



# Leading the world to 5G

Hector Marin  
Senior Director, Government Affairs

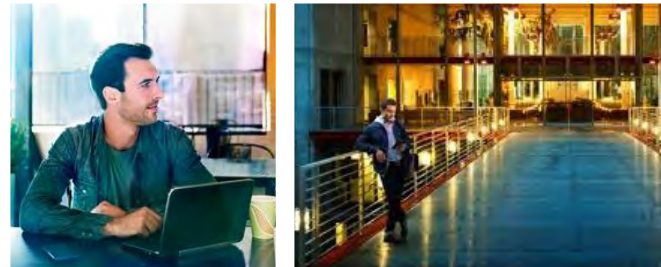




# Born Mobile™

- 30+ years of driving the evolution of wireless communications
- Making wireless more personal, affordable and accessible
- World's largest fabless semiconductor company
- S&P 100/ S&P 500/ Fortune 500

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# Our 5G vision: a unifying connectivity fabric

## 5G

### Enhanced mobile broadband

- Multi-Gbps data rates
- Extreme capacity
- Uniformity
- Deep awareness



Mobile devices



Networking

### Mission-critical services

- Ultra-low latency
- High reliability
- High availability
- Strong security



Automotive



Robotics



Health

### Massive Internet of Things

- Low cost
- Ultra-low energy
- Deep coverage
- High density



Wearables



Smart cities

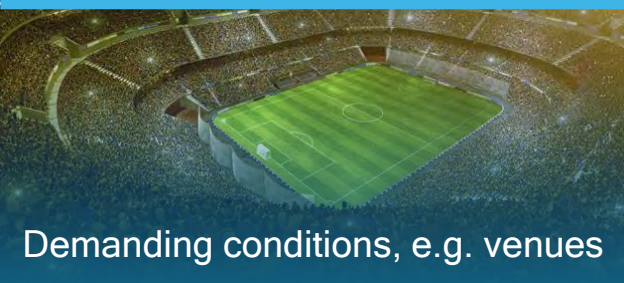
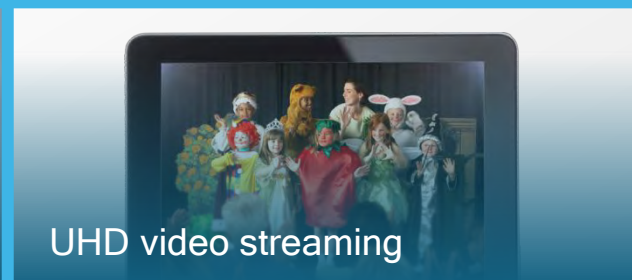


Smart homes

← Unified design for all spectrum types and bands from below 1GHz to mmWave →

# Enhancing mobile broadband

Ushering in the next era of immersive experiences and hyper-connectivity



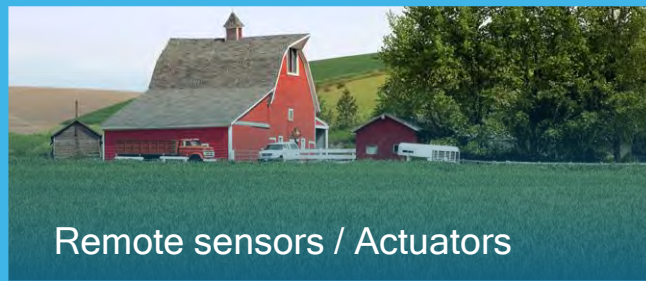
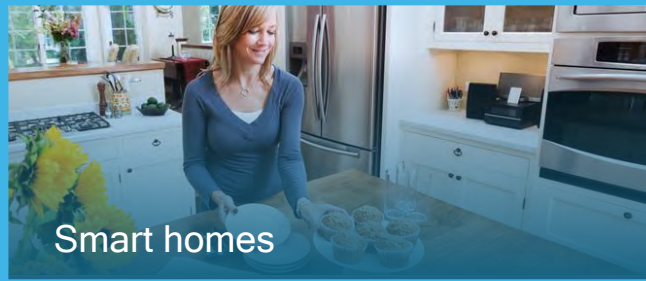
**Extreme throughput**  
multi-gigabits per second

**Ultra-low latency**  
down to 1ms e2e latency

**Uniform experience**  
with much more capacity

# Connecting the massive Internet of Things

Optimizing to connect anything, anywhere with efficient, low cost communications



**Power efficient**  
Multi-year battery life

**Low complexity**  
Low device and network cost

**Long range**  
Deep coverage

# Enabling new mission-critical control services

With ultra-reliable, ultra-low latency communication links



**High reliability**  
Extremely low loss rate

**Ultra-low latency**  
Down to 1ms e2e latency

**High availability**  
Multiple links for failure tolerance  
& mobility

# A unified 5G design for all spectrum types/bands

Addressing a wide range of use cases and deployment scenarios

## Licensed Spectrum

Cleared spectrum  
EXCLUSIVE USE

## Shared Licensed Spectrum

Complementary licensing  
SHARED EXCLUSIVE USE

## Unlicensed Spectrum

Multiple technologies  
SHARED USE

Below 1 GHz: longer range for massive Internet of Things

1 GHz to 6 GHz: wider bandwidths for enhanced mobile broadband and mission critical

Above 6 GHz, e.g. mmWave: extreme bandwidths, shorter range for extreme mobile broadband

From wide area macro to local hotspot deployments

Also support diverse network topologies (e.g. D2D, mesh)

# Bringing together the technologies for IoT success

Bluetooth Smart

Bluetooth Mesh

802.11ac

802.11ad

802.11n

DSRC

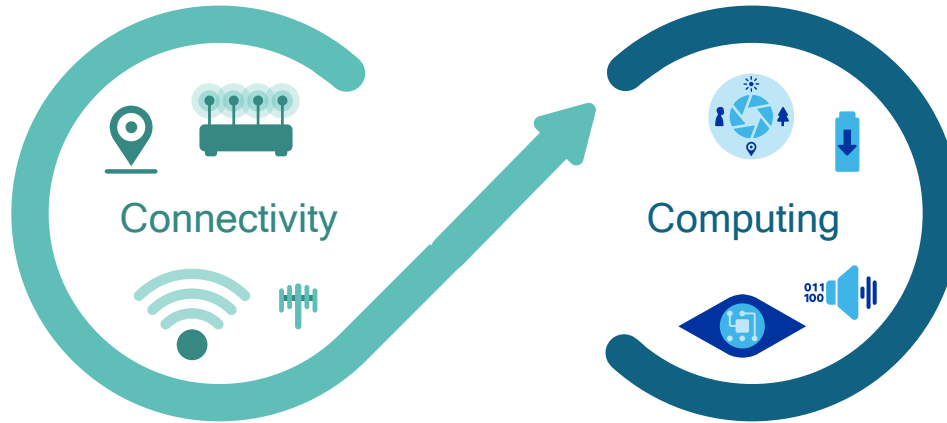
NFC

3G

4G/LTE

Powerline

GNSS/Location



Cognitive computing

Camera processing

Audio processing

Sensor core

Security

CPU

GPU

DSP

Media processing

Augmented reality

Display processing

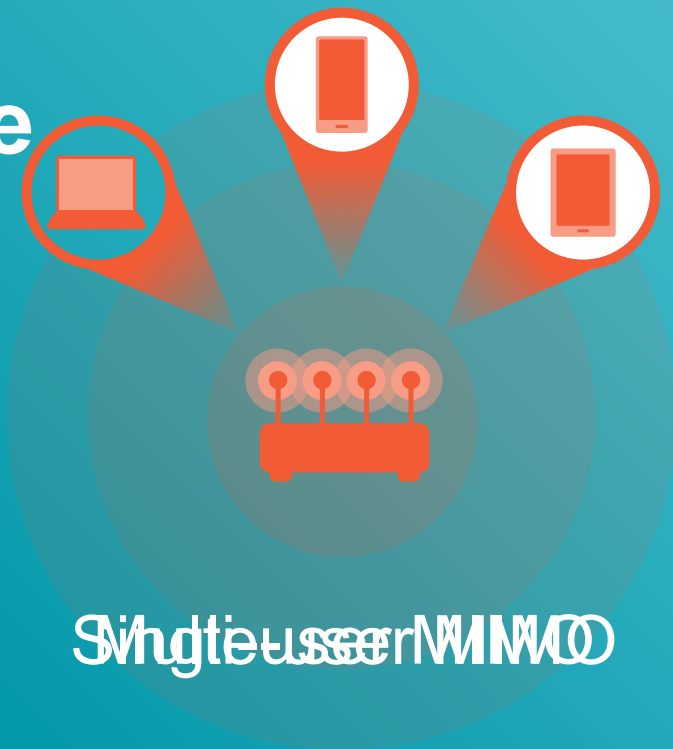
Power management



# Delivering the Smart Gateway - Increased Network capacity, Wi-Fi BW

802.11ad, 802.11ac, Multi-User MIMO, Wi-Fi SON for 4k media streaming, Virtual Reality, lag-free gaming

Up to  
**3x increase**  
throughput and capacity



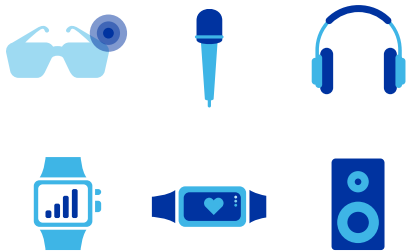
- More network capacity
  - 802.11ac solves traffic congestion
  - Multi-User MIMO
  - 802.11 ad – eliminate cables, multi-screen exp.
- Greater flexibility
  - Band-steering & load balancing 2.4 / 5 GHz
  - Ideal for distributed & mesh networks
- Better connected experiences
  - Less congestion
  - Wi-Fi SON simple setup & automatic optimize

# IoT business channels

## Wearables, voice and music

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Smart glasses, smart watches, smart bands, headsets (mono/stereo), speakers, sound bars



## Consumer electronics

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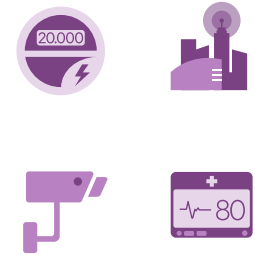
Home entertainment, home control and automation, cameras and drones, document imaging, high volume



## Smart cities

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Energy and metering, building security, infrastructure, industrial automation, retail, asset tracking, medical



Smart networks connecting everybody to everything...everywhere

# The Internet of Things (IoT) is here

# 25B

permanently connected things by 2020\*

## Body



Smart glasses



Smart watches



Smart trackers



Body sensors



Voice and music

## Home



Smart router



Home automation



Energy management



White appliances



LED lighting



Media devices

## Cities



Energy and metering



Infrastructure



Industrial/  
Building



Transportation

# Thank you



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