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USA/Europe: Seven Digital Challenges

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Program

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Abstract

Thanks to the positive momentum in transatlantic relations brought about by the arrival of the Biden administration, significant progress is expected on a range of key digital issues. New rules are emerging that are designed to level the playing field for economic actors and ensure the respect of civil liberties, while significant new investments in technological innovation are taking place amid considerable industrial reorganizations. This paper proposes to shed light on seven particularly central and topical challenges for our societies in the digital age.

First, the European Union (EU), the Biden administration and the international community at large are converging in an attempt to regulate the **tax optimization** practices and **monopolistic positions** of Big Tech companies such as Google, Amazon, Facebook, Apple and Microsoft (the GAFAM). However, while there is clear movement in this direction, the US government does not wish to undermine the strength of American tech giants.

A second trend is shaped by the US-China tech rivalry. The Biden team is following the Trump administration's lead in trying to thwart Chinese efforts in terms of **5G technology** and **semiconductor** development. US sanctions against China may have indirect benefits for European actors in these sectors, and the EU has not said its last word as an industrial power.

Finally, these new technologies pose many ethical challenges that undermine the democratic values on which Western societies are based. As a result of the regulations the EU has already put in place or is currently developing, Europeans are in a good position to set global standards for the **protection of private data**, the development of an ethical form of **artificial intelligence (AI)** and the **regulation of online content**.

Résumé

Alors que les relations transatlantiques connaissent une nouvelle dynamique grâce à l'arrivée au pouvoir du président Biden, d'importantes avancées sont attendues sur nombre de questions liées au numérique. Ces évolutions comprennent d'une part l'établissement de règles plus équitables pour les acteurs économiques et de lois garantissant le respect des libertés individuelles, et d'autre part la relance d'investissements pour l'innovation technologique assortie de diverses réorganisations industrielles. La présente note propose d'éclairer sept enjeux particulièrement centraux et actuels de nos sociétés à l'ère numérique.

On voit d'abord converger l'Union européenne (UE), l'administration Biden et plus largement la communauté internationale pour tâcher de réguler **les pratiques d'optimisation fiscale** et **les positions monopolistiques** des GAFAM (Google, Amazon, Facebook, Apple et Microsoft). L'élan semble donné, même si le gouvernement américain ne souhaite pas pour autant entraver la puissance de ses géants nationaux.

La rivalité technologique sino-américaine dessine un second mouvement, qui voit l'équipe Biden prendre la suite de l'administration Trump pour tâcher d'entraver les efforts chinois en termes de **technologie 5G** et de développement des **semi-conducteurs**. Les sanctions américaines contre la Chine peuvent avoir des effets indirects bénéfiques pour les acteurs européens de ces filières et l'UE n'a pas dit son dernier mot en termes de puissance industrielle.

Enfin, ces nouvelles technologies posent de nombreux défis éthiques qui mettent à mal les valeurs démocratiques sur lesquelles reposent les sociétés occidentales. Du fait des régulations qu'ils ont déjà mises en place ou qu'ils développent actuellement, les Européens sont en bonne position pour s'imposer comme référence en matière de **protection des données privées**, de développement d'une **intelligence artificielle (IA)** éthique et de **régulation des contenus en ligne**.

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Introduction

Since the outbreak of the Covid-19 pandemic in early 2020, digital technologies have enabled us to remain connected to the world, despite the social distancing imposed by the virus. But there is little public recognition for the big US digital companies – Google, Amazon, Facebook, Apple, and Microsoft (the so-called GAFAM) – and the image of these “systemic platforms” is now tarnished. Far from the utopias of knowledge-sharing, transparency, and better democracy announced in 2000, digital actors are now accused collectively of tax evasion, abuse of dominant positions, the capture and resale of user data, the destruction of entire sections of the traditional economy, the exploitation of their employees, the manipulation of minds for the benefit of extremists of all kinds, and the sustained dumbing down of children, etc.

For example, according to a survey conducted by Harris Interactive in February 2019 in eight European Union (EU) countries, a majority of respondents believed that the GAFAM represent a risk to the functioning of democracy (53%), and even more so to the flow of free information in Europe (65%).¹ Fully 84% of respondents were in favor of imposing a tax on digital businesses. In the US, 45% of persons surveyed by Gallup in February 2021 also had a negative perception of “Big Tech,” up 12 percentage points from August 2019, and 57% now want better regulation of these players, up 9 points.² The change is particularly clear among Republicans, who blame these companies for their anti-conservative bias.

Awareness of the problems raised by the digital economy is not new, and a large regulatory effort has been underway for several years in Europe, in the United States and more broadly within the international community – including by the Organization for Economic Cooperation and Development (OECD) on digital tax issues. In December 2020, the EU, drawing fully on its role as a standards-setting power, introduced two very important drafts of common legislation: the Digital Services Act (DSA) and the Digital Markets Act (DMA). Discussions, currently underway in the European Parliament, could end in spring 2022 under the French Presidency of the Union. Moreover, the EU has not abandoned its

1. “Les droits d’auteur en Europe”, the Harris Interactive international survey for GESAC, March 18, 2019.

2. M. Brenan, “Views of Big Tech Worsen; Public Wants More Regulation”, Gallup, February 18, 2021.

technological ambitions, and will use the EU's post-Covid stimulus package to strengthen champions in key areas.

For the USA, competition with China is fierce on technology development issues, particularly in 5G and semiconductors. The Biden administration has extended the trade obstacles set up by the Trump administration, which could have positive consequences for European producers. On other subjects, such as taxation, monopolies, the protection of private data or the control of contents, a number of standards have been put in place by states within the US. The Biden administration seems intent on taking over at the federal level, particularly in the anti-trust struggle. But relations with the GAFAM, traditional supporters of the Democratic Party, could complicate matters.

A Trade and Technology Council (TTC) was established at the US-EU Summit on June 15, 2021. It will enable the US and the EU to coordinate their efforts in digital regulation and technological development. This study reviews seven challenges related to digital technologies, in order to better understand the industrial, legal and geopolitical issues the TTC will address within a transatlantic framework. For each area, the study presents an analysis of the situation in Europe and the United States and, where appropriate, an assessment of the rivalry with China.

A GAFAM Tax: Important Tax Negotiations at the OECD

Tax evasion by global digital players

International tax conventions state that profits earned by multinational corporations should be taxed in countries where such firms have their “permanent establishment.”³ In order to avoid taxes on this side of the Atlantic, the GAFAM have set up their European headquarters in the EU countries with the lowest taxes: Amazon in Luxembourg; Apple, Google, Facebook and Microsoft in Dublin (the corporate tax rate in Ireland being 12.5%). Moreover, until the US corporate tax reform in 2017, some of their profits were also deposited in tax havens, pending a timely tax window for repatriation to the US. While President Trump’s Tax Cuts and Jobs Act made tax havens less attractive to US multinationals, the reform also considerably reduced the corporate tax rate.⁴

In order to avoid taxes on profits in the US itself, the GAFAM use tax exemptions from the federal government, as well as from the state of California where Silicon Valley is located. These exemptions can be linked either to stock options or to investments in research and development (R&D).

Redesigning the international tax regime

In an attempt to tackle abusive fiscal optimization, several European countries, including France, have introduced a turnover tax on digital firms. A tax targeting advertising, devised by the economist Paul Romer, has also been adopted by the US state of Maryland.⁵ The international community, however, is seeking a more comprehensive solution to this problem.

3. For more information and analysis about the ongoing international tax negotiations, see L. Nardon and S. Rust, “De la taxe numérique à l’imposition des multinationales, la révolution fiscale de Joe Biden,” *Briefings de l’Ifri*, Ifri, April 15, 2021.

4. Information taken from D. Bunn, “The Balancing Act of GILTI and FDII,” *Tax Foundation*, April 7, 2021.

5. P. Romer, “A Tax that Could Fix Big Tech,” *The New York Times*, May 6, 2019.

Thus, far-reaching negotiations to reform international taxation have been taking place at the OECD, and could be successful before the end of the year. Among the many measures envisaged, in April 2021, the US proposed to make an exception to the principle of stable establishment for the largest firms, namely those making more than \$20 billion in profits. These profits would be taxed in the countries where they actually accrue. This would end tax evasion by all major multinationals, including major digital firms. This proposal was welcomed with great interest by the other negotiators.

Monopolies: Adapting Competition Law to the Digital Economy

A digital world dominated by the GAFAM

The GAFAM are accused of anti-competitive practices in both the US and Europe. They are criticized for actively undermining other market players (and, in turn, consumers who have access to a more limited supply).⁶ The problem is twofold because not only are the GAFAM present in many key sectors (cloud infrastructures, search engines, e-commerce, operating systems and mobile applications, online advertising, smartphones, etc.).⁷ But they are also dominant in many of these sectors, enabling them to establish entry barriers for emerging actors. For example, Amazon is both a web host and a seller. The company can thus favor its own products over those of other brands, listed downstream in the rankings it presents on its website.

The Digital Markets Act: a new European tool for promoting competition

The EU has tried to block these practices: When Google imposed its search engines on Android mobile phone systems, the Commission fined it €4.34 billion (July 2018). But current sanctions procedures are far too slow for an industry with remarkable agility and rapid adaptation. Current competition law is inadequate.

That is why EU countries are developing the Digital Markets Act (DMA). This text aims to facilitate the emergence of small digital players in the face of systemic platforms.⁸ The latter, who have so far acted as “gatekeepers” by impeding market entry to newcomers, will

6. Direct actions detrimental to consumers, such as forced sales, do not come under competition law but under consumer protection.

7. A. Piquard, “Comme l’Union européenne entend domestiquer les GAFA,” *Le Monde*, December 7, 2020.

8. The criteria for defining the undertakings covered by the DMA are: i) a turnover equal to or greater than €6,5 billion per year, in the last three years; or ii) a market capitalization level of at least €65 billion in the last financial year; iii) a user base exceeding 45 million; and iv) a sustainable position, i.e., meeting the first two criteria for 3 consecutive years.

be subject to a series of conditions aimed at effectively protecting their professional users. As a result, the GAFAM will no longer be able to systematically put their own products at the top of the rankings or impose the use of their ancillary services, such as identification or payment applications. Likewise, they will no longer be able to reuse personal data collected by their corporate clients. Finally, the Commission retains the right to specify further some of these conditions at a later date.

The DMA should not modify the current European anti-trust rules. However, large platforms will have to inform the European regulator of all mergers and acquisitions they undertake, even when the target is too small to be subject to concentration control.⁹

A very innovative aspect of DMA is that it will act upstream of the possible establishment of a monopoly. The planned sanctions are heavy, up to 10% of the turnover of the undertakings concerned, and even the suspension of services. As a last resort, a company may be broken up, even if this option is mainly envisaged as a deterrent.

American anti-trust law

The US approach to anti-trust is different. Companies in monopoly positions are only sanctioned if their situation is detrimental to innovation and deprives the public of better services. This model was used to breakup large monopolies such as Standard Oil in 1911 or AT&T in 1984. But, so far, the Internet giants have been able to demonstrate to the Department of Justice (DoJ) and the Federal Trade Commission (FTC – the consumer-protection and anti-trust control agency created in 1914), that they have been engines of innovation and that the public has benefited enormously from their free applications. Nevertheless, numerous investigations and law suits against the GAFAM are under way. They are being carried out either by the DoJ, by the FTC, or by the Attorneys General of various states of throughout the country.¹⁰

Expectations of the Biden administration are high in this area. Two anti-trust activists have already been appointed to prominent positions: Lina Khan became President of the FTC on June 15, 2021, and Tim Wu was appointed special assistant to the President for technology and competition policy. It remains to be seen who will lead the DoJ's anti-trust division. Their willingness to reform has resonated strongly in Congress. On June 11, 2021, five draft anti-

9. F. G'sell, "Une nouvelle réglementation *ex ante* imposée aux *gatekeepers* : le *Digital Markets Act*," Chaire Digital, Gouvernance et Souveraineté, Sciences Po, December 23, 2020.

10. "Big Tech Antitrust Tracker: Current Noise to Set Course of Travel", Capstone, March 18, 2021.

monopoly legislative Bills were introduced in the House of Representatives. They are supported by Democrat David Cicilline, Chairman of the Judiciary Subcommittee on Anti-Trust, Commercial and Administrative Law. In the Senate, the Minnesota Democrat Amy Klobuchar is taking the same line. She has just published a 600-page book advocating better monopoly regulation in the digital age, entitled *Antitrust*.¹¹

Predictably, this offensive is facing intense GAFAM lobbying of both the administration and Congress. Given the GAFAM's near-unanimous support for the Democrats, this could turn out to be effective. However, regulating digital monopolies could benefit from bipartisan support. Indeed, precisely because the GAFAM has a left-leaning image, Republicans are overcoming their traditional attachment to free enterprise to take them on.¹² For example, Ken Buck, a very conservative Republican representative from Colorado, has made combating the anti-competitive behavior of Google, Amazon, Facebook, and Apple a top priority. He is now the ranking member (i.e., opposition leader) of the Subcommittee chaired by Mr. Cicillin, and he also supports the bills tabled in June.

11. A. Klobuchar, *Antitrust, Taking on Monopoly Power from the Gilded Age to the Digital Age*, New York, Alfred A. Knopf, May 2021.

12. C. Zakrzewski, "Bipartisan Proposals in House Would Mean Major Changes for the Way Tech Giants Operate", *The Washington Post*, June 11, 2021.

Semiconductors: The Sinews of War

Silicon is a metalloid material called a "semiconductor" because it manifests an intermediate electrical conductivity. It is used in the manufacture of integrated circuits (or electronic chips) present in all computer systems, be they in telecommunications, automobiles, televisions or appliances, as well as in all modern military equipment. Silicon gave its name to Silicon Valley, where many semiconductor manufacturing companies emerged from 1950 to 1970.

The race to innovate

The global semiconductor market was valued at \$464 billion in 2020, and is expected to reach \$522 billion in 2021.¹³ According to the Semiconductor Industry Association, US-based firms account for the largest market share with 47% in 2020, followed by South Korea (20%), Europe (10%), Japan (10%), Taiwan (7%) and China (5%).¹⁴ By contrast, the majority of semiconductor production is now carried out by Asian countries. In 2020, Taiwan accounted for 22% of the world's production capacity, South Korea 21%, China and Japan 15% each, the United States 12% and Europe 9%. China's share is expected to continue to increase to 24% of global production capacity by 2030, helped by government subsidies to industry. This compares to 10% for the United States and 8% for Europe over the same time horizon.¹⁵

The manufacture of electronic chips has become highly complex and delicate. Thus, while many American companies still design chips, the physical production of the most powerful microprocessors used for the latest generation smartphones is carried out by Korean players (Samsung) and especially Taiwanese actors (the Taiwan Semiconductor Manufacturing Company, TSMC). As a result, TSMC alone produces 50% of the latest generation of components.

13. "Worldwide Semiconductor Revenue Grew 10.8 % in 2020 to \$464 Billion, Growth Will Accelerate This Year Despite Market Shortages, According to IDC," *idc.com*, May 6, 2021.

14. "2021 Factbook," *Semiconductor Industry Association*, April 21, 2020.

15. A. Varas *et al.*, "Government Incentives and U.S. Competitiveness in Semiconductor Manufacturing," *Semiconductor Industry Association*, September 16, 2020.

No Chinese company achieves this performance, and China perceives itself as dependent on foreign powers for its supply of semiconductors.¹⁶ In 2014, it set itself the goal of becoming a major player in all segments of the semiconductor production chain by 2030, and allocated \$150 billion to this goal.¹⁷ This is therefore a highly competitive market, and arguably an epicenter of the US-China technological war.

A global shortage

A shortage of semiconductors is currently affecting the entire world, including the production of cars, as well as of the iPhone 12 and the PlayStation 5. There are many reasons for this crisis. The Covid-19 pandemic has disrupted production chains and led to an explosion in the demand for electronic devices, linked to lockdown measures and the rise of teleworking. Moreover, the faster-than-expected recovery in the automotive sector is increasing demand even as suppliers have in the meantime turned to the much more profitable smartphone market. Finally, the cold wave that caused power outages in Texas in February 2021, a fire in March at a Japanese chip factory, and a severe drought in Taiwan slowed production further.¹⁸

As a result, both European and American automotive production chains are partly at a standstill. This is particularly bad news for President Biden, who is basing much of his plan to rebuild the US middle class on the electoral support of workers and the big automakers.¹⁹

This shortage is reinforcing many countries' urge to repatriate semiconductor production lines, in order to regain strategic independence. The US's historic leader Intel, which was recently overtaken, plans to recover lost ground by investing in new foundries in Arizona and Europe. Americans have also been pleased by the announcement in mid-May 2020 by TSMC that it is opening a state-of-the-art chip plant in Arizona. For its part, Samsung is considering expanding its facilities in Texas.

16. F. Lemaître, "Les semi-conducteurs, talon d'Achille de la puissance de la Chine," *Le Monde*, Septembre 14, 2020.

17. S. Ezell "Moore's Law under Attack: The Impact of China's Policies on Global Semiconductor Innovation," Information Technology & Innovation Foundation, February 18, 2021.

18. The production of microchips requires large amounts of water.

19. A. Leparmentier, "Joe Biden veut muscler le *Buy American Act*," *Le Monde*, February 25, 2021.

America's strategy is to prevent Chinese technological independence

US sanctions on Chinese chip manufacturers could also exacerbate the crisis. Between 2019 and 2020, the Trump administration gradually banned all global companies using US hardware from delivering semiconductors to Chinese companies such as Huawei and the Semiconductor Manufacturing International Corporation (SMIC). The reasons given for this were fear of industrial espionage, forced technology transfers, and intellectual property theft by China, but also Chinese technology companies' involvement in human-rights violations. Moreover, it was necessary to impede the development of technologies with high potential not only commercially but also militarily.

In response, Chinese companies have established large inventories of semiconductors, which has reinforced shortages. More broadly, China has now understood its need for strategic independence in this area. That is why US companies deplore their government's sanctions policy: wouldn't keeping China dependent on US components have been a more effective strategy?²⁰

Yet the Biden administration is continuing down this path, and has not lifted Trump's sanctions. Congress supports the President in his effort to counter China's innovation agenda, and a major bipartisan bill entitled the Innovation and Competition Act was passed by the Senate on June 8, 2021. It plans to allocate \$250 billion to finance new technologies, including semiconductors.

Towards better-performing European production

The Franco-Italian firm STMicroelectronics, the Netherlands' NXP and Germany's Infineon are Europe's leading manufacturers, but are struggling to produce the most advanced chips. To overcome this gap, the European Commission is betting on "green tech": the creation of energy-efficient chips that would give European companies a competitive advantage in the market for connected cars, 5G, as well as the Internet of things. Europe is unable to produce the chips with an engraving fineness of 7 and still less 5 nanometers: now it will invest directly in the chips of 2 or 3 nanometers.²¹

20. C. P. Bown, "How the United States Marched the Semiconductor Industry into Its Trade War with China," *Peterson Institute for International Economics*, December 2020.

21. F. Dèbes and D. Perrotte, "L'Europe à la relance pour les puces électroniques," *Les Échos*, January 21, 2021.

In December 2020, 16 EU countries (including France, Germany, Italy and Spain) announced an alliance on an Important Project of Common European Interest (IPCEI) to jointly develop European capabilities for the design and production of electronic chips. The IPCEI tool facilitates the financial support of Member States in transnational projects of strategic interest to the EU, with a view to strengthening Community industrial policy. The European Commission is using this industrial alliance, which aims to bring together Europe's leading companies and research centers, in order to double European production levels (from 10% to 20% of the world's market share) by 2030.²² EU financial support for companies in the sector has already paid off with the inauguration in early June 2021 of a new semiconductor factory by Bosch in Dresden, six months ahead of schedule.

In 2016, a first industrial alliance enabled Europe to double its share of the semiconductor market, from 5% to 10%. Countries will now receive much more generous funding: up to \$145 billion (20%) of Europe's post-Covid stimulus package is set to be devoted to digital technologies.²³

22. "Europe's Digital Decade: Digital Targets for 2030", European Commission, March 9, 2021.

23. F. Dèbes and D. Perrotte, *op. cit.*

5G: Europe's Quest to Recover its Position with Ericsson and Nokia

The challenges of deploying 5G

The fifth generation of mobile phones, called 5G, offers a connection speed 10 times faster than the latest version of the 4G generation. It will allow the large-scale deployment of the Internet of things and its promises are numerous: improving traffic (with autonomous cars), health (connected bracelets and remote surgery), optimizing energy consumption, etc. Optimists point to a new technological leap forward that will transform both industrial production and everyday life, while restarting global economic growth.

But 5G also raises fears of the generalized surveillance of individuals through facial recognition. In China, for the past few years, 5G data transmission has been coordinated with artificial-intelligence technologies to establish a system of monitoring and rating to measure citizens' "social credit."²⁴

The environmental impact of 5G is also debated. While it is predicted that 5G will be less energy-intensive than 4G, and should help with optimizing energy consumption, the renewal of smartphones worldwide, the installation of 5G antennas, and the proliferation of data transfers could be highly polluting.²⁵

The consequences of the technology are also geopolitical. Until now, telecommunication standards have been imposed primarily by the US. But China, with its ambition to overtake the West by 2049, has made the 5G a priority. Not only is China's Huawei the world's leading 5G patent custodian,²⁶ but a Chinese citizen is now the head of the International Telecommunication Union (ITU), enabling Beijing to set future telecommunications standards²⁷. The Chinese

24. E. Dubois de Prisque, "Le système de crédit social chinois, Comment Pékin évalue, récompense et punit sa population," *Futuribles*, No. 434, 2020/1.

25. Furthermore, France's National Agency for Food, Environment and Labor Security (Anses, *Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail*) considers it "unlikely" that 5G deployment poses new health risks. But the Agency has also stressed the need for further research. At the same time, 5G radio frequencies operate in the same range as the weak, natural signal emitted by water vapor, and so could interfere with weather forecasts.

26. "Who Is Leading the 5G Patent Race?" *IPlitics*, February 2021.

27. "5G : une guerre froide sino-américaine," *Le Dessous des cartes*, *Arte.tv*, October 2020.

government sees Huawei as a means to strengthen its technological influence in the world and supports its establishment in Africa and the Middle East.

US Sanctions against Huawei...

For the US, 5G raises significant trade and political issues. With no national champion capable of competing with Huawei, the US fears losing its technological and economic leadership as the 5G is deployed around the world.²⁸ The Americans also fear that installing Chinese 5G infrastructure in the West will make it easier for Beijing to engage in cyber-espionage and even cyber-attacks.

While US countermeasures against Huawei date back some two decades, the offensive against Chinese enterprise was launched by President Trump. In December 2018, Meng Wanzhou, Huawei's chief financial officer and daughter of its founder, was arrested in Vancouver by the Canadian authorities at Washington's request. She is still under house arrest at the time of writing (June 2021), while two Canadians have been imprisoned by China in retaliation. Huawei was de facto banned from future US 5G networks, as of 2019. Taking this further, the Trump administration demanded that European countries and their allies do the same. Australia, New-Zealand and Japan complied at once. The way the Biden administration is now following up this position bears out the present alignment between Democrats and Republicans concerning China.

... as a possible opportunity for European companies

In the absence of a coordinated decision, EU countries are oscillating between their willingness not to provoke the US and yet not to break with China, amid debate about Europe's strategic autonomy. Sweden, Romania and Poland have banned Huawei from their 5G networks. Germany has not nominally banned Huawei, but is also strengthening its oversight of telecommunications network providers, making Huawei's deployment in the country more complicated.

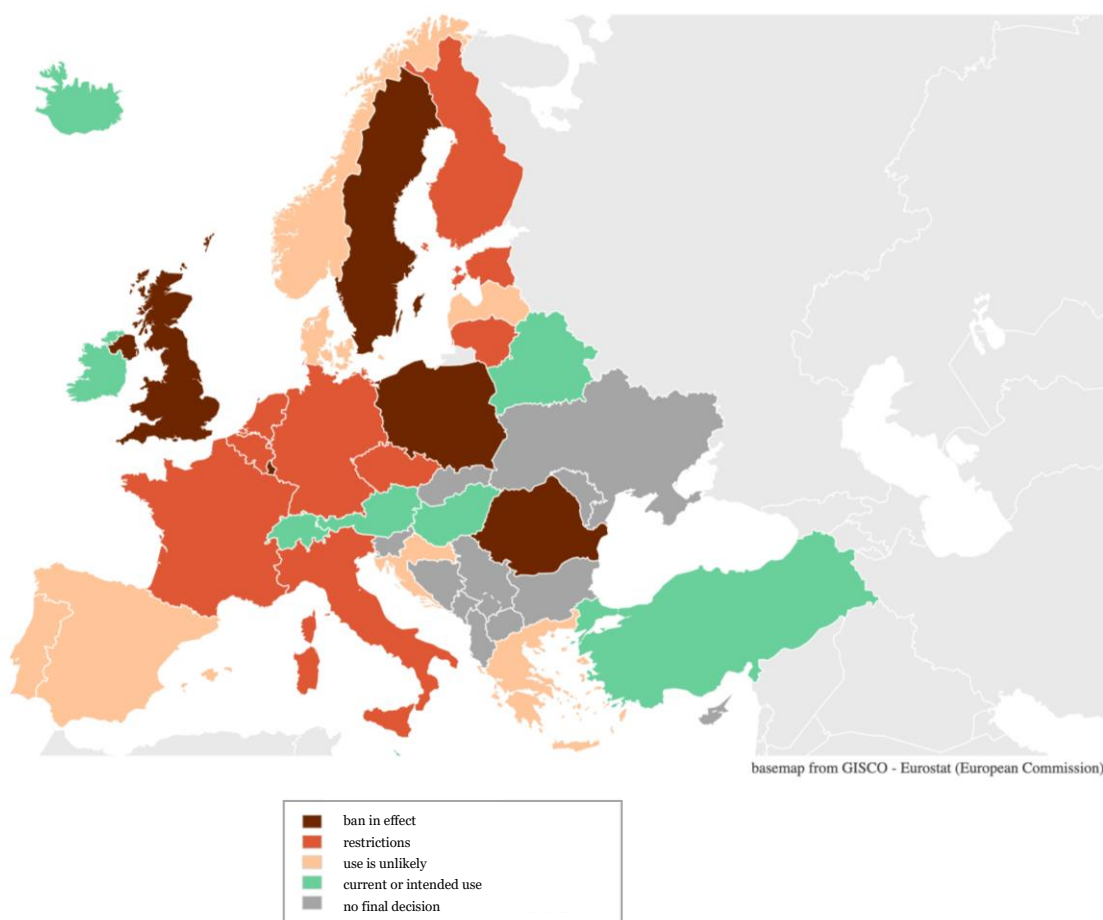
In France, the National Information Systems Security Agency (ANSSI, *Agence nationale de la sécurité des systèmes d'information*) has authorized Huawei infrastructures for 3 to 8 years, but has excluded them from network cores, as well as from the Paris region, and is no longer renewing user licenses when they expire. SFR and Bouygues Telecom will therefore have to uninstall their Huawei antennas. For

28. E. Morozov, "Bataille géopolitique autour de la 5G," *Le Monde diplomatique*, October 1, 2020.

their part, the other European telephone operators (Deutsche Telekom, Orange, Telecom Italia, Telefonica and Vodafone) have all preferred the Swedish Ericsson and Finnish Nokia companies to Huawei.

The consequences of these decisions are clear: In the European market of base stations for mobile telecommunications, Huawei (26%) is outpaced by Ericsson (31%) and Nokia (28%).²⁹ The Huawei Group's growth is slowing worldwide and especially in Europe (see map below). The company now generates most of its sales in China.³⁰

European governments' official positions on the use of Huawei equipment in 5G networks (July 2021)



Source: map prepared by Ifri using [Khartis](#).

29. LightCounting data for 2020.

30. P. Fay and S. Dumoulin, "Huawei, ce géant de la 5G qui dérange les États-Unis," Podcast La Story, *Les Échos*, May 5, 2021.

Europe clearly lags in many new technologies, but Huawei's two main competitors are Ericsson and Nokia. For the most important 5G patents, Nokia (with 11.4%) ranks second only to Samsung (18.5%), and ahead of Qualcomm (10.7%) and Huawei (8.4%).³¹ For its part, Ericsson (with 18.0%) is hard on the heels of Huawei (22.9%) in terms of technical contributions to international 5G standards.

Ericsson's CEO Börje Ekholm reckons that Europe is two years behind China in deploying the 5G network, but that it enjoys strategic autonomy in telecommunications.³² In March 2021, the Commission presented its "digital compass" for 2030. It aims to equip all inhabited areas in Europe with 5G by the end of the decade,³³ thanks to the two European champions.³⁴

6G – a boon for latecomers

The US now seems to be focusing on developing the 6G, whose connection speed could be 100 times faster than the 5G.³⁵ The Alliance Next G was launched in October 2020, and includes Apple, AT&T, Qualcomm, Google and Samsung. For its part, the EU launched its 6G wireless project in December 2020, with Nokia as coordinator, joined by Ericsson, Orange and Telefonica, as well as universities and companies like Atos, Intel and Siemens. As for China, it began its research in 2018 and plans to introduce the 6G in 2029, while South Korea is more ambitious and has announced a 6G rollout for 2026.

31. "Who Is Leading the 5G Patent Race?," *op. cit.*

32. A.-F. Hivert, "Pour le patron d'Ericsson, l'Europe est très en retard sur la 5G," *Le Monde*, April 18 2021.

33. "2030 Digital Compass: the European way for the Digital Decade," European Commission, 9 March 2021.

34. Many European operators, for their part, are in favor of adopting a more flexible industrial architecture called "open-ran." This would allow them to change a 5G equipment provider more freely.

35. S. Zhao *et al.*, "Forget 5G, the U.S. and China Are Already Fighting for 6G Dominance," Bloomberg, February 8, 2021.

Artificial Intelligence: between Ethics and Competition with China

Artificial intelligence (AI) is a “set of theories and techniques implemented to produce machines capable of simulating human intelligence.”³⁶ Beginning in the 1940s, the British code-breaker Alan Turing helped design contemporary computers by successfully deciphering messages encoded by the German Enigma machine. In 1950, he published his thoughts on the ability of a machine to reproduce human intelligence in his famous article, “Computing Machinery and Intelligence.” Since 2010, research has benefited from increased machine computing power and the emergence of “big data”: i.e., massive data collection.³⁷

The benefits and risks of new technology

If the 5G increases the speed at which data is transmitted, it is artificial intelligence that then processes it to provide support for decision-making and even autonomous decision-making by computers. Many applications – beneficial or harmful – have already been cited. To these, we can add more generally the algorithms of the search engines or social networks that provide the bulk of our information today. According to the European Commission, 42% of European companies now use AI algorithms to process their data.³⁸

Some of the negative effects of AI’s autonomous decision-making capacity are feared. First, there is the risk of mass unemployment. A study conducted in 2018 by PwC indicated that, by the mid-2030s, 30% of the world’s jobs could be automated, and 44% of the world’s lowest-skilled jobs could be assigned to machines.³⁹ AI is also open to military use, with a dozen countries developing autonomous lethal weapons systems.

36. Larousse.fr

37. “History of artificial Intelligence,” Council of Europe.

38. M. Craglia *et al.*, “Artificial Intelligence and Digital Transformation: Early Lessons from the Covid-19 Crisis,” European Commission, July 2020.

39. J. Hawkworth *et al.*, “Will Robots Really Steal Our Jobs? An International Analysis of the Potential Long Term Impact of Automation,” PwC, 2018.

The issue of AI ethics is therefore important, as illustrated by the often-cited example of a self-driving car that has to choose between killing a pedestrian or its own passengers. The way AI is programmed also tends to replicate the social prejudices of its designers. Discrimination against women and minorities could thus be strengthened.⁴⁰ One of the challenges for years to come, then, will be to define and teach AI values.

Europe's bet on ethical AI

A draft regulation on AI was submitted by the European Commission on April 21, 2021. Updating an initial strategy set out in April 2018, Europe is now aiming to become the global hub for a form of AI that is “human-centric, sustainable, secure, inclusive, and trustworthy.”⁴¹ This proposed regulation still has to be approved by the Council and the European Parliament and will not be effective until 2023 at the earliest. Nevertheless, it already puts forward several important principles.

The Commission classifies the different types of AI according to four levels of risk to society. Government systems for rating citizens are viewed as unacceptable and will be banned, as will AI manipulations that could impede users' free will. Several fields are considered “high risk”, including: education (with exam ratings), bank lending, critical infrastructure that could endanger the lives and health of citizens (transport), as will the administration of justice,⁴² and the functioning of democracy. Strengthened obligations will be imposed on all EU member states.

In addition, risk assessment and mitigation systems will need to be put in place, along with the traceability of results and clear and accurate documentation to help users and authorities ensure human control over these technologies. The use of remote biometric identification will be the exception, not the rule, and must be authorized by a judicial authority.

Sanctions of up to 6% of a company's annual global turnover could be taxed, and a European Artificial Intelligence Committee will be established to further develop new AI standards.

40. N. Turner Lee *et al.*, “Algorithmic Bias Detection and Mitigation: Best Practices and Policies to Reduce Consumer Harms,” *Brookings*, May 2019.

41. “Europe Fit for the Digital Age: Commission Proposes New Rules and Actions for Excellence and Trust in Artificial Intelligence,” European Commission, April 21, 2021.

42. AI-enabled legal software already exists: The Case Law Analytics application, for example, estimates the chances of a successful trial and the amount of compensation that can be expected.

Here, Europe is seeking to “provide a third way in the development of AI, between the American way led by market forces, and the Chinese way of AI serving the state that controls its people.”⁴³ But the choice of developing an ethical AI will also help to uphold the Union’s economic interests. Europe could differentiate itself by offering a form of AI that inspires more confidence than its neighbors do. On the other hand, companies that have followed the EU’s recommendations since 2018 will have a competitive advantage in the European market, where competitors will have to upgrade their practices.

The US desire not to impede innovation

Confident in technological progress, Americans are less worried about the challenges posed by artificial intelligence than Europeans. While proposals for AI control should not be ruled out, the Biden administration’s priorities remain the same as under its predecessor: developing military applications and not falling behind China.⁴⁴ The Innovation and Competition Act passed by the Senate in June 2021 provides significant funding for the industry.

However, there has been a growing awareness in the US in recent years of the risks related to AI, including political ones. In the face of a lack of federal regulation, a number of states are beginning to legislate to better protect public freedoms. In California, the *Body Camera Accountability Act* (Act AB 1215) passed in 2019 has temporarily prohibited the use of facial recognition software in the body cameras carried by the police.⁴⁵

43. M. Garreau, “La réglementation européenne de l’intelligence artificielle, un choix éthique... et stratégique,” *L’Usine Nouvelle*, April 21, 2021. See also E. Brattberg *et al.*, “Europe and AI: Leading, Lagging Behind, or Carving Its Own Way?,” *Carnegie Endowment for International Peace*, July 9, 2020.

44. D. Malloy, “Can the US Win the AI Race with China?,” *The Atlantic Council*, April 29, 2021.

45. A. Vitard, “La Californie interdit la reconnaissance faciale dans les caméras corporelles des policiers,” *L’Usine Digitale*, October 11, 2019.

Private Data Protection: Europe Leads the USA

The need to protect personal data online

The large-scale collection of personal information from Internet users is a necessary condition for artificial intelligence to work. Yet, it raises specific ethical problems, linked to the very fine, even intrusive, knowledge of individuals. Implementing predictive citizen profiling systems for policing, for example, has already been the subject of multiple experiments with widely discussed consequences. Such systems could also be deployed in the health sector, with questionable uses for consumers in terms of insurance or bank lending.

Second, the GAFAM routinely resell data to third parties without explicitly requesting permission from users, and much less paying them for it. Third parties use this data for advertising, for marketing or business purposes, even if it is sometimes rendered anonymous. The information collected can also be misused for very problematic purposes. In 2014, the theft of personal data from the Facebook profile of 87 million US users was organized, and enabled the British firm Cambridge Analytica to target users who are most likely to vote for Donald Trump. They were bombed with fake information generated by hyper-aggressive online profiles (trolls) or automated programs (bots), often of Russian origin, during the 2016 presidential campaign.

The adoption of the GDPR in Europe

The problem has already been identified and addressed, at least in Europe: The General Data Protection Regulation (GDPR), applicable within the EU since May 2018, strengthens data protection and security with corporate accountability and through significant sanctions. Digital companies are now obliged: to erase user data on request (right to erasure); to provide their data to users so that they can transmit it to another processor or service provider (portability); to obtain the user's exclusive and positive consent to receive cookies; no longer use automated decisions (so-called profiling) that can affect users significantly; notify users of data leaks; and conduct privacy impact assessments before any new data processing.

Patchwork legislation in the United States

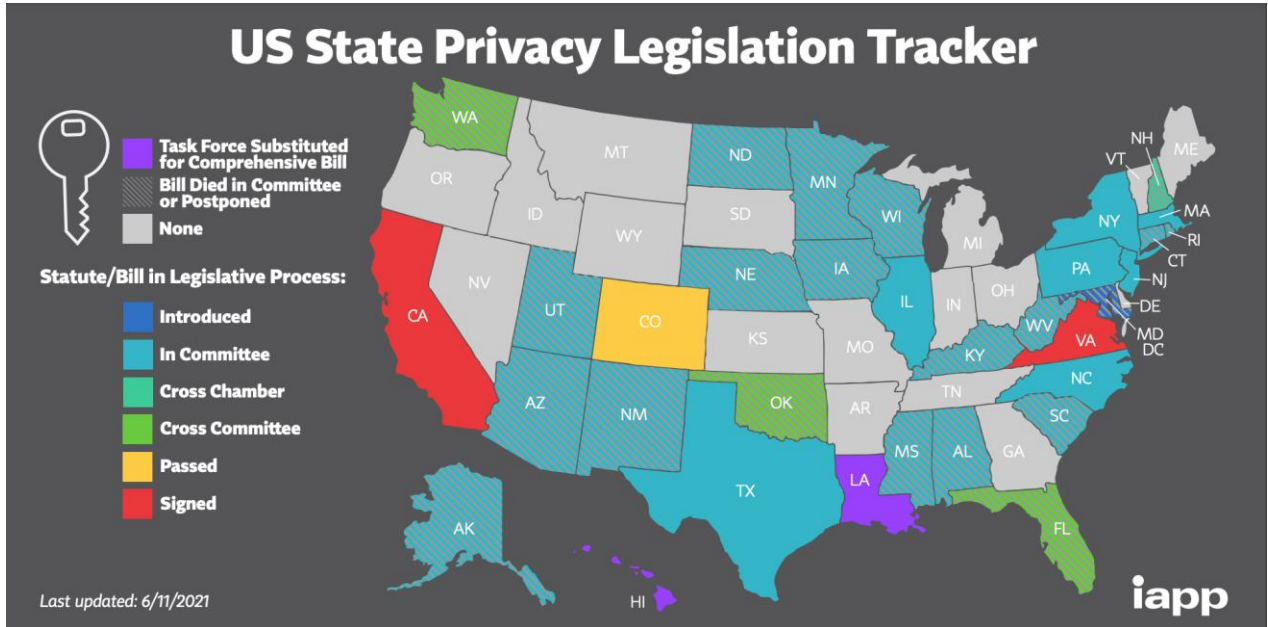
There is no equivalent law in the US at this time. The Cloud Act of March 2018 even runs counter to the spirit of the GDPR regulation. Under US law, it is legal to acquire any e-mail or other digital data stored on US servers, including abroad, for public safety purposes. Europeans fear this may lead to industrial espionage.⁴⁶

Since then, however, California has adopted its California Consumer Privacy Act (CCPA). It came into effect on January 1, 2020, to protect consumers' private data. The CCPA differs from the GDPR in several respects. Whereas the GDPR is intended to be extraterritorial and affects all digital businesses that have ties with EU citizens, the CCPA is aimed only at companies based in California, although this affects many firms, given the location of the digital giants in Silicon Valley. And while the GDPR seeks to establish a clear legal basis for businesses and consumers, the CCPA focuses on the possibility of users banning the sale of their data. Every California website must now have a page on which users indicate their preferences.

In the spring of 2021, a number of other states in the USA were studying their own legislation.

46. C. de Laubier, "L'Europe redoute la loi américaine sur les données," *Le Monde*, October 11, 2020.

Private Data Protection Efforts in the United States



Source: S. Rippey, "US State Privacy Legislation Tracker," *International Association of Privacy Professionals*, June 2021, available at: <https://iapp.org>.

The GAFAM had largely opposed the adoption of the GDPR in Europe, but are now in favor of federal legislation on data in the US, which would unify the rules across the country and which, they hope, would offer a less binding alternative than the European model. They argue that if users' data are less accessible to them, then AI will progress less quickly, jeopardizing US digital excellence.

Responsibilities for the Decency of Online Content

The rise of problematic online content

The lack of regulation of Web content poses many political and security problems. Online and social media (including trolls and bots) broadcast incendiary rumors and fake news, conspiracy theories, violent content and child pornography, incitement to radicalization, and even terrorism, as well as online harassment. AI has recently made possible the creation of “deepfakes”, realistic video manipulations in which one person’s face is encrusted on another’s face to make them say things they did not say. These adverse developments question the possible limits to freedom of expression.

Two mechanisms reinforce this problem. On the one hand, the virality of Internet content allows fake or problematic content to spread throughout the information sphere, reaching and convincing an ever-larger shares of the population. On the other hand, the algorithms used by the platforms highlight content that is always similar to what users have appreciated before. Internet users are never faced with other types of information and are locked into a digital echo chamber.

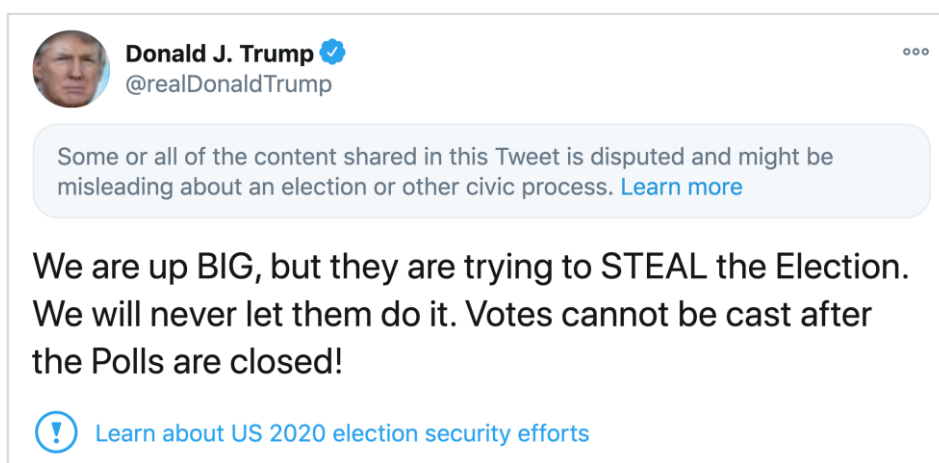
The US experience reflects the limits of free speech

Another problem lies in the weak responsibility of the digital giants acting as content hosts, not publishers. So far, the Supreme Court has interpreted Section 230 of the Communications Decency Act of 1996 as distinguishing between publishers (such as online media) from hosts (social networks like Facebook and Twitter, etc.). The latter are not held criminally responsible for messages published by users, provided that they delete the illegal content reported to them.⁴⁷ Companies simply need to prove that they have teams of moderators to remove the content.

47. “Responsabilités des réseaux sociaux : les États-Unis renoncent à la réforme de la ‘section 230’,” *Le Monde*, January 8, 2021.

Facebook and Twitter were widely blamed for failing to respond to Russian meddling in the 2016 US presidential campaign. Yet they also suffered Donald Trump's wrath from 2016 to 2020, for their excessive support, according to Mr. Trump, for Democratic ideas. In fact, in the aftermath of the November 2020 election, which Donald Trump has challenged, both platforms began to add banners above the most problematic messages (see the Figure below).

Twitter's Disputed Content-Warning Banner



Source: Twitter, screenshot.

After the attack on the Washington Capitol on January 6, 2021, Facebook and Twitter suspended the accounts of the former US president. But this reaction is also problematic, as they based their decision on non-compliance with their "Terms of Service" (ToS). Yet are the firms legitimate to take decisions of such political significance?

In France, the political class has worried about such power being in the hands of private companies, indicating that such a decision should remain in the hands of government. The question then is which official body would be responsible for making such a decision: the legislature? The judiciary? Independent bodies (private or government-funded)?

Leaving content regulation in the hands of the GAFAM also runs the risk of other platforms with less stringent terms of service emerging, such as the "Parler" application. It was back online on February 15, 2021, bypassing its exclusion from Apple, Amazon, and Google services. This platform welcomes expression by America's far right, which could further exacerbate the country's political polarization.

During the campaign, candidate Biden suggested that he could change the law. The Safe Tech Act, tabled in the Senate on February 8, 2021 by Democrats Mark R. Warner (Virginia), Amy

Klobuchar (Minnesota) and Mazie Hirono (Hawaii), proposes to amend Section 230, in order to strengthen the responsibility of platforms for harassment, discrimination, and the violation of civil rights. Moreover, advertisements should no longer be covered by immunity. But this reform does not address online disinformation. Overall, reforms put forward in America remain more limited than the ambitious European proposal for a Digital Services Act.⁴⁸

Europe's Digital Service Act seeks to adjust Internet rules to those of the real world

The Digital Services Act (DSA) proposed by the European Commission is currently under discussion in the European Parliament. It would modernize the e-commerce directive adopted in 2000 to ensure better control of online content. Its goals are ambitious: Thierry Breton, the European Commissioner for the Internal Market, has stated that, "Everything that is allowed offline should be authorized online; and everything that is forbidden offline should be banned online."⁴⁹

In particular, the DSA aims to encourage mechanisms for reporting illegal content and practices, and obliging platforms to act where appropriate.⁵⁰ It also imposes a strengthening of requirements for platform transparency about their moderating practices, content recommendation systems and targeted advertising. Greater demands will be placed on larger platforms. They will need to assess the systemic risks generated by their operations, make "reasonable" efforts to address these risks, and be audited annually. Finally, the draft regulation provides for the creation of authorities to monitor the application of the DSA and to apply sanctions if necessary.

Moreover, European governments are trying to force Google to pay publishers for the use of excerpts from articles. A European directive has been adopted along these lines, but its transposition into national law is the subject of an intense battle.⁵¹ An agreement between Google and France was reached in January 2021.⁵²

48. M. MacCarthy, "Back to the Future for Section 230 Reform," *Brookings*, March 17, 2021.

49. V. Malingre, « Thierry Breton: 'Dans bien des cas, l'espace numérique est une zone de non-droit', » *Le Monde*, October 22, 2020.

50. F. G'Sell, "Une nouvelle étape dans la régulation des contenus en ligne : la proposition de règlement sur les services numériques (DSA)," Chaire Digital, Gouvernance et Souveraineté, Sciences Po, December 23, 2020.

51. A. Piquard, "Entre l'Europe et les GAFA américains, les points de tension sont nombreux," *Le Monde*, July 16, 2020.

52. "Google a signé un accord pour rémunérer la presse française au titre du 'droit voisin'," *Le Monde*, January 21, 2021.

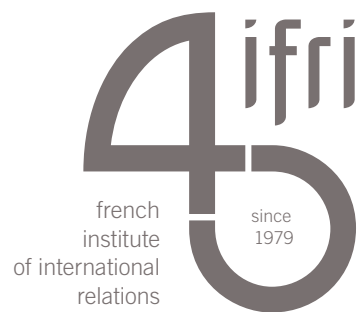
Conclusion

Through the various issues discussed here, the central role of new technologies clearly stands out, not only in transatlantic trade, but also in the geopolitical rivalry between China and the US. Mastering these technologies technically, economically, and politically, is at the center of all objectives.

While Europeans want to regain their status as a technological power, they also want to become an active regulatory power, both to establish equality between economic actors and to put forward ethical technological alternatives. Exporting this model, structured around strict standards, is a challenge: the largest digital companies, mainly American and Asian, currently disregard most of these standards.

The US position is no less delicate. The adverse effects of an unregulated digital world have spilled over into US politics and exposed democracy's weakness in the face of the proliferation of false online information, aided by the interference of foreign powers hostile to Western values. The Biden administration seems intent on undertaking major reforms, but will shy from hampering the power of America's national giants. Fear of being overtaken by Chinese technology is playing a pivotal role in the Washington debate, and is manifested fully in sanctions against Huawei on deploying 5G networks and access to semiconductors.

Today's competing actors understand that much of their influence in the world of tomorrow depends on their technological power. But this competition, which encourages innovation and progress, must remain concerned about the linkages between technology and other current challenges: respect for human rights, preservation of the environment, security, peace, and democratic values.



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