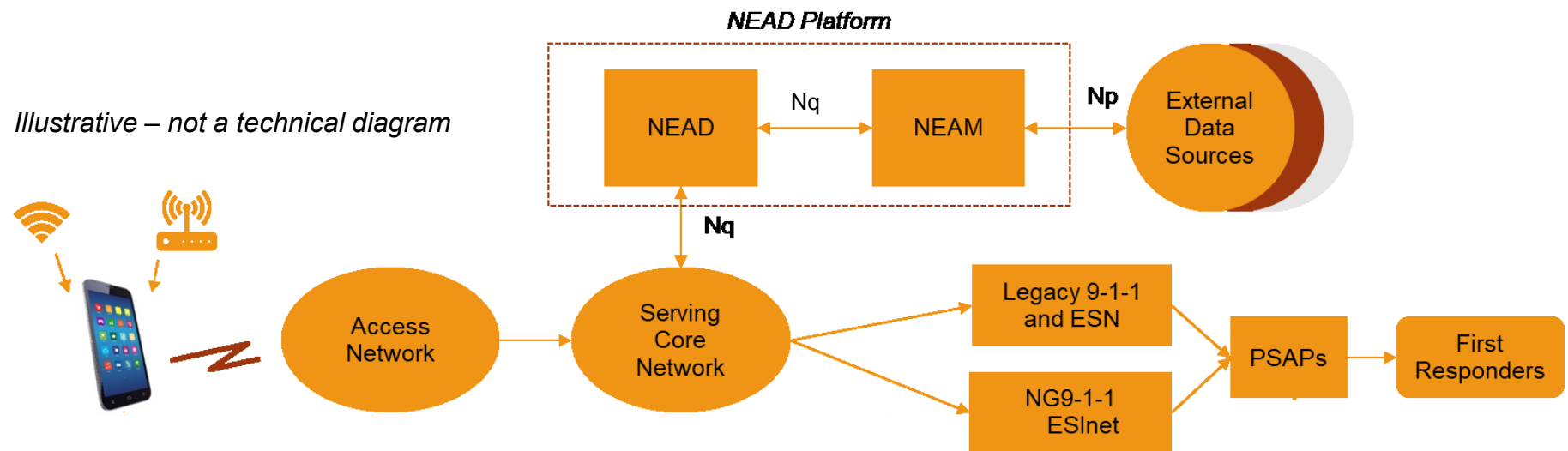
# Creating the NEAD Platform

- NEAD, LLC was established to launch the NEAD Platform.
- NEAD Platform is comprised of two parts:
  - NEAD
  - National Emergency Address Manager (NEAM)
- NEAD is a database of the street address and additional location information of Wi-Fi and Bluetooth LE Beacon (wireless) access points, referred to as Reference Points in the database.
  - Before any reference point data is added to the NEAD, the data is first verified against the Master Street Address Guide (MSAG) by the NEAM.
  - Take advantage of technology and innovation available in the consumer marketplace (vs. specialized, proprietary)

# NEAD Functional Overview

The NEAD Platform has two primary interfaces:

- **NEAD (Nq)** – the interface which a wireless carrier location server uses to query the NEAD to obtain civic addresses which location server can then use to determine the Dispatchable Location to forward to the PSAP in response to 9-1-1 calls
- **NEAM (Np)** – the provisioning interface which is used by providers to load reference points to the NEAM to be used in providing civic addresses to carrier location server in response to an Nq query



# Horizontal Location (Indoor and Outdoor)

All CMRS providers must provide (1) dispatchable location, or (2) x/y location within 50 meters, for the following percentages of wireless 911 calls within the following timeframes, measured from the effective date of rules adopted in this Order (“April 3, 2015”):

- Within 2 years: 40 percent of all wireless 911 calls.
- **Within 3 years: 50 percent of all wireless 911 calls.**
- Within 5 years: 70 percent of all wireless 911 calls.
- Within 6 years: 80 percent of all wireless 911 calls.



# Vertical Location

- Within 3 years: All CMRS providers must make uncompensated barometric data available to PSAPs from any handset that has the capability to deliver barometric sensor data
- Within 3 years: Nationwide CMRS providers must use an independently administered and transparent test bed process to develop a proposed z-axis accuracy metric, and must submit the proposed metric to the Commission for approval
- Within 6 years: Nationwide CMRS providers must deploy either (1) dispatchable location, or (2) z-axis technology that achieves the Commission-approved z-axis metric, in each of the top 25 Cellular Market Areas (CMAs)
- Within 8 years: Nationwide CMRS providers must deploy dispatchable location or z-axis technology in accordance with the above benchmarks in each of the top 50 CMAs

<http://www.911nead.org/>

NEAD

The National Emergency Address Database:  
**Enhancing Indoor 9-1-1 Location Accuracy**

<http://www.911locationtestbed.org/>

911 Location Technologies  
Test Bed LLC

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STAGE Z: ALTITUDE, Z-AXIS TESTING FOR INDOOR LOCATION TECHNOLOGIES [CLICK  
HERE](#)

TEST BED LLC – BACKGROUND

# Q&A

APCO International is the world's largest organization of public safety communications professionals. It serves the needs of public safety communications practitioners worldwide—and the welfare of the general public as a whole—by providing complete expertise, professional development, technical assistance, advocacy and outreach.



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