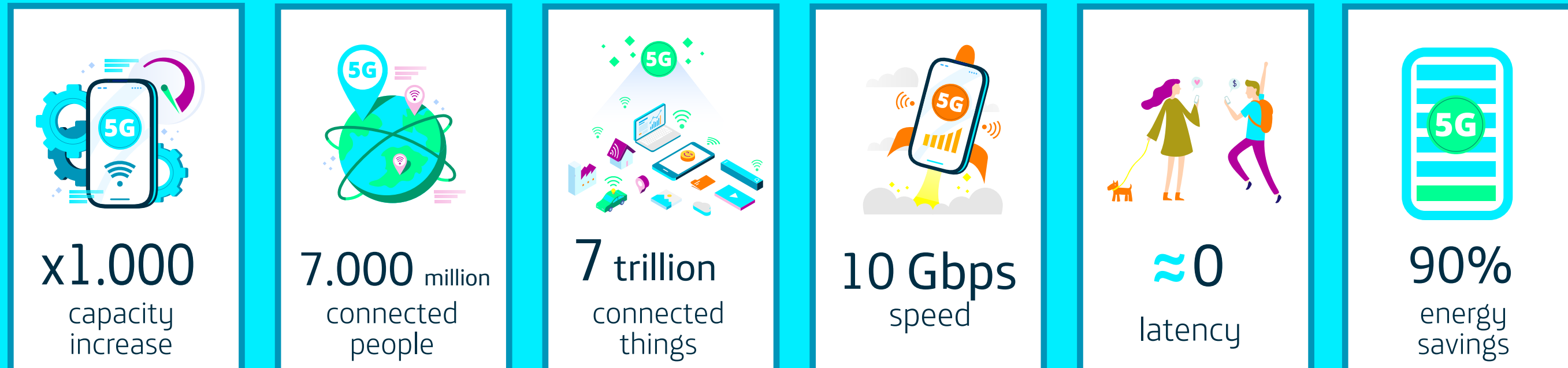


# What 5G is and how it works



The 5th generation mobile network enables **ultra-fast, very low-latency connectivity** to billions of devices, the Internet of Things (IoT) and a **fully connected world**



Source > <https://5g-ppp.eu>

## The new 5G mobile networks

### Minimum transmit power:

5G networks are designed to minimise power, resulting in optimised electromagnetic field (EMF) levels.



### Minimal device power:

the network guarantees the lowest level to complete satisfactory communication.

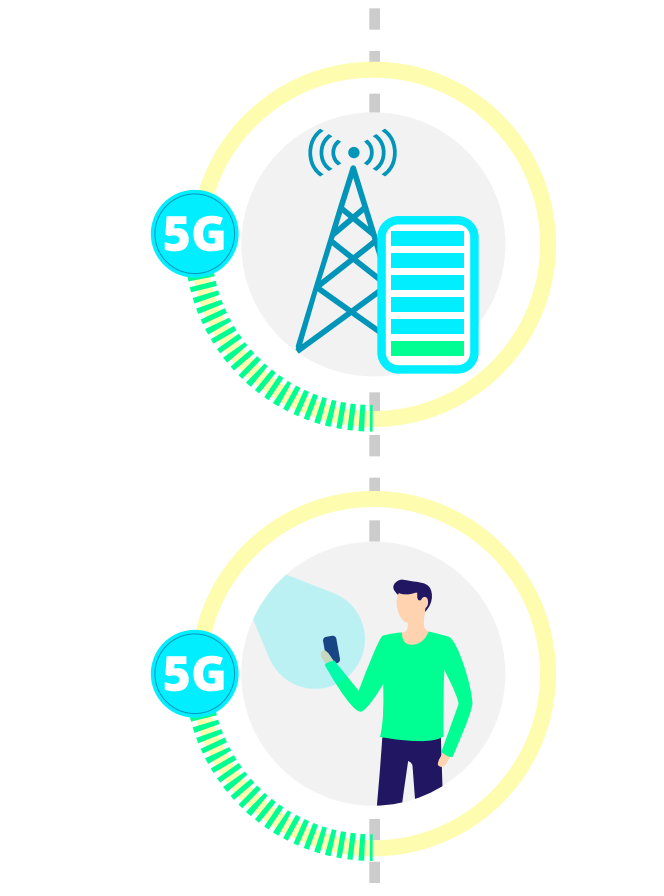


### Electromagnetic fields control:

5G networks use a new, highly efficient advanced radio architecture, which minimises transmissions power according to the service requirements, resulting in optimised electromagnetic field levels.



They also have equipment that manages to transmit the same information with much less power. The new equipment incorporates functionalities that monitor and control the levels of electromagnetic fields. These functionalities are included in the safety guidelines of the ICNIRP.



In addition, massive MIMO antennas allow power to be directed only in the required direction, minimising the power transmitted to other directions, which will lead to lower exposure levels than current technologies (2G, 3G and 4G).

### Small cells:

small cells are used to expand coverage over large areas or to create private networks.



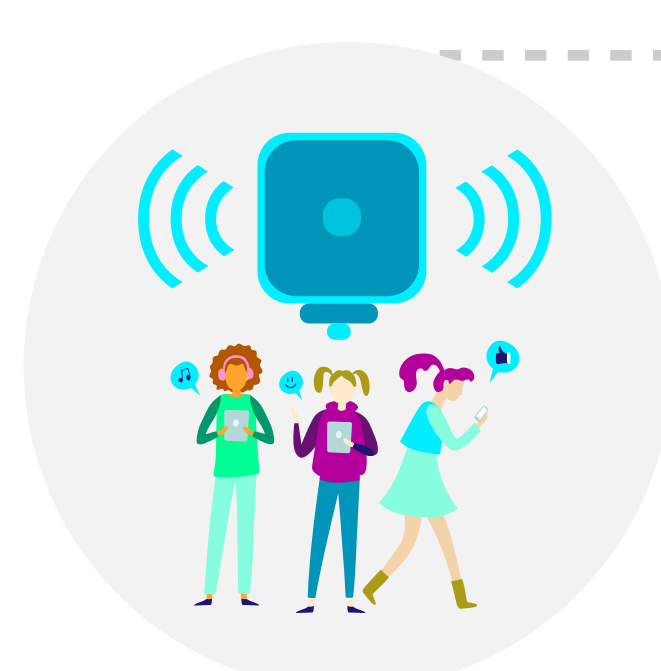
### Frequencies:

5G uses the 700 MHz and 3.5 GHz frequencies. Progressively, the current mobile bands (2G, 3G and 4G) will be migrated to 5G and the deployments will be completed with the "millimetre" band, this is 26 and 28 GHz bands.

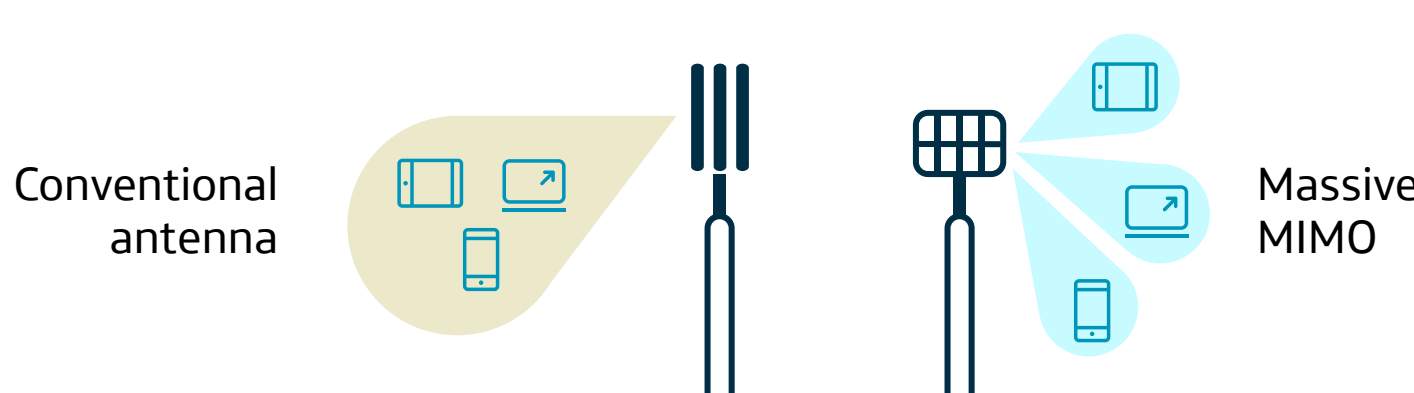


### Antennas:

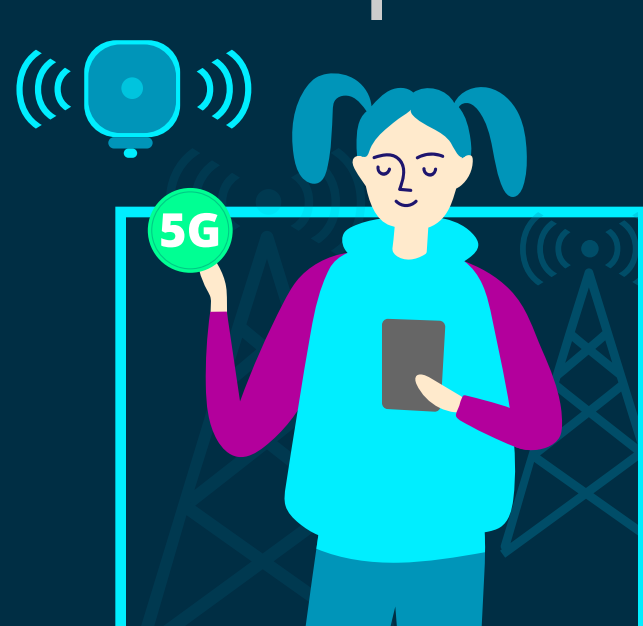
Massive MIMO antennas are introduced, allowing more data to be sent and received simultaneously so more users can use the same resources.



### Massive mimo antennas give coverage only where it is needed



## 5G Equipment or Devices



5G Equipment (or devices): with more modern and efficient equipment, these transmit the same information with a much lower power.

In addition, automatic control functionality helps minimise interference, extends battery life, and limits user exposure to electromagnetic fields.

## Safety, health, and the environment

**Decades of research:** the impact of electromagnetic frequencies used for 5G are part of the spectrum that has been thoroughly investigated.

**Safety limits:** there is no scientific evidence linking exposure below the ICNIRP limits to risks to humans, animals, or plants.

**Strict compliance:** Telefonica complies with the ICNIRP international guidelines in all countries.

**Safe devices:** the devices are and will be assessed to ensure that they comply with exposure limits of all regulations.

