

## Is 5G telecoms hype or reality?

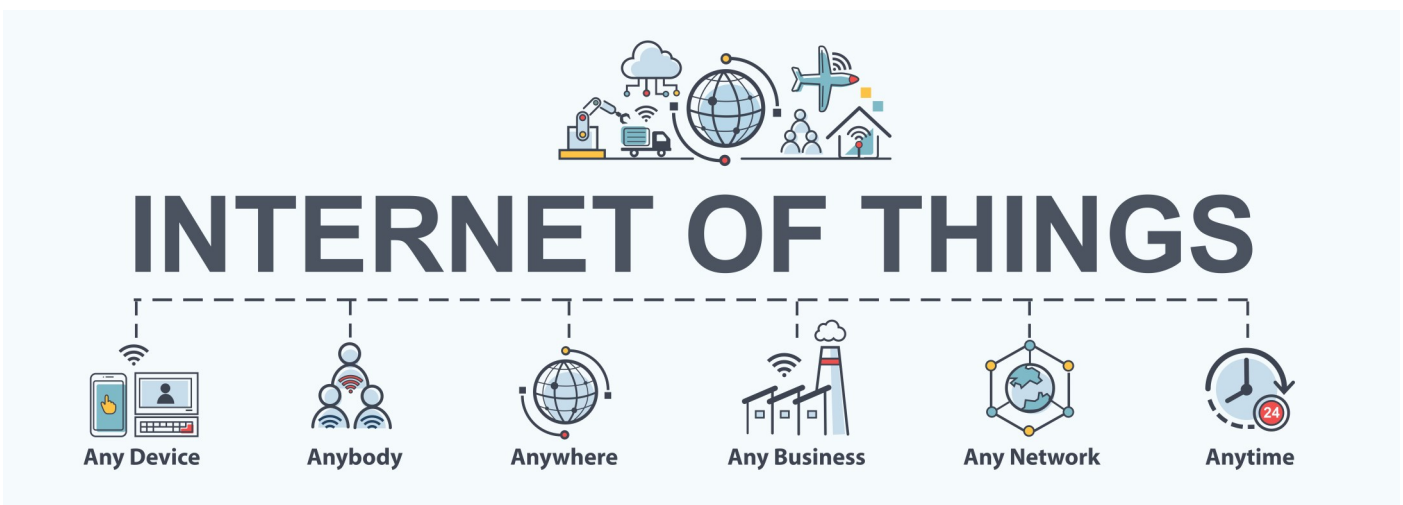
While many of us are still getting used to 4G networks – 3G for some – 5G is already here. It is available in a few cities rather than most countries so is not yet close to mass acceptance but by 2024 it is estimated that 40% of the world’s population will have 5G coverage<sup>1</sup>.

To put its availability in context, EE launched the first 5G network in the UK in May, starting with a limited service in six cities; in the US, Verizon has only just started making 5G devices available, AT&T sells a 5G hotspot rather than handsets and Sprint is expected to introduce its first 5G devices early in the summer. It was first launched anywhere on a commercial network in South Korea while neighbour and technology giant China is lagging the rest of the world when it comes to introducing this kind of next-generation technology, with 2020 its own likely launch date.

5G, the fifth generation of wireless networks, promises to provide users with better responsiveness, greater bandwidth and faster download speeds – it is expected to be 100 times faster than 4G – as well as the ability for operators to develop new products, applications and services, then deliver them more cost-effectively. This will allow consumers to access the internet faster, get faster mobile connections, upload videos more quickly and stream movies more smoothly.

Despite the debate around 5G technology’s readiness, the telecoms industry has clearly started to embrace it given the volume of activity seen in 2018 in readiness for its roll-out across the UK this year. We have counted at least 201 operators worldwide who have already initiated 5G projects, up from 154 a year ago<sup>2</sup>.

To give an idea of the step-up for 4G, according to Borje Ekholm, CEO at Ericsson: “No previous generation of mobile technology has had the potential to drive economic growth in the way that 5G promises. It goes beyond connecting people to the possibility of making the internet of things (IoT) and the fourth industrial revolution a reality. 5G has the ability to drive a digital society where everything that can benefit from being connected will be connected.”



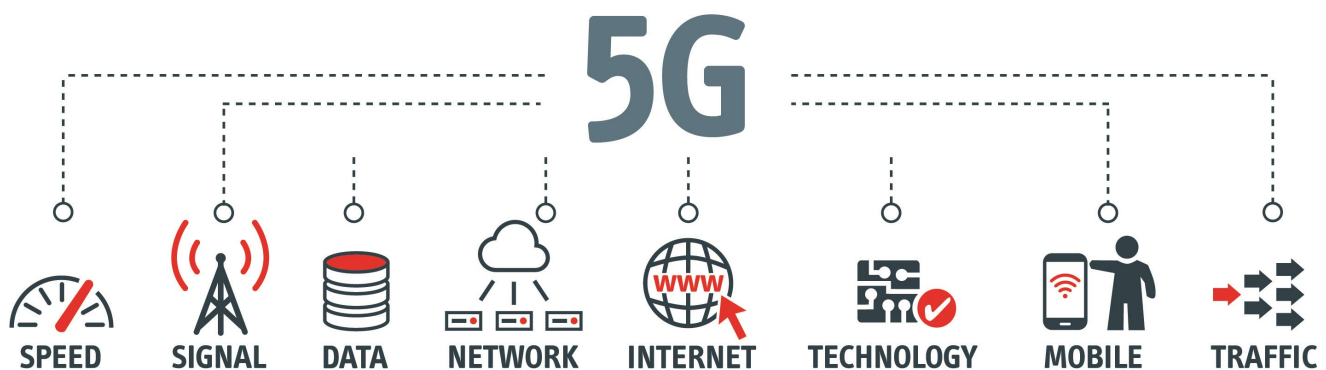
Source: Adobe Stock, May 2019.

<sup>1</sup> Ericsson Mobility Report; January 2019

<sup>2</sup> GSA

While the previous four generations have all been about delivering faster connectivity – with the consumer’s abilities moving from making calls to texting to using data to streaming video – 5G is much more enterprise and company focused. It will allow applications ranging from the IoT – anything with a chip in it, such as an alarm clock, a vending machine or smart TV – to connected cars, autonomous trucks and cloud-based gaming. These are all genuinely cutting-edge innovations.

5G should also allow a number of new applications based on machine-to-machine and machine-to-human communication, all because of what we know as ultra-low latency, one of the key improvements of 5G. A low latency means a high speed of a signal being sent and received, the speed an action follows an instruction – imagine playing Fortnite and there being a noticeable delay between moving the controller and moving your on-screen character. More broadly, low latency should enable the proliferation of the IoT, potentially challenging how data is created, stored and analysed in the future. This in turn should drive semiconductor demand, an area we are particularly excited about.



Source: Adobe Stock, May 2019.

A radio access network (RAN) is that part of the mobile telecoms system that sits between a device and a signal, connecting a device to the network. This is arguably the most obvious area to benefit as 5G will support a network upgrade in a market that has seen no, or even negative, growth and severe pricing pressure for a number of years despite being dominated by the likes of Huawei, Ericsson, Nokia and Samsung.

The whole area of 5G is not without risks, at a technological, corporate and political level. Recent concerns around Huawei technology’s security, the arrest in Canada of its chief financial officer, allegations that the company has violated Iran sanctions, and scepticism from a UK security chief on certain “shortcomings” the company may have, have led to several countries, spearheaded by the US, to boycott Huawei products. Ericsson and Samsung appear to have been the biggest share gainers so far while Nokia has not been able to keep up, being held back by product and execution issues.

These RAN upgrades will allow greater radio content which will lead to a higher number of antennae which will further boost demand for semiconductors. The Bank of America forecasts the 5G-related semiconductor market will reach \$18bn by 2022, quadrupling from about \$4bn this year, split into \$6bn for infrastructure and the rest for mobile/IoT.

RAN upgrades will lead to greater capacity and efficiency but only if all manner of support is in place from, among others, a core network that can handle the data tsunami on its way, optical components, new frequency bands (using millimetre wave technology), hardware and compound semiconductors, the next generation of semiconductors.

For every positive comment – “I think this is the beginning of the fourth generation of the industrial revolution. 5G will be the platform linking billions of devices together”: Kaan Terzioglu, Turkcell’s CEO – there is a counter – “I think a lot of the hype is where things are going to be 10 years from now with 5G, not what it will be at launch”: Ron Marquardt, Sprint’s vice president of technology, innovation and architecture. While 5G remains in its infancy today, momentum is building nicely and we expect it to move from hype to reality over the coming years.

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3 June 2019

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