

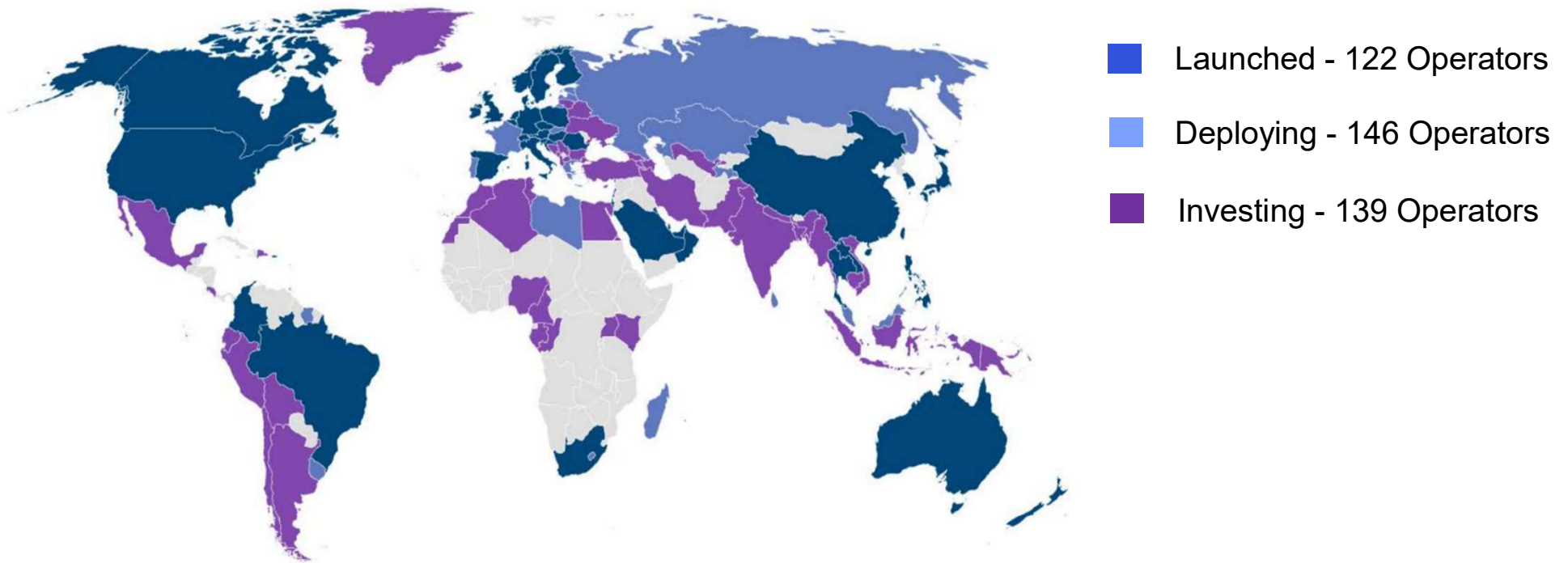
# Spectrum 2021

5G First year traction and What's next?

Prakash Sangam

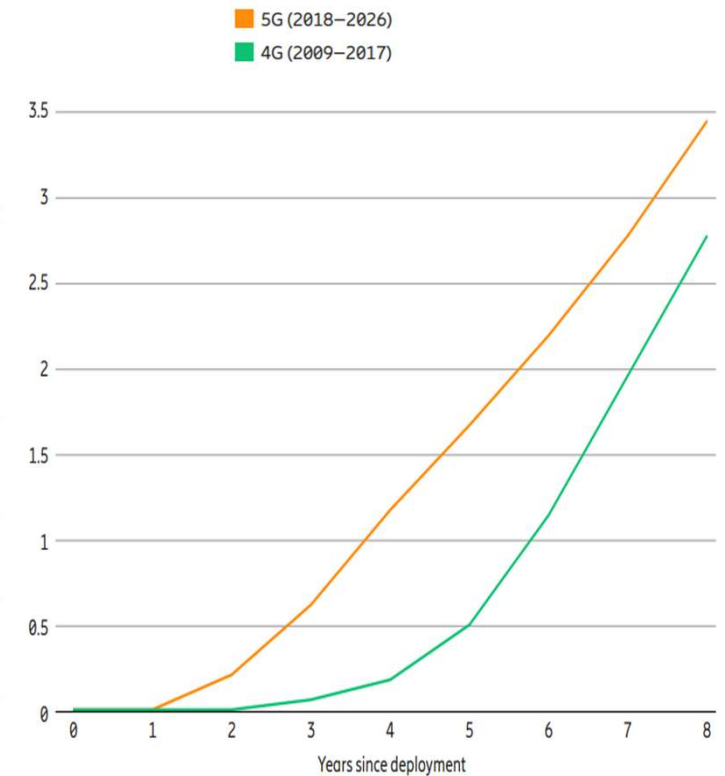
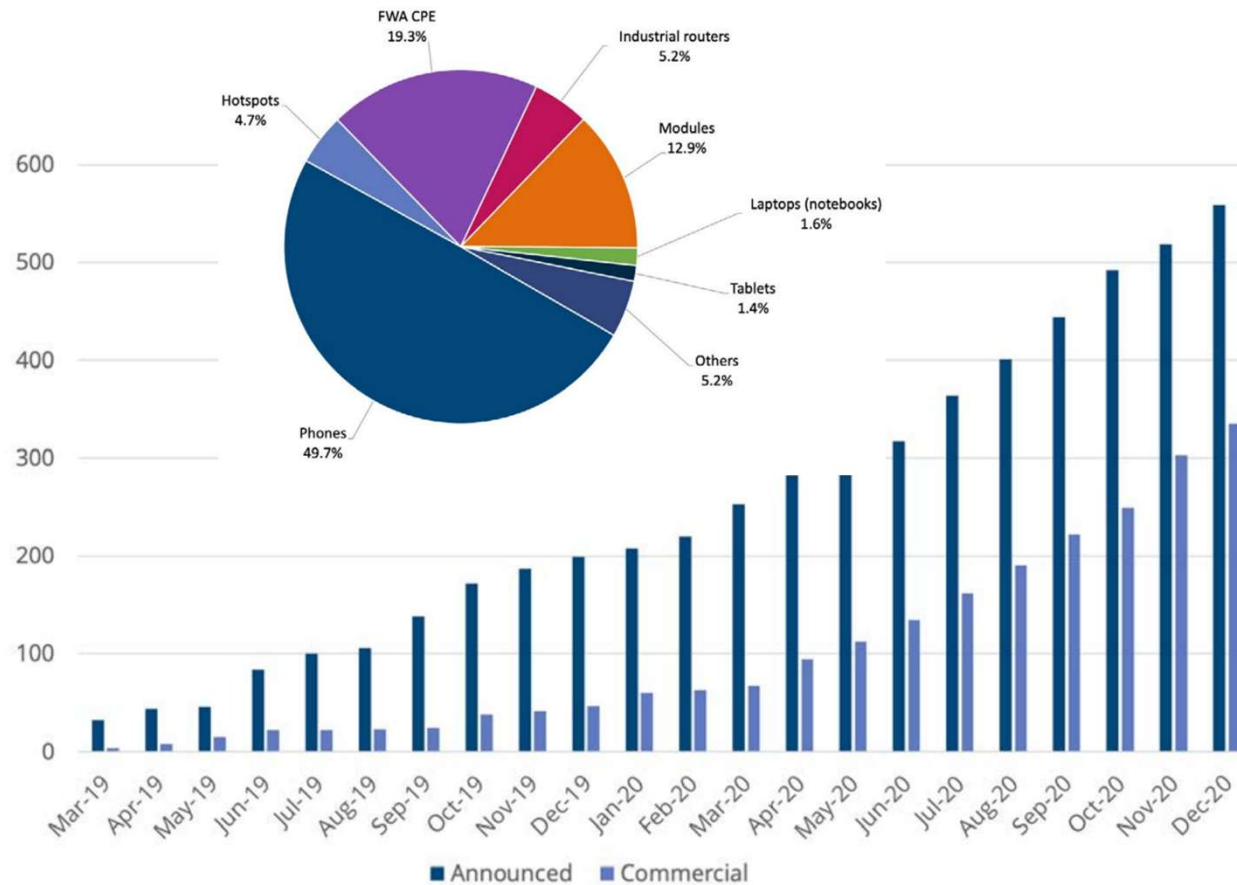
January 26<sup>th</sup>, 2020

# 5G - Unprecedented Global Growth



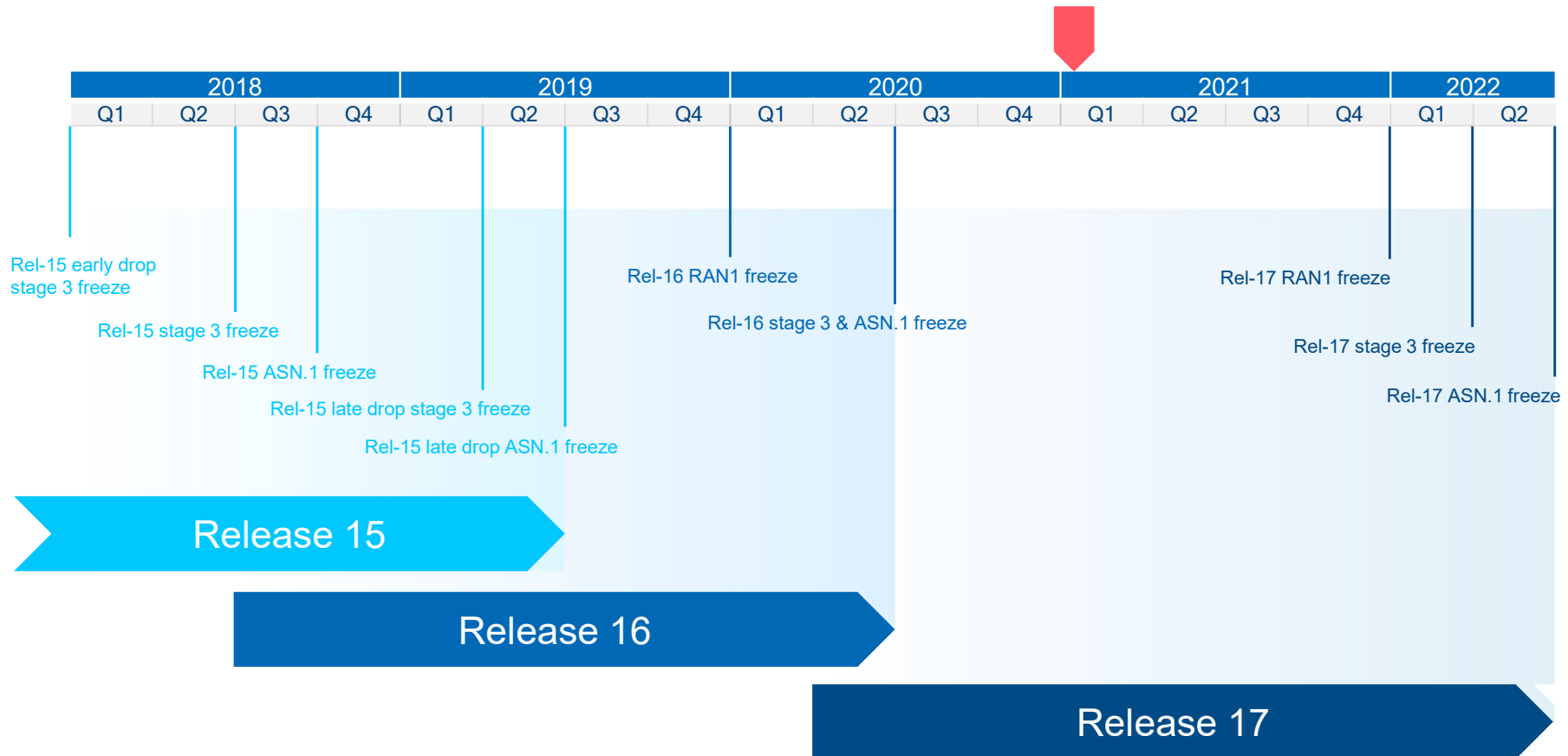
**407** Operators in **129** Countries

# 5G - Unprecedented Global Growth



Source: GSA, Ericsson Mobility Report 2020

# Robust 3GPP 5G Roadmap - Enabling 5G Expansion



# Rel. 16 - Heralding a New Industrial IoT Era....

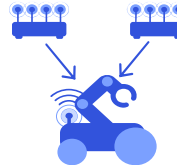
## Next Trillion Dollar Opportunity



Time Sensitive  
Networking (TSN)



Positioning



Ultra Reliable Low Latency  
Communication (URLLC)



Unlicensed & \*  
Shared Spectrum



C-V2X

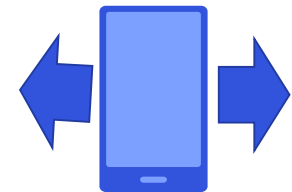
## ...While Further Enhancing Mobile Broadband



MIMO  
Enhancements



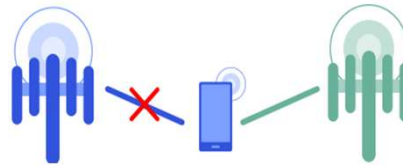
Device Power  
Saving



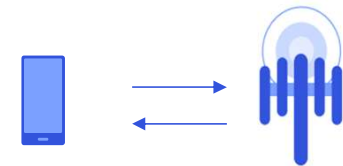
Mobility  
Enhancements



Spectrum/Band  
Extensions



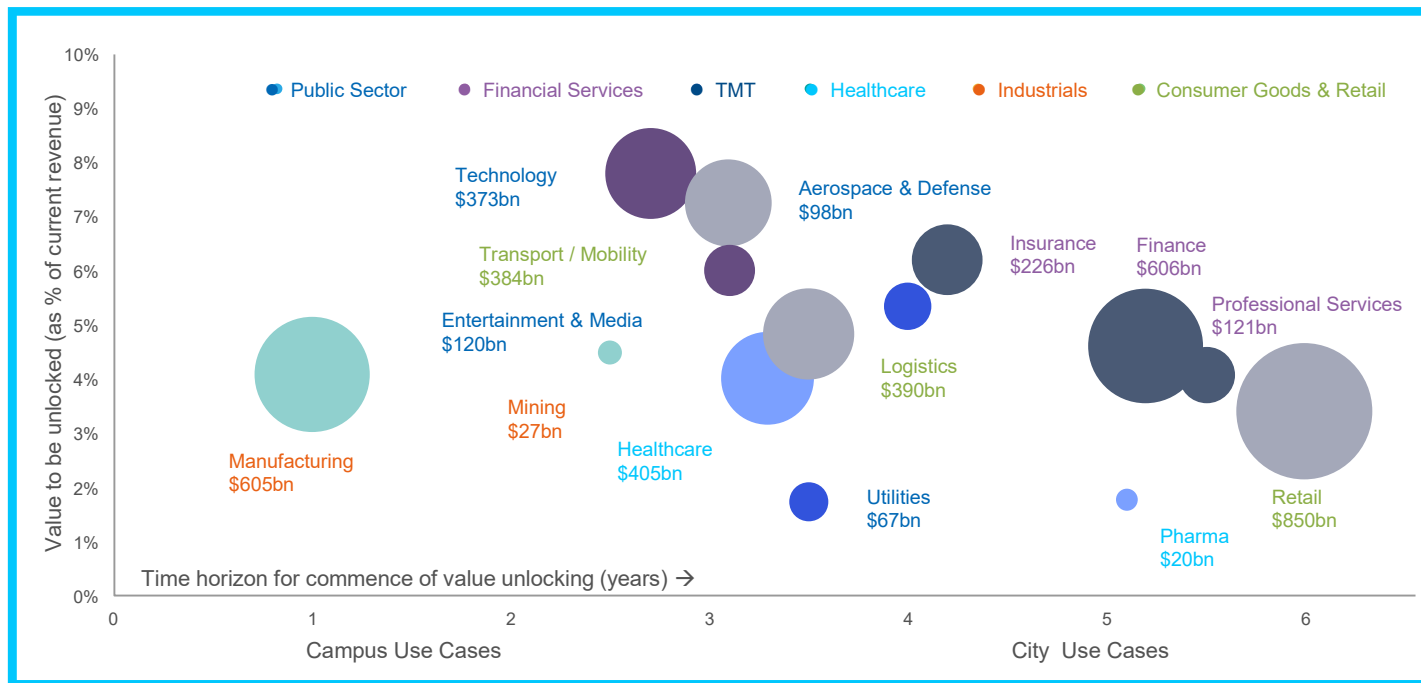
Interference  
Mitigation



Efficient  
Signaling

# The Business Case for 5G Unlocking \$4.3T in Value

KPMG's DNA of 5G Industry Value



“In the new 5G world, capacity, reliability, latency, bandwidth and efficiency will be transformational in what the MNO can enable for the enterprise customer”



# McKinsey: Potential 5G Impact by Domain



**\$400B to \$650B\***

Top Use Cases:

- Automated guided vehicles
- System-wide real-time process control
- Vision quality checks
- Augmented reality
- 3-D bin picking



**\$170B to \$280B\***

Top Use Cases:

- Vehicle-to-network comms
- Vehicle-to-vehicle comms
- Vehicle-to-infrastructure comms
- Vehicle-to-pedestrian comms



**\$250B to \$420B\***

Top Use Cases:

- Remote patient monitoring
- AI-enabled decision support solutions
- Integrated command centers



**\$420B to \$700B\***

Top Use Cases:

- End-to-end product visibility
- Frictionless in-store experience
- Enhanced personalization

\*Potential GDP impact by 2030 for each domain due to 5G and other advanced connectivity technologies

Source: McKinsey Global Institute (business and economics research arm of McKinsey & Company), Connected world: An evolution in connectivity beyond the 5G revolution, February 2020



# 5G Global Spectrum Landscape (Allocated/Targeted)

	<1GHz	3GHz	4GHz	5GHz	6GHz	24-30GHz	37-50GHz	64-71GHz	>95GHz
 600MHz (2x35MHz)	900MHz (2x3MHz)	2.5/2.6GHz (B41/n41)	3.1-3.45GHz 3.45-3.55GHz 3.55-3.7GHz	3.7-3.98GHz	4.94-4.99GHz	5.9-7.1GHz	24.25-24.45GHz 24.75-25.25GHz 27.5-28.35GHz	37-37.6GHz 37.6-40GHz 47.2-48.2GHz	57-64GHz 64-71GHz >95GHz
 600MHz (2x35MHz)			3.475-3.65 GHz	3.65-4.0GHz		26.5-27.5GHz 27.5-28.35GHz	37-37.6GHz 37.6-40GHz	57-64GHz 64-71GHz	
 700MHz (2x30 MHz)			3.4-3.8GHz		5.9-6.4GHz	24.5-27.5GHz		57-66GHz	
 700MHz (2x30 MHz)			3.4-3.8GHz			26GHz		57-66GHz	
 700MHz (2x30 MHz)			3.4-3.8GHz			26GHz		57-66GHz	
 700MHz (2x30 MHz)			3.46-3.8GHz			26GHz		57-66GHz	
 700MHz (2x30 MHz)			3.6-3.8GHz			26.5-27.5GHz		57-66GHz	
 700MHz	2.5/2.6GHz (B41/n41)		3.3-3.6GHz	4.8-5GHz		24.75-27.5GHz	40.5-43.5GHz		
 700/800MHz	2.3-2.39GHz		3.4-3.42GHz 3.42-3.7GHz 3.7-4.0GHz		5.9-7.1GHz	25.7-26.5GHz 26.5-28.9GHz 28.9-29.5GHz	37GHz	57-66GHz	
 700MHz			3.6-4.1GHz	4.5-4.9GHz		26.6-27GHz 27-29.5GHz	39-43.5GHz	57-66GHz	
 700MHz			3.3-3.6GHz			24.25-27.5GHz 27.5-29.5GHz	37-43.5GHz		
 700MHz			3.4-3.7GHz			24.25-29.5GHz	39GHz	57-66GHz	

 Licensed
  Unlicensed/Shred
  Existing Band

Source: Qualcomm



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