

What Is a 6G Network and How Will It Affect Us?

“How far is humanity willing to go for the sake of technological progress? And does progress always have to mean trading off our health and safety?”

By Jane Knight | Omnia

“The power to question is the basis of all human progress”

– Indira Gandhi

We would understand if you saw the title of this article and thought, “**5G** isn’t even rolled out around the world yet, why are you warning us about **6G**?”

But make no mistake – the race for **6G** technology is on.



Despite the potential health impacts of **5G** causing its rollout to be stalled and mired in controversy, big tech firms and nations across the world are already working on its successor!

But what exactly is a **6G** network, and how is it different from **5G**? Moreover, what does this technology mean for humanity’s future and well-being? If you find yourself wondering about these relevant questions, then read on. We’re taking you through the basics of **6G** today.

What is a 6G Network?

6G technology is the sixth generation cellular technology that is slated to succeed **5G**. It's already under development as a collaboration between policymakers and technological firms globally, and is predicted to be significantly faster than its predecessor.

Some of the biggest names in tech have come together for this purpose – **in August 2021, the Center for Technology at Purdue University launched their lab named 'Lab to Life' which is dedicated to researching and developing 6G technology and its uses across industries.** This initiative is supported by firms like Dell, Cisco, Eriksson, Qualcomm, Intel, and Nokia, among many others. This 400-acre research area is slated to be the USA's very first **6G** deployment zone.

And that's just scratching the surface – in the past year, several **6G** symposiums have been organized across [Europe](#), [the USA](#), and [Asia](#) to discuss the road ahead for **6G** and its real-world applications. In fact, [China launched a 6G test](#) satellite in November 2020.

How Does 6G Work?

If you thought the leap in data transfer speed from 4G to **5G** was a big one, then here's a shocker: **6G** wireless network is rumored to be 100 times faster than **5G**. While **5G** technology relied on frequencies in the microwave range to transmit data, **6G** will be using even smaller wavelengths that fall in the Terahertz (THz) band that falls between 100 GHz to 3 THz.

This will enable it to transmit data at shockingly fast speeds of approximately 95 Gbps (gigabits per second), which can hit a peak max speed of up to even 1 Tbps (terabit per second).

Another way to understand the data transmission speeds with **6G** is to analyze its latency, which is usually measured in milliseconds. Simply put, latency is the time it takes for data to be transmitted from its originating source to its destination. The lower the latency, the faster your data transmission speed would be.

The latency for 4G networks is around 50 milliseconds and it falls to a mere 5 milliseconds with **5G** technology. **6G networks are set to reduce that to only 1 millisecond – implying an almost instantaneous data transfer speed.** The high-capacity, ultra-low latency features of **6G** will expand the scope of wireless technology to encompass never-before-seen applications in AI (artificial intelligence), mobile edge computing, blockchain technology, and much more.

What Will 6G Be Like?

If you're wondering how **6G** will be different from its predecessors, then the name of Purdue University's **6G** laboratory (Lab to Life) should give you a clue – this technology will seek to not just enable faster communication, but embed our very lives into a global

informational grid. Thanks to its faster-than-ever data speeds, **6G** is said to become the foundation over which a plethora of industries will be built. By embedding the network in systems across residential, manufacturing, and other commercial purposes, [6G is being built to become the next 'electricity'](#).

With its ultra-fast computing speeds, **6G** is set to give a major push to 'cognitive technology' where computers are able to mimic human brain functions and decision-making abilities. By connecting our homes, cars, offices, phones, wireless devices, digital wearables, and much more to each other, this technology is capable of not just continuously monitoring our lives and activities, but also playing an active part in it.

By offering real-time recommendations and converting our daily activities into a series of millions of data points, our lives will be even more accessible online by corporations and/or governments, unless watertight data privacy protocols are put in place before the roll out.

With the announcement of the metaverse world and virtual reality becoming a real-world reality with each passing day, it's not wrong to think that we will soon find ourselves dependent on **6G**-enabled technology for functioning in our day-to-day lives. VR (Virtual reality) conferences, schools, and events may become a regular occurrence, with us spending more and more of our lives inside a **6G**-enabled simulation in the brick-and-mortar world.

While AI-enabled technology has its applications and benefits, the question to ask ourselves is this – **where is the line between us taking advantage of technology, and technology taking advantage of us?**

Will 6G Have An Impact On Human Health?

There is mounting evidence that EMF radiation as well as the short millimeter waves used in **5G** wireless technology have [significant](#) and undeniable effects on our well-being and that of the [environment](#). Considering that **6G** is estimated to be 100 times faster and uses even shorter radiofrequency waves than **5G**, it is likely that we will see these effects intensified manifold with this new technology. Although research has begun on the applications of **6G** technology, we still have extremely limited information on the [safe exposure limits of THz frequency](#).

A [study](#) looking into the biological effects of Terahertz radiation (used in **6G**) waves on artificial human skin and mice have revealed that it caused *"DNA double-strand breakage, cell death, cell membrane change, disturbance of nerve cell growth, suppression of cell-signaling pathways as well as acute inflammation."*

Another article published by the Journal of the Royal Society shares that Terahertz radiation is reported to interfere [with DNA as well as cause genomic instabilities](#). While a lot more research is sorely needed to fully understand how Terahertz radiation affects

living beings, the preliminary information is a cause for concern and warrants urgent intervention for public safety.

Final Thoughts

How far is humanity willing to go for the sake of technological progress? And does progress always have to mean trading off our health and safety? As more news of **6G** technology and its potential health impacts come to light, we as a society have to ask ourselves these two urgent questions. This is not only for the sake of our [own well-being](#), but to preserve and protect the health, freedom, and autonomy of [future generations](#).

References and interesting reads:

[Purdue Research Foundation launch 'Lab to Life' 6G digital innovation](#)

[What Is 6G?](#)

[China sends 'world's first 6G' test satellite into orbit](#)

[Explaining 6G – ISEMAG](#)

[Cellular effects of Terahertz Waves](#)

[The interaction between electromagnetic fields at megahertz, gigahertz and terahertz frequencies with cells, tissues and organisms](#)

[Understanding The Effects Of 5G On Our Environment – Omnia](#)

[Effects of 5G on Wildlife](#)

Blessings,

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