

# 5.5G To Drive Innovation for Consumers and Industries

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5G has been a key development in the history of the telecoms sector, yet, in its current form, it is not the final product. 5G started a new path for the telecoms industry to serve a wider set of services and use cases. Now 5.5G is building on that, supporting innovation and new use cases while addressing the existing challenges of consumers and industries.

## 5.5G unlocks five different scenarios

5G brought eMBB, mMTC, and URLLC to the telecoms' ecosystem, starting the journey of cellular technology into new markets. 5.5G is adding to these features by delivering three new scenarios namely, Uplink Centric Broadband Communication (UCBC), Real-Time Broadband Communication (RTBC), and Harmonized Communication and Sensing (HCS).

The evolution of 5G is happening now, in April 2021 3GPP officially defined Rel-18 as the first release for 5G-Advanced, which is going to be the 3GPP nomenclature for 5.5G. Release 18 will be frozen on 1H24 with key features to be standardized including downlink of 10Gbps, 1Gbps uplink, and 100 billion connections.

5.5G will enable the telecoms world to further support five scenarios: the consumer market, the home broadband market, IoT, vertical industries, and smart transport. In the consumer space 5.5G will deliver a user experience not based on best effort speed but on guaranteed speed, latency, and reliability. In the home broadband space, it will enable higher speeds making FWA more competitive versus other home broadband options. For IoT, the new technology standard will support speeds from Kbps to Gbps opening a wealth of different IoT scenarios. For industries, 5.5G will deliver a sub 4ms latency and increasing reliability to 99.999%, making cellular an essential enabler of the industrial sector. In the smart transport and connected car space, the new connectivity paradigm will support V2X communication creating a real-time interactive environment between cars, roads, and the cloud.

## 5.5G will bring innovation addressing the practical challenges of 5 scenarios

In the consumer market, true innovation has been so far hampered by the lack of a deterministic connectivity, which is essential to guarantee a predictable consumer experience. 5.5G will deliver that experience providing a ten-fold increase in performance compared to 5G and increasing downlink from 1Gbps to 10Gbps, with guaranteed speed and latency. These capabilities will support new services including cloud gaming, XR applications, live broadcasting, and eventually holographic communication.

In the home broadband market, one of the key challenges to expand home broadband penetration in isolated and rural areas has been the cost of deploying fiber networks and the limited speed of existing FWA options. 5.5G will enable FWA to deliver speed comparable to fiber 10G GPON. This will enable market package rates of 1Gbps with 20ms latency and 99% reliability. Compared to 5G, 5.5G will provide a ten times lower bit cost, easing the creation of profitable business cases for the technology.

The IoT world has so far encountered roadblocks such as the limited supported speed of devices and their short battery life. 5.5G will deliver medium and high speed, thus enabling the support of all IoT scenarios. RedCap will support medium speeds for devices such as cameras and wearables, while still supporting billion level of connections. RedCap with SLAs would be crucial for instance for Electric power generation, an industry needing large numbers of higher performing devices. Passive IoT, instead would further reduce the price of low-end devices while increasing their battery life. This could be optimal for instance in a warehouse environment providing cheap and long-life devices supporting label reading and sensor data collection which underpin a warehouse inventory and tracking.

In vertical markets such as manufacturing, one of the main roadblocks for cellular technology has been the need for predictable low latency and high uplink capabilities. 5.5G will reduce latency from the current 20ms to 4ms and increase reliability to 99.999% helping cellular technology to move from supporting auxiliary production processes to enabling core production processes. The ability to deliver 2Gbps of uplink per user means the ability to support a higher number of machine-based applications from security to quality monitoring.

In the smart transport industry, 5.5G will enable the support of a reliable deterministic connectivity between fully autonomous vehicles, L2/L3 ADAS vehicles, the cloud, and the road infrastructure. The ability to connect all parts of the smart transport ecosystem is essential to support use cases such as navigation, smart transportation, traffic control, and priority passing.

## 5.5G gathers momentum through tests, partnerships, standardization, and devices

Huawei has been testing with multiple partners the features and innovative applications enabled by 5.5G, providing real world results of the benefits of the technology.

For instance, Huawei partnered with a German operator to perform a U6G joint field test. In China the CMCC, the CUCC, and the CTCC tested areas including DL 10 Gbps, UL 1Gbps, P-IoT, smart new vision, smart high uplink, and super time-frequency fold test. In France and Spain joint tests of passive IoT were conducted. Hong Kong built a 5.5G network capable of delivering DL 10Gbps, UL 1Gbps (mmWave + IF), while South Korea announced XR as a corporate strategy and in the United Arab Emirates, Du drafted a Metaverse 5.5G strategy.

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The whole ecosystem is embracing 5.5G as a key means to develop new opportunities. In fact, the device ecosystem is also supporting the new technology with 10Gbps terminals supported by 5G-Advanced capable chipsets to be in commercial use in 2023 and with the benefits of scale from 2024.

With all pieces of the 5.5G puzzle including features and standardization, devices, tests, and strategies and partnerships coming together, the vision for 5.5G is getting ready to unlock innovation in both the consumer and enterprise markets.

## Appendix

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