


TECHNOLOGY

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5G INTERNET: WHAT TO EXPECT

"We are all now connected by the Internet, like neurons in a giant brain."
– STEPHEN HAWKING

INTRODUCTION-5G THE FIFTH GENERATION OF WIRELESS

Over the last 30 years, technology has moved forward on a path of ever increasing interconnectedness. Size and speed of computers allow for devices that were once only thought possible in science-fiction. Computers that historically took up entire rooms now fit in the palm of your hand. When computers first started communicating with other computers, the Internet was born. Now, common devices connect and exchange information that was once transferred by hand. We live in the age of the Internet of things.

Initially, the information between computers was carried through telephone lines. As technology progressed so did the volume and speed at which that information could be transferred. With the mass adoption of the smart phone, portable devices with wireless data and Internet connectivity are ubiquitous. The network that these devices connect with determines how fast information can be transferred. These networks have gone through several different iterations as the consumer demand for greater speed and efficiency has increased.

5G is the fifth generation of cellular data technology[1] and it will soon be upon us. This article contemplates some of the implications for the practice of law. What does 5G mean for lawyers and the practice of law? There is a lot of technology driving change; this article explores what 5G could mean.

5G-WHAT IS IT?

Warren Buffet was recently quoted in describing the cost of an iPhone being far too low given its value. In fact, Mr. Buffet finds his iPhone and iPad more valuable than his private jet. [2] The ability for a smart phone or similar portable digital device to provide a valuable experience is largely based on the device's ability to connect to a wireless network. The quality of the user experience is directly related to speed of data transfer. Advances in Cloud-based storage have made the local or physical storage of videos, photos and documents largely obsolete. In many respects, people rely on their smartphones and portable tablets today much like they relied upon computers a decade ago. The expectation for 5G connectivity has been significantly anticipated and is promoted as the next big technological leap.

In a technical sense, 5G Internet is a term that describes a myriad of proposals for the next generation of mobile communications.[3] A brief history of cellular data transmission rates shows how far this technology has come. In 1982, 1G connectivity became available to consumers. Since that time 4G rates are currently running 10 times faster.[4] For example, downloading an app to a smartphone through a cellular network on a 2G network could take 12 minutes. The same task on a 4G network takes 3 seconds.[5] These speeds mean that more data can be transferred to and from the Cloud. According to the Next Generation Mobile Networks Alliance, 5G technologies will improve data transfer to allow for "several tons of megabytes per second, enhanced coverage, and a significant reduction in latency", latency meaning the amount of time between when data is sent from a connected device to when it arrives back to the same device. Additionally, Cloud-based processing of this data could yield innovations and opportunities not yet even conceived.

5G will be instrumental in the next evolution of connected devices including cars, smart homes, and wearables, due to its superior network speeds (10 times faster than 4G) and capacity (1,000 times the capacity of 4G).[6]

WHAT WILL 5G CHANGE?

Predicting how technology will impact everyday life can be challenging, and predicting how technology may be impacted by a paradigm shift in wireless data transfer capabilities is daunting. It appears that the scope of change that 5G will bring could be dramatic. Viewing 5G as a massive increase in data transfer speeds and volume of data is only part of the equation. The ability for software engineers to design applications that can leverage the increased speed and efficiency will allows for even greater advances in technology-enabled lives.

One of the more fascinating possibilities of 5G is the potential for an increase in background application data monitoring. In effect, nearly invisible reporting of a user's activities and predictive estimates are derived from that data as well as the ability to predict future behaviour. While most users continue to allow programs to track and report data in the background as a convenience, the importance of digital devices to collect and report data in the background will increase.[7] It's hard to predict with any degree of precision or certainty where further trends might lead but what is clear is that 5G will allow for seamless data capture and reporting for nearly any type of activity. This is exciting and terrifying simultaneously.

DOES 5G REALLY MATTER?

Some commentary regarding 5G suggests that for most people it will not change anything over the current 4G network. In essence, predictions about data usage expanding appear to peak in 2027.[8] What will likely change will be an increase in seamless integration of low-cost devices. While user data might peak in 2027, devices that connect to powerful artificial intelligence interfaces and other AI enabled devices may use data well beyond the 2027 peak prediction. There will likely be countless devices communicating with each other; 5G is the only reliable data transfer method to realize the potential of those devices. These devices will likely leverage Wi-fi and cellular connections, much like the current generation of cell phones.

THE SHIFTING PRACTICE LANDSCAPE: BENEFITS AND RISKS

Nikola Tesla is credited with a profound insight into the relationship between technology and progress by observing that not all technology should be viewed as progress.[9] Like most technology that impacts the majority of users today, the potential of 5G is seemingly limited only by the ability of software engineers to deliver more of what has already transformed society. The practice of law has benefited from technology but the fundamentals of legal practice and delivery of legal services has not changed as some other industries have adapted and innovated.[10]

With new technology, practices and processes change. Necessary in any new process or practice is a need to reflect on the principles of ethics. The challenge with computers is the inherent risk that data, as opposed to wisdom, will drive judgment. 5G will enable parties to have access to information that could be used in a variety of constructive but also destructive ways. The need to balance any new technological development with a strong regard for the principles that underlie rules of procedure and procedural fairness will be a continuous challenge. Computers can be very efficient and inexpensive, but incapable of discerning what might be just.

IMPACT ON THE LEGAL PROFESSION AND PRACTICE

DISCLOSURE AND PRIVACY

With greater ability for programs to verify data, there will likely be security benefits. There is a view that current technology has made disclosure burdensome in that there is too much to review and sort. Software with 5G might allow for more rapid review of relevant documents as they become material in a given situation. Imagine avoiding an adjournment because you can now summon a precise brief on a matter that has just arisen. Imagine sharing that brief with customized edits in a digital environment. 5G technology may increase the ease of trial preparation as the current boxes of paper containing submissions and documents will then be created and shared digitally. Security can be managed with software protocols that use up significant data to ensure security and fidelity of the transmission to the recipient. These technologies become more relevant when the data transmission is no longer the constraint with 5G.

Disclosure could be revolutionized and the courtroom of the future might be reimagined and repurposed around the ease of use and enhanced security these complementary technologies provide.

AUTONOMOUS VEHICLES

Tesla automotive gave the world the first promise and actual glimpse of a future that shows cars with self-driving functionality. The ability for a car to be safely driven is possible through the use of artificial intelligence that relies on data. The 5G network increases the ability for data centres to harvest significantly more real time data. This data can also be further augmented with technologies that have autonomous vehicles communicating with each other to create redundant fail safe systems for what could realistically be a crash-free future.

Imagine traffic signals, other vehicles and traffic control centres all working together on optimized algorithms to transport people and goods in ways previously thought impossible. 5G enables that vision.[11] Constant connectivity means automobile risks and risky driver behaviour could be significantly reduced or even eliminated. While the ethical and policy considerations around this level of driver monitoring are well beyond the scope of this article, it is helpful to note that 5G could enable a real time driver monitoring tool that could be an incentive or deterrent to most, if not all, human controls. Imagine a network that issues a ticket in real time as a driver ignores a speed warning. Aggressive driving such as tailgating or traffic weaving would also be transmitted and easily linked to a driver risk profile. Insurance premiums could be calculated accordingly.

ACCESS TO JUSTICE

5G wireless has the potential to transform access to justice for remote communities. Many challenges with access to justice revolve around the inability for a client to connect in a quality way with a lawyer. With 5G, a person with a modern cell phone connected to a 5G network will have options that mirror the best experiences in tele-health and tele-education.

Given that portable devices continue to have increasing capabilities, clients and parties may actually have more control over their digital lives. Similarly, associated technologies such as Blockchain and Hashgraph[12] might become more usable as the high data demands will be dealt with far more easily on a wireless network that is unconstrained by concerns of data throughput limits. A properly designed digital future may well be far more secure than is currently feared by most.

CONCLUDING REMARKS

If Stephen Hawking is correct about humanity's connectedness, 5G has accelerated that vision and makes it more available. As 5G becomes the new wireless standard, society will be connected to technology in a way that might shift lives from technology-enabled to technology-dependent.

Lawyers continue to play a prominent role in how relationships are managed. In many respects, 5G will allow for next level communications, with inherent concerns about security, privacy, waiver of privilege and policy likely informing the most formidable challenges for 5G technological deployment. Throughout the ages, technology benefits are largely measured by the ability to generally improve the well-being of society. 5G technology will enable technology delivery in ways that will have a tremendous impact on society. Those changes will be rapid. Whether or not it will lead to improvement will engage consideration of ethics, policy and law. V

1 https://www.cnet.com/news/5g-is-coming-but-not-everyone-is-happy-about-it/?ftag=CAD-03-10aaj8j
2 https://www.cnbc.com/2018/08/30/warren-buffett-says-he-bought-just-a-little-more-apple-recently.html
3 Webb, William. 2016. The 5G Myth and Why Consistent Connectivity is a better future. CreateSpace Independent Publishing Platform; 2 edition.
4 Webb, William. 2016. The 5G Myth and Why Consistent Connectivity is a better future. CreateSpace Independent Publishing Platform; 2 edition.
5 https://kenstechtips.com/index.php/download-speeds-2g-3g-and-4g-actual-meaning
6 https://www.ngmn.org/5g-white-paper/5g-white-paper.html, referenced by Webb, W.
7 Consider anytime google maps is used and how it asks a user to then rate businesses nearby locations visited. The application of artificial intelligence and predictive suggestions becomes far more powerful with increased data input.
8 Webb, William. 2016. The 5G Myth and Why Consistent Connectivity is a better future. CreateSpace Independent Publishing Platform; 2 edition.
9 For example, many significant technology developments are militaristic. These inventions in and of themselves are designed to accomplish harm, the paradox of progress.
10 Online shopping is an example and tele education are just two examples of services that are fundamentally delivered in a technology enabled environment.
11 Hermann, Andreas, et al. 2018. Autonomous Driving: How The Driverless Revolution Will Change The World. Emerald Publishing Limited
12 https://www.hedera.com/