Indoor Location Mechanisms for Emergency Services

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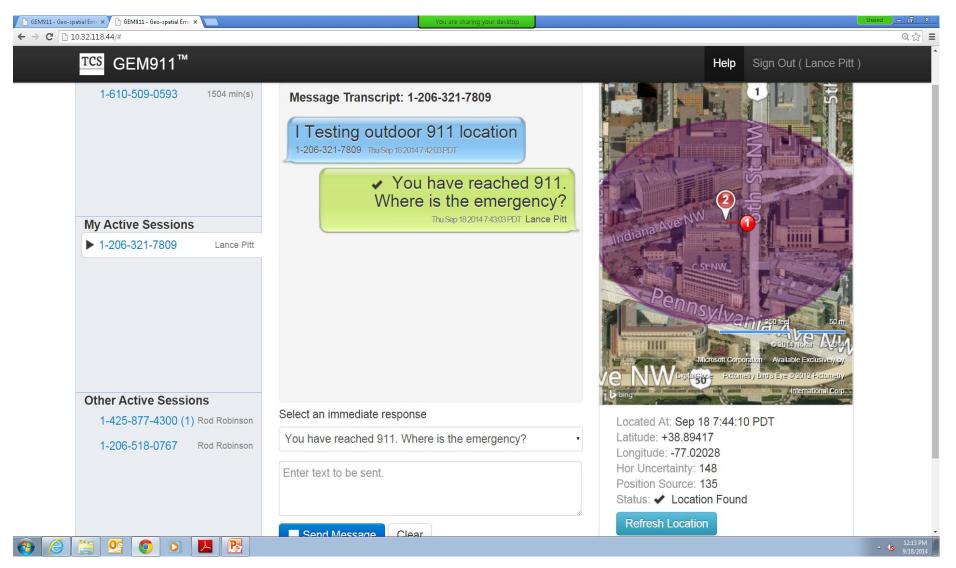
FCC Report & Order – January 29, 2015

- *In this Fourth Report and Order, we adopt measures that will significantly enhance the ability of Public Safety Answering Points (PSAPs) to accurately identify the location of wireless 911 callers when the caller is indoors. We also strengthen our existing E911 location accuracy rules to improve location determination for outdoor as well as indoor calls.*

- http://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0310/FCC-15-9A1.pdf
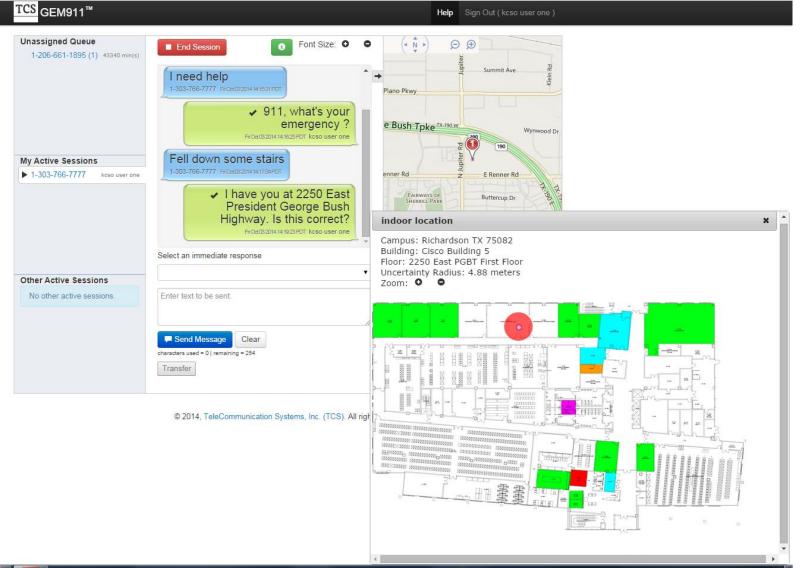
Indoor Device Location

- Today, cellular networks in the US return
  - (phase 1) Course tower location
  - (phase 2) Geo location
    - Handset based (assisted GPS or advanced forward link trilateration)
    - Network based (uplink time difference of arrival)
- The ultimate goal of Public Safety/FCC R&O is to deliver dispatchable location when the caller is indoors.

Where is the caller?
(actual phase2 location)

Where is the caller?
(WLAN location demo)

How do we get there?

- Currently, two proposals for obtaining dispatchable location
  - Beacons
    - Pre-provisioned Beacon location database
  - Real-time network-based
    - Building WLAN- trilateration using RSSI
      - New mechanisms on the horizon

Beacons

- BLE Beacon
  - Provides proximity; not location data, which is in database
- WLAN APs
  - Can provide pre-provisioned reference point
  - Can also provide location in management frames
  - Requires a supporting database
- In GeoPriv terms, Beacon mechanisms use Location by Reference
  - DB query returns a Presence Information Data Format Location Object (PIDF-LO)

Real-time WLAN location query

- The cellular carrier asks the WLAN network to locate a client device
- WLAN network Location Information Server returns a dispatchable location
  - Network locates device based on the device WLAN MAC address
  - Utilizes RSSI and trilateration (today), additional mechanisms under development
  - Can return a building map

What can ECRIT do?

- Adopt this draft, http://www.ietf.org/id/draft-marshall-ecrit-indoor-location-00.txt as WG item
  - To document the problem statement, use case (informal) and protocol requirements
- Specify a protocol for query and response of dispatchable location from WLAN Location Information Servers
  - Evaluate alternative protocols
  - HELD?
    - A new profile?