

Location Technology: Geospatial

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GeoBuiz Summit

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Intel's Mission



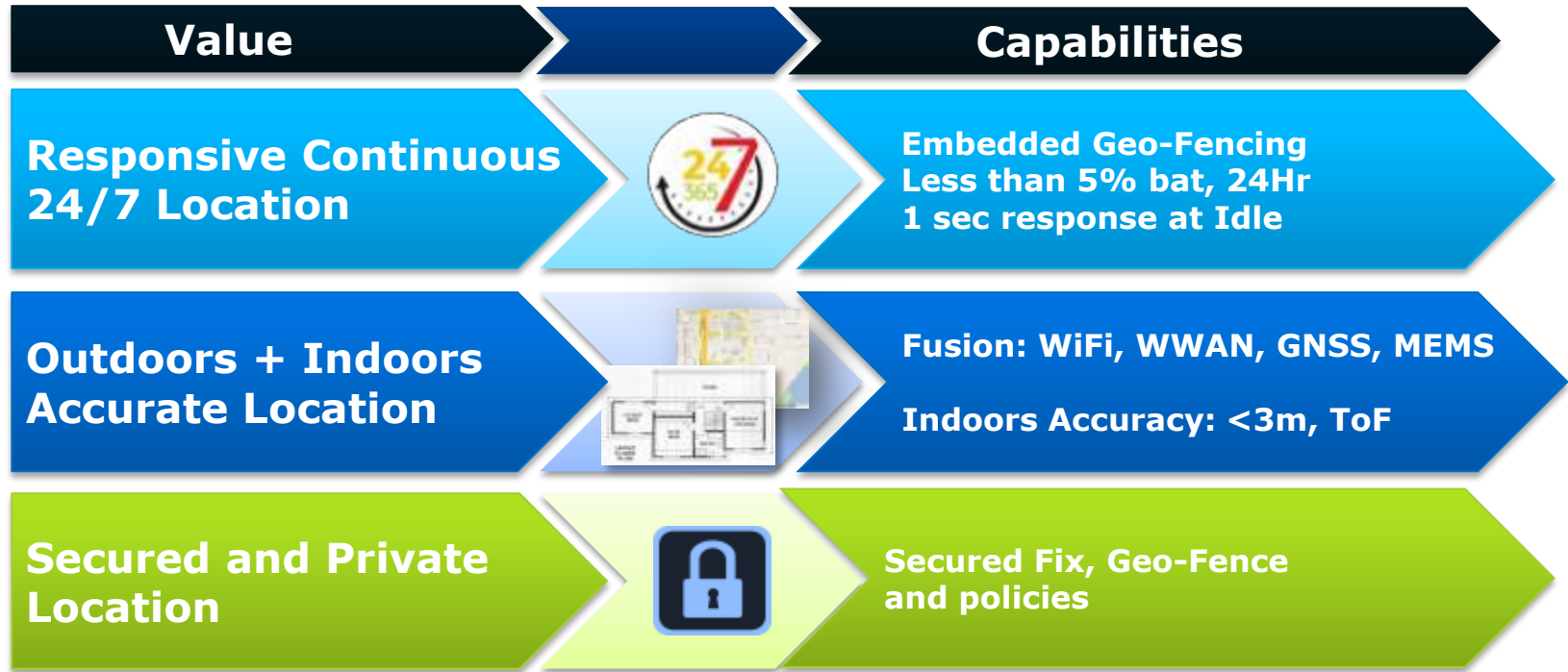
Utilize the power of Moore's Law to bring smart, connected devices to every person on earth.

Intel's Vision

If it is smart and connected, it is best with Intel.



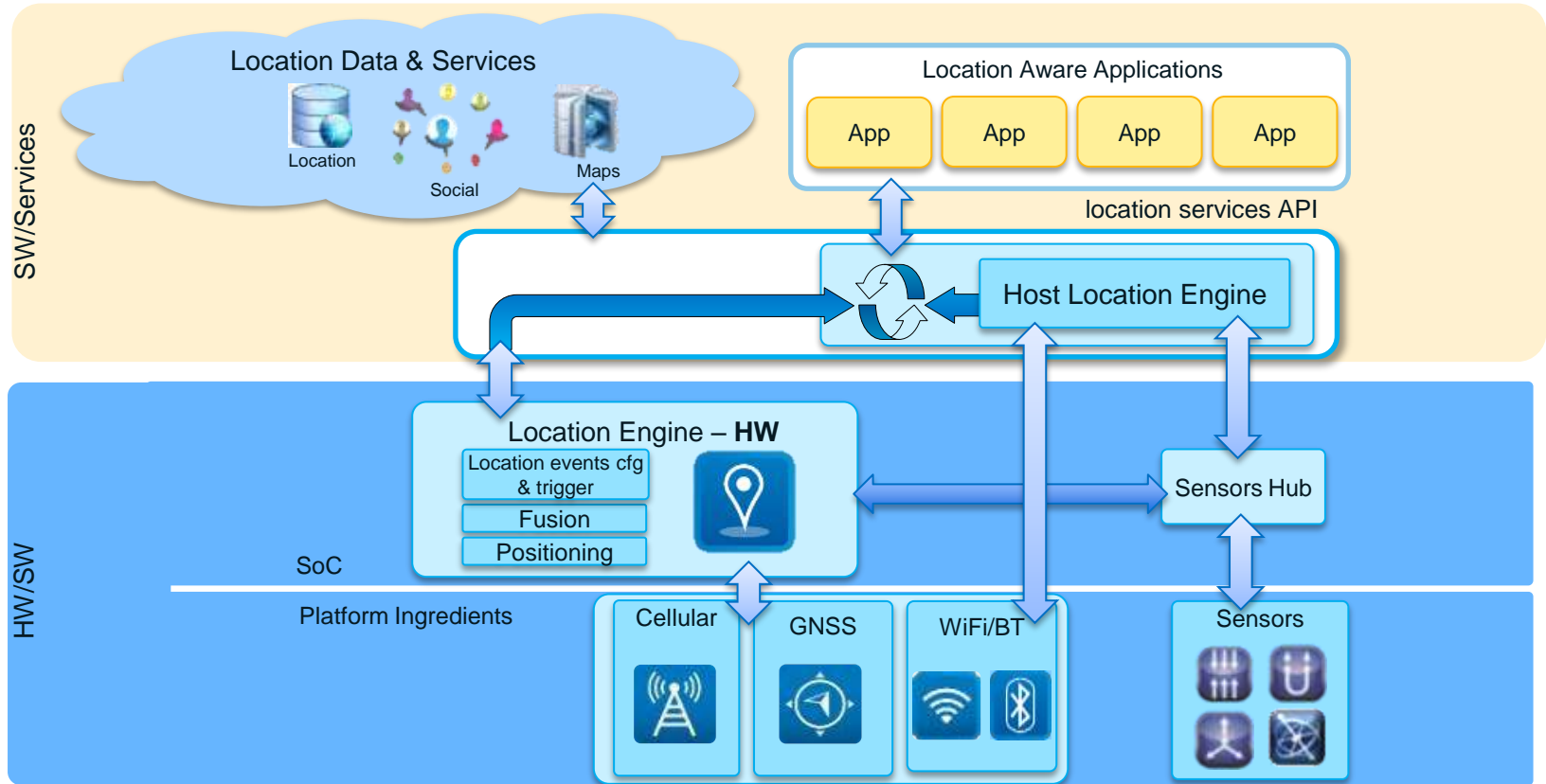
Location Value Proposition & Capabilities



“Always Located”



Smartphone Location Concept



Target Location Usages

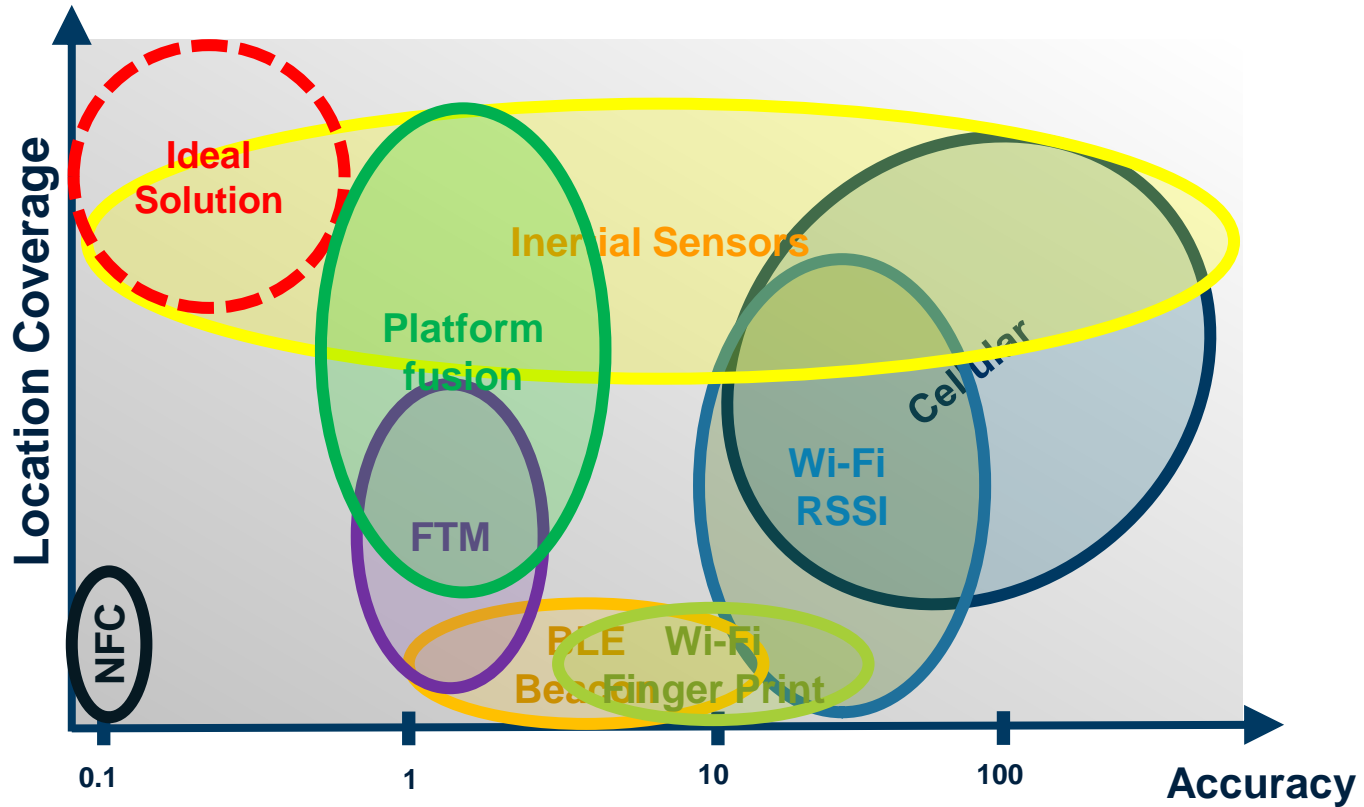
- **Outdoor & Indoor navigation** – Personal assistance
- **Location based scheduling** – Wireless lock
- **Device localization** – Adjust device behavior to location
- **Logging & Digital storytelling**
- **Shopping & advertising**
- **Location enabled gaming**
- **Location sharing** – Social networking
- **Assets & personnel tracking**
- **Rights management** – Location based data access control



Location Usage Models



Indoor Positioning Technologies



802.11mc Fine Time Measurement (AKA: ToF/RTT)

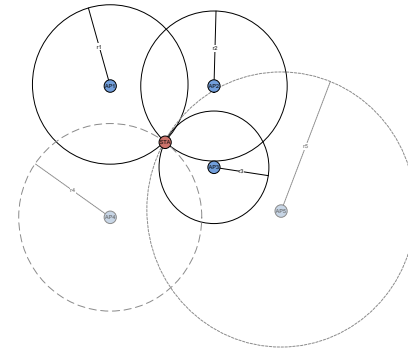
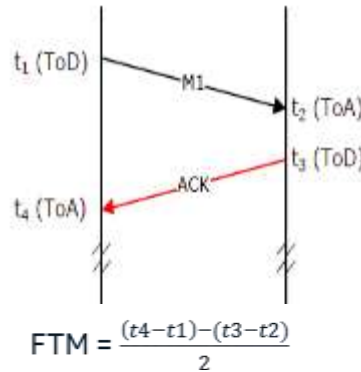
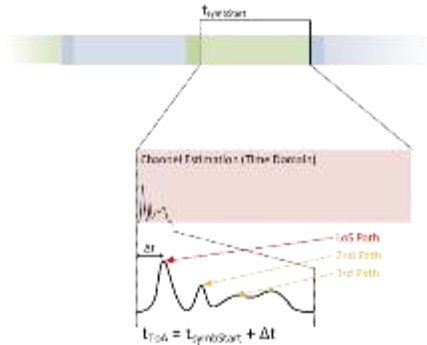
Main items addressed by FTM introduction to 802.11REVmc:

1:N operation - AP STA: non AP STA is the lead usage model.

Multi channel operation: AP STAs have a fixed operating channel while non AP STA moves between AP STA's channels.

Unassociated operation mode, as multiple ranges are required to obtain a single fix.

Support for AP Location DB protocol



Geometrical approach

Location is calculated by trilateration

Range is obtained by measuring the ToF (round-trip time, no Clock Sync) between the mobile and each AP – using:

2 side RTT (ToF)

Analyzing Ch Est (Multi path, LoS path),

Timers: <1 nSec resolution (1m)

Intel's 11mc FTM Performance; **Positioning** (Under WiFi Interference)

%



Thank you

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Backup