

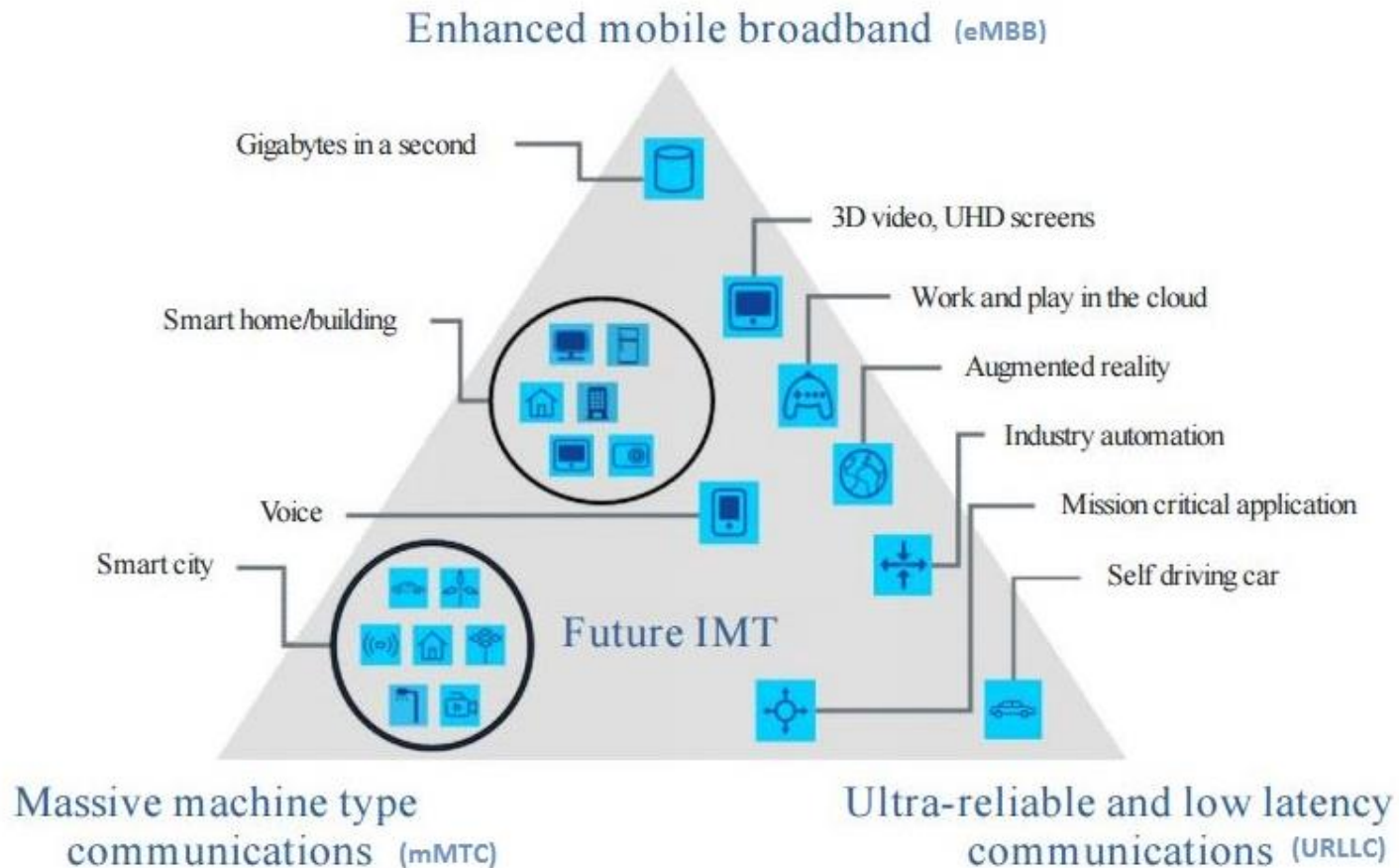
THE ROAD TO 5G NETWORKS: EXPERIENCE TO DATE AND FUTURE DEVELOPMENTS

14 November 2018, Paris
IGF
WS 278 on IoT, 5G and AI- Addressing Digital
Inclusion and Accessibility

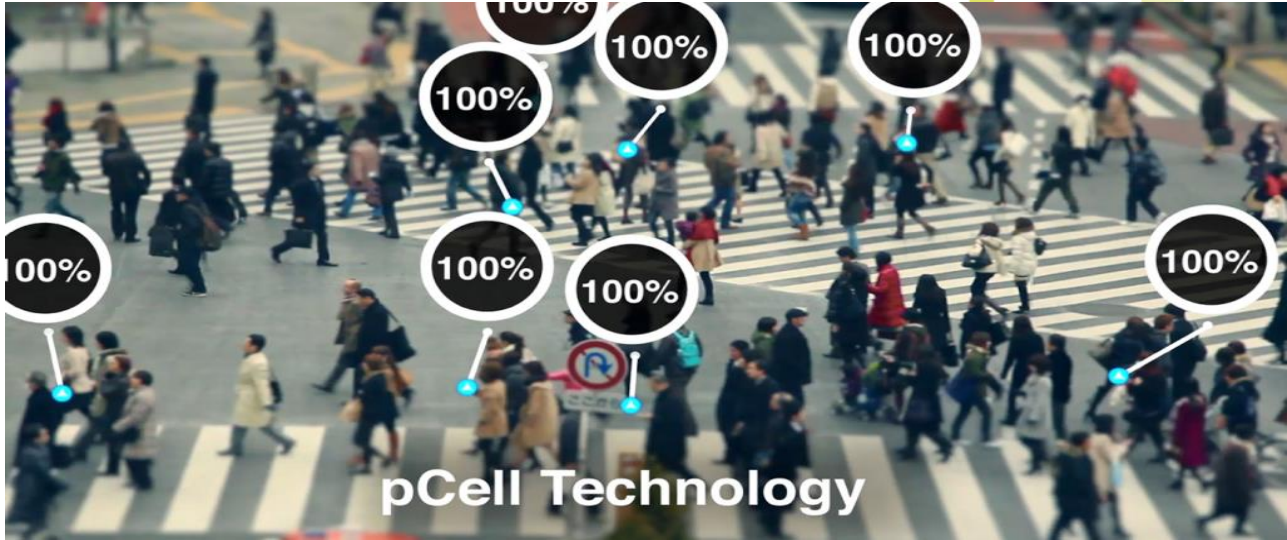
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5G Standard, the promise

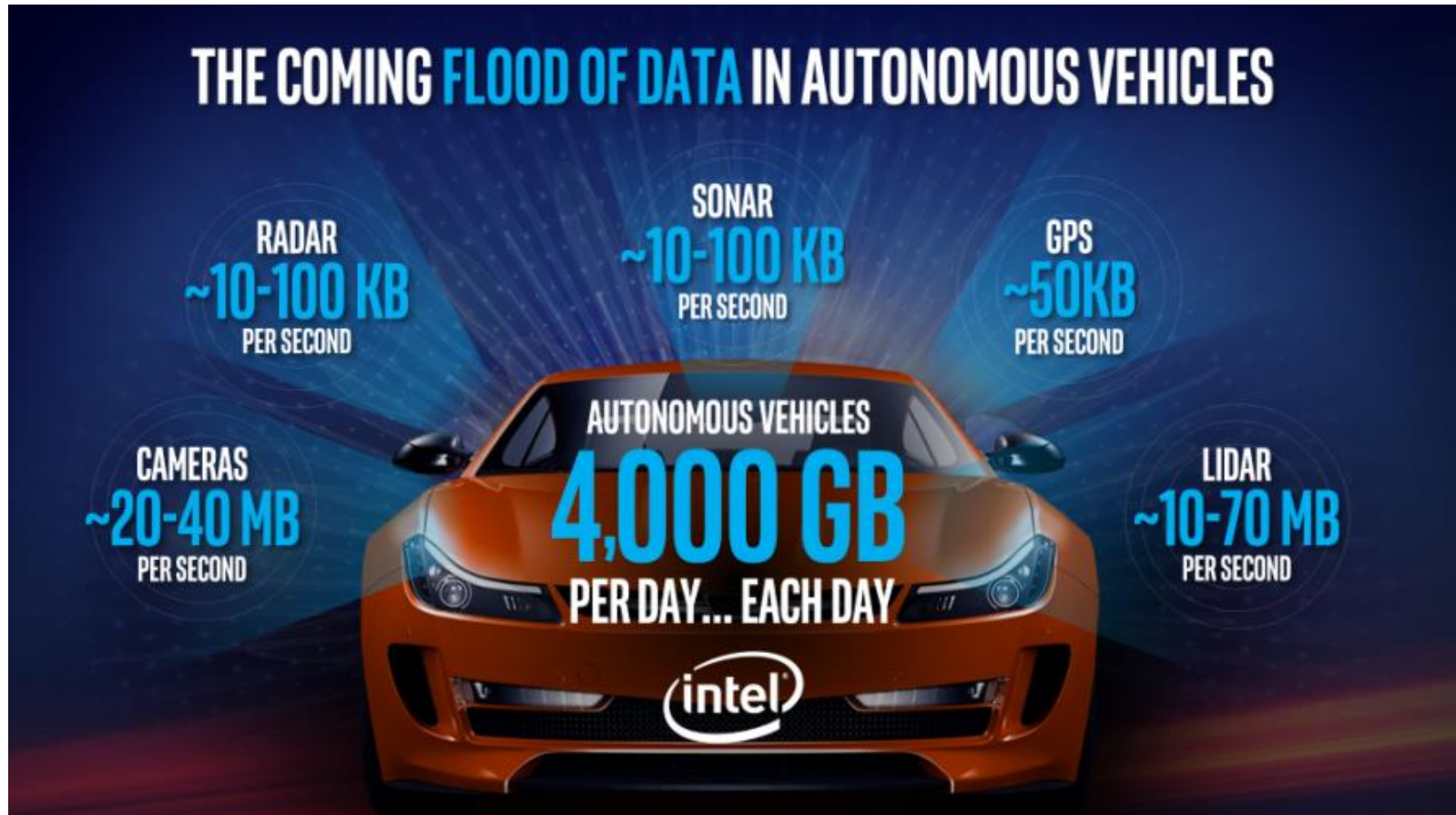
IMT-2020 usage scenarios



5G: implications of network “densification”



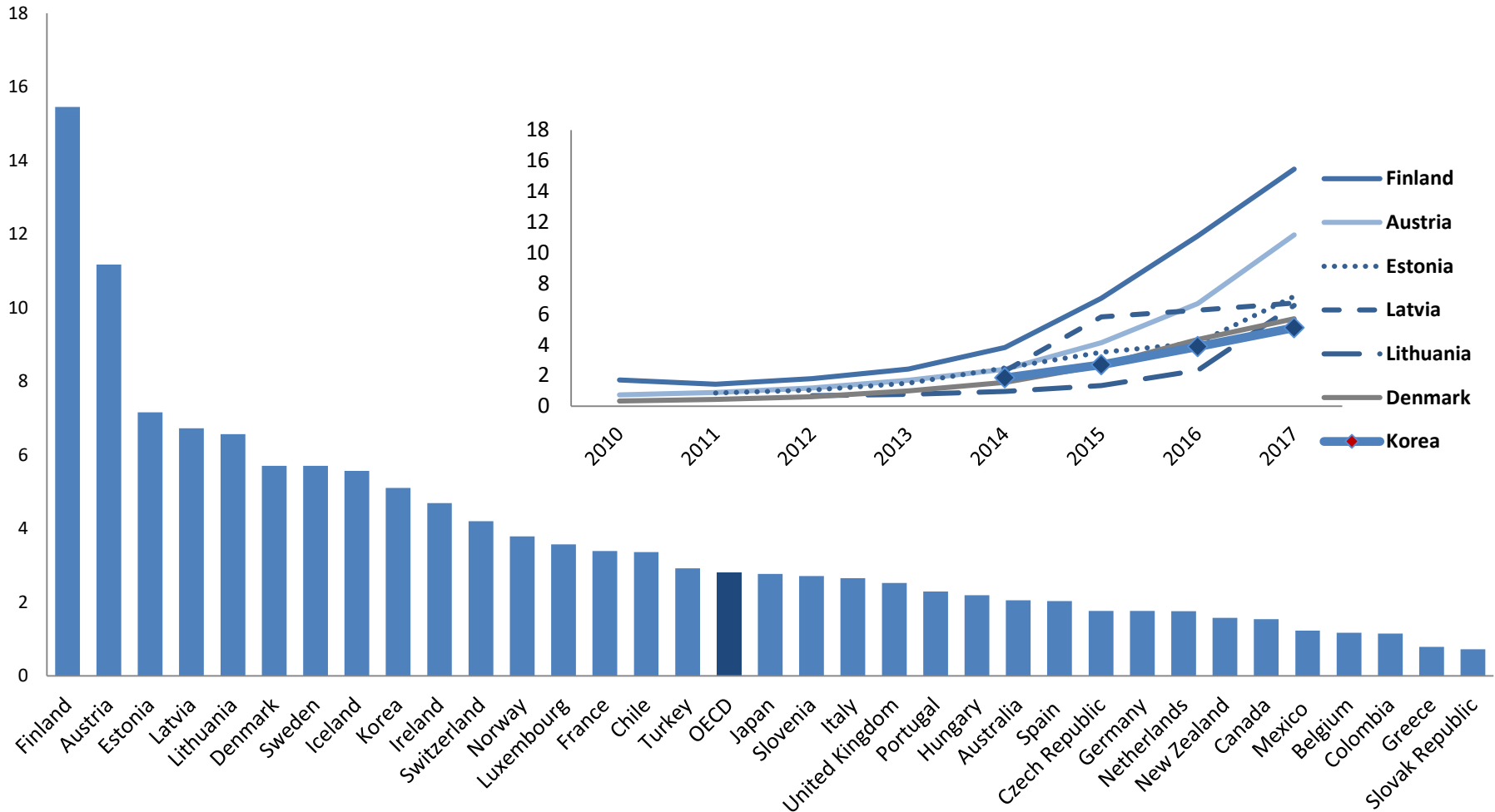
New demands on wireless infrastructure



4 000 GB for one car is the equivalent of around 50 000 mobile users today on average across the OECD

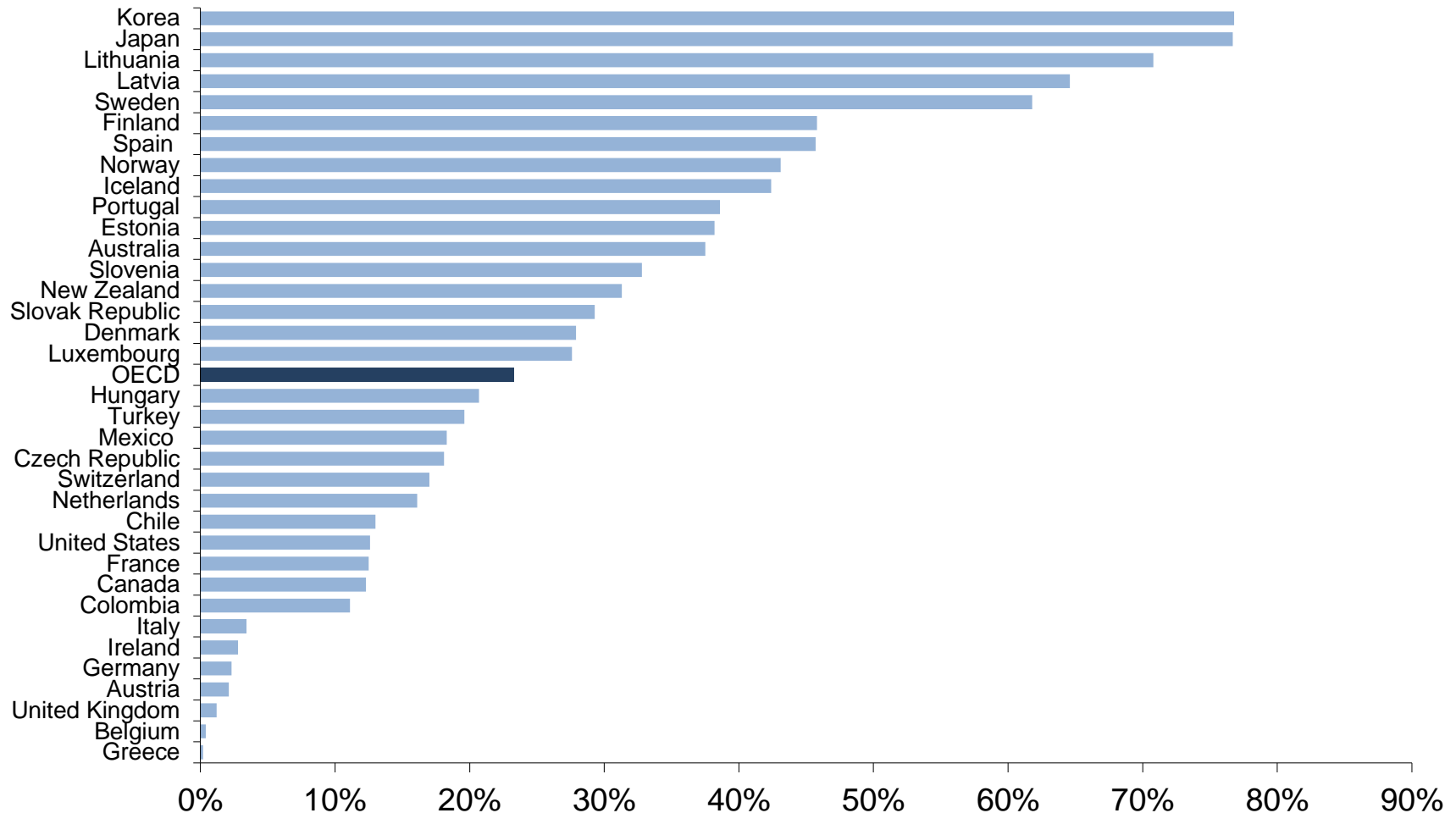
Data increases will place demands on cellular

GB per month, per mobile broadband subscription, 2017



More fibre backbone & backhaul needed

Percentage of fibre connections in total broadband subscriptions, December 2017



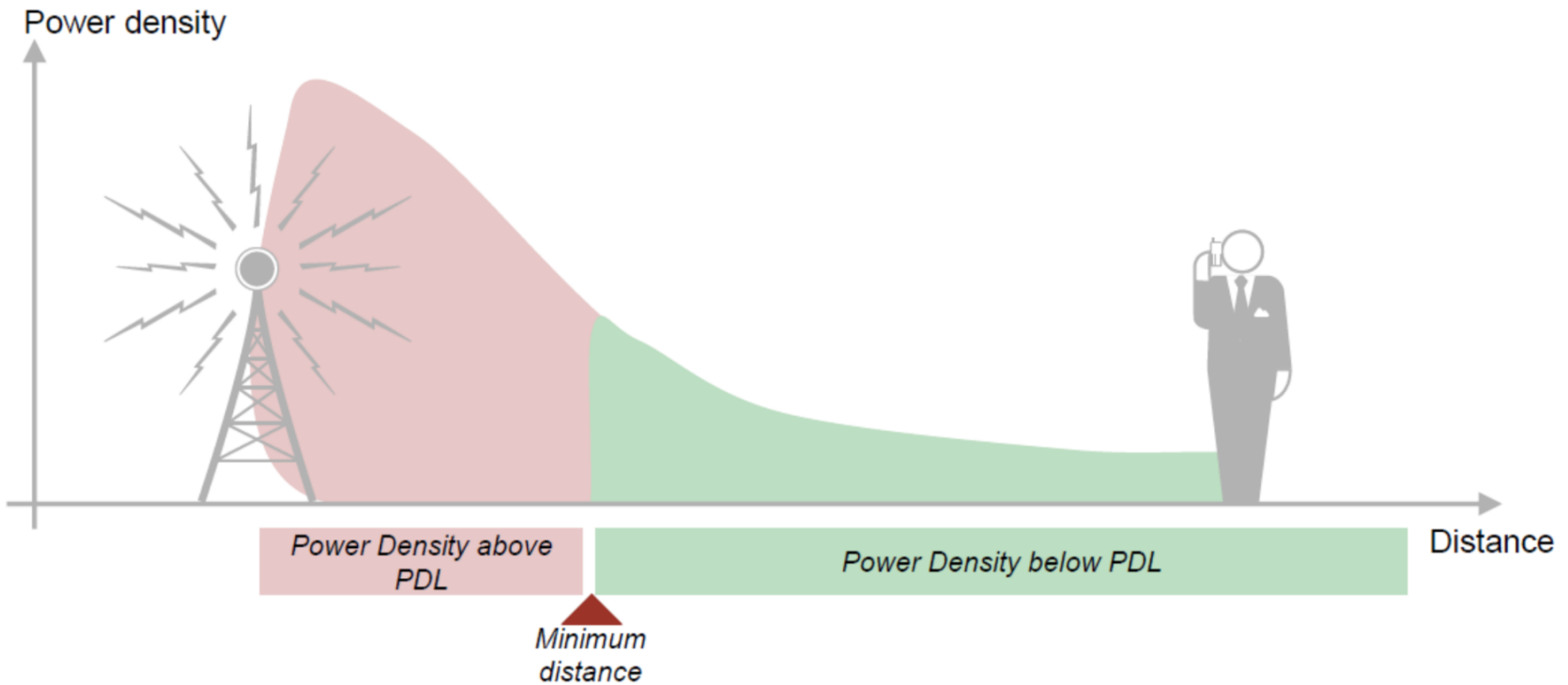
Source: OECD, Broadband Portal, www.oecd.org/sti/broadband/oecdbroadbandportal.htm

More spectrum will be needed....

	Spectrum Frequency Bands		
	High	Middle	Low
Australia	26 GHz		700 MHz
Austria		1.5 GHz, 3.4-3.6 GHz, & 3.6-3.8 GHz	700 MHz
Chile			
European Union	26 GHz (24.25-27.5 GHz)	3.4-3.8 GHz	700 MHz
Finland	26.5 and 27 GHz	3.4 GHz and 3.8 GHz	
France***		2.6 & 3.6 GHz*	
Germany***	24.25-27.5 GHz	2.1 & 3.4-3.8 GHz*	700 MHz (703-733 MHz/758-788 MHz)
Ireland	26 GHz	3.6 GHz (awarded)	
Japan****	28 GHz (27.5-29.5 GHz)	3.6-4.2 GHz & 4.4-4.9 GHz	

Note: * Table is incomplete. Please find complete table in the report.

Implications of network densification: Who wants to be close to a cell transmitter?



Country case studies: 5G trials



- While an international standard has yet to be agreed for “5G” a number of operators have announced or are undertaking trials.
- **Examples:**
 - Japan: trials underway with a commercial launch aimed for the 2020 Summer Olympics
 - Italy
 - Korea: Winter Olympics scheduled to take place in February 2018 in Pyeong Chang

And many, many others...

Country case studies: 5G strategies

- Australia
- France
- Korea
- Spain
- United Kingdom
- United States

And many, many more...

Concluding remarks: Back to the basics



- Infrastructure investment “due to densification”:
 - High deployment costs (fibre backhaul and otherwise)
 - Infrastructure sharing
- Increase of collaboration:
 - Between networks
 - With vertical industries
 - Among countries (e.g. 5G corridors)
- Regulatory and policy focus:
 - Rights of way
 - Power density regulations
 - deployment and access to backhaul and backbone facilities,
 - Spectrum management

THANK YOU!

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