# Wireless Indoor Location

John Snapp

VP, Senior Technical Officer
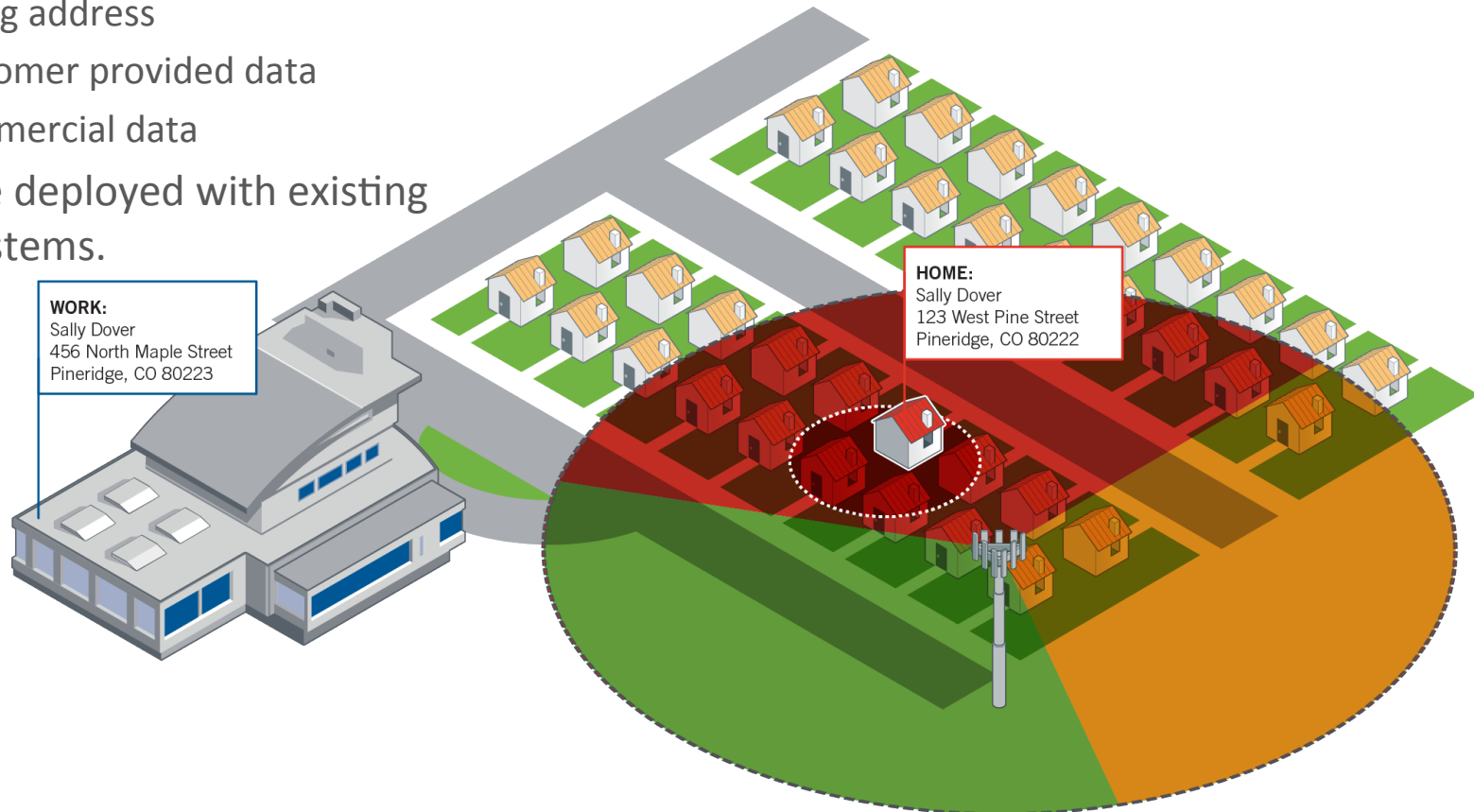
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# Changing landscape of Indoor 9-1-1 calls

- An increasing number of wireless 9-1-1 calls are being placed from indoors
- Phase 1 and Phase 2 do not mean the same thing anymore (Small cells and Femto cells)
- Public safety dispatches to an address not an X/Y
- Reverse geocoding adds an unpredictable amount of error to the existing error of an X/Y/ location (on average 1 out of 10 results are wrong)
- Reverse Geocoding is only as accurate as the base maps it utilizes
- There are multiple additional technologies that on the horizon that can provide a reliable dispatchable location and improve X/Y/Z location.
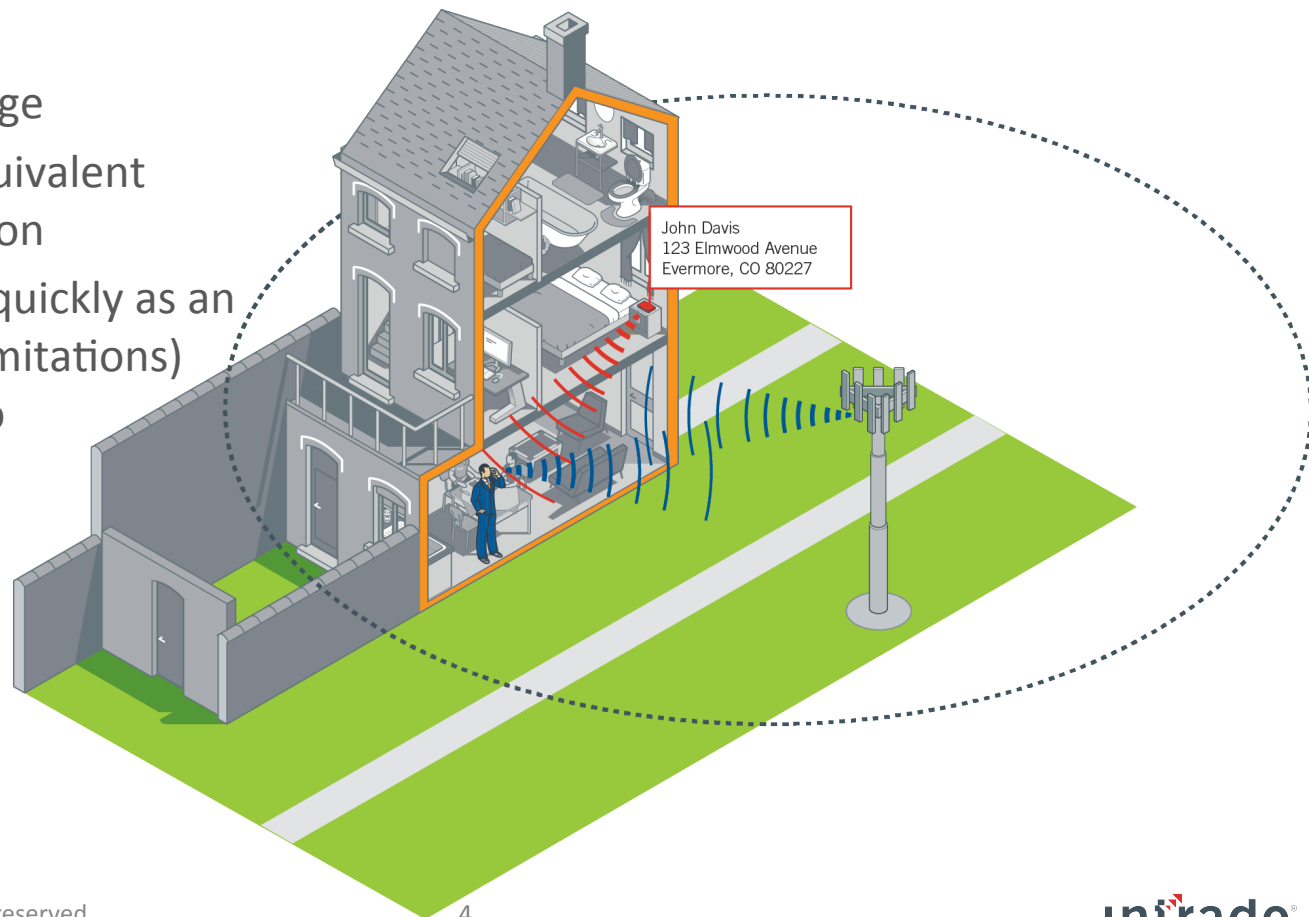
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# Providing Dispatchable Locations Through Geo-Relevant Wireless ALI

- Only provide addresses associated with emergency caller

- Associated user addresses are cross referenced with 9-1-1 location.

- Multiple possible data sources
  - Billing address
  - Customer provided data
  - Commercial data

- Could be deployed with existing 9-1-1 systems.

WORK:
Sally Dover
456 North Maple Street
Pineridge, CO 80223

HOME:
Sally Dover
123 West Pine Street
Pineridge, CO 80222

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# Providing Dispatchable Location through BLE Beacons

- Bluetooth Low Energy (BLE)
- Developed for commercial applications
- Integrated into Apple iOS and Android
- Very low cost
- Very low power usage
- Provide wireline equivalent 9-1-1 address location
- Could be deployed quickly as an application (with limitations) then integrated into handset through standards.

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# Commercial Handset Based Location

- Why can Starbucks locate me but 9-1-1 can not!
- Commercial location uses additional technologies beyond Cell and GPS
  - WiFi
  - Beacons
  - Barometer
  - Multi sensor
- 9-1-1 could leverage commercial to improve indoor X/Y/Z location
- Competition between handset based OS providers is driving innovation at a stunning rate
- Commercial handset based location technology is the "best of breed" of location technologies today and probably will continue to be in the future.
- Why duplicate the location databases within the 9-1-1 network when it already exists for commercial purposes
- Provides 9-1-1 access to new location technologies as they are deployed for commercial location purposes.

GPS

Cell ID

WiFi

Bluetooth LE Beacon

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# Questions

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