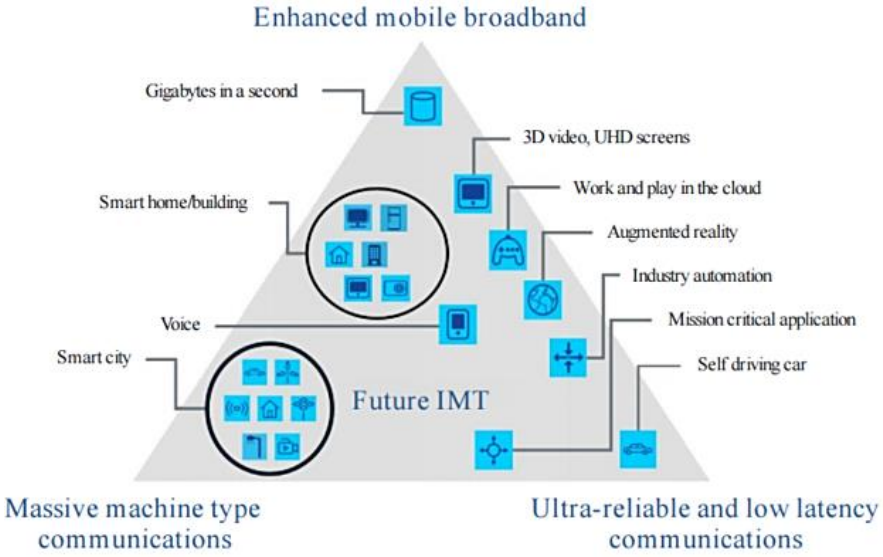
ANNEX B

RECOMMENDED USE CASES AND TECHNICAL GUIDELINES

1. ITU-R has identified three broad use cases for 5G and the possible applications and industries that could benefit from the network. The figure below illustrates the envisioned usage scenarios for IMT-2020 and further details on the technical performance parameters for each use case is highlighted in the sections below.

Figure 1: Usage Scenarios of IMT for 2020 and Beyond



Source: ITU-R

i) Enhanced mobile broadband ("**eMBB**")

eMBB, a media broadcast service, is a bandwidth-hungry application that will become a possible application with LTE-A Pro (or 4.5G). The recommended guideline for eMBB use cases are highlighted in the table below:

Table 1: Data Rates for eMBB Use Cases

	Peak Data Rate	User Experience Data Rate
Downlink	20Gbps	100Mbps
Uplink	10Gbps	50Mbps

ii) Massive Machine-Type Communications ("**mMTC**")

This is identified as an emerging paradigm of interconnected systems, machines and things that communicate with each other automatically without human intervention. mMTC, also commonly referred to as M2M communications, with its various device types, low data volume, and performance requirements will have to be supported by very different network structures. With 5G, the recommended guideline for mMTC use cases is to connect up to 1,000,000 devices per km^2.

iii) Ultra-Reliable and Low-Latency Communications ("**uRLLC**")

These future applications will demand an end-to-end latency of a few milliseconds and extremely high reliability. To fulfil these key performance requirements, the recommended guideline for such use cases is a latency rate of 1ms for the time needed to deliver a data packet from a source to a destination.