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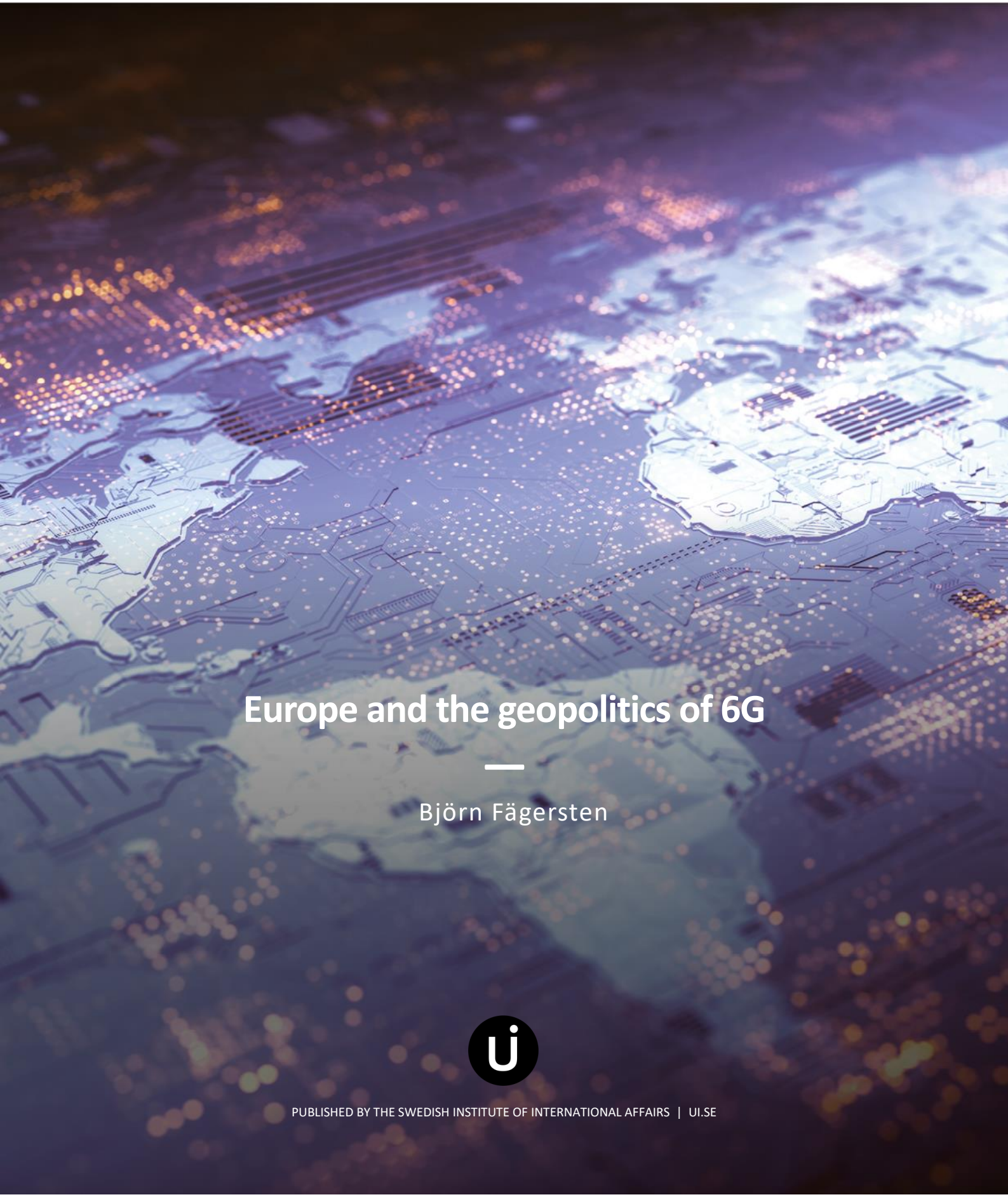

Europe and the geopolitics of 6G

Björn Fägersten

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Björn Fägersten

Senior Research Fellow at the Swedish Institute of International Affairs' Europe Programme and CEO of the geopolitical consultancy Politea

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Introduction

As consumers and operators continue to explore the full potential of 5G, countries, companies and regulators are already racing to develop the next generation of telecommunications: 6G. Although visions for 6G and its use cases differ, some experts suggest that it will represent a more transformative leap than its predecessor, enabling unprecedented interaction between the digital and physical worlds.

As a result, 6G has become a central focus in the escalating technological rivalry between China and the United States. Critical technologies, such as artificial intelligence (AI), cloud storage and edge computing, will play a pivotal role in the development of 6G, further amplifying its geopolitical significance. Unlike many other ongoing technological races, however, Europe has a unique advantage in the competition for 6G. The continent is home to two of the world's leading telecommunications giants: Sweden's Ericsson and Finland's Nokia.

This report delves into the geopolitical dimensions of 6G from a European perspective: How well is Europe positioned to compete in this race? What is at stake? What geopolitical scenarios might emerge as the race for 6G concludes? First, however, let us examine what 6G is – or, rather, what it could become.

What is 6G?

One of the earliest mentions of 6G by a senior figure was in 2019 when US President Donald J. Trump urged US industry to accelerate the transition to 5G and suggested that the US should also take the lead on 6G. At the time, this statement created some confusion as 5G was still the new technology to grasp. Today, the race for 6G is evident in numerous policy papers, strategic documents and forward-looking visions from telecom operators, as well as in occasional reports on the painstaking standardisation process and the outcomes of high-profile research projects. Despite this momentum, however, many questions remain unanswered about what 6G really is or will become.

A procedural answer suggests that 6G will be defined by what engineers and standardisation officials agree on in the relevant documents – most notably the 21st release of the 3GPP standardisation group. A technological answer points to 6G as a system that might utilise terahertz waves, enabling ultra-high frequencies and data transfer speeds of up to 100 Gbps, far surpassing current wireless capabilities. A visionary answer imagines 6G as the enabler of seamless interaction between the physical and digital worlds. This would allow the creation of digital twins of infrastructure and cities, enabling holographic communication and immersing our physical senses with digital information collected by thousands of sensors integrated into everyday products.[1]

[1] See UK Parliament. (2024). 6G mobile communications (POST Note No. 734). Parliamentary Office of Science and Technology. Retrieved January 26, 2025, from https://post.parliament.uk/research-briefings/post-pn-0734/

Others might question the "generational" distinctions in telecom development altogether, arguing that incremental changes occur continuously and that the new 6G label is more of a marketing ploy – indeed, this perspective have been raised by Ericsson's CEO in relation to 6G.[2] It is clear, however, that the process of defining and standardising the next iteration of advanced connectivity has begun and is expected to result in a global standard by around 2028, with early commercialisation anticipated by 2030.

According to industry players, 6G is projected to deliver capabilities such as ultra-high data rates, low latency and seamless integration of AI and extended reality technologies.[3] These features make it central to future industries, such as autonomous vehicles, smart cities and advanced manufacturing. While the technical specifications remain undecided, it seems reasonable to assume that 6G will build on and expand the capabilities of 5G. When combined with parallel advances in other fields, such as AI and, later, quantum computing, 6G could lead to transformative changes in how we utilise and are affected by advanced connectivity.[4]

European Opportunities

As with previous generations of telecommunications, 6G technology is poised to become a cornerstone of global connectivity. It will enable unprecedented communication among people, industries and devices. For regions and nations, its rollout is vital to sustaining competitiveness in advanced technologies that will be crucial drivers of productivity and innovation.

For Europe, the development and deployment of 6G are of profound strategic importance. Despite the challenges in other areas of tech competitiveness highlighted by the Draghi report, Europe remains a strong player in telecommunications. Sweden's Ericsson and Finland's Nokia will be pivotal. Between them, they have a significant share of the global market for Radio Access Network (RAN) equipment and of connectivity patents.

Their importance will be magnified as 6G intensifies the geopolitical race for technological supremacy in a way reminiscent of the dynamics surrounding 5G. The EU, the US and China are all striving to influence 6G standards, development, and the associated economic, defence and cybersecurity capabilities. Standards-setting is particularly contentious, as it shapes technological compatibility and controls the flow of intellectual property. The EU must navigate this competition carefully to secure

[2] https://www.lightreading.com/6g/for-ericsson-boss-evolutionary-6g-puts-end-to-Gs-cycle

[3] 6GWorld. *What is 6G technology and how it works*. Retrieved January 26, 2025, from https://www.6gworld.com/blog/what-is-6g-technology-and-how-it-works/

[4] European Parliamentary Research Service (EPRS). (2024). *The path to 6G* (Briefing PE 757.633). Retrieved from https://www.europarl.europa.eu/RegData/etudes/BRIE/2024/757633/EPRS_BRI(2024)757633_EN.pdf

its interests and prevent technological fragmentation that could undermine global interoperability.

The coming four years – spanning the second Trump administration in the US and the second European Commission under Ursula von der Leyen – will define the foundational phase of 6G development. During this period, standards, definitions and technical expectations will be developed and finalised. If Europe leverages its telecommunications legacy effectively, it could secure a leading position in the 6G era, ensuring competitiveness and sovereignty in the global digital landscape.

Setting the stage for the 6G race: the generational rivalries of telecom

Every generational shift in mobile telecommunications has been marked by rivalry, often with a significant impact on market structures. In the earlier generations, these rivalries were predominantly commercial and standards-based. The Nordic region had an early advantage by uniting around a common analogue standard – NMT – that formed the foundation of the first generation. Europe capitalised on this success, coalescing around the first digital system – GSM – which enabled text services and was later adopted as the global 2G standard. This unity and early rollout positioned European actors favourably for the race to the third generation around the turn of the millennium, which enabled music downloads, multimedia access and video calls on mobile handsets.

Competition during the 3G era saw the emergence of several competing systems, as well as notable contributions from emerging Chinese actors. Europe, Japan and China (although with a different radio interface) converged around the UMTS standard, developed through the novel 3GPP structure, while US industry fragmented in its efforts to compete with the rival CDMA-2000 standard. Although the US lost influence over telecom systems, it regained prominence in handset development. Indeed, the capabilities of 3G were only fully realised with the advent of smartphones, particularly the iPhone in 2007.

The development of 4G, which drastically increased data flows (with data from now on being the primary source of operators' revenues[5]) and enabled streaming and gaming, saw South Korea lead with an early rollout of the Intel-backed WIMAX standard. However, the rival LTE standard eventually dominated, on which the Nordic region achieved an early rollout in 2010. This success laid the foundations for many data-focused start-ups that later scaled globally as well-known unicorns. While US companies now lost influence over telecom systems, their ICT giants, focused on search, content, cloud and compute, now captured most of the value created by modern connectivity. The roll-out of 4G in the early 2010s saw the first geopolitically motivated limitations on

[5] Ali-Yrkkö, J., Seppälä, T., & Tuhkuri, J. (2022). *5G in the era of geoeconomics: Playbook for Finland* (ETLA Report No. 115). ETLA Economic Research. Retrieved January 26, 2025, from https://www.etla.fi/en/publications/reports/5g-in-the-era-of-geoeconomics-playbook-for-finland/

Chinese tech, for example, in the US and Australia.

The key RAN developers at the start of the race for 5G were Ericsson, Nokia and Huawei. However, this era was defined by a markedly different geopolitical landscape. China's rapid advances in technology and economic power, alongside its increased military assertiveness in the Indo-Pacific, positioned it as a near-peer rival to the US. Decades of liberal globalisation had also resulted in deep interdependencies between the two nations at a level that surpassed anything seen between the main contenders in the previous era of Cold War rivalry. The confluence of growing geopolitical rivalry and deep interdependency led both actors to worry about vulnerabilities. The financial and technical value chains that it had been hoped for decades would create not only wealth, but also stability and perhaps even political convergence were now seen as vulnerabilities that could be weaponised for strategic gain. The US responded with strategies under the first Trump administration that linked economic security to national security, notably the 2017 National Security Strategy. Measures included barring Chinese companies such as Huawei and ZTE from US markets, restricting the flow of advanced microchips to China and pressuring allies to exclude Chinese technology from future connectivity systems. The US also championed a more open telecoms market, as exemplified by the push for Open RAN technology, which sought to create room for new entrants such as US ICT companies into the Radio Access Network ecosystem. In the race for 5G, the US saw more success in some areas of its economic security agenda than in others.

Derisking and economic security measures to separate US and Chinese technology stacks have continued, and the US is continually developing new methods to block technology transfers. These efforts have significantly restricted China's access to advanced chips and the machinery needed to produce them, affecting areas such as handsets and AI applications. However, they have also spurred new momentum in China's efforts to domesticate production and achieve its long-held goal of self-sufficiency. Huawei has been far from defeated by the loss of access to western technology while US companies are becoming increasingly vocal about the revenue losses they have suffered from strict US export control regimes.

A substantial number of countries have opted to build 5G networks without—or with heavily restricted—participation by China's Huawei. Within the EU, this process has been facilitated by the 5G toolbox, even though it has not been fully implemented. The push for Open RAN technologies has been successful in terms of standardisation, as most new telecom systems have incorporated "openness" to varying degrees, which theoretically allows a wider range of actors to supply parts of the system. As a market choice, however, Open RAN adoption has not yet occurred on a significant scale. The lack of economies of scale for new entrants and the inherent advantages held by complete system providers have diminished some of the initial optimism around Open RAN. It is also worth noting that Open RAN initiatives came relatively late to the 5G race and failed to make any dramatic impact on market structures.

Looking ahead to 6G, a geopolitical rematch reminiscent of the 5G contest is anticipated. The main RAN actors remain Ericsson, Nokia and Huawei, with Samsung striving to catch up. The "magnificent seven" US ICT companies are more profitable than ever, and leverage business models that utilise advanced connectivity.[6] At the start of the second Trump administration, these companies also appear to be more aligned with US political ambitions than ever before. Global geopolitical tensions have intensified, particularly as China has lent support to Russia's attack on Ukraine and the broader European security order. US derisking measures and economic security initiatives continued under the Biden administration, encompassing a wide range of value chains that would prevent China from developing advanced technology. While the EU has had its own economic security strategy since 2023, which in practice targets vulnerabilities in relation to China, it has so far not suggested any actions that resemble what has been the case in the US. Member states are divided on the preferred direction, implementation is piecemeal and the new Commission under Ursula von der Leyen is likely to want to maintain some flexibility in Europe's China policy, as US policy – towards both the EU and China – could shift under the new Trump administration.

The stakes of the 6G race

In addition to the overarching strategic landscape outlined above, particular aspects of the coming generation of telecom systems fuel the geopolitical tensions inherent in its development.

Market Power: As noted above, the efficient rollout of telecommunications infrastructure – especially when an actor bets on a winning standard – has a significant impact on successful commercialisation. If 6G delivers on its promises, it could unlock considerable economic gains not only for industrial applications, but also in broader economic development.

As the US grapples with inflation risks and an ever-growing budget deficit, China faces mounting pressure on its growth model and the EU struggles with its overall competitiveness, the market potential of 6G becomes a matter of strategic importance.

Cybersecurity: with 6G, states will not only have to deal with the network risks tied to 5G,[7] but also have additional risks and threat vectors to consider. For example, it has been suggested that future connectivity by 2030 will connect up to 500 billion devices.[8] By decentralising computational resources to the network edge, 6G will connect billions and potentially trillions of devices, including

[6] For value creation in 5G systems, see Ali-Yrkkö, J., Seppälä, T., & Tuhkuri, J. (2022). *5G in the era of geoeconomics: Playbook for Finland* (ETLA Report No. 115). ETLA Economic Research. Retrieved January 26, 2025, from https://www.etla.fi/en/publications/reports/5g-in-the-era-of-geoeconomics-playbook-for-finland/

[7] https://www.ui.se/globalassets/ui.se-eng/publications/ui-publications/2020/ui-paper-no.-1-2020.pdf

[8] European Parliamentary Research Service (EPRS). (2024). *The path to 6G* (Briefing PE 757.633). Retrieved from https://www.europarl.europa.eu/RegData/etudes/BRIE/2024/757633/EPRS_BRI(2024)757633_EN.pdf

Internet of Things endpoints and autonomous systems. This vastly expanded attack surface increases vulnerabilities, allowing adversaries to disrupt critical infrastructure, compromise sensitive data or manipulate physical operations. Mission-critical applications, such as autonomous vehicles and energy grids will be reliant on 6G's ultra-low latency and reliability, which will make even minor security breaches potentially catastrophic.

The reliance of 6G on edge data processing and high-frequency bands further heightens risks, necessitating robust security measures such as zero-trust frameworks, quantum-safe cryptography and AI-driven anomaly detection. Its role in national security and critical infrastructure makes 6G development not just a technological pursuit, but a strategic imperative that requires early investment in advanced cybersecurity measures.

Strategic vulnerability: As with 5G networks and other critical infrastructure, 6G networks should be assumed to pose political risks beyond cybersecurity if controlled by adversarial actors.[9] As networks constitute the backbone of societal connectivity, and 6G promises to connect even more critical entities than previous generations, the risk of network shutdown or manipulation by adversarial actors becomes a grave concern. The path dependency and lock-in effects are also significant, meaning that after roll-out customers could find themselves at the strategic mercy of the supplier for years to come. A group of countries has already signed a joint statement opting for trusted technology in their 6G networks to avoid creating future risks to national security.[10]

Defence and national security uses: The development of 6G promises transformative capabilities that could redefine military operations and national security. With its potential for ultra-low latency, higher data rates and AI-driven edge computing, 6G is expected to enable real-time battlefield coordination across the land, sea, air, space and cyber domains. By integrating sensing and communications, 6G networks could enhance situational awareness, allowing devices to serve as both radars and high-fidelity sensors. This could facilitate precision targeting and seamless strategic decision making. 6G also has the potential to advance autonomous systems, including drone swarms and ground robots capable of immediate analytics, target recognition and coordinated manoeuvres. Tactical "bubbles" – or secure, deployable private networks – could offer improved communication and

[9] For a general framework of vulnerabilities of critical infrastructure, see Ruhlig, T., & Fägersten, B. (2021). Infrastructure Development and Geoeconomic Competition: A Framework for Analysis. In H. Borchert & J. Strobl (Eds.), *Storms Ahead. The Future Geoeconomic World Order* (pp. 156–171). Vienna: Raiffeisen Bank International. For specific risks related to telecommunication, see Strand Consult. (2024). *Eight risks for the 5G supply chain from suppliers under the influence of adversarial countries like China*. Retrieved from https://strandconsult.dk/eight-risks-for-the-5g-supply-chain-from-suppliers-under-the-influence-of-adversarial-countries-like-china/

[10] National Telecommunications and Information Administration (NTIA). (2024). *Joint statement endorsing principles for 6G secure, open, and resilient design*. Retrieved January 26, 2025, from https://www.ntia.gov/speechtestimony/2024/joint-statement-endorsing-principles-6g-secure-open-resilient-design/

disaster relief capabilities in high-intensity scenarios. On a geopolitical scale, 6G is set to become a focal point for competition, as initiatives by NATO, the EU and the United States seek to secure leadership in defence applications. Europe, in particular, could leverage partnerships through programmes such as Horizon Europe and the European Defence Fund to harmonise standards and ensure interoperability. As states position themselves for the future of military technology, 6G development will be essential for maintaining technological superiority and operational readiness.

Tech Fusion: 6G is poised to serve as a fusion platform that seamlessly integrates, connects and leverages diverse technologies. As mentioned above, computing power will permeate the entire system, not just functions at its core. Sensors will be an integral component supplying data to AI applications, which are expected to be a native feature of the 6G network. Quantum computing, which is likely to be incorporated at a later stage, could exponentially enhance computational capabilities. Communication with and through satellites is anticipated to become a standard feature. This fusion of technologies amplifies both risks and rewards. On the risk side, the intrinsic integration of 6G with existing technological conflicts, such as those surrounding semiconductors, AI development and access to critical resources such as rare earth metals, could exacerbate tensions. On the reward side, early adopters of 6G stand to gain a significant advantage in deploying and harnessing a suite of emerging technologies, the synergies of which are yet to be fully understood.[11] In sum, the technological convergence inherent in the design of 6G raises the geopolitical stakes in the race to develop next-generation tele-communications systems.

Towards the future of 6G: assumptions and scenarios

Predicting how the 6G race will unfold and its impact on broader geopolitical trends presents many challenges, given that the technical constitution of 6G remains uncertain. In addition, any geopolitical scenario for 6G development will be heavily shaped by the overarching technology rivalry between the US and China, affecting Europe's room for manoeuvre. This final section presents three potential scenarios for how this race might evolve, although the range of possible futures is, of course, infinite. Each scenario is grounded in the same baseline assumptions.

Baseline assumptions

- **A Global Standard**: Early analyses of 6G raised concerns about a potential split in standards, as rival Chinese and western systems compete globally.[12] However, this outcome now appears increasingly unlikely. The three primary producers of

[11] See Picarsic, N., & de la Bruyère, E. (n.d.). Wiring the 6G world. Hinrich Foundation. Retrieved January 26, 2025, from https://www.hinrichfoundation.com/research/article/us-china/wiring-6g-world/

[12] https://www.di.se/nyheter/borje-ekholm-varnar-for-kinesiskt-6g-vastvarlden-riskerar-att-bli-forlorare/

telecom systems, which also possess the majority of relevant patents for standardisation, seem committed to establishing a common global standard. The US, which was sometimes thought to advocate a "China-free" standard,[13] might be reconsidering its position. Given the substantial state backing for Huawei, a divided standard could result in the Chinese giant being the only player capable of producing technology aligned with separate standards, which would give it a significant market advantage. The working assumption is that the coming years will see the development of a unified global 6G standard.

- **A Variety of 6G Systems**: While based on a global standard, it is expected that the commercial implementation of 6G will differ significantly both within and across countries. Several factors suggest this outcome. Spectrum allocation is one such factor, as countries differ greatly in terms of availability (e.g., where defence operations are located or whether the terrestrial television spectrum is still in use) and requirements (e.g., sparsely populated regions versus dense urban areas). From a market perspective, the ability of 6G to use different parts of the available spectrum could influence operators' choices on technology rollout and auction bids, depending on the type of services they intend to offer. In addition, operators that are still struggling to achieve stable returns on their 5G investments could prioritise building 6G infrastructure on top of existing networks, potentially using the same spectrum, in a process that will vary across markets.[14] Furthermore, even if they adhere to a shared global standard, geopolitical fragmentation would be likely to result in 6G networks being constructed with distinct technical systems derived from increasingly decoupled technology stacks. As Nathan Picarsic and Emily de la BruyèreIn suggest: 'The fractured geopolitical picture means a bi or multi-polar layout at the technical level for new telco networks'.[15] In sum, factors such as legacy technology, geographic conditions, spectrum availability, market strategies and geopolitical divisions make it likely that 6G systems will

[13] From a Chinese perspective, the US "Next G Alliance" is feared to have such ambitions, Picarsic, N., & de la Bruyère, E. (n.d.). Wiring the 6G world. Hinrich Foundation. Retrieved January 26, 2025, from https://www.hinrichfoundation.com/research/article/us-china/wiring-6g-world/

[14] A report from the Uk Parliament suggests that 'mobile network operators spent $162 billion for 5G acquisition auctions globally, equivalent to a decade's worth of expenditure for 4G. Similar capital expenditure is expected again for 6G, and is predicted to outpace revenue growth', see UK Parliament. (2024). 6G mobile communications (POST Note No. 734). Parliamentary Office of Science and Technology. Retrieved January 26, 2025, from https://post.parliament.uk/research-briefings/post-pn-0734/

[15] Picarsic, N., & de la Bruyère, E. (n.d.). Wiring the 6G world. Hinrich Foundation. Retrieved January 26, 2025, from https://www.hinrichfoundation.com/research/article/us-china/wiring-6g-world/

vary considerably in appearance and functionality across the globe.

Critical uncertainties

Many factors will shape the development of 6G in the years ahead. From a geopolitical perspective, the scenarios outlined below focus on three relational factors as their starting point and key areas of divergence. These critical uncertainties are: the level of Sino-US technological conflict globally; the degree of Euro-Atlantic coordination on 6G; and the extent of intra-European cooperation on 6G. Building on these critical uncertainties and the baseline assumptions described above, three distinct scenarios are proposed below.

Scenario 1: Telco Sovereignty

In this scenario, the European Union advances towards digital sovereignty in the telecommunications sector through harmonised policies, industrial support, market adoption and protective economic security measures. It is characterised by high levels of intra-European cooperation, while Sino-US conflict and transatlantic collaboration remain at moderate levels.

Faced with mounting challenges to its competitiveness and minimal influence over global tech development, as illustrated by the high-profile generative AI competition between US and Chinese providers, Europe rallies around telecoms as one of its last strongholds. Budgetary means provided in the new multiannual framework are used for strategic investments in research, test facilities and early applications development. In line with the ambitions set out in the Draghi report, steps are taken towards gradual spectrum harmonisation and relaxed competition enforcement, enabling operator consolidation. The 5G toolbox is revised to guide 6G development and rollout, and a new legal mandate is agreed on, increasing the leverage and enforcement powers of the European Commission.

6G is highlighted in the EU's economic foreign policy, both as a carrot – through Global Gateway support for third countries choosing trusted European ICT providers for infrastructure development – and as a stick, as the repressive elements of the economic security agenda are deployed to shield European 6G producers from takeovers or external pressure.

These choices were made possible as Sino-US rivalries remained in check, driven by Trump's fear of inflation and China's domestic economic issues. Both factors moderate any appetite for escalatory policies. The relatively low level of overall systemic conflict creates more room for manoeuvre for Europe and prevents the internal divisions that a higher level of global conflict would have caused.

As US companies generate significant revenue from the advanced connectivity infrastructure supplied by a few foreign firms, the desire to control at least one of these companies resurfaces. Given the moderate tech conflict with China, the geopolitical risk remains manageable, but there are still market-based vulnerabilities that US industry might seek to address. The EU, committed to protecting its industry and Europe's tech sovereignty, is likely to use FDI measures to block such a takeover or

controlling effort, even at the cost of increasing transatlantic trade tensions.

Scenario 2: United Front

In this scenario, the EU and the US form a united front in the race for 6G. The US, in need of a capable ally, supports EU cohesion. Successful management of the Russia crisis serves as a catalyst for deeper cooperation. The UK aligns itself with this western tech front, while China and Russia further strengthen their cooperation in a balancing effort. Consequently, all three critical uncertainties—Sino-US rivalry, Euro-Atlantic coordination and intra-European cooperation—are at high levels.

Building on cooperation within a renamed Trade and Technology Council, the EU and the US agree on a joint 6G rollout plan and a shared policy on trusted vendors. With the transatlantic tech domain increasingly functioning as a common market operating under shared security principles, the US sees less vulnerability in its continued dependency on European RAN providers. Indeed, as the primary focus of global rivalry with the Chinese-led bloc is to prevent third countries in South America, Africa and Southeast Asia from falling under China's technological influence, having European providers proves advantageous, as it appeals to many countries that wish to avoid being fully absorbed by either China or the US. Increased domestic pressure for trusted connectivity in the US increases the market opportunity for European providers.

From a market perspective, close transatlantic coordination allows US ICT companies to become increasingly integrated into the evolving 6G network, as illustrated by the Nvidias AI Ran concept. There is seamless collaboration between operators and Musk's Starlink satellite systems. Joint US-led efforts within NATO and the QUAD countries take shape to integrate a quantum security regime into the 6G network over time.

Scenario 3: Fragmented Rivalry

In this scenario, the EU is fractured by escalating rivalry between the US and China, and the associated costs are unevenly distributed among member states. There is intense competition for global telecoms markets, but individual European countries forge separate technology agreements with the US. As such, the Sino-US tech rivalry is pronounced but fails to translate into either transatlantic cooperation or intra-European integration.

Conflicts over how to manage the global technology confrontation lead to internal European divisions. Some prefer closer bilateral links with the US and heightened vigilance towards China, while others opt to maintain substantial trade ties, including in critical technology, with China. The power of tech regulation and key areas of 6G development remain at the national level, allowing for different practices. Weak EU coordination results in member states making divergent choices on and interpretations of trustworthiness. For one group, reliance on US cloud services increasingly comes to be seen as a problematic vulnerability. Others double down on bilateral US solutions by moving sensitive governmental communication to US satellite systems, which not only weakens

the EU's own satellite ambitions but also risks undermining full implementation of the 5G toolbox, as mobile technology is framed as a consumer issue. This internal fragmentation leads to a delayed and inconsistent rollout of 6G across Europe, as operators struggle to secure returns on their investments.

Conclusions and Policy Implications

This report has analysed the geopolitical context and potential consequences of 6G development from a European perspective. Three scenarios have been proposed, outlining possible trajectories shaped by fluctuations in global tech rivalry, the level of transatlantic coordination and the degree of European integration.

Advanced connectivity remains one of the last bastions of European technological leadership in an otherwise Sino-US-dominated tech landscape. At a high strategic level – reflected in the Commission's Connectivity White Paper, the new Competitiveness Compass, and the Letta and Draghi reports – there is growing recognition of the opportunities and challenges linked to this evolution. Interviews conducted for this report indicate that this awareness extends to Commission units working on telecoms policy. However, the crucial question remains: Can Europe generate sufficient policy momentum to turn ambition into action?

Europe's ability to shape 6G will ultimately depend on its willingness to act decisively to leverage its strengths in connectivity technology while reinforcing the policy frameworks necessary to remain a key player in the global telecoms landscape. Without this, it risks becoming a policy-taker rather than a policymaker, also in this tech domain.

From a geopolitical perspective, and recognizing the considerable level of uncertainty we face – regarding both transatlantic relations and the overarching Sino-US tech rivalry – a few general inferences can be offered. The recommendations below would strengthen Europe's hand across all three scenarios described above.

A Producer of Technology

The EU must fully embrace the fact that it is a producer of advanced connectivity, not merely a collective of users. This shift in mindset should translate into enhanced bureaucratic capacity and digital diplomacy. As the EU's economic security agenda moves to address the next tranche of critical technologies, advanced connectivity will be a key focus. This presents an important opportunity to address both vulnerabilities and strategic advantages from a producer's perspective rather than merely a consumer's. The ability to shape global standards and retain influence over core network technologies will be critical in maintaining Europe's position in the global 6G ecosystem. As a producer, the EU would also benefit from a more vibrant ecosystem around its main champions and could invest in fostering such dynamism, drawing inspiration from the Next Generation Internet initiative, which targets smaller innovative projects around a common theme.

Tech Sovereignty

The ambition to align Europe's communications infrastructure with core values and strategic control remains elusive, but is increasingly urgent as technological dependencies become weaponized. Europe faces critical dependencies, in relation to China (batteries, legacy chips and critical resources) and the US (cloud storage, generative AI and software). Managing and mitigating these interdependencies will be crucial. Most European countries are striving to catch up in AI and build value on top of US-driven AI architectures, accepting a level of vulnerability in the process. However, it is important to recognise that US tech giants generate substantial value on top of European RAN (Radio Access Network) architecture. For Europe to maintain its capacity to supply indispensable network infrastructure globally, it must leverage this position as a mitigating factor as its technological sovereignty is increasingly challenged. Tied to this are, of course, the EU's own networks and critical infrastructure, where fully implementing the 5G toolbox will be paramount for both security and sovereignty. Moreover, this toolbox must be updated where necessary to ensure a smooth transition from 5G to 6G, particularly in an increasingly tense global tech landscape. It also seems preferable that work on the advanced connectivity area—one of the ten critical technology areas selected by the European Commission for upcoming risk assessments as part of its economic security strategy—should start immediately to avoid falling out of sync with the international development of the area.

A Competitive Connectivity Market

Regardless of the geopolitical outcomes, Europe's position will be stronger if it excels as a market for advanced connectivity. The link between internal market performance – an issue thoroughly explored in reports like Draghi's – and Europe's global standing in this domain is evident. This should inform specific policy lines, notably: Standardisation – ensuring a coordinated European voice in international standardisation bodies such as 3GPP and the ITU; Roll-out – agreeing on a joint timeline for 6G deployment, preferably tied to a common approach to spectrum allocation; Competition policy – ensuring that producers and operators can scale effectively within the EU; Economic security – establishing instruments to protect key industries from foreign control or predatory investments where necessary; and Advanced test facilities – fostering a wider innovation ecosystem, allowing European companies to lead in shaping global standards.

brief

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The Swedish Institute of International Affairs
Visiting Address: Amarilitetsbacken 1, 111 49 Stockholm
Postal Address: Box 3163, 103 63 Stockholm
Phone: +46 8 511 768 00
www.ui.se info@ui.se X: @UISweden