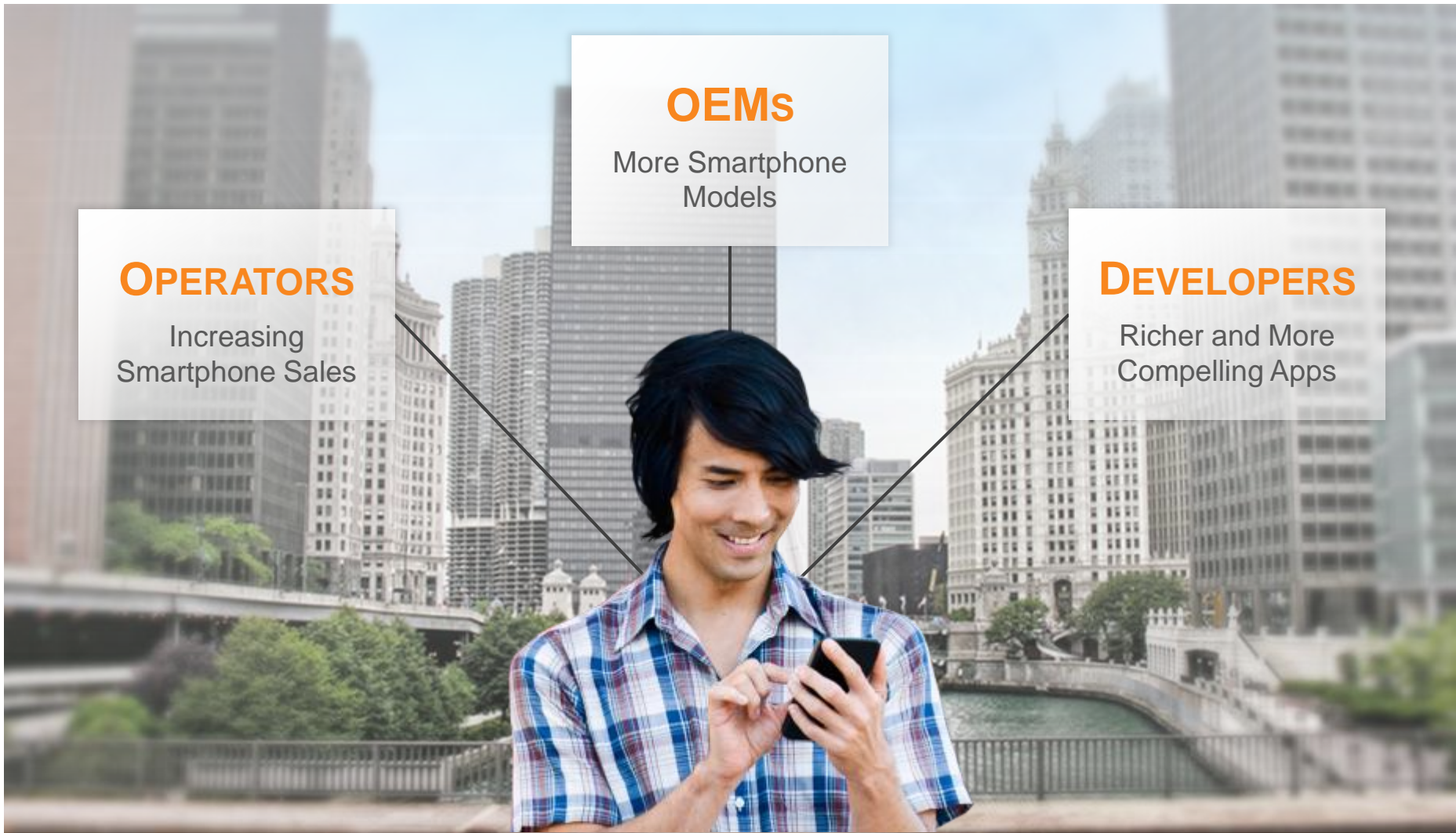




Challenges and Opportunities for Location Technology in the Mobile Ecosystem

Cormac Conroy
Vice President, GPS/Location
Qualcomm, Santa Clara, CA





OEMs

More Smartphone Models

OPERATORS

Increasing Smartphone Sales

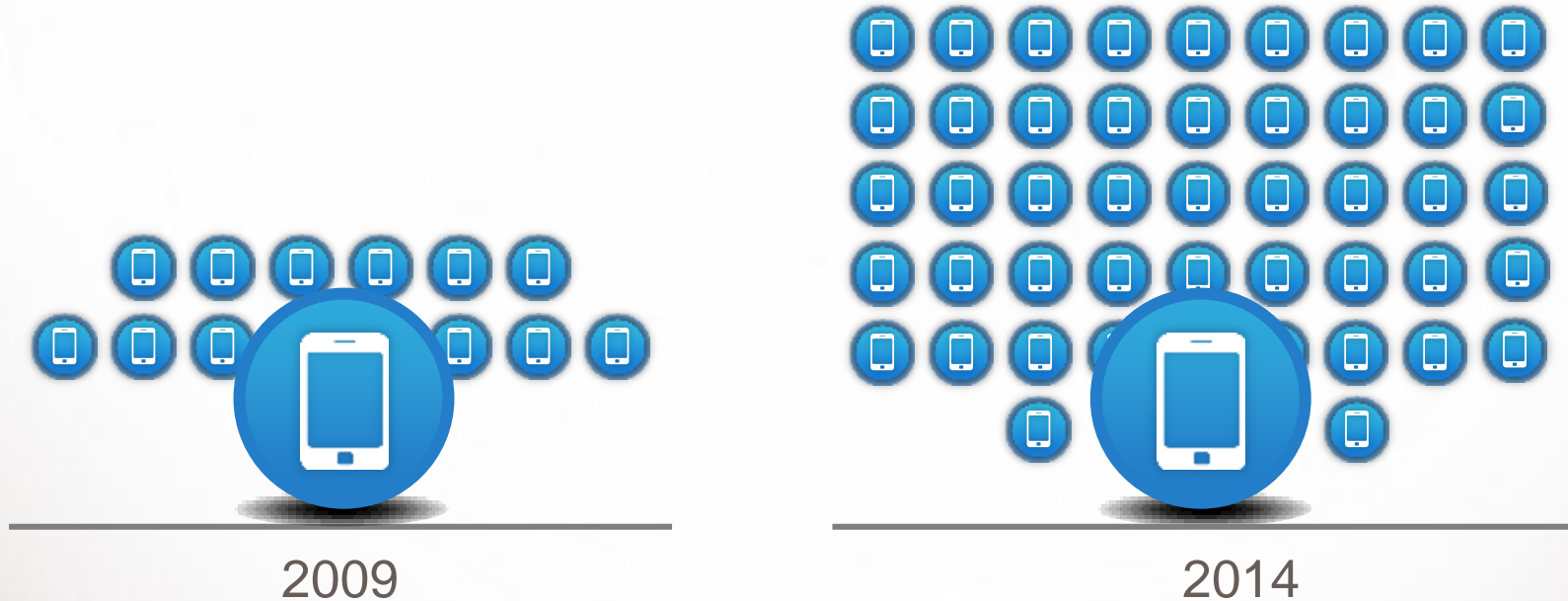
DEVELOPERS

Richer and More Compelling Apps

CONSUMER DEMAND DRIVING SMARTPHONE ECOSYSTEM

Smartphones: Expanding to the Masses

~ 2.5 Billion Smartphones Forecast to be Shipped by 2014



SMARTPHONE SHIPMENTS AS % OF HANDSETS

<15%

>45%

High penetration rates of smartphones, and high attach rates of cellular, GPS, and Wi-Fi will result in rapid uptake of indoor location



THE MOBILE INTERNET

SHIFTING TO A CARRY ALONG EXPERIENCE

Always
with You

Real-time

Context
Aware

Leverages
the Cloud

Highly
Personalized

Changing Market Landscape – Trends Driving Ubiquitous Location

Consumer Mobility Spurring New Use Cases

- Always-connected, Always on, Aware
- Greater need for personalization and context
- High expectations for user experience

Technology Advancements

- Not just GPS – hybrid of many positioning sources
- Greater accuracy – outdoors and indoors
- Cloud-based assistance data

New Location-Based Business Models

- Global LBS revenue to reach \$10.3B by 2015
- Advertisers, retailers, entertainment venues, and technology vendors trying to monetize location

Location Use Cases are Changing

TEN YEARS AGO...

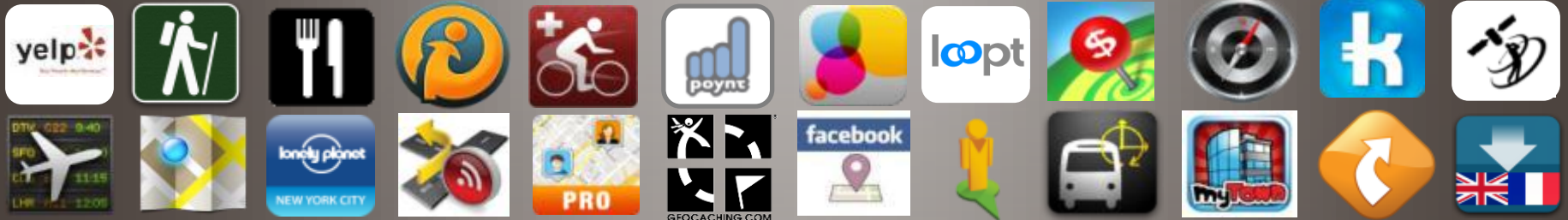
- Few dedicated devices
- Primarily emergency services and navigation apps
- Experience subject to performance limitations



TODAY...

- Many converged devices
- Unlimited commercial, entertainment & social apps
- Higher expectations for performance and availability

Over 66 Billion mobile apps to be downloaded in 2016



New Location-Based Business Models

Location-Based Service Revenue Expected to Reach **\$10.3B** by 2015

Source

Many Seeking to Monetize LBS

Mobile Device Vendors

Cellular Operators

Advertisers

Entertainment Venues

Application Developers

Location Assets that Can be Monetized

Data Mining

Analytics

Advertising impressions

Unique Benefits of Location Awareness

Greater dimension for existing apps

Completely new apps

Immediate measurement & validation

Influence behavior

The Next Frontier: Precise Indoor Location

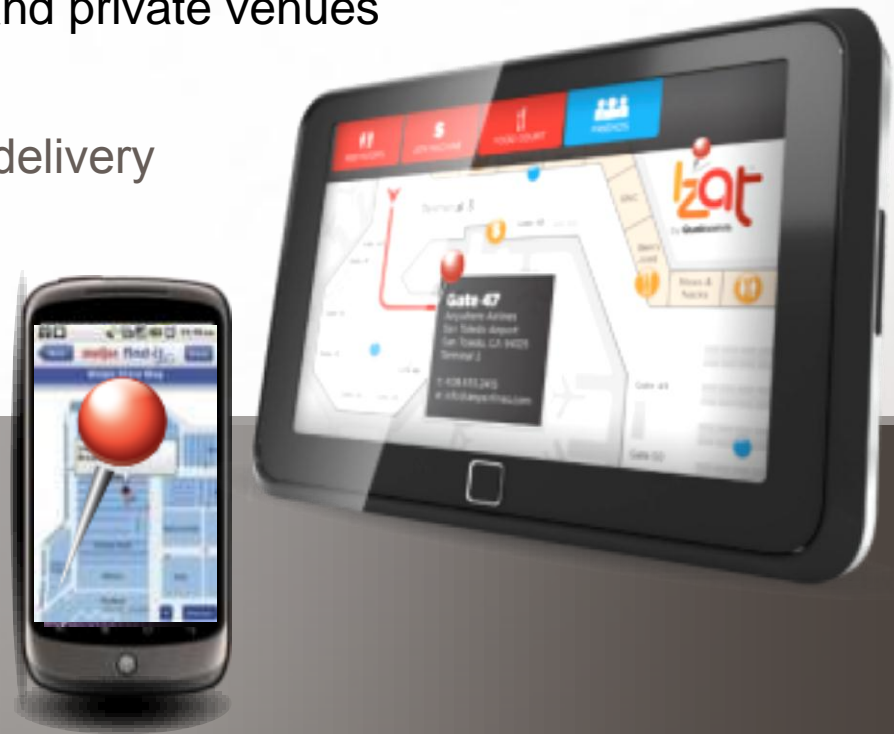
CHALLENGE:

Accurate, continuously available, and secure location indoors

REWARD:

New context-aware applications in public and private venues

- Pedestrian navigation
- Proximal “push” advertising & content delivery
- Finding people and items of interest
- Immediate consumer analytics



Precise Indoor Positioning

Opening new possibilities for a variety of indoor scenarios



Shopping Malls



Stadiums



Airports,
Train Stations



University
Campuses



Entertainment
(Museums, Casinos,
Theme Parks)



Exhibit Halls, Office
Buildings

Venue Search by User

- Orientation in a new environment
- New events/offers/alerts in a familiar environment

Indoor Discovery Pushed to User

- Show places on navigation path
- Personal recommendations (based on user schedule, loyalty programs, etc.)



Key Requirements for Good Indoor Positioning Solutions



It Takes an Ecosystem



Thank You

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