

A futuristic city scene with a monorail, people using smart devices, and a dog. The scene is set in a modern, open-air urban environment. A sleek, silver monorail train is visible on an elevated track in the background. In the foreground, a man in a grey suit is smiling and holding a smartphone. A woman in a blue dress is sitting on a bench, working on a laptop. A man in a brown jacket is standing and talking on a phone, with a dog sitting next to him. Other people are seen walking and using devices in the background. The sky is blue with some clouds. A large blue banner is overlaid on the right side of the image, containing the title and speaker information.

# Panel 1 – State of mmW Technology and Outlook: A View from Industry

**Carlos Cordeiro**  
Senior Director/Senior Principle Engineer  
Intel Corporation



# 5 myths about mmWave

## 1. Build a mmWave radio and they will come

- Consumer grade radios are available, but not widely deployed
- Takes a lot more than just a radio!

## 2. It only works in LoS channels

- Believe me, I still keep hearing this till this date
- Reflections work magic in most indoor scenarios

## 3. Range is limited to few tens of meters

- Within reason, it is all about TX/RX antenna gain and TX power
- 1 Gbps at 1Km has been shown with consumer grade HW

## 4. Power consumption is too high for small form factor devices

- The issue is not power consumption, but space
- Joules/bit of mmWave is lower than < 6 GHz bands
- Duty cycling helps a lot

## 5. Cost is too high for consumer devices

- It is all about volume
- There is no killer app; radio needs to support multiple applications

- Standards are in place
- No significant regulatory issues
- Devices operating in 60 GHz have been commercially available since around 2014
- Devices operating in 28/39 GHz expected to become commercially available this year
- R&D momentum in industry and academia has not abated

So, what will it take to make mmWave radios mainstream?



# Compelling usages that people are willing to pay for!

## Fixed Wireless Access

Optimal access deployment economics



## UHD Media Content

Video/VR/AR delivery



## Connected Cars

Automotive radar

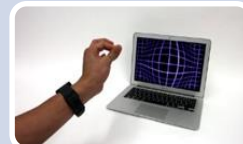
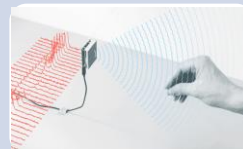


IVI



## New forms of UI

Gesture recognition



## Industrial IOT

Wireless Industrial Control



Untethered Robotics



