

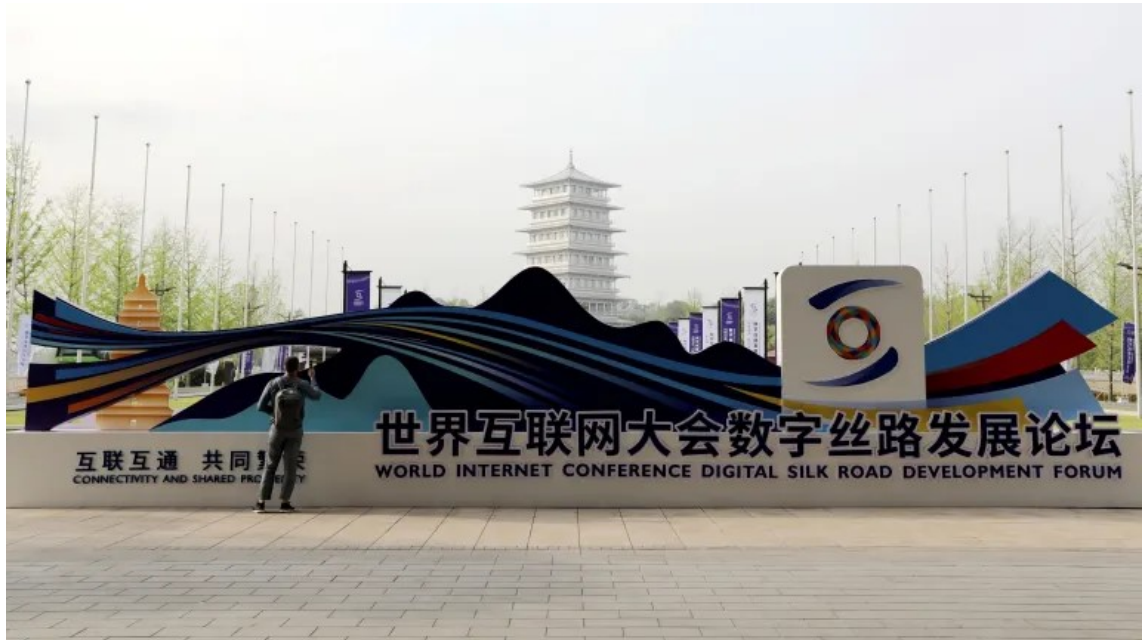
IN-DEPTH

GLOBAL

U.S.-China Digital Fragmentation Is Putting the World in a Bind

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A man stops in front of the logo for the Digital Silk Road Development Forum of the World Internet Conference, in Xian, China, April 16, 2024 (China News Service photo by Zhang Yuan via AP).



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The global trend of digital fragmentation seems unstoppable. Barring intervention by the Supreme Court, a law [banning TikTok](#) in the U.S. will go into effect later this month, despite the company investing billions in implementing U.S. data-localization requirements. China's own AI regulations prevented the first generation of large language model chatbots from reaching the country. And while the European Union's Digital Markets Act, [Digital Services Acts](#) and AI Act have created regulatory clarity, they may also limit foreign firms' capacity to do digital business in the EU.

While tech powers like the U.S. and China push for ever more digital fragmentation, the rest of the world often bears the costs, with regulatory, economic, technological and security implications. With digital fragmentation showing no signs of slowing down, various countries are now adopting a range of ad hoc approaches to navigate the challenges and risks it presents. Yet, the most effective strategy is likely to be one of pragmatic resilience, characterized by adopting non-antagonistic narratives, emphasizing short-term results and pursuing long-term regulatory ambitions.

What Is Digital Fragmentation?

Digital fragmentation is often [discussed](#) from the perspective of who is doing the fragmenting. One view focuses on corporate actors who, by creating closed digital ecosystems, make it prohibitively expensive for consumers to

migrate across digital ecosystems. This monopolizing strategy reinforces and expands companies' market advantages but often leads to higher prices and less choice for consumers. It also decreases the interoperability of systems and applications.

Another view focuses on [fragmentation related to national jurisdictions](#), generally emphasizing competition among the U.S., China and—albeit to a lesser extent—Europe. In this view, governments are the main actors, using financial resources, regulatory policies and diplomatic persuasion to shape [the regulatory regimes and standards](#) governing digital technologies in line with national strategic priorities. Examples here include government attempts to define who controls, produces and has access to data and cutting-edge technologies, as in discussions of [5G telecom networks](#), [semiconductor](#) production and data-localization laws around the world.

At the same time, governments are increasingly seeking to rein in corporate-led fragmentation and its inhibiting effects on market competition. This is evident in numerous recent legal filings and decisions. For example, the U.S. Department of Justice announced in October 2024 that it was considering measures to [break up Google's internet search monopoly](#), and a U.S. federal court ruling in the same month allowed rivals to temporarily [sell their apps](#) in Google's Play Store as a penalty for Google having violated antitrust laws. Similarly, the [European Commission](#) has launched numerous [investigations](#) and in some cases already issued [rulings](#) under the scope of its Digital Markets Act.

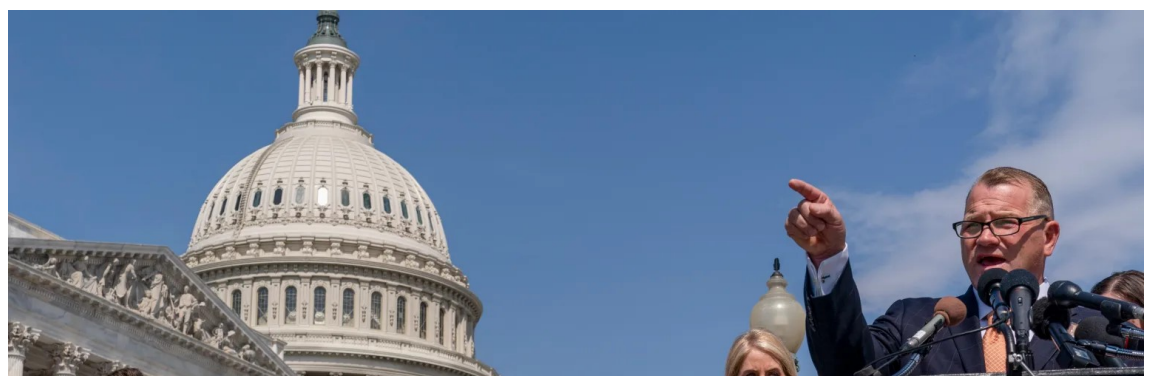
Reining in government-led fragmentation is more difficult. This is partly because the private-sector tech giants in both the U.S. and China are themselves helping advance government-led fragmentation. In fact, the two digital superpowers, building on these deepening partnerships with their digital sectors, represent the “technopoles” of today's New Cold War. They are driving global digital fragmentation in three ways.

How Technopoles Advance Digital Fragmentation

One way technopoles foster fragmentation is by investing in their own technological progress. Those investments are significant. The U.S. government's 2024 [State of U.S. Science & Engineering Report](#) shows that the U.S. and China collectively invested \$1.4 trillion at purchasing power parity in research and development in 2021, more than 3 times as much as the next three big spenders—Japan, Germany and South Korea—combined. Government contributions constituted [at least 20 percent](#) of these totals in both technopoles, underlining the strategic importance accorded to such advances by the U.S. and Chinese governments.

Theoretically, technopole expenditures could mediate rather than enhance fragmentation by pooling substantial financial, technological and diplomatic resources as well as complementary strengths to pursue shared goals such as [minimizing the digital divide](#) and promoting [AI governance](#). In practice, the reverse appears to be happening. Amid fears about manufacturing and supply chain vulnerabilities, both the [U.S.](#) and [China](#) depict tech investments as a means of boosting their own self-reliance and pursuing competitive gains. Related policies limiting [data sharing](#) and [migration](#) have undercut research collaboration, cementing fragmentation in both the knowledge and infrastructure realms. As such, technopole investments are widening the gap between technopoles and others, while also underscoring the differences, rather than similarities, in U.S. and Chinese approaches to technology, making great power cooperation more difficult.

A second strategy that is a central tenet of both U.S. and Chinese tech policies involves [blocking rivals' access](#) to cutting-edge technologies and technology-relevant resources. For example, since October 2018, the [United States](#) has leveraged its influence over intellectual property in chip-making—as well as its security partnerships—to pressure governments in Germany, the Netherlands, Japan, South Korea and Taiwan to restrict Chinese firms' access to [cutting-edge semiconductors](#) and chipmaking equipment. Likewise, in August 2023, China began requiring [export licenses](#) for gallium and germanium, rare earth metals on which much of the world depends for high-technology manufacturing and whose mining and refining is [dominated by China](#). And in December, it [banned the export to the U.S.](#) of both metals and several other tech-relevant materials.





Rep. Troy Nehls speaks at a demonstration at the Capitol calling for the banning of TikTok, in Washington, March 23, 2023 (AP photo by J. Scott Applewhite).

These and other blocking policies are fragmenting global supply chains and markets as technopoles work together with “like-minded economies” to ensure their own supply chain resilience and reinforce economic chokepoints to protect state resources. Seth Schindler and his co-authors have argued the goal is to create “splintered stacks” of digital infrastructure that “forc[e] countries and firms to choose between American and Chinese stacks.” While leading tech platforms continue to resist such pressures, smaller platforms have already succumbed.

Finally, technopoles are facilitating digital fragmentation through their involvement in other countries’ digital initiatives and infrastructure policies, particularly in key allied states, such as Japan, South Korea and Germany for the United States. These digital interventions extend to the Global South as well. While these less powerful states may be wary about China’s Digital Silk Road investments or U.S. investments via the G7’s Partnership for Global Infrastructure and Investment, the opportunities are often too attractive to pass up given the high costs of developing and building digital infrastructures. Once accepted, these investments can end up locking partner states into “gilded digital cages” that are easy to enter but harder to leave.

This carrot-and-stick approach to tech diplomacy, characterized by financial incentives and access to services and infrastructures on one hand and weaponizing interdependence on the other, creates new opportunities for dominant U.S. and Chinese firms to access and benefit from information, data, talent and markets in the Global South. It also gives them influence over the regulatory and normative initiatives that accompany technological integration in partner countries. This is likely to lead to more digital fragmentation, not less.

The Costs of Digital Fragmentation

In such a world, according to the International Monetary Fund, “most countries lose, and losses scale up with the degree of fragmentation.” A 2017 survey of private-sector information and tech executives indicated that 86 percent of global respondents thought their IT strategies and systems were “vulnerable” to growing digital fragmentation, and over 90 percent expected their IT costs to rise as a result. Others worried about the impact on IT recruitment and their businesses’ physical and digital infrastructures.

Eight years later, these risks have multiplied. A report from Digital Policy Alert and Global Trade Alert in 2022 noted that “a fragmented internet and global digital economy denies users choice, diminishes the incentives for innovation, exacerbates trade tensions between governments, and increases the risk of numerous crises.” The IMF estimated that technological and trade decoupling—the most extreme form of fragmentation—could cost countries between 8 percent and 12 percent of their GDP. Additional risks include creating new opportunities for cybercriminals, slowing progress toward global AI regulation and negatively affecting human rights.

Digital fragmentation is especially costly for the Global South. For instance, data-localization measures that concentrate control over data in digitally powerful countries increase the costs of doing business in other countries by complicating digital payments, impeding access to machine-learning technologies, decreasing the efficiency of cloud infrastructures and limiting real-time access to information about cybersecurity threats. This can be painful for Global South businesses, which already face higher costs than their counterparts in high-income economies. Digital fragmentation may also increase economic inequality within and among countries and reinforce regional tensions, hindering mutually beneficial cooperation.

The Limits of Existing Approaches

Given technopoles’ commitment to advancing digital fragmentation and their dominance over global digital infrastructures and platforms, the costs of digital fragmentation will only grow in the coming years. In this context,

what strategies can the rest of the world pursue to minimize their vulnerability, maintain a degree of policy flexibility and achieve their goals?

In one strategy, called [omni-alignment](#), non-technopoles engage in—and intermittently re-evaluate—collaboration with the U.S. and China in a variety of areas. This strategy is characterized by non-technopoles' refusal to bow to pressure to choose one side or the other—that is, a refusal to be complicit in further fragmenting the digital world. Talk of “de-risking” rather than “decoupling” from China—as seen in the [EU](#) and [India](#), for instance—can be viewed as an example of omni-alignment, since it rejects the [dominant U.S. narrative](#) about [the risks of digital engagement with China](#) while also heeding the warnings in that narrative.

Maintaining cooperation is unavoidable in today's digital economy and should be pursued with technopoles and non-technopoles alike. How it is framed matters, though.

Omni-alignment can increase non-technopoles' policy flexibility. But it does little to minimize vulnerability, particularly in the Global South where many countries continue to rely on Chinese digital [infrastructures](#) and U.S. digital [platforms](#). Moreover, a strategy organized around a firm refusal to comply with technopoles' demands runs the risk of exacerbating technopoles' fears about their global position, leading them to pursue policies that will deepen digital fragmentation even further.

Others have identified a strategy of [minilateralism](#) to slow the pace of fragmentation and protect non-technopoles' interests. This strategy is characterized by collaborations among groups of “tech middle powers,” with partnerships often [bridging](#) the Global North and the Global South. As in omni-alignment, such collaborations are generally informal and subject to change as circumstances evolve, meaning they offer a great deal of policy [flexibility](#). The diversification of partnerships and activities beyond collaboration with technopoles should also [minimize](#) the costs of disruptive global developments, thereby decreasing vulnerability.

Yet to truly address non-technopole worries about vulnerability via minilateralism, non-technopoles must prioritize cooperation with other non-technopoles. But doing so is [unlikely](#) to erode the advantages that enable technopoles to intervene in other countries' digital initiatives, and may even [encourage](#) more intervention, as technopoles fear economic and informational losses arising from their exclusion. As such, it minimizes the costs of being vulnerable without addressing the source of vulnerability. In addition, it may be difficult to isolate such partnerships from technopoles' own initiatives as their [government](#)- and [business](#)-led leadership activities expand in scope.

Toward Pragmatic Resilience

In this context, cultivating a strategy of pragmatic resilience seems the best way forward. Such a strategy seeks to chart a course toward the goals of [liberal interdependence](#), including cooperation, mutual gains and non-aggression, while acknowledging the realistic constraints of [weaponized interdependence](#) on policy flexibility and national [autonomy](#) as well as the emphasis it places on minimizing vulnerability and increasing security. Such a strategy comprises two elements.

First, non-technopoles should try to get results without antagonizing technopoles. Maintaining cooperation is unavoidable in today's digital economy and should be pursued with technopoles and non-technopoles alike. How it is framed matters, though. When collaborating with technopoles, non-technopoles should be explicit that their priority is to achieve their own strategic goals; that they are willing to work with all potential partners that can help them do so; and that working with one technopole does not preclude working with another.

Emphasizing results is crucial in cooperation that excludes technopoles as well. This is particularly true when Global South digital innovations have the potential to disrupt the interests of technopoles or the corporations based in them, as has been [alleged](#) with regard to India's efforts to extend the reach of its Unified Payments Interface worldwide.

Second, non-technopoles should embrace flexibility in cooperation, from regulatory approaches to industrial policy, while also pushing for rules with teeth. The need for policy flexibility will not abate in the coming years, so minilateral cooperation is likely to remain a dominant feature of the digital world. But the history of economic cooperation teaches us that this flexible collaboration can not only co-exist with binding global or regional rules and frameworks for digital trade, but can even benefit from it.

Achieving such rules is most likely in areas where mutual benefits are visible and quickly attainable. Digital economy partnership agreements, which promote digital trade and interoperability while also providing a forum for dialogue over digital issues, appear [promising](#) in this respect and may also offer non-technopoles opportunities to shape

regulations. Examples of regulations achieved in 2024 include the inclusion of the [Global Digital Compact](#) as a crucial output of the United Nations' 2024 Summit of the Future; [U.S.](#)- and [Chinese](#)-led resolutions related to AI at the U.N.; and moves by the [EU](#) and [African Union](#) to create frameworks governing a variety of digital technologies and infrastructures.

In contrast, negotiations that target fragmentation directly, such as the Internet Governance Forum's 2022 [Policy Network](#) on Internet Fragmentation and [discussions](#) in 2023 in the International Telecommunication Union's Council Working Group on the Internet to "prevent the fragmentation of the Internet," might achieve results only in the long run. And in the areas where digital fragmentation is likely to extract the highest costs, such as dual-use technologies, new generations of encryptions—including quantum-based applications—and military AI, enforceable rules will remain the exception. This was evident at the October 2024 REAIM summit on regulating the use of AI in the military, which despite [producing](#) only "legally nonbinding declarative documents" for the second year in a row only secured one technopole's [signature](#).

Together, these elements can allow non-technopoles to shape tech narratives and policies that balance short-term benefits with a vision for long-term stability. While this approach may not reverse digital fragmentation, it can help countries navigate it by emphasizing the visible, positive outcomes they hope to achieve from less fragmentation. These successes can then serve as welcome reminders that the potential for good that inspired the internet's original architects nearly 40 years ago should remain a central ambition in today's digitally fragmented world.

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