5G: A Transformative Force

- Enhanced Mobile Broadband
- Gigabits/sec
- 3D Video and UHD Screens
- Work and Play in the Cloud
- VR Gaming
- Ultra-Reliable and Low Latency

- Massive Machine to Machine
- Smart City & Buildings
- CPE, Drones, Phones, Tablets
- Machine Learning
- Health
- Autonomous Driving

- CPE, Drones, Phones, Tablets
Evolution to a Smart and Connected World

- 2G: Cellular Comms.
- 3G: Data and the ‘app’ revolution
- 4G: Faster data rates
- 5G: Smart and connected devices
Mobile Communications – Why Do We Care?

Global Scale
- Global SIM Connections (2014): 7.3Bn
- World Population (2014): 7.2Bn

Economic Impact
- Mobile Industry Value (2014): $3.0Tn

Country | GDP ($Tn)
---------|---------
USA      | 16.8    
China    | 9.2     
Japan    | 4.9     
Germany  | 3.6     
France   | 2.7     
UK       | 2.5     
Brazil   | 2.2     
Russia   | 2.1     

Technical Breadth
- Device Shipments (2014): 4
- Wi-Fi Enabled: 2.3Bn
- Global Public Wi-Fi Hotspots (2014): 47.1M
- Global Public Wi-Fi Hotspots (2020): 340.0M

~$3T wireless ecosystem

U.S. Cellular Subscriber Growth

Data Traffic per Month
- 2014 – 2020
- 49% CAGR
- 7GB/mo. per subscriber

Global Connections
- 2015: 7.3B
- 2020: 8.9B

2015: 7.3B
99% penetration rate
3.9% CAGR

2020: 8.9B
114% penetration rate
Intel Powers 5G End-to-End

Smart Devices

Radio Access Technology

Access Network

Core Network

Cloud

MM WAVE  LTE

IOT  WI-FI

NFV  SDN
WIRELESS TECHNOLOGIES

IOT

LTE & Wi-Fi

MM WAVE

100MHz

3GHz

10GHz

30GHz

100GHz
The Journey Ahead

Standards

Prototypes

Global Partnerships

E2E Solutions

Products

Scaling
Ecosystem Collaboration

ERICSSON

verizon

vodafone

SK

ZTE

NTT docomo

中国移动通信

CHINA MOBILE

LG

Telefonica

AT&T

MOBILEYE

Sprint

Nokia

NEC
5G End to End Portfolio

**Wireless Technologies**
- 2016: LTE, MM WAVE, NB-IOT
- 2017: 28 GHz, Sub 6 GHz, 39 GHz
- 2018: Sub 6 GHz, 39 GHz, Sub 6 GHz
- 2019: First Public Showcase of 5G Devices
- 2020: First Commercial Network

**RF/ HW**
- Sub 6 GHz
- 39 GHz
- 60 GHz follow-on

**BBIC**
- BB 1.0
- BB 2.0
- BB 3.0
- 5G-IOT
- +XMM

**FPGA**
- 2nd Gen
- 3rd Gen
- 4th Gen

**Mobile Trial Platform**
- Continuously evolving

**Smart Devices**
- FlexRA

**Network Infrastructure**
- Massive MIMO
- MEC
- Network Slicing

**First Commercial Network**
Real World Field Testing
NFV/SDN is Essential to 5G Networks
Moving the Network at Cloud Pace

Compute, Network & Storage Pooled Resources
Standardized Commercial Grade Solutions

Dynamic Flexible Networks
Next-Generation Network Architectures

Services Delivery and Agility
Business Process Transformation
Transformation Continues Everywhere Across Industries

Use Cases

Examples

Disruptors creating new use cases, accelerating adoption curves and business models (B-B-C); opportunities to partner and help enable with 5G prototypes
In Closing…

5G

Retail
Transportation
Financial Services
Education
Manufacturing
Government
Communications
Health Care
Energy
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