Lancashire Cyber Foundry

What is 5G?

READ TIME: 2 MINS

AUDIENCE: BUSINESS & TECHNOLOGY

Not only is 5G (fifth generation) a new faster network, but it has the potential to radically change the internet and the way we interact with it. Through its greater use of the radio spectrum it will enable more Internet of Things devices to access the internet at the same time and communicate with each other with minimal delay. Experts predict that a connected world with smart home technology, smart cities with driverless cars, and industry automation will be the start the 5G technological revolution. So, what could your business do with 5G technology?

WHAT IS THE DIFFERENCE BETWEEN 4G AND 5G?

Firstly, 5G is much faster than the existing 4G network, with potential to make a huge difference to any big data applications. It will have a lower latency, meaning that there will be less delay or lag when using phones or other devices, and it will be able to connect to thousands of devices at the same time.

WHAT COULD THIS MEAN FOR YOUR BUSINESS?

Successful remote working is critical for all companies in 2021. Although we have been doing more conference calls than in previous years they continue to be stiff and often awkward. Augmented Reality (AR) and Virtual Reality (VR) with low latency connectivity could make virtual meetings feel as if you're in the same room.

COMPARISON	4G	5G
Latency	200 Milliseconds (0.2 Seconds)	1 Milliseconds (0.001 Seconds)
Number of Devices	Supports 4,000 devices per km^2	Supports 1 Million devices per km^2
Speed	100 Mbps (50 mins to download a film)	10,000 Mbps (9 mins to download a film)

Reference: https://www.thalesgroup.com/en/worldwide-digital-identity-and-security/mobile/magazine/5g-vs-4g-whats-difference, 19/02/21

European Union
European Regional Development Fund

NORTHERN POWERHOUSE HM Government

Lancaster University

WHAT IS 5G?

Using smart technologies in the workplace such as sensors to monitor occupancy, lighting, temperature and CCTV all being able to be streamed in real-time to a mobile phone will give businesses the ability to be more flexible, efficient thus cut costs.

It's anticipated that manufacturing automation will significantly increase, making processes more efficient and reduce overheads.

With increased use of AR and VR our shopping experiences will change. Customers will be able to browse shops, and visualise products from the comfort of their home. When shopping in store, AR will mean that shoppers will be able to get additional product information or complementary product choices to their phones increasing cross-selling opportunities.

The ability to offload processing to the cloud for computer games will mean that gamers won't need powerful consoles and will be able to play from phones or on the TV.

There is a huge opportunity within the healthcare sector to measure, record and use real-time data to inform a patient's healthcare needs or interventions. It's possible for patient data to be analysed in real-time to enable the clinician to make adjustments or decisions about medications, surgical procedures, and remote monitoring of patients will be mean that more people can remain at home whilst getting accurate and timely care.

IS IT BAD FOR OUR HEALTH?

Speculation of a health risk has been related to the radiofrequency and electromagnetic fields or radio waves that 5G will use.

After carrying out tests at several sites in the UK, Ofcom state that "5G currently contributes a small amount to the EMF levels measured at each location. At all locations, the largest contribution to the measured levels comes from previous generations of mobile technology (2G, 3G, 4G). The highest level we observed in the band used for 5G was just 0.039% of the relevant level." Public Health England (PHE) states that in relation to 5G, "the overall exposure [from all mobile network EMFs, including 5G] is expected to remain low relative to [the ICNIRP] guidelines and, as such, there should be no consequences for public health".

Reference: • https://www.ofcom.org.uk/__data/assets/pdf_file/0015/190005/emf-test-summary.pdf, 19/02/21

ABOUT THE AUTHOR

Dr. Rebecca Robinson

Rebecca has successfully led many complex projects within the public and private sectors, and is determined to use her knowledge and experience to ensure that Lancashire based businesses get the most out of this valuable programme. After completing her PhD in electronics she worked as a researcher, before working for a Lancashire based SME electronics company.