

# 5G-teknologian kehitys



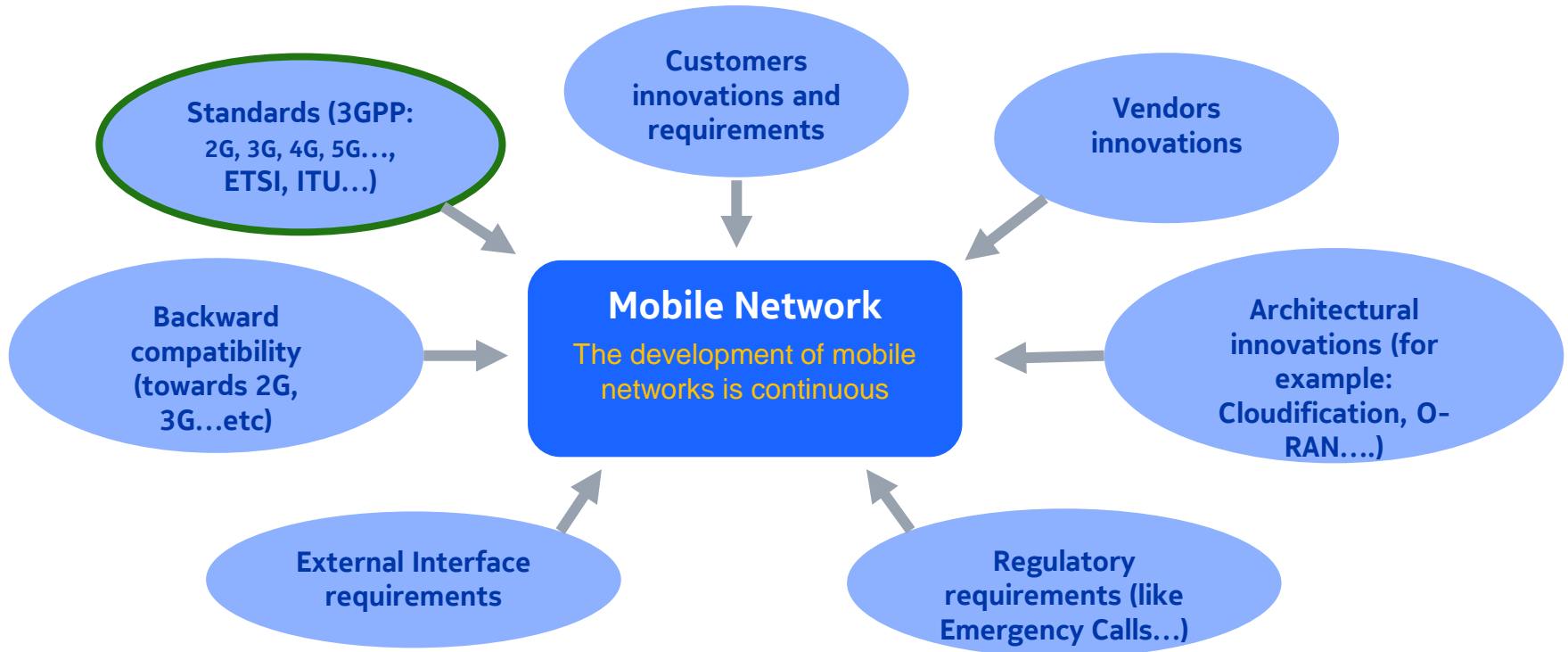
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# Mobile Networks - in state of continuous development



# Mobile Data usage is growing → 5G helping

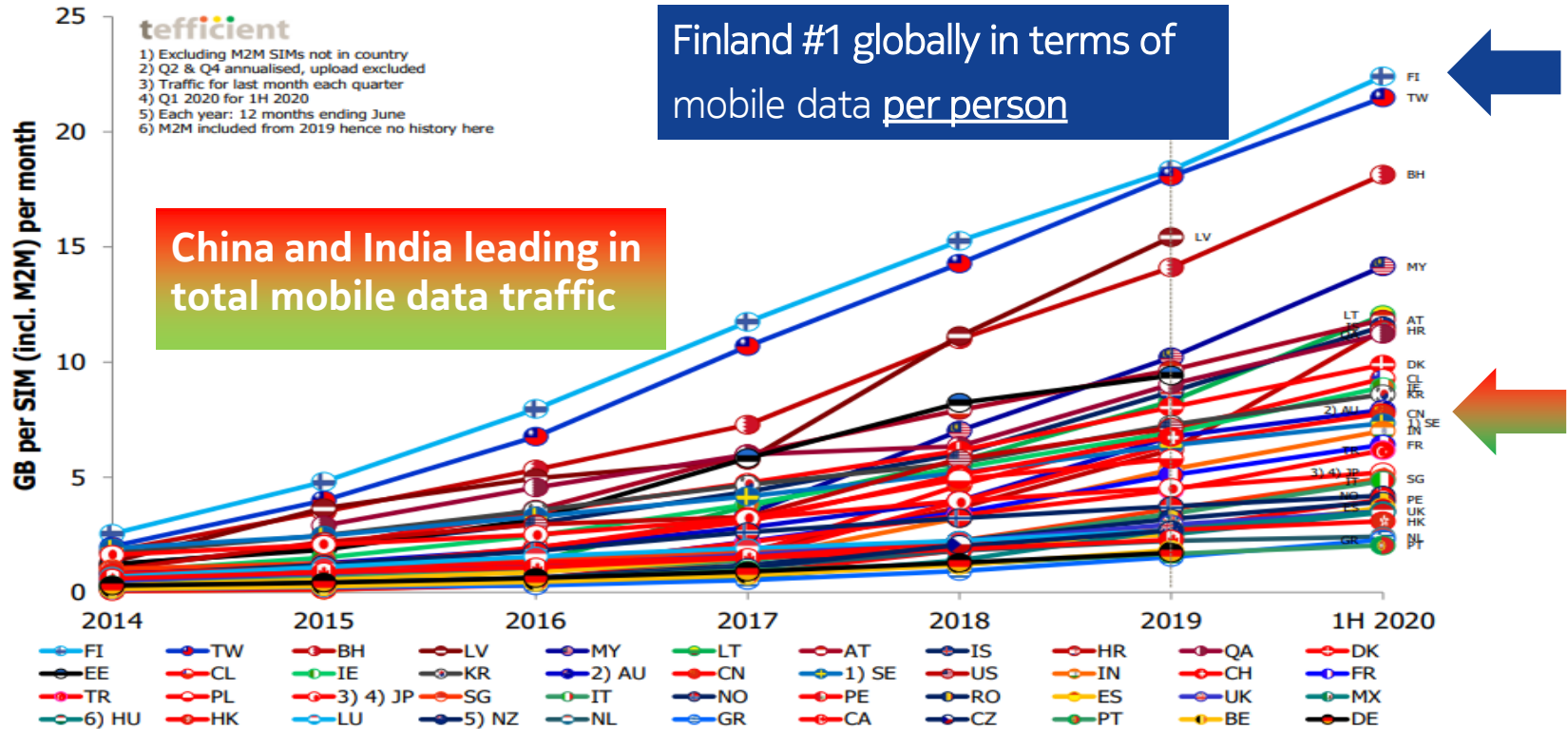
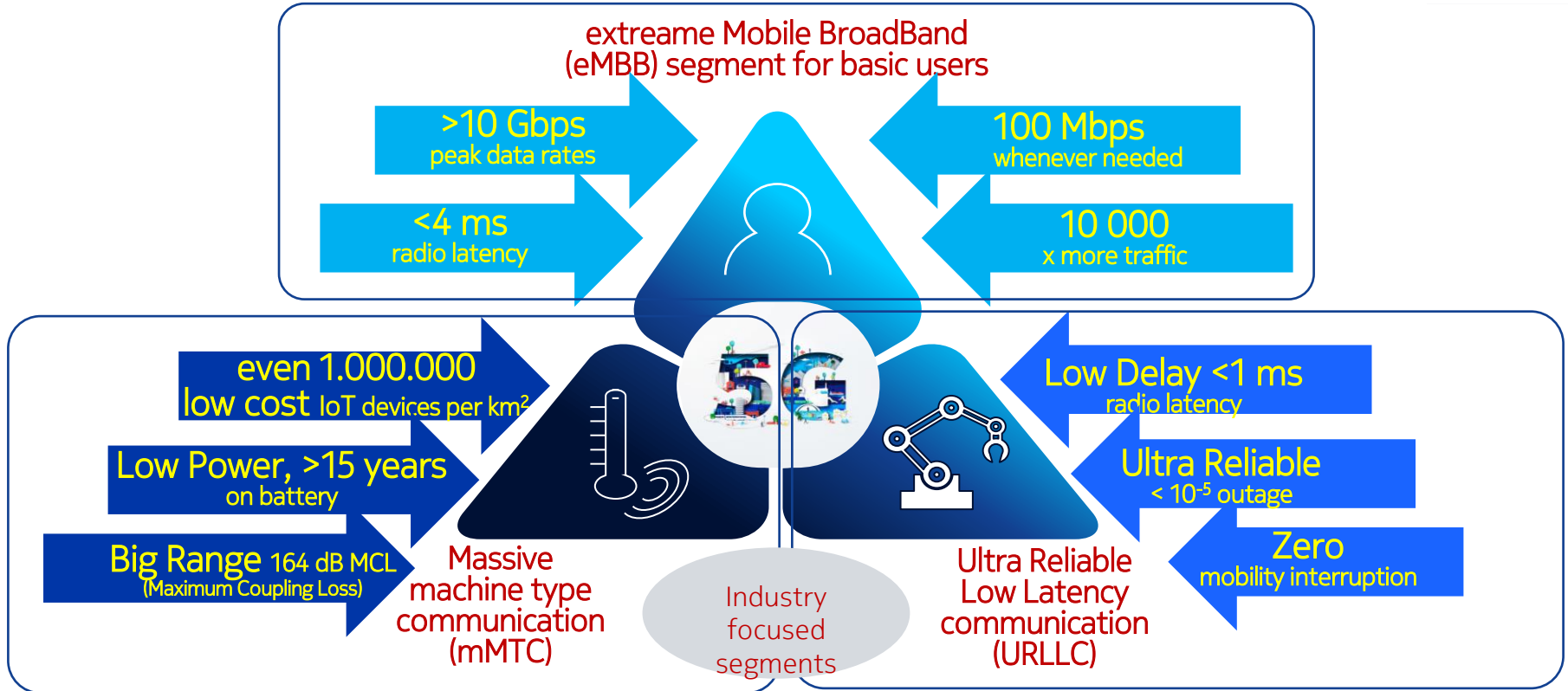


Figure 1. Development of mobile data usage per SIM (incl. M2M) per month – the legend shows the ranking<sup>3</sup>

# Three 5G Main Segments

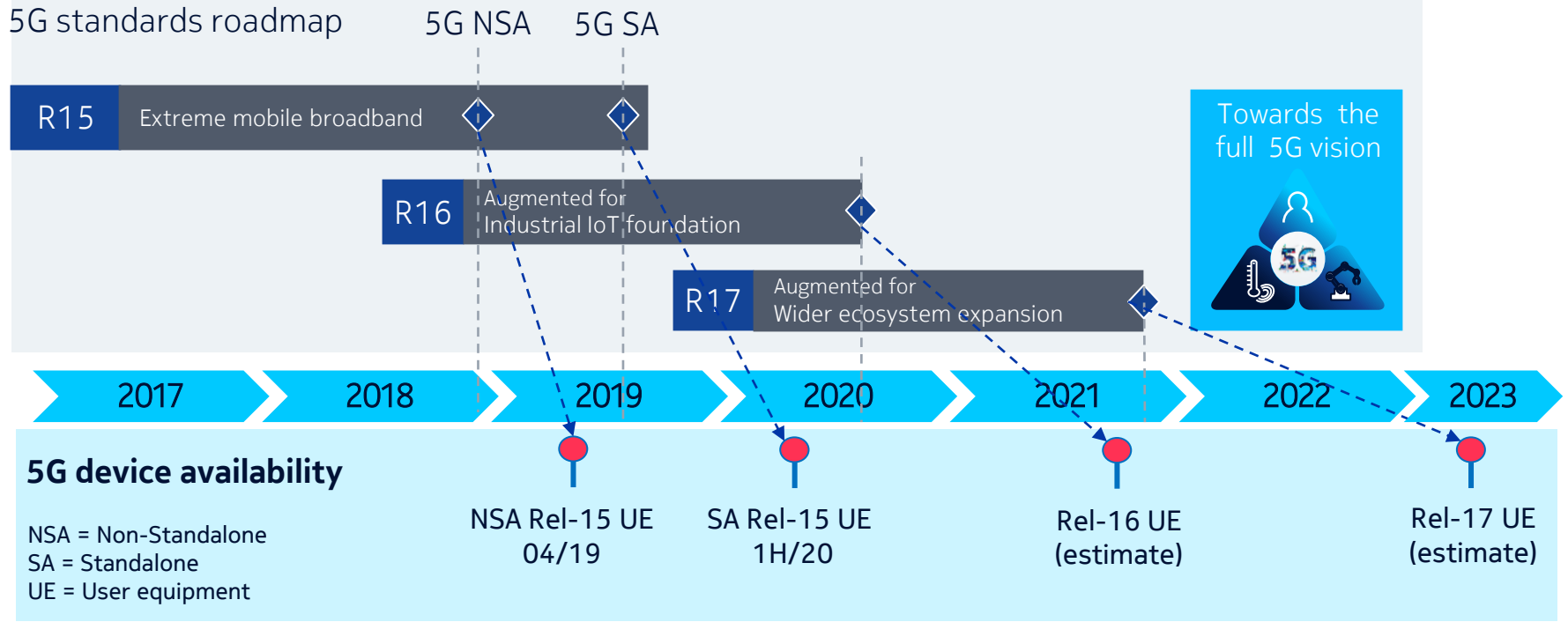


A significant advantage of 5G is the wide frequency spectrum







# Realizing the full promise of 5G through 3GPP evolution

“Rome wasn’t built in a day” – 5G evolves from a strong Rel-15 base



# 3GPP Radio Evolution in Releases 16 and 17 building on top of Release 15

			Release 16	Release 17
Industrial IoT		Ultra-reliable & local connectivity	<ul style="list-style-type: none"> <li>• URLLC/TSN</li> <li>• Unlicensed band</li> <li>• Private networks (NPN)</li> <li>• Positioning</li> </ul>	<ul style="list-style-type: none"> <li>• TSC</li> <li>• 60 – 71 GHz</li> <li>• NR-light</li> <li>• Accuracy positioning</li> </ul>
Radio boosters		Extreme radio performance	<ul style="list-style-type: none"> <li>• Enhanced MIMO</li> <li>• UE power saving</li> <li>• Mobility enhancements</li> <li>• DC/CA improvements</li> </ul>	<ul style="list-style-type: none"> <li>• Further enhanced MIMO</li> <li>• Further power saving</li> <li>• Multi-TRP uplink</li> <li>• DC/CA enhancements</li> </ul>
New verticals		New use cases with 5G radio	<ul style="list-style-type: none"> <li>• V2X</li> </ul>	<ul style="list-style-type: none"> <li>• NTN/HAPS</li> <li>• Public safety: sidelink and multicast</li> </ul>
Deployment automation		5G fast rollout	<ul style="list-style-type: none"> <li>• IAB</li> <li>• SON/MDT</li> </ul>	<ul style="list-style-type: none"> <li>• IAB enhancements</li> <li>• SON/MDT enhanced</li> </ul>

URLLC = Ultra Reliable Low Latency Communication  
 TSN = Time Sensitive Network  
 NPN = Non-public Network  
 TSC = Time Sensitive Network

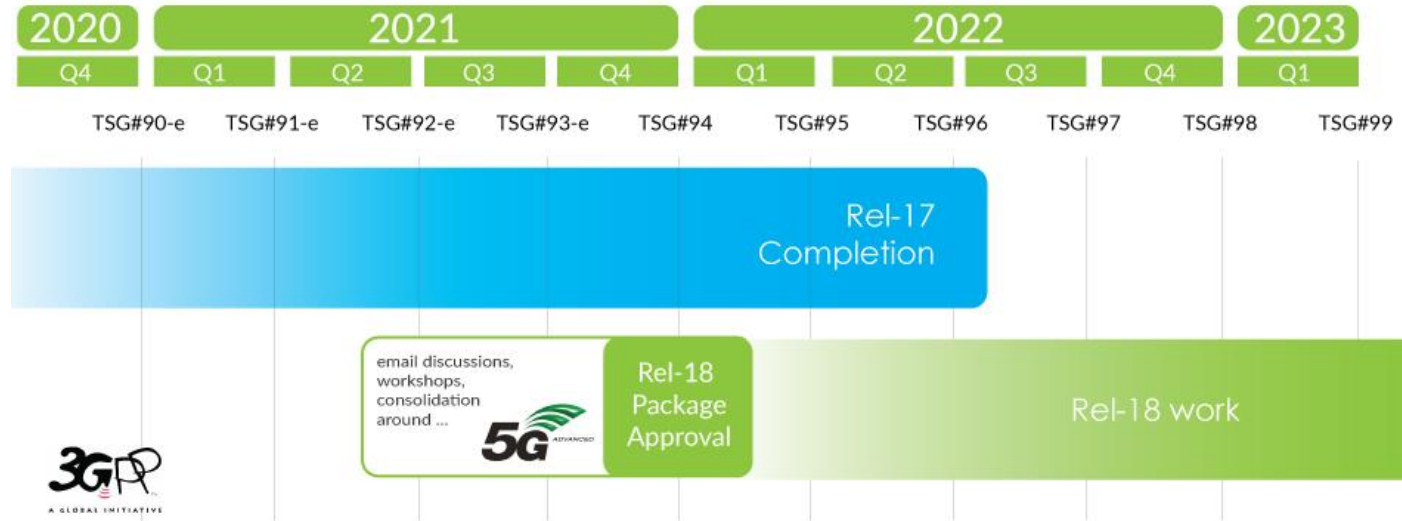
DC = Dual Connectivity  
 CA = Carrier Aggregation  
 TRP = Transmission Point  
 V2X = Vehicle-to-X

NTN = Non-Terrestrial Network  
 HAPS = High Altitude Platform  
 IAB = Integrated Access and Backhaul  
 MDT = Minimization of Drive Testing

# 3GPP Radio Evolution beyond Release 17 – 5G Advanced launched



More details:  
[https://www.3gpp.org/news-events/2210-advanced\\_5g](https://www.3gpp.org/news-events/2210-advanced_5g)







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Kiitos