The 5G conundrum amid geopolitics and security in Europe

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Resumo

A rede 5G é a nova geração de rede sem fio, representando uma evolução na revolução digital. Embora possa trazer enormes benefícios para as empresas e os consumidores, esta rede é conotada como uma infraestrutura crítica, tornando-se um dos campos de competição mais significativos entre as potências globais. Portanto, o 5G deve ser visto no contexto geopolítico causado pela ascensão da China, que almeja tornar-se um líder global em tecnologia. Este artigo visa compreender os principais desafios do debate 5G, focando-se no processo de implementação da rede 5G na União Europeia. A primeira parte do artigo debruça-se sobre a estratégia divergente 5G da Huawei numa Europa fragmentada. O debate atual sobre o 5G determinará a aliança da Europa com os Estados Unidos e a sua relação com a China. A segunda parte do artigo incide sobre o processo de implementação da rede 5G em Portugal, um membro da União Europeia que ainda coopera com a Huawei. A última parte do artigo considera as implicações geopolíticas e de segurança em ter uma rede 5G dominada pela Huawei.

Palavras-chave: 5G; Huawei; Europa; China; Estados Unidos; geopolítica; segurança; sociedades digitais; Portugal; competição; autonomia estratégica; domínio tecnológico.

Abstract

The 5G network is the latest generation of wireless technology, representing an upgrade in the digital revolution. Although it is supposed to bring tremendous benefits for both enterprises and consumers, it has started to be perceived as a critical infrastructure, becoming one of the most significant fields of competition among global powers. Hence, 5G should be seen in the context of a more geopolitical world order caused by the rise of China as a global technology leader. With a focus primarily on Europe and its 5G implementation process, this paper aims to understand the core stakes in the 5G debate. The first part of the paper focuses on the 5G divergent strategy on Huawei in a fragmented Europe. The current debate on 5G will determine Europe's alliance with the United States and its relation with China. The second part of the paper examines the 5G implementation process in Portugal, a member of the European Union still cooperating with Huawei. The last part of the paper considers the geopolitical and security implications of having a 5G network dominated by Huawei.

Keywords: 5G; Huawei; Europe; China; United States; geopolitics; security; digital societies; Portugal; competition; strategic autonomy; technological dominance.

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Introduction

In the thought of Carl Von Clausewitz's, it could be said that the discussion about the 5G network represents the continuation of great power competition by other means[2], in an era of the global race for technological supremacy, on earth and surreptitiously, in space too. Today's dominating headlines have made the 5G issue a ubiquitous topic, but its sheer scope and transformational power are underestimated. This next generation of wireless connectivity will have a lasting and long-term impact on our lives, revolutionising all spheres of economy, politics and security. The science-fiction odyssey described in literature has become a reality, with benefits but at the same time, with many more risks and threats.

The country that dominates the current leadership in the development of 5G networks is China, driven by the strategic imperative of Beijing, with the Asia-Pacific region leading the implementation of the new networks. As for Europe, the adoption of 5G has become a controversial issue with the Chinese company Huawei leading the implementation process, provoking divergent reactions within the European Union. In addition, the United States government considers the Chinese company a threat, which has become a symbol of confrontation between the United States and its increasingly ambitious adversary, China. The imminent deployment of the 5G infrastructure also represents a commercial and political struggle for controlling the industries of the future. Europe has been caught up in this imbroglio, and it is becoming clear that it needs to develop a strategy to guide it, not only through the current 5G network debate but also through the technological rivalries that are yet to come[3].

[2] Carl von Clausewitz's original quote is: "War is the continuation of politics by other means." In *On War*, trans. Col. J.J. Graham. New and revised edition in Three Volumes (London: Kegan Paul, Trench, Trubner & C., 1918). Vol. 1 Chapter: "CHAPTER I: WHAT IS THE WAR?"

[3] Ruhlig, Tim et al. "5G and the US–China Tech Rivalry – a Test for Europe's Future in the Digital Age" *Swp*, Comment, 19 June 2019.

Geopolitical forces shape the development of 5G technology, and these developments influence the future of international relations. Currently, Europe is discussing a ban on the Huawei company. Some countries have not yet placed limits on the company, others have already restricted participation in the critical infrastructure, and some countries have banned Huawei. Until recently, Portugal was in a group of countries that had not yet placed limits on the Chinese company. However, the recent report on 5G risks in Portugal by the National Security Office[4] was considered geopolitically sensitive. Soon after, the government revealed that it would pass a law requiring telecommunications brands to prove they are safe[5].

In fact, the current debate on 5G will determine Europe's alliance with the United States and its relationship with China. European companies are inevitably faced with difficult choices, and the competitive offer of the company Huawei poses challenges to the European Union. At this juncture, member-states must choose one side, reflecting Europe's weakness and lack of strategic autonomy. Therefore, the construction of 5G infrastructures can allow Europe to develop and consolidate a strategy of a technological ecosystem with its industrial autonomy.

1. 5G in a fragmented Europe

In the current scenario of tension between the United States and China, and as 5G networks are a strategic industry, they have become an arena for confrontation between the two powers over the future of new technologies. Reminiscent of the Cold War's echoes, albeit with many differences, both players seek to expand their areas of influence and elevate their *status quo*. China

https://www.swp-berlin.org/fileadmin/contents/products/comments/2019C29_job_EtAl.pdf

[4] ZAP. Risks of 5G in Portugal closed to seven keys (report is too "sensitive"). 30 September 2020. https://zap.aeiou.pt/riscos-do-5g-portugal-encerrados-sete-chaves-relatorio-demasiado-sensivel-350126

[5] Séneca, Hugo and Matos, Vítor. "Government will make it difficult for the Chinese to enter 5G". *Expresso*. 3 October 2020. https://expresso.pt/politica/2020-10-03-Governo-vai-dificultar-entrada-dos-chineses-no-5G

is becoming a technological power, and in the process, the United States is challenging its ambitions. In this regard, the European Union is in a difficult position. Generally, in national security matters, the European Union makes decisions in alignment with the United States. However, the situation with 5G networks reflects a new scenario, where the competition for dominance may compromise the future partnerships in the area of security and defence. Faced with this situation, the European Union is at crossroads, where it will have to choose, and naturally, follow a strategic line of union, which has been difficult, considering the divergences of each member regarding the 5G networks and their economic relations with China.

By the end of August 2020, more than ten European countries had implemented the 5G network, including Germany, Austria, Italy, Romania, United Kingdom and Sweden[6]. Germany is one of the European countries where the Chinese company Huawei dominates most in terms of equipment. In Italy and Spain, the 5G network has been commercially implemented in several cities, and in some of them, 5G coverage reaches almost 80% of the city. However, in July, the United Kingdom has banned the Huawei company, France imposed limits on Chinese equipment, and Italy excluded the company from the tender list for 5G equipment. There are also rumours that Germany may adopt policies, which formulate more rigorous technical criteria that could eventually lead to a partial ban. However, recently, the German authorities stated that banning Huawei is not a solution and has very high costs, which would increase the difficulty of building the 5G network since the Chinese company holds most of the patents in the 5G field.

At the heart of the 5G network issue is the security of communications between member-states. In October 2019, a report by the European Union Agency for Cyber Security (ENISA) reflected that there are threats in the 5G system, which call into question the security of the

[6] See https://5g-ppp.eu/5g-european-cities/

European Union's telecommunications networks. Recent joint efforts are a significant step that has resulted in a coordinated risk assessment as part of the European Commission's "Strategic Perspective on its relationship with China"[7]. In this document, the European Union no longer describes China as a developing country but as a global player and a leading technological power, emphasising that while China is an essential partner in cooperation and negotiation as well as an economic competitor, it is also a systemic rival, mainly due to its model of government. However, despite this perspective, Europe faces several challenges and significant differences in the way it deals with the Huawei company. The only countries that have followed United States' position in banning Chinese company are Poland, Czech Republic and the United Kingdom[8]. Countries like Portugal, Spain and other Nordic countries like Sweden or Finland are apprehensive about banning the company, as there is close cooperation with China in technology.

Since many member-states are dependent on Huawei components for 5G architecture, the European Union's geopolitical vision of 5G networks faces several challenges, where each country is managing its relationship with China, the company Huawei and the United States in its way. At the same time, many European countries continue to consider the United States as their most crucial ally while taking advantage of China's economic and trade relations. However, the European Union must seek alignment with like-minded partners to maintain international stability. In general, most European governments have been postponing to choose one side by avoiding taking sides in this geopolitical confrontation. Nevertheless, this postponement can no longer be extended, as the security implications may affect the transatlantic relations, which have suffered a few setbacks in recent years with Trump's presidency. Therefore, it should aim for a more

[7] "EU-China – A Strategic Outlook". *European Commission*. HR/VP contribution to the European Council. 12 March 2019.
[8] See https://www.channele2e.com/business/enterprise/huawei-banned-in-which-countries/

consolidated approach among its member-states to mitigate the risks to certain providers' telecommunications networks. Simultaneously, its goals should include cooperation with allies having the same interests to achieve a global consensus on the 5G spectrum vision.

Moreover, amid this geopolitical competition, compared to the progress of the deployment of 5G networks in Asia, Europe is falling behind. China's ambition is to become a world technological leader and has followed clear objectives, where innovation represents a strategy for development and progress[9]. The country continuously invests in further research and innovation projects, while Europe fails at this point. In recent years, China has invested over $400 billion in 5G networks, and three of the most important Chinese operators - China Mobile, China Telecom and China Unicom, have launched all 5G services in more than 50 cities still in 2019[10].

In Europe, the 5G Action Plan has set the goal of implementing 5G in at least one city in each member-state by the end of 2020. However, many contracts between mobile operators and equipment vendors remain secret, especially as member-states have not yet fully announced approved measures to restrict high-risk vendors from their 5G networks. The European Commission recognised in 2013 the potential of 5G, being one of their top five priority areas. To this end, it launched a public-private partnership, which aimed to raise 700 million euros of funding from the European Union and 3 billion euros of private investment by 2020 for research and innovation in 5G technology[11]. Compared to China, these numbers are minimal, considering that at the moment, Beijing is committed to investing more than 150 billion dollars in the development

[9] China Policy, "China Going Global between ambition and capacity", *China Policy*, 2017. https://policycn.com/wp-content/uploads/2017/05/2017-Chinas-going-global-strategy.pdf
[10] Perez, B. "Why China is set to spend US$411 billion on 5G mobile networks", *South China Morning Post*. 2017. https://www.scmp.com/tech/china-tech/article/2098948/china-plans-28-trillion-yuan-capital-expenditure-create-worlds
[11] "5G PPP". *The 5G Infraestructure Public Private Partnership.* https://5g-ppp.eu/

of its 5G network by 2025[12]. The lack of more investment and coordination of digital policies, which continue to be dominated by nationalist trends, hinder their joint development. Moreover, the lack of competitive internal technological alternatives to equip its future communications infrastructure poses the risk of becoming too dependent on one producer from China or any other country. The dependence on foreign supply components leaves Europe confronted with growing vulnerability in its critical infrastructure.

Therefore, the European continent needs to build a more competitive digital industry and put Europe in a better technological position. Following this ambition, the European Union and the United States have common interests in technology as they share democratic systems and values. In this race for technological supremacy, in this case, 5G, Beijing's digital reach is not only motivated by economic motives but is connected to competition between political systems, where we have liberal democracy on the one hand and China's communist authoritarianism on the other.

Eventually, how China's digital development will affect Europe will depend first and foremost on two critical conditions. First, if the Chinese government continues with its digital ambitions within a more politically powerful or cooperative framework and whether the European leadership will respond to China's digital rise challenges in a united and strong, or fragmented, and hence, weak way[13]. Nonetheless, there is considerable uncertainty about China's future relations and the European Union in the digital sphere either in the first or later scenario. In the near future, several aspects will determine the relationship between the two, namely the political

[12] Tomás, Juan Pedro. "China to invest over $150 billion in 5G networks by 2025: Report". *RCR Wireless News*. 2 Julho 2019. https://www.rcrwireless.com/20190702/5g/china-invest-over-150-billion-5g-networks-2025-report

[13] Shi-Kupfer, Krisitn and Ohlberg, Mareike. "China's Digital Rise - Challenges for Europe"No 7. Merics. 2019. pp.43-46.
https://merics.org/sites/default/files/2020-04/MPOC_No.7_ChinasDigitalRise_web_final_2.pdf

and economic dynamics in China, the degree of internal European alignment with digital policies, the expansion of its digital industrial base and China's and Europe's relations with Washington[14].

2. Portugal and the process of implementing 5G networks

Like Germany's position, although with many differences in implementing 5G networks, Portugal has cooperated with China and the Chinese company Huawei by creating strategic partnerships and collaborative university projects. In December 2019, Portugal received a visit from the President of China, Xi Jinping. The visit itself was notoriously diplomatic, in which several agreements were signed. Altice Portugal signed an agreement with Huawei to develop the 5G network and several communication services[15]. Besides, the Chinese company has recently formalised a partnership with the University of Aveiro (UA) and the Institute of Telecommunications to create a laboratory in Aveiro dedicated to the 5G network and Artificial Intelligence. The laboratory aims to provide a realistic environment for developing and testing new devices, networks, and research for 5G technology.

In Portugal, the 5G network implementation process is regulated and coordinated by the national telecommunications regulator ANACOM. The regulator intended to allocate 5G spectrum in April, but due to the pandemic, Portugal has suspended the auction of 5G frequencies and is expected to happen soon in October 2020. For now, no supplier is excluded from participating in the auction. Since the Chinese company Huawei has already a presence in Portugal, being one of the significant technological partners of national operators, such as Altice Portugal and NOS, it is one of the most competitive suppliers in the auction. However, given the reactions of other

[14] *ibid*.
[15] ComputerWorld. "Altice Portugal and Huawei sign memorandum for 5G". 27 February 2018. https://www.computerworld.com.pt/2018/02/27/altice-portugal-e-huawei-assinam-memorando-para-5g/

European Union countries, which have already restricted the company's participation, and Portugal is one of the member-states, it is only a matter of time before the Portuguese government approves Huawei limits.

Furthermore, the country is one of the founding members of NATO. Having 5G provided by Huawei incorporated into its critical communications infrastructure becomes a matter of national and international security. The use of Huawei equipment in telecommunications between member-states has security implications, namely in sharing information and other critical data. What is at stake is the security of sharing information between member-states with their allies, where their networks may be vulnerable to interception or even disruption of communications. The security of one is the security of all, and since the European Union is composed of 27 member-states, Portugal should seek to fit into the collective vision. Therefore, the implementation of the 5G network provided by Huawei, without stricter government directives, may have repercussions on the Euro-Atlantic geopolitical space and its relationship with its allies.

Despite Portugal's privileged relationship with the United States, it has also managed to have good relations and attract Chinese investment. Currently, Portugal is one of the leading destinations for Chinese investment, especially in energy, transport, health, construction, real estate and financial services**.** Moreover, Portugal's geostrategic position in the Atlantic, connected to Europe, makes it an attractive partner in China's strategy. The Silk Road initiative aims to include the country, with the Port of Sines being a potential centre of the connection between the maritime and land routes, where the use of 5G networks is fundamental. The Atlantic basin has been a vital strategic asset, with the Lajes Air Base in the Azores and the Exclusive Economic Zone (EEZ), the third-largest in the European Union. On the other hand, Portugal's extensive connection with the African continent is advantageous, which the Chinese also recognise in their

European and African strategy. It is estimated that the Chinese investment on both continents will grow and diversify in the coming years, with more cooperation and partnerships in various areas. In the technological area, Chinese companies have grown and become very competitive, offering sophisticated technology with reduced prices and a business model that other European companies that provide 5G cannot compete at this time.

In the near future, it is clear that Portugal will have to make choices regarding the Huawei company, but without ostracising China, since it has many investments that the country has benefitted and continues to benefit from. Besides, China has had a fundamental role in the Portuguese economic recovery that begun in 2012. Thus, in this dispute between Beijing and Washington, one of the solutions in the implementation of the 5G networks may be the limitation of Huawei equipment, prohibiting its use in critical infrastructure, as well as greater diversification of components, to avoid dependence solely on Huawei or another foreign company. Ultimately, the country will have to review its priorities and manage its relationship with China without compromising its transatlantic relationship.

3. The geopolitical and security implications for Europe

The controversy about 5G can be seen through the lens of geopolitics, where the race for patents and eventual expansion of 5G networks has clearly become a geopolitical rivalry to have "control over certain territories and their populations"[16]. Another term directly connected to the debate is the concept of power. Despite its amplitude, when we talk about states, it must be understood that a technology that implies excellent economic benefits and whose implementation can pose risks to national security is directly connected to power. The installation of 5G networks will allow the improved functioning of many applications directly related to other aspects of power: security, defence, energetic suplly, intelligence, among others.

With this in mind, there are two vital dimensions to the problem of the 5G networks and their geopolitical and security implications for Europe. The first concerns the European Union as a whole, related to the development of digital capabilities and strategic autonomy[17]. The second concerns the influence that 5G has on security and defence, military use and critical power infrastructures.

Currently, Huawei holds an estimated 17.5% of the smartphone market in Europe, and the advent of 5G is multiplying the risks inherent to the absence of European sovereignty. The protection of European data, and the promotion of both the autonomy of political decisions and the construction of an environment that diminishes the risks for businesses, requires choices that go beyond the operator costs and immediate customer interests[18]. It is crucial to have a secure 5G

[16] Lacoste, Yves. *Géopolitique: La longue histoire d'aujourd'hui.* Éditeur Larousse - Librairie Decitre. 2012.
[17] "5G for Europe: An Action Plan", *European Commission.* https://ec.europa.eu/digital-single-market/en/news/communication-5g-europe-action-plan-and-accompanying-staff-working-document
[18]Bob et al. *Defending Our Data: Huawei, 5G and the Five Eyes*, London: Henry Jackson Society, 2019. https://henryjacksonsociety.org/wp-content/uploads/2019/05/HJS-Huawei-Report-A1.pdf

environment since this also concerns the security of data. For instance, China's company, Global Tone Communications Technology (GTCOM), is a state-owned enterprise, which provides hardware and software translation tools while also using them by taking advantage of the Chinese technological partnerships with foreign entities to collect data[19]. The company's goal is to build a massive and global data collection ecosystem and eventually influence where possible and control the online environment. Thus, building 5G infrastructures represents an opportunity for Europe to invest in its industry and technology development, which is essential for European sovereignty.

In this process, the need to ensure networks against the risk of sabotage without being dependent on a single supplier is fundamental. All the flaws in the 5G structure are likely to be exploited by malicious actors, but in the Huawei company, there is the risk of its cooperation with the Chinese secret services. According to the Chinese National Intelligence Act of 2017, organisations and individuals must support the work of intelligence and keep any knowledge of such activities secret[20]. Aware of this fact, the company issued a statement saying that the Chinese authority does not grant the government the authority to compel telecommunications companies to install backdoors or listening devices or engage in any behaviour that could compromise other nations' telecommunications equipment[21]. However, this declaration was not considered sufficient for China's existing security laws, which may extend beyond its borders.

Because of the critical implications that the 5G network will have for security and defence issues, dependence on Huawei's 5G architecture poses multiple risks. Forthcoming, the 5G network will have military uses such as strategic communication, battlefield situational awareness,

[19] Hoffman, Samantha. "Engineering global consent: The Chinese Communist Party's data-driven power expansion", *Australian Strategic Policy Institute*, 14 October 2019.
[20] See http://www.npc.gov.cn/npc/c30834/201806/483221713dac4f31bda7f9d951108912.shtml
[21] "Huawei denies report about hidden "backdoors" in its software". Reuters. April 30th. 2019. Accessed on September, 2020. https://br.reuters.com/article/huawei-security-vodafone-statement-idUKL9N20T02K

autonomous equipment (aircraft, ships), among others. Hence, the potential use of 5G can have severe and disruptive implications, since having a military use, there are risks of becoming a weapon. In addition, in the near future, 5G signals may be emitted from space, supporting the earth's 5G infrastructure. This may allow activities such as telesurgery, autonomous vehicles and smart grid system. All of this is still a hypothetical scenario unless 5G achieves full coverage. For this to happen, 5G satellite technology is being developed, which means a new space race for satellites, representing even more complex security and defence challenges since space legislation is very limited.

For now, the security debate is vehemently used by Washington, which has found that the construction of the 5G architecture by the Huawei company constitutes a threat to national security. For this reason, the American government has pressured its European allies to support the United States and close their markets to Chinese technology or restrict its participation in those same markets. Chinese companies such as Huawei, which has repeatedly declared its willingness to cooperate transparently, continue to establish partnerships in Europe. Regardless of the course of events, the European Union is facing a strategic dilemma regarding its choices to build the 5G system. Implementing the 5G network illustrates several technological challenges and reflects the position that Europe will occupy in the international global order in the coming years. The fact that it is still behind in the implementation of the 5G network impacts its economic and competitive importance, questioning its future innovative and sustainable technological progress. It also involves Europe's strategic and digital autonomy, crucial to its sovereignty and affirmation as a global power.

Thus, it is important that in this dispute between the United States and China, Europe is not left behind and is able to build a secure 5G network that can be used between all its member-states,

including Portugal, with its allies, and in various industries, more effectively. Therefore, a common transatlantic position is much needed to safeguard the balance of an open and secure data management system, where all partners can cooperate in the connectivity of critical infrastructures while respecting mutual values and fundamental rights.

Conclusion

Considering the security implications, the implementation of 5G networks by Huawei is a geopolitical decision. The technological confrontation between the United States and China reflects a scenario where the European Union must choose a side and aim for a common strategy. The security risks which 5G poses is, first of all, a competition between political systems - liberal democracy on the one hand and China's communist authoritarianism on the other. Secondly, the use of 5G components from the Chinese company can compromise the security of communications between European Union member-states and its allies, while it can also become vulnerable to attacks and disruptions. Besides, the risk of espionage is also high since, for the Chinese government, any Chinese organisation or citizen is required to support intelligence work and keep secret any knowledge of such activities. Furthermore, the adoption of 5G networks will eventually involve a universal coverage that requires 5G satellites, which will emit signals to earth, allowing activities that were only seen in science fiction. This will have an impact in the security and defence fields and on the individual and collective level.

Thus, both European Union and the United States should aim to invest in the transatlantic relationship and deepen it in the digital area by increasing cooperation and investment in innovative technology. Although at the moment, the United States and China are key players in the technological race, there are no guarantees that either of them will dominate and become a leader. There are other powers such as India, aiming to become a global power, with highly sophisticated and developing technology and science.

Ultimately, Europe should strengthen its position in the global digital area, aspiring to be a strategic and autonomous technologically independent 5G player. The development and

investment in technology made in Europe are crucial for maintaining its position as a global power and fuelling its ambition to become a leader in 5G technology.

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