

Forum: First General Assembly on Disarmament and International Security

Issue: The question of the role of 5G in surveillance

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Introduction

A global communications device that has seeped into almost every nook and cranny of modern-day civilization, the advent of the mobile phone has been a defining invention of the last century. From the earliest phones before the development of the automatic dialing system to the first commercial mobile phone services in 1946, the development of 5G is just the latest technological breakthrough in a sector that embodies the spirit of invention and innovation. At its core, 5G is the fifth generation of cellular networks, and the successor of 4G LTE, defined by the 3GPP (3rd Generation Partnership Project) by its spectrum of radio signals used to transmit data. 5G networks aim to sustain a far significant number of cellular devices and decrease latency, or the delay of communication between devices. While indeed, such improved connection capacities may benefit the average mobile user, the real significance of 5G lies in its potential to connect internet-accessible devices and create "smart cities" around the globe. In nature, 5G infrastructure is aimed more at the industrial landscape and entire enterprises rather than individual consumers as it possesses the potential to facilitate the rapid relay of massive quantities of information.

As a result, with the implementation of 5G networks, more information and data than ever before will be processed through the internet, which has enormous potential to be used in malicious surveillance. In essence, the debate on the implementation of 5G has far-reaching influences in not just the realm of technology, but also in that of global security and personal privacy.

At BEIMUN XXVII, delegates will dive deep into the untapped potential of 5G networks, devising ways to regulate the ongoing development for the protection and betterment of global privacy and security. While indeed delegates will be able to make decisions on behalf of their nation's foreign policy, it's crucial to realize that the development of 5G is a process that involves more entities than just countries themselves and to consider the interests of such entities when making decisions and drafting resolutions.

In a fragmented world where it is easier and more acceptable than ever to dissent (case in point, the tensions between the United States and Huawei) nations should strive to reach a compromise and evaluate beyond the narrow scope of national interest to protect personal data in the best interest of human rights.

Definition of Key Terms

5G and Cellular Networks

5G is the fifth generation of cellular network technology, the successor to 2G, 3G, and 4G, as well as respective related technologies. Cellular networks are networks that provide internet services to mobile devices using base stations, which are physical radio transmitters and receivers. 5G differs from its predecessors not only because it will drastically reduce latency, but also because it will transmit information via what is known as a millimeter-wave. This particular wavelength is of extremely high frequency and previously has only been used by radar systems and satellites. Millimeter waves, however, are short in range and incapable of penetrating obstacles. As a result, 5G networks will have to be relayed on dense construction of base stations, essentially miniaturized versions of a cell tower, to compensate for the lack of range in 5G infrastructure.

Cybersecurity

Cybersecurity refers to the established system of preventative measures typically taken by an entity to safeguard and protect data, particularly against malicious intent such as deliberate attacks, damage as well as theft of personal information.

Digital Surveillance

Surveillance is systematic attention to one's personal information with the motivation to use it for potentially malicious purposes. Digital surveillance is those mentioned above achieved through digital means and channels.

Fourth Industrial Revolution

The Fourth Industrial Revolution was a term coined by Klaus Schwab, the founder and executive chairman of the World Economic Forum. The Revolution itself is characterized by the joint fusion of physical, biological, and digital worlds through the channel of technology that will fundamentally change society. In recent years, technology has been developed and made accessible at an unprecedented rate. In the past year alone, the development of cheaper technology has allowed internet access to reach once disconnected places such as rural India. Spontaneously, The Fourth Industrial Revolution has already begun its manifestation with the rapid integration of technology into our daily lives.

Internet of Things

The Internet of Things (IoT) is a concept of interconnectedness between any device, including the likes of coffeemakers, washing machines, and lamps. With decreasing costs of production, internet capabilities have become embedded in an increasing number of products, and the development of 5G will only augment this number. Still, the IOTs also pose major personal privacy and data issues, as it would facilitate tracking of human behavior in all aspects of their daily lives.

Platform Fragmentation

Platform fragmentation is the rift between hard and software, which makes connecting devices and developing mutually compatible applications difficult. Platform fragmentation is a weakness in cybersecurity, as often users with devices that run older versions of soft/hardware without the necessary patching are more susceptible to cyberattacks.

Smart Cities

Smart cities are a concept for urban development with the fundamental intent of utilizing data from the Internet of Things to develop tech-based infrastructure with urban areas.

Telecommunications Service Provider

Telecommunications Service Providers (TSP) are wireless service providers that supply cellular connectivity to their customers. Typically, they own the necessary infrastructure, cellular towers, servers, switching centers, base-station controllers, and other components, to provide network services. While TSPs usually are not the innovators of 5G technology, they are the most direct link between consumers and the network itself, offering the service as well as installing the technology.

Background

An Introduction to 5G & Its Development

While Model UN in no way requires an extensive understanding of the specific technicalities of 5G, it's still important to understand some of the technological aspects of 5G to develop a better understanding of its potential and weaknesses as with all cellular networks, signals are sent and received in a 5G network through radio waves. Due to the nature of 5G wavelengths — which drastically decrease the range of connectivity — an increasing number of cellular relays will have to be installed to ensure uniform access to the network.

What is distinctive about 5G is its capacity for speed and inclusivity of devices. Some estimates expect 5G, theoretically, to top out at rates of 10 gigabits per second, which is over a hundred times faster than the current maximum speed for 4G. With increased speeds comes reduced latency, a term used to describe the delay in communication between devices. While this may indeed improve the consumer experience and interaction with their mobile devices, the underlying significance of 5G lies somewhere else.

With reduced latency (a maximum latency of 4ms as compared to 20ms on current day 4G LTE devices) and increased access to the internet comes the development of Ultra-Low Latency Networks (URLLCs) and Massive Machine Type Communications (mMTC). While the two systems of communication are different in nature and application (URLLC is geared more towards businesses whereas mMTC is more towards the interaction between mobile-phone users), they all demonstrate a growing trend of interconnectedness between devices.

This is precisely where the concept of the Internet of Things stems from, made possible by the low latency of 5G networks. As IBM defined it as part of a 2017 paper that compiled definitions of IoT, IOTs are "the growing range of Internet-connected devices that capture or generate an enormous amount of data every day along with the applications and services used to interpret, analyze, predict and take actions based on the information received."

The Pertinence of 5G to Global Security and Surveillance

IOTs have huge potential to positively impact businesses, individuals, industries, and entire economies alike. As Michael E. Porter explains in the Harvard Business Review, "Smart, connected products offer exponentially expanding opportunities for new functionality, far greater reliability, much higher product utilization, and capabilities that cut across and transcend traditional product boundaries." Soon, IOTs will have the tremendous capability to integrate devices, and further down the line, potentially change the urban landscape and communications. This may perhaps be in smart elevators, smart automobiles, and smart electrical grids, all to create what many experts have defined as a "smart city."

Yet, with increased communication between devices also comes an influx in the passage of data, presenting an opportunity for companies, governments, and unauthorized third parties alike to monitor, sell, and manipulate user information.

Governments themselves have a strong motivation to "spy" on their citizens, and many argue that such is necessitated by a need to maintain public order and national security. However, the situation becomes a lot more complicated when one considers the ethics of doing so as well as the involvement of third parties in the relay process. In countries such as the United States, citizens believe that surveillance activities by the government are in direct violation of their constitutional privacy safeguards. Likewise, the government obtains its data from third parties, often TSPs like AT&T. When such third parties share the same information with firms in the private sector, there may be potential opportunities for corporations to utilize personal data for their monetary gain. As aforementioned, 5G necessitates an increased number of cellular relays, meaning that individual devices will connect to more relays that more precisely identify the location of the device. As a result, TSPs will have information on the specifics of exactly where someone is, where they came from, and where they are headed. This information can, and in the past, has been sold to different entities for marketing, tracking, and surveillance. Combined with the transfer of data along IOTs, 5G has the terrifying potential of erasing anonymity, and this has increasingly become a reality. In an interview with The Wall Street Journal, Steve Bellovin, a computer-science professor at Columbia University, reasoned "might a pollution sensor detect cigarette smoke or vaping, while a Bluetooth receiver picks up the identities of nearby phones? Insurance companies might be interested."

With increasingly sophisticated technology such as machine learning and artificial intelligence (development of which would both be colossally supplemented by the development of 5G) also comes an increasingly prominent risk of personal data. Often, AI and machine learning are integrated into hardware such as automated vehicles, and physical security becomes of concern when such systems may be infiltrated. Likewise, AI is often able to develop a sophisticated understanding of users of technology and their preferences, habits, and behavior. As a result, entities with access to such data will be able to manipulate users through means such as systematic political advertising.

Beyond this, 5G's enormous potential to track people moves into the realm of video cameras, which would be enabled by IOTs as having the ability not only to capture video but also to identify and track objects within said video actively. It is assumed that this is in the case of some developed nations already, wherein states have begun amassing databases with facial recognition enabled video cameras.

Current Global Situation Regarding 5G, Surveillance & Privacy

Recent Development of 5G

As of today, 5G networks are rapidly expanding and developing all across the globe. In April of 2019, the Global Mobile Suppliers Association (GSA) identified 204 operators that were actively investing in 5G mobile or 5G wireless broadband networks. These 204 operators were situated in 85 different countries; currently, there are around nine companies that sell 5G radio hardware to TSPs, including those of AltioStar, Cisco, Datang Telecom, Ericsson, Huawei, Nokia, Qualcomm, Samsung, and ZTE. Currently, Huawei is the controversial global leader in 5G technology, boasting more than 50 contracts in over 30 different countries.

5G is now available in limited urban areas across the globe. In the USA, all four major carriers (Sprint, Verizon, AT&T, and T-Mobile) offer some 5G service in a handful of cities. On December 1st, 2018, three South Korean TSPs collaborated to provide 5G access to the nation, and just a few months ago, China Mobile, China Telecom, and China Unicom launched 5G access in China.

Huawei, 5G & The USA

While 5G is still in its early stages of development, there has already been much controversy surrounding it, particularly with Huawei, a Chinese based company that is the leading provider of 5G infrastructure. Huawei continues to be the global leader in technology and supply (partly due to its cheap costs and sophisticated equipment). However, many nations have expressed concerns over the integrity of the company and its equipment. Accusers have cited its shaky past, government interference with the company, and alleged incidents of intellectual property theft. Despite all this, the company still has dealt with numerous TSPs all across the globe to provide 5G infrastructure.

Regarding geopolitical concerns, there are allegations that China has utilized Huawei & ZTE to essentially "infiltrate" the US and other Western data networks. While such claims are merely speculations and unfounded, they draw attention to how the use of such technology from foreign firms may introduce potential security vulnerabilities into a network that will increasingly lie at the heart of the global economy.

The initial involvement of technology in the trade war was the mutual prohibition of usage of technologies from the other country. Yet, gradually, the ban stemmed into the advancement of their technological capacities, eventually resulting in the formation of a "Silicon Curtain" between the two nations. The involvement of technology in the trade war grew into political tension with the arrest of Huawei CFO Meng WanZhou on charges of fraud linked to violations of Iran sanctions.

The Facebook Controversy

While the Facebook Controversy has no direct correlation with 5G technology, it was a glance into how susceptible personal data was to be manipulated and how unready both local and international legislation was to regulate the ever-changing realm of technology. In short, the controversy revealed the deliberate use of data for targeted advertising and court-hearings only strengthened the notion that American policymakers were remarkably unaware of the technology that they were debating legislation upon. With the development of 5G and IOTs, potential malicious use of data will only be on a larger scale, and that may pose a considerable security risk to individual consumers of mobile electronics.

Major Parties Involved

3GPP (3rd Generation Partnership Project)

3GPP is a partnership project that defines the technical specifications for 5G. The partnership project consists of seven SDOs (Standards Development Organizations) that congregate almost 140 times a year. The technical requirements that 3GPP defines ultimately become standards. As of right now, 3GPP has published Release 15 with some tentative technical specifications and is currently working on Release 16. While the technical requirements embedded within each release is not essential, it is crucial to realize the role that 3GPP has to create cohesiveness and prevent 5G “developmental chaos.”

China

In recent months, China has jumped to the forefront as the global leader in 5G, currently possessing the largest 5G network in the world. Now, 5G networks have been established in 50 cities all across the country, and all three major carriers now offer 5G network plans to their users. In essence, China has pushed towards becoming this global leader, and it has a real geopolitical motivation to do so. By becoming a so-to-speak “first mover,” China will demonstrate the capabilities of 5G and become a global leader in said technology, exporting their systems to the rest of the world. Furthermore, the development of 5G and IOTs give China a boost in its efforts to create a “digital silk road.”

The Chinese government has long pushed for technological development and independence, and in particular, Made in China 2025 is a strategic plan that seeks to make China a global leader in high-tech manufacturing. In particular, this includes the sectors of renewable energy transportation, next-generation IT and communications, and advanced robotics and AI.

China’s emergence as a global leader in 5G has brought its fair share of controversies, and more about geopolitics will be discussed in the section below about the USA.

Germany

Germany's own Deutsche Telekom recently launched its 5G network to give German cities, seeking to expand to Hamburg and Leipzig by the end of the year. Germany has been somewhat caught as an intermediary in the crossfire of the trade war between the USA and China, which has escalated due to the race to develop 5G. Whence finalizing rules for the build-out of 5G networks, Huawei technology was not excluded, despite heavy pressure from the USA to shut-out Huawei. Germany is a rare case of the dilemma many nations face, as because all major TSPs rely on Huawei for their technology, choosing to ban the vendor would set the country back years in development and be extremely costly.

Huawei

As a tech company based in Shenzhen, China, Huawei has perhaps been the most controversial figure relating to the topic at hand. The USA slams it for alleged intellectual property theft and murky history, further warning its allies that Huawei's 5G technology may pose a security and spying risk, allegations of which Huawei denies. On the other hand, Huawei has emerged as the clear-cut, upfront global leader in cheap and developed 5G technology. China Mobile awarded nearly half of its 5G networking contracts to the company, and it is also the supplier of technology to multiple TSPs in all parts of the world. While legally speaking a non-state actor, Huawei, to some extent, still carries out the interests of the Chinese government and has to be considered in relevant discussion on the topic.

ITU (International Telecommunications Union)

The ITU is a United Nations based agency with a specialization in information and communications technologies. According to the organization itself, "ITU plays a leading role in managing the radio spectrum and developing globally applicable standards." The ITU is a powerful instrument with enormous potential to develop converging international standards as well as well-performing, secure 5G networks. With more than 193 member states, the power it holds as an entity of the UN is also not to be underestimated.

United States of America

The USA & China are currently engaged in a "political fight" over not along with the development of the 5G network itself, but also in the development of related technologies that would spark the rise of IOTs. As of recent, the major American carriers have already established 5G networks in many major cities across the country, whereas Silicon Valley continues to be the heart of the innovation that may spark this Fourth Industrial Revolution. Yet, what is more, important to understand about America in this context is the implications of the "5G battle" it has engaged with China. While nominally, the US reasoned its ban of products from Huawei under claims of relations with Iran, part of the motivation to do so might have been an attempt to keep Huawei 5G technology out of the American market. What is perhaps now ensuing is a polarization of technologies between the China "5G camp" and the American "5G camp." This is a potential threat to the security of all 5G networks, as the existence of two non-compatible technologies and networks may lead to platform fragmentation, creating a vulnerability in cybersecurity.

In June of 2013, The Guardian reported the first leak of top-secret documents that Edward Snowden had obtained from the NSA (National Security Agency). Subsequent documents provided evidence that the NSA, among other

acts, had collected telephone records as well as data through back door access to Google and Facebook. There has been much controversy surrounding the nature of such leaks, a term coined by media critic Jay Rosen as “The Snowden Effect.”

Previous Attempts to Resolve the Issue

The development of 5G and related security concerns is a recently developing issue with no real precedent. As a result, there have been a few previous attempts to address a similar issue. However, that is not to say there are lessons from history that delegates should not note. Among others, the question of 5G is related to the intersection of politics and technology, and in recent years, there have been many associated cases that delegates could examine and evaluate.

For one, the situation with data transparency and Facebook demonstrated how unready the legislative system was to tackle technology-related issues, and how policymakers were concerningly unaware of such technology. Furthermore, a few years ago, the Edward Snowden files brought to light on how the NSA, among other organizations, used technology to spy on people essentially.

5G will only increase the extent to which such issues will prevail, and delegates must examine such related issues to understand what necessary measures must be taken to ensure a safe and secure transition to 5G networks.

Possible Solutions

The situation regarding 5G networks and security is one that extends far beyond the pure realm of technology. Instead, with the intermingling of politics in the issue, the greatest thing for delegates to **strive for is unity**. At BEIMUN XXVII, delegates should devise solutions that will ensure that the global transition to 5G networks is one that emphasizes the privacy of consumers, and below are some ideas delegates should consider while drafting solutions.

First and foremost, delegates should actively **seek ways to prevent the development of a pro-Chinese 5G technology camp and an anti-Chinese 5G technology camp**. If countries continue to impose bans on Huawei technology, what will ultimately ensue is the creation of two separate, incompatible 5G networks. However, as previously noted, platform fragmentation is a threat to Cybersecurity as it creates points of vulnerability that are more susceptible to cyberattacks (think devices are running an older system of software without necessary patches).

Yet, allowing Huawei to supply all of the world's 5G network poses yet another issue. The concerns expressed by Western Nations of the company's history and influence under the Chinese government aren't entirely unwarranted, and the implementation of Huawei infrastructure across the world may allow China to gain access to information in foreign networks. Thus, it is crucial to **foster a healthy**

market of 5G infrastructure, wherein all firms engage in a perfectly competitive market and sell homogenous technologies. However, this may be a challenge as of current as Huawei is already the global leader in such technology, and other firms from other countries are playing the catchup race rather than innovating. Thus, it may be worthwhile also to consider **developing opportunities for companies to expedite the process of product development.**

A major concern for 5G networks is the potential it possesses for TSPs and governments similar to "spy" on people for different motivations. Delegates must consider **mechanisms to deter companies and governments from using 5G to gain access to private information.** For example, delegates may choose to enact measures that protect whistleblowers like Edward Snowden, who has the potential to provide valuable information. Because 5G is a relatively new technology, the **creation of international legislation and guidelines** is vital to the development of this technology. What the Facebook controversy demonstrated was how important it is for policymakers to stay up to date on such technology. As such, related laws regarding 5G should be continuously updated by people who are aware of the subject at hand.

Delegates, 5G has a huge potential to change and facilitate all processes in our lives. With the subsequent development of the Internet of Things, this technology has the potential to change human society drastically. As we integrate 5G into our world, it is essential to consider the **potential political, social, and technological implications** it can cause, and it is in our best interested in implementing this technology while protecting the fundamental human right to personal privacy and security.

Bibliography

- 3GPP. "RELEASE 15: Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); ." *ETSI*.
- Busvine, Douglas. "Deutsche Telekom 5G network goes live in 5 German cities." *Reuters*, 5 Sept. 2019, www.reuters.com/article/us-tech-ifa-deutsche-telekom/deutsche-telekom-5g-network-goes-live-in-5-german-cities-idUSKCN1VQ0KH.
- Cheng, Roger. "The 5G Wireless Revolution." *CNET*, 27 Oct. 2019, www.cnet.com/news/the-5g-wireless-revolution-explained/.
- Cybersecurity and Infrastructure Security Agency. "OVERVIEW OF RISKS INTRODUCED BY 5G ADOPTION IN THE UNITED STATES ." *Department of Homeland Security*, 30 July 2019, www.dhs.gov/sites/default/files/publications/19_0731_cisa_5th-generation-mobile-networks-overview_0.pdf.
- THE DEPARTMENT OF COMMERCE INTERNET POLICY TASK FORCE & DIGITAL ECONOMY LEADERSHIP TEAM. "FOSTERING THE ADVANCEMENT OF THE INTERNET OF THINGS."

- National Telecommunications and Information Administration*, Jan. 2017, www.ntia.doc.gov/files/ntia/publications/iot_green_paper_01122017.pdf.
- Ellsmoor, James. "Smart Cities: The Future Of Urban Development." *Forbes*, 19 May 2019, www.forbes.com/sites/jamesellsmoor/2019/05/19/smart-cities-the-future-of-urban-development/#16c5c07e2f90.
- ETSI. "Third Generation Partnership Project (3GPP)." *European Telecommunications Standards Institute*, www.etsi.org/committee/1418-3gpp.
- Eurasia Group. "Eurasia Group White Paper: The Geopolitics of 5G." *EURASIA GROUP*, 15 Nov. 2018, [www.eurasiagroup.net/siteFiles/Media/files/1811-14%205G%20special%20report%20public\(1\).pdf](http://www.eurasiagroup.net/siteFiles/Media/files/1811-14%205G%20special%20report%20public(1).pdf).
- Global Mobile Suppliers Association. "LTE-5G Market Statistics –March 2019 Update." *Global Mobile Suppliers Association*, Mar. 2019, gsacom.com/paper/lte-5g-market-statistics-04-2019/.
- Halpern, Sue. "The Terrifying Potential of the 5G Network." *The New Yorker*, 26 Apr. 2019, www.newyorker.com/news/annals-of-communications/the-terrifying-potential-of-the-5g-network.
- Lal Das, Prasanna; Beisswenger, Stefan Claus; Mangalam, Srikanth; Yuce, Mehmet Rasit; Lukac, Martin. 2017. "Internet of things : the new government to business platform - a review of opportunities, practices, and challenges (English)" Washington, D.C. : World Bank Group. <http://documents.worldbank.org/curated/en/610081509689089303/Internet-of-things-the-new-government-to-business-platform-a-review-of-opportunities-practices-and-challenges>
- Morgan, Jacob. "An Explanation of The Internet of Things." *Forbes*, www.forbes.com/sites/jacobmorgan/2014/05/13/simple-explanation-internet-things-that-anyone-can-understand/#fb4fbe11d091.
- Morris, Jason. "History of the Telephone." *Independent Telecommunications Pioneer Association*, www.nationalitpa.com/history-of-telephone.
- Morton, Heather. "Mobile 5G and Small Cell 2019 Legislation." *National Conference of State Legislatures*, 7 JUL 2019, www.ncsl.org/research/telecommunications-and-information-technology/mobile-5g-and-small-cell-2019-legislation.aspx.
- Pham, Sherisse. "China just launched the world's largest 5G network." *CNN Business*, 1 Nov. 2019, www.cnn.com/2019/11/01/tech/5g-china/index.html.
- Schwab, Klaus. "The Fourth Industrial Revolution." *Encyclopædia Britannica*, Encyclopædia Britannica, inc., 25 MAY 2018, www.britannica.com/topic/The-Fourth-Industrial-Revolution-2119734.