



The Next Generation of Wireless: 5G Leadership in the U.S.

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1G



2G



3G



4G



5G



	1G	2G	3G	4G	5G
ROAD TYPE:	Dirt road	Paved one lane road	Two lane road	Four lane highway	Ten lane superhighway
CHANNEL SIZE:	30 KHz	200 KHz	1.25 MHz	20 MHz	200 MHz
APPLICATIONS:	Voice, text	+Email, Limited Internet	+ Internet, low quality video	+ Social media (FB, Instagram)	+ HD video, VR, AR, others...
FREQUENCY BAND:	800	800/1900	800/1700/1900 2.1	700/800/1700/1900 2.1/2.5	High Band

US Leadership in 4G LTE: Continued Benefits and Evolution

- 4G LTE will serve US operators until 2020 and beyond



- Operators deploying LTE-Advanced

- Innovative services launched or announced

5G Will Be:

Very fast



Ultra high speed data

Everywhere



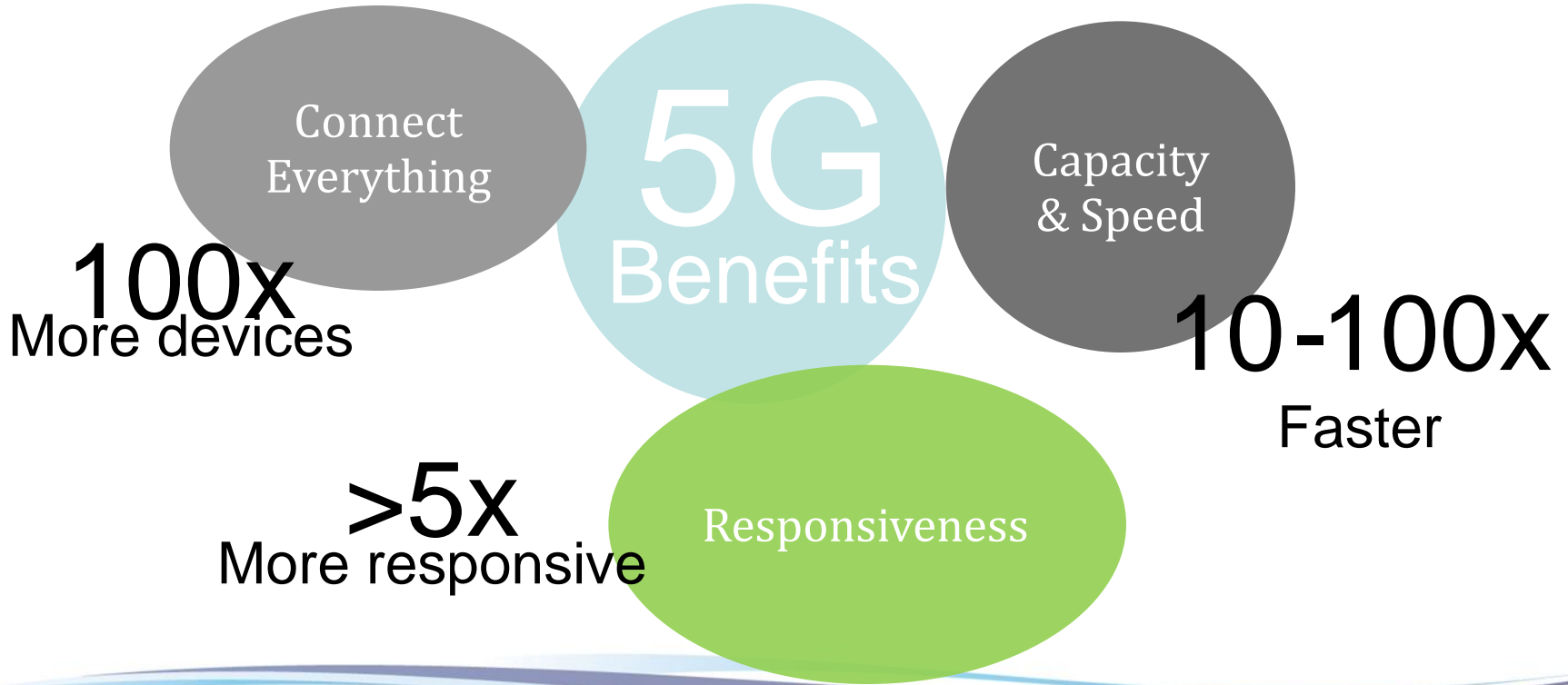
Massive IoT

Real-time

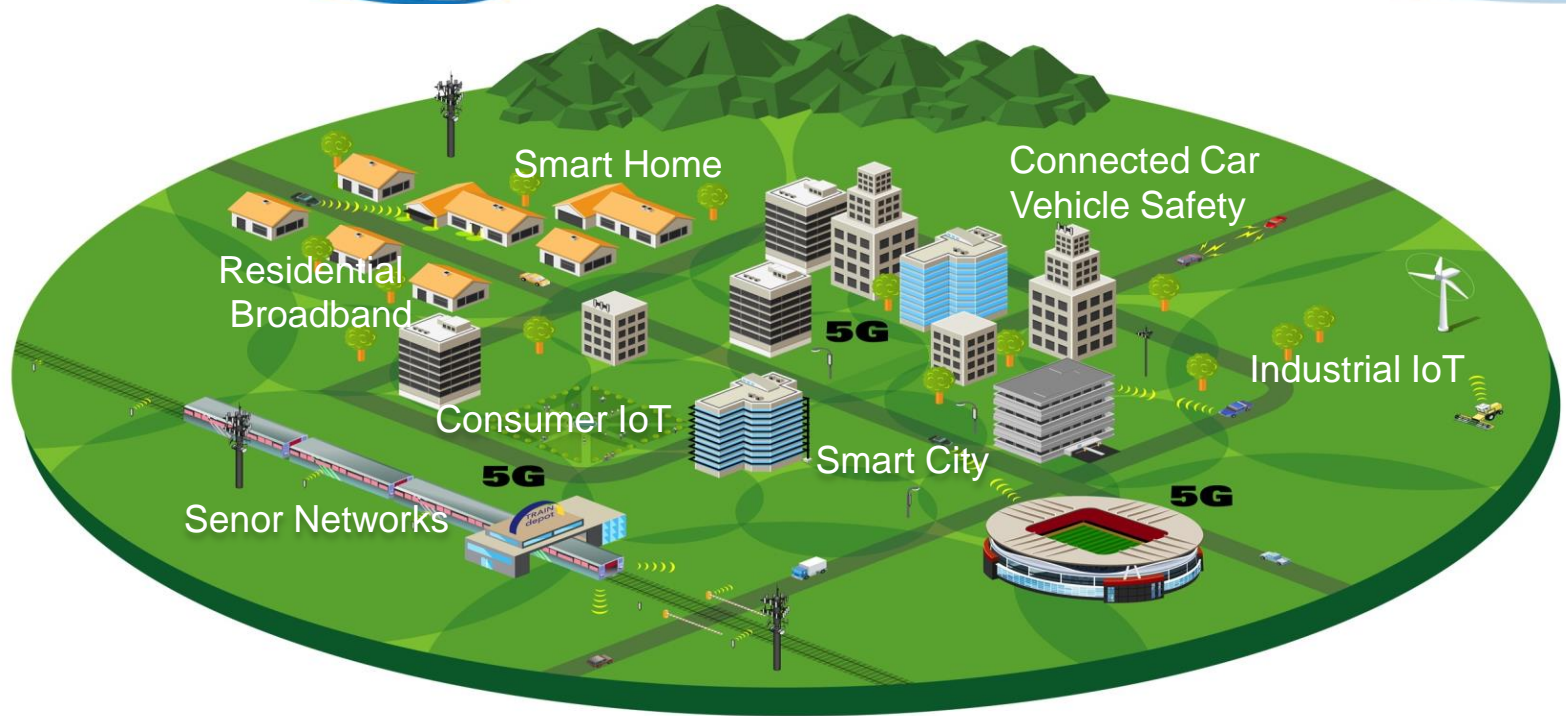


Low latency/lag time

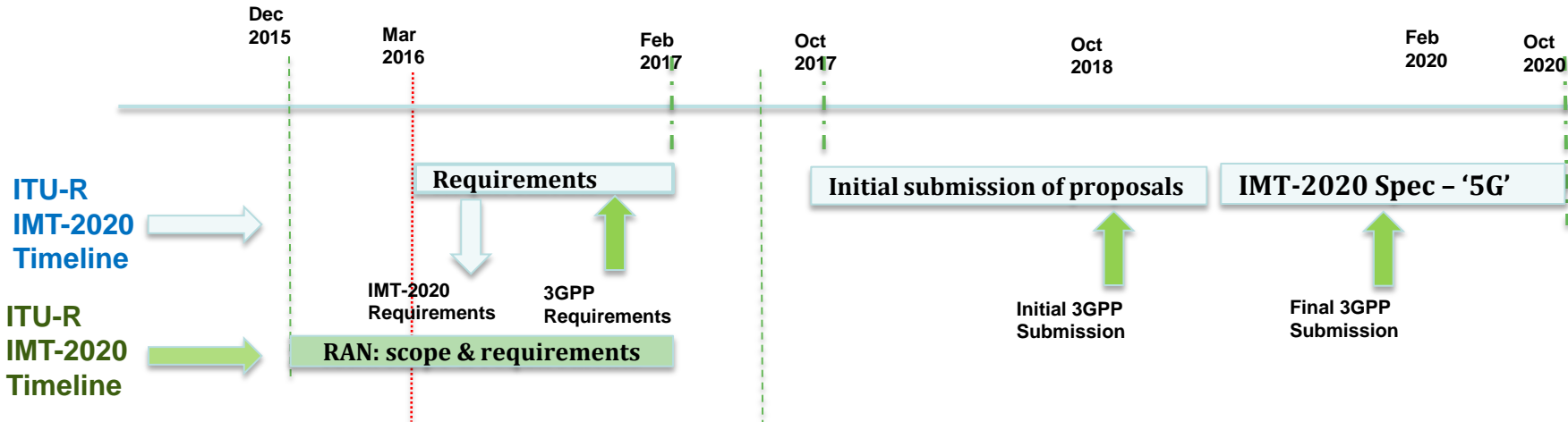
5G Key Requirements



5G Network



Development of 5G Technology and Services Well Underway



5G Requires New Spectrum and Infrastructure

High-Band Spectrum

- Large contiguous blocks of spectrum
- Offers higher capacity and lower latency

Low/Mid-Band

- Low-band – enable broad coverage
- Mid-band – capacity and small cells

Infrastructure

- Small cell placement
- Fiber and microwave backhaul

BIGGER BANDS

200 MHz+

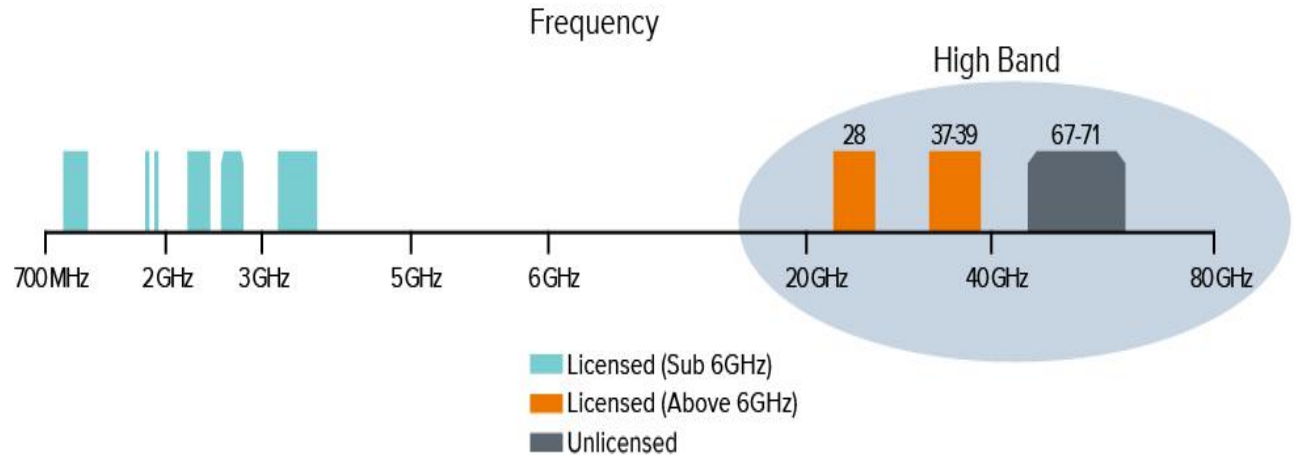
SHORTER DISTANCES

Meters, not Miles

The FCC's High-Band Proceeding: Essential to 5G and IoT

Mobile allocations for over 10 GHz of spectrum

Opportunities for wide channel, exclusive use licenses



Spectrum Frontiers:

Act this summer

Clear licensing rules
to promote
investment

Flexible service and
performance rules

Protect existing users
without elevating
rights

5G Will Require Smarter Infrastructure Policy

Greater densification of network infrastructure

- US carriers looking to deploy 10s of thousands of DAS and small cells

5G infrastructure has smaller impact on surroundings

- Equipment can be as small as a laptop or smoke alarm





ctia Everything™
Wireless

