Toward a T12

Putting Allied Technology Cooperation into Practice

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OCTOBER 2021

THE ISSUE

The Biden administration has sought to expand cooperation with allies and partners on promoting and protecting critical technologies, citing the potential benefits to U.S. and partners' competitiveness, national security, and global leadership. In a dynamic global environment experiencing rapid digitization, economic nationalism, and a multifaceted challenge from China to existing rules and norms, allied technology cooperation—if it is to be effective—will require thoughtful prioritization and organization of efforts within and among countries.

INTRODUCTION

Less than nine months into the Biden administration, three themes have come to define its international economic agenda: competition with China, technology preeminence, and plurilateralism. These themes ran through the president's **first speech to Congress** in April of this year. In a little over an hour, Biden reaffirmed that the United States is in competition with China to "win the twenty-first century," declared that the United States will have to "develop and dominate . . . technologies of the future," and reestablished that Washington will not lead alone, but with its allies.

Tying the three themes together, **White House** officials—with a strong push from **Congress**—have put allied technology cooperation at the core of their emerging strategy toward China. The outlines of this cooperation have appeared in all the statements emerging from President Biden's early interactions with his counterparts from the **Group of Seven** (G7), **Quadrilateral Security Forum** (Quad), and the **European Union**, as well as leaders of individual allies such as **Japan**, **South Korea**, and **Germany**. The administration's efforts echo calls from many outside experts for formation of a **"T10"** or **"T12"** technology alliance, bringing together the United States and various configurations of other "techno-democracies" to promote and protect technologies seen as critical to the competition with China.

Yet key questions remain as to how to put a technology alliance into action, particularly on the "promotion" side of the ledger (i.e., joint development of critical technologies). What sectors should be prioritized for cooperation? Where along the technology development chain are the greatest opportunities for, and obstacles to, allied cooperation, and how should allies seize these opportunities and reduce key impediments? Which countries should be involved, and what organizational structures and processes are most conducive to effective collaboration? This brief addresses these and related questions and offers recommendations for putting an effective technology alliance into practice.

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WHY ALLIED TECHNOLOGY COOPERATION?

The growing interest in technology cooperation among the United States and its allies stems from both the nature of emerging technologies and shifts in the relative capabilities of key global players. Technologies such as artificial intelligence (AI) and biotechnology are dual use, meaning in the broadest sense that they have the capability to do good and to do harm. For example, new genomic coding techniques were instrumental in developing a Covid-19 vaccine; however, the same technology can be used to develop another dangerous disease. In an international policy context, these and other emerging technologies are considered dual use in that they have both commercial and military applications. The United States and its allies have a shared interest in ensuring that the benefits of dual-use technologies are maximized and the risks mitigated or managed. More generally, allies have an interest in minimizing threats to an open internet and digital connectivity, such as intellectual property theft or cyberattacks.

The other driver of increased interest in allied technology cooperation is the fact that the United States no longer holds an unrivaled lead in the development and deployment of critical technologies. This is partly the result of underinvestment in the traditional foundations of U.S. innovation—such as infrastructure, federal research and development (R&D), relevant education and skills—and partly due to rising capabilities in other countries. In 2020, the United States ranked ninth behind European and Asian competitors in **Bloomberg's global innovation index**. Japan, South Korea, Taiwan, and the Netherlands have joined the United States as critical players in semiconductor manufacturing. China, Europe, Canada, and Israel all have formidable capabilities in AI and biotech. And the global telecommunications equipment market is dominated by two Chinese and two European suppliers; the United States has no integrated-hardware suppliers in a sector that forms the backbone of today's digital economy.

China poses a particular challenge for the United States in the technology arena. Supported by a rolling series of initiatives launched by Beijing over the past 15 years—including the "**indigenous innovation**" policies of the mid-2000s, the "**Made in China 2025"** plan released in 2015, and today's "**dual circulation**" strategy—Chinese companies have rapidly move up the technology ladder. According to the latest **Global Innovation Index,** China is ranked 12th in the world, a significant rise from its 35th place ranking in 2013. China now leads in the rollout of fifth-generation (5G) telecommunications systems, with the **greatest** number of cell sites deployed and per capita network subscribers. It also leads in AI adoption rates; an August 2019 **report by the Center for Data Innovation** found that 32 percent of Chinese firms had adopted AI technologies, compared to 22 percent of U.S. firms.

China's growing technological prowess has been a double-edged sword for the United States. On one hand, it has powered China's growth, providing new sources of economic demand and market opportunities for U.S. exporters. It has enabled global supply-chain efficiencies, with U.S. producers using China as a source of high-tech inputs and a platform for final assembly. It has also promoted beneficial R&D collaboration and enhanced the U.S. talent pool as Chinese researchers and entrepreneurs have moved across the Pacific.

On the other hand, China's technological rise has created a new competitive challenge for the United States, with several dimensions. Chinese technologies in many areas, from 5G equipment to digital payments, are now global market leaders. China's progress in AI, drones, and other technologies with military applications has raised serious national security concerns in Washington. And Beijing's massive subsidies and other distortive industrial policies threaten to tilt the competitive playing field in China's favor and upend the rules and norms of the global economy that the United States has championed since World War II. At the same time, growing technological interdependence with China has created supply-chain vulnerabilities in critical technologies, from semiconductors to biopharmaceuticals.

Against the backdrop of these shifts in technology and the global competitive landscape, allied technology cooperation could kill several birds with one stone: supporting U.S. and allied competitiveness; improving global supply chain resilience; upholding and updating the rules and norms of the global economy; addressing shared global challenges, such as climate change and pandemics; and helping mitigate the national security and other risks that some dual-use technologies pose.

This brief is primarily focused on the *promotion* of new technologies to achieve the more positive of these goals. The *protection* of critical technologies for national-security purposes is no less important but has received more attention to date from policymakers and scholars alike, including at CSIS. For example, the CSIS Economics Program released a **report in August 2020** highlighting lessons from an allied-government forum convened to discuss multilateral cooperation on investment screening mechanisms, export controls, and other technology-transfer policies. Moreover, there are particular complexities involved in the promotion of new technologies that can impede cooperation, including market competition among allied firms and divergent regulatory philosophies across countries.

EARLY PROGRESS, CHALLENGES AHEAD

The Biden administration has moved quickly to lay the foundations for allied technology cooperation. In March, the president joined his counterparts from Japan, Australia, and India for the first-ever Quad summit, at which the leaders agreed to establish a **critical and emerging technology working group**. Similar groups were set up as part of the **U.S.-Japan Competitiveness and Resilience (CoRe) Partnership** and the **U.S.-EU Trade and Technology Council** (TTC). The agenda for each of these groups includes a heavy focus on cooperation to promote and protect critical technologies, including by jointly developing standards in areas like AI and the Internet of Things, harmonizing data governance rules, and aligning investment screening and export control policies. The findings of the Biden administration's **100-day supply chain review**, released in June, stressed the importance of working with allies and partners to address supply chain vulnerabilities in four critical sectors, including semiconductors.

Putting these cooperative efforts into practice will be more challenging than agreeing to them on paper. While the members of these various groupings espouse democratic values and a commitment to multilateralism, each brings to the table a distinct philosophy and approach to technology development and digital governance. The European Union, for example, considers **personal data privacy a fundamental human right,** deserving of thorough protection under law and regulation. The United States, by contrast, is in the midst of a roiling debate about the appropriate balance between data privacy and the use of data for commercial, national security, and other purposes that may be at odds with individual privacy. In the area of standard setting for new technologies, most countries take a top-down, government-led approach, while in the U.S. case, this work is led by the private sector. More broadly, views on the appropriate balance between market mechanisms and state intervention, or between free trade and protection of domestic producers, vary widely among potential members of a technology alliance. These differences in philosophy and approach produce different forms of law, regulation, and policy across a potential T12 that will be difficult to reconcile in practice.

Moreover, while the United States and its allies share many values and interests, they are also economic competitors. U.S., European, and Asian companies compete globally for profits and market shares. Their willingness to collaborate only goes as far as will benefit them commercially, or as far as government incentives can sway them to collaborate through subsidies or other incentives. And for political, national security, and other reasons, governments naturally prioritize the interests of their own companies over those in other countries. In addition to impeding collaboration, national efforts to promote onshore production in critical technologies could lead to redundancy and global overcapacity.

This leads to a final set of challenges: organization of allied efforts. Committing to cooperation in a press release is one thing; follow-through is far more difficult. Working groups will need to have the right structure, participants, and agenda. Leadership and accountability are critical, with clear points of contact and processes of decisionmaking within and among governments. These organizational challenges will be especially difficult in a loose, fluid technology alliance in which there may be differeces over who should be at the table (not just countries but government agencies, private-sector representatives, and others); which sectors and technologies should be prioritized; and what kind of practical cooperation is appropriate. Moreover, it will be important to ensure that new allied efforts do not duplicate or disrupt existing technology collaborations.

SETTING PRIORITIES

The effectiveness of any technology alliance will depend on prioritization. Allies cannot work together on every new technology or address every issue that either enables or impedes cooperation. They will have to make choices, particularly on two questions: Which technologies are most critical for—and amenable to—allied cooperation? And where along the chain of technology development are the greatest opportunities for—and obstacles to—allied cooperation?

WHICH TECHNOLOGIES?

In his first major speech as President Biden's national security adviser, Jake Sullivan **highlighted** four sectors that will define what he called "the third wave of the digital revolution": AI, biotechnology, semiconductors, and telecommunications. This is a reasonable list around which to explore the possibility for allied cooperation. These sectors increasingly shape how we make decisions, how we physically live and breathe, how we power technology, and how we communicate. The potential for growth and innovation in these four areas over the next decade or two is enormous. They are also technologies on which international competition is likely to be most intense—and on which the benefits of cooperation are potentially greatest. China, in particular, has **set its sights** on global preeminence in all four of these areas.

Each of these areas has great potential for expanded cooperation among allies:

- **AI** refers to the creation of smart machines that can mimic human learning and thought-process capabilities. This technology allows machines to operate human-run tasks, potentially improving the cost, accuracy, and efficiency of these activities. China is dedicating significant state resources toward AI tech development, with potentially troubling commercial and military implications for the United States and its allies. There is a solid foundation for allied cooperation on AI. Research collaboration in this area is already **well established,** including a formal partnership between the U.S. National Science Foundation and the Natural Sciences and Engineering Research Council of Canada on technology research, of which AI is an important component, and the 2020 U.S.-UK declaration to further cooperation in AI R&D. Expanding this kind of research collaboration, particularly on scaling and commercializing AI technologies, could help get allied AI products to market and ensure they are competitive with Chinese alternatives. Moreover, there are several useful international policy frameworks on which to build out allied cooperation. These include the G7-led **Global Partnership on Artificial Intelligence (GPAI)**, the Organization of Economic Cooperation and Development's **(OECD) Principles on AI**, and AI provisions in regional trade arrangements, including the Singapore-led **Digital Economy Partnership Agreement (DEPA).**
- **Biotechnology**, the creation of products through biological materials or processes, has enormous potential for solving health, agriculture, and environmental challenges. Moreover, one of the most important areas of potential for biotech lies in its ability to transform the manufacturing sector. Biomanufacturing—the application of biotech in manufacturing—will allow countries to not only create different types of products but to do so in new, more sustainable ways. For example, Cambium BioMaterials, a Bay Area start-up, **recently biomanufactured** an enhanced flame-retardant material using plant-based ingredients that is now being used in commercial and military grade. China, the world's leading manufacturer, already dedicates **significant resources** to support innovation in biotech, for potential commercial and military purposes. Allied cooperation on biotech is nascent at this point, but the United States, Germany, Singapore, and Israel are notable leaders in the field, and there is significant scope for building out collaboration.
- **Semiconductors** are "**the brains of modern electronics**." They control the flow of electrical currents in electronic devices, making them a critical component of the technologies of both today and tomorrow. And as the world's digital transformation accelerates, so does the demand for semiconductors. The world needs **more large-scale semiconductor production facilities** to meet this demand, but because it is **increasingly expensive and complex** to produce semiconductors, no one country can solely support this expansion. The semiconductor industry is already one that benefits from specialization—and cooperation—across allies and partners, with the United States dominating front-end research and design, and East Asian countries—including Taiwan, South Korea, and Japan—leading the manufacturing segment of the supply chain. Yet China has set its sights on assuming global leadership in advanced semiconductor manufacturing, as detailed in Beijing's 2014 ***Guidelines to Promote National Integrated Circuit Industry Development***. In response to that and other foreign government

subsidy programs for semiconductor development, the U.S. Congress enacted the Creating Helpful Incentives to Produce Semiconductors for America (**CHIPS) Act** in the 2021 National Defense Authorization Act. **If funded**, this would direct $52 billion of federal money toward domestic semiconductor manufacturing and R&D. The Biden administration has supported the CHIPS Act as critical to sustaining U.S. competitiveness in semiconductors, but it will also be important to enhance cooperation with allies and partners on this foundation technology.

- **Telecommunications**—the transmission of data via wire, radio waves, optical fiber, and other means—are the backbone of today's interconnected economy. The technology underlying telecom networks has advanced rapidly in the past two to three decades through several "generations." The global market for telecom equipment is dominated by a handful of vertically integrated suppliers such as Huawei and ZTE of China, Ericsson of Sweden, and Nokia of Finland. The sector is highly susceptible to first-mover advantages; the first company to deploy the latest generation network (5G) doesn't have to compete with other companies for subscribers and network partners, amassing large shares of both and making it easier for the company to deploy other technologies (telecom equipment, phones, radios, etc.) to their subscribers and network partners. China has moved aggressively in international forums and markets to try to harness the first-mover advantage by setting standards that favor its telecom networks and equipment. This poses a critical challenge to the United States and allied countries, particularly in their ability to secure competitive market shares for their telecom and other network-dependent technology. Allied efforts are already underway to try to diminish the impact of the first-mover advantage by promoting the use of the **Open Radio Access Network (O-RAN) platform**, which is not reliant on supplier-specific software or hardware. The **O-RAN Alliance**, a group of over 270 telecommunications operators and vendors that are dedicated to creating "fully interoperable mobile networks," and the **Open RAN Policy Coalition**, a group of 60 technology companies from around the world dedicated to the advancement and adoption of open RANs, are critical groups of allied companies working to foster a collaborative environment for telecommunication technology. The United States and Japan have been particularly active in their efforts to innovate in telecoms and compete with China, notably through **joint investments in 6G development** under the countries' newly launched **Global Digital Connectivity Partnership**. Allied efforts in telecommunications can help expand these efforts and increase O-RAN adoption.

WHERE TO FOCUS COOPERATION?

After agreeing on the technologies to prioritize, allies will need to decide how to direct their efforts along the technology development chain and what substantive issues to focus on. There are opportunities to expand cooperation across a range of activities, from research collaboration to joint financing. In roundtables and conversations with experts conducted by the CSIS Economics Program as part of this project, two cross-cutting issues repeatedly came up: data and standards. Focusing allied efforts on aligning approaches in these two areas would make a significant contribution to joint promotion of critical technologies.

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Data

In 2020, the world generated **some 44 zettabytes of data**—"40 times more bytes than there are stars in the observable universe." Data are everywhere, fueling technology and informing our decisions and innovation choices. In biotechnology, **for example**, data analytics help biopharmaceutical researchers identify drug candidates for early-stage testing and drug development. Progress in AI development is largely a function of data and the computing power to process it.

These and similar innovations are dependent on data quantity, quality, and diversity—how much data one has, how accurate and usable those data are, and how many different types of data are available. As the **Global Data Alliance**, an industry coalition, **notes**, greater data quantity allows researchers and firms to "identify meaningful insights, patterns, and connections that can aid R&D teams in discovering and developing novel solutions to scientific and technical challenges." Access to high-quality data enables faster, more reliable discoveries. Data diversity helps researchers and firms broaden these discoveries, applying them to new products, patients, and processes.

Data are essential to allied technology efforts for the seemingly simple reason that sharing data is beneficial. Sharing increases the quantity of data and therefore the potential for new discoveries. But it also improves the quality of data, by allowing entities to verify their data against data held by others and to inform, supplement, and complement their data. Sharing data can also increase the diversity of data sets, allowing researchers and producers to apply their results to a wider range of products and demographics. This is especially important in the development of AI, where access to different types of data allows machines to make better decisions.

For all the benefits of data sharing, a number of frictions impede allied cooperation in this area. These include national laws and policies to protect the privacy and security of sensitive data. Every government has a legitimate interest in ensuring that sensitive personal, business, and government information does not get into the wrong hands, and law and policy in this area nearly always restrict the use and sharing of this data in some ways. The problem is when these restrictions inhibit reasonable, responsible, and ethical data sharing with organizations in like-minded countries involved in joint research projects. There are emerging differences in national philosophies and regulatory approaches to data privacy and security that complicate, or may preclude, allied data sharing in support of joint promotion of critical technologies.

As mentioned earlier, the European Union considers personal data privacy a human right and has put into law what is arguably the global standard for data protection in its **General Data Protection Regulation** (GDPR). **Several other countries have enacted data laws based on GDPR, including South Korea and India.** For its part, the United States has a patchwork of privacy rules at the state and sectoral level but no comprehensive federal legislation in this area. By contrast, data security has taken on new salience in Washington, as highlighted by President Biden's signing of an **executive order** in this area in June. How this will affect Washington's historic position that data should generally flow freely across borders remains to be seen.

Meanwhile, several allied and partner countries have also enacted data localization policies, which require data to be stored domestically. This can silo data within states, impede data flows, and undermine innovation. According to a **report by the Information Technology and Innovation Foundation (ITIF),** as of 2020, 62 countries had enacted 144 data localization policies. Many governments such as the European Union and South Korea claim that data localization is necessary to protect "important" or "sensitive" data from being shared; U.S. financial regulators take a similar view with respect to financial data. However, localization policies are often broadly applied and seem to be less about legitimate protection than about protection*ism*.

Efforts to bridge the differences among allies on data flows, privacy, and security have so far had mixed success. Japan has usefully put forward the concept of "**data free flow with trust (DFFT)**" and won both G7 and G20 endorsement of the idea, but it has yet to be turned into an agreed set of rules and practices. To facilitate data flows across the Atlantic, the United States and the European Union negotiated a **"privacy shield"** in 2016, providing a mechanism for companies to comply with GDPR regulations when transferring data from Europe to the United States. However, in 2020, the European Court of Justice found that the framework failed to meet GDPR standards and subsequently invalidated the policy. Without a replacement framework, transatlantic technology cooperation will be constrained.

More positively, as detailed in a **CSIS report in April 2021,** there has been useful work on developing agreed approaches to data governance in a number of recent trade agreements, particularly among U.S. partners **in the Asia-Pacific region.** The U.S.-Mexico-Canada Agreement (USMCA) incorporates and builds on commitments to substantially free cross-border data flows and other rules the United States won agreement to in the **Trans-Pacific Partnership (TPP)** before it pulled out in early 2017. Similar provisions were included in the **U.S.-Japan Digital Trade Agreement** concluded in 2019. And Singapore has been a leader in aligning data governance policies through its bilateral trade agreements, in the **Asia-Pacific Economic Cooperation (APEC)** forum and through its innovative DEPA arrangement.

Moving forward, to capitalize on the innovation gains that come from sharing data and promote meaningful allied technology cooperation, the Biden administration should focus on several lines of effort to reconcile the divergent approaches to data governance among its key allies. First, it should **work with Congress to enact comprehensive federal privacy legislation.** Second, it should use the new TTC forum with the European Union to **align transatlantic positions on data privacy, security, and flows.** Third, it should **embrace the work on data governance in the Asia-Pacific region,** starting by **docking onto DEPA.** And fourth, it should **work to identify areas where U.S. agencies can pool data with like-minded countries in the interest of conducting joint research** on issues of mutual concern. (For example, NIST could combine data with UK or EU counterparts to improve the accuracy of facial recognition tests.) These efforts will help improve the quantity, quality, and diversity of allied data sets, enabling greater innovation opportunities for allied researchers and firms in critical sectors such as AI, biotech, semiconductors, and telecommunications.

Standards

The term "standards" is used to describe a broad array of rules, metrics, and norms, ranging from ubiquitous technical specifications like Bluetooth to safety requirements such as the warning labels found on lawn mowers to expected approaches that establish a certain baseline such as in accounting standards. In all these variations, standards convey a sense of expectation of performance. There are broadly two types of standards: consensus standards and technical regulations. Consensus standards are the outcomes of processes where general agreement rather than unanimity is sought and the development of such outcomes is voluntary. Technical regulations refer to the use of standards by the government to meet a specific policy objective and where conformance with the standard is mandatory.

Standards are critical to innovation for two reasons: first, they provide a foundation for technology development upon which product differentiation can be made, which makes it easier to deploy competitive products, including by leveraging first-mover advantages; and second, they boost product interoperability and consumer confidence in technologies, expanding existing technology markets and helping to create new ones. The focus here is mainly on voluntary standards because, as with data governance, there is arguably more work to be done to align allied approaches.

Global standards are typically set in a broad range of bodies that are open to participation by all interested stakeholders and where decisionmaking is done by consensus. Examples of such as bodies include the International Organization for Standardization (**ISO**), the Third Generation Partnership Project (**3GPP**), **and the Institute of Electrical and Electronics Engineers (IEEE).** Participants in these bodies include a mix of government and private-sector researchers and other experts from the member countries. The process for reaching agreement on standards varies by organization, with different thresholds in balloting that help establish consensus.

As is the case with data governance, the United States and its allies have different approaches to standard setting. While government agencies such as the **National Institute of Standards and Technology (NIST), the Department of Defense,** and the Department of Transportation participate in many standard-setting bodies, Washington does not lead in setting technical standards. It is the long-standing policy of the United States to allow the private sector to take the lead, leveraging the extensive technical expertise and experience available in industry and its knowledge of market need and demands. This private-sector–led approach—in which the U.S. government participates as a contributor, user, and enforcer—has helped establish and maintain U.S. industrial and technological leadership since World War II. By contrast, governments in Europe and Asia tend to have a top-down approach to standard setting, establishing standardization priorities and attempting to develop and protect domestic champions. In order to achieve these objectives, these governments often send a large number of officials to push for preferred national outcomes.

While there is a strong case for the U.S. government to step up its long-term game in international standard setting—for example, by investing in and adequately resourcing government experts to participate in global standards work—the likelihood that the United States and its allies will align their approaches in standard-setting bodies is low. In addition to the philosophical differences, these countries are also competitors and want their own companies and technologies to "win" in the marketplace. There are numerous examples of such competition in emerging technologies such as cloud computing, cybersecurity, and advanced manufacturing. Moreover, the industry-led U.S. approach, with its competitive dynamics among actors who have a better sense of the market potential of new technologies than governments, arguably has real advantages over the top-down approach used by Europe and other allies.

A more productive line of effort for U.S. policymakers seeking to promote greater allied alignment in the technical standards would be to **encourage pre-standardization cooperation.** Here it is useful to explore the concept of **"technology readiness levels (TRLs)."** These measure the maturity of technology along a spectrum from early-stage basic research to commercialization and deployment of technology. The lower the TRL, the less developed the technology and the greater the need is for fundamental research and development. Collaboration at low TRLs—basic research—is already well established. International standard setting happens at higher TRLs, where, as discussed above, allied cooperation faces a number of challenges. The opportunity lies in the middle of the TRL spectrum, where governments could help researchers collaborate on basic research and develop shared insights and data and, by so doing, set the stage for more productive standards cooperation and, even further along the technology-development spectrum, promote regulatory convergence among allies.

In addition to encouraging pre-standardization cooperation, Washington could **do more to engender trust and cooperation with the private sector** on standard setting and related policies. With its extensive firsthand experience, the private sector can help the government better understand the true dynamics of standard-setting rivalries in different standards bodies. Greater public-private exchange of perspectives on the commercial and national security dimensions of emerging technologies would also be valuable. Also, as mentioned above, small amounts of additional funding for government experts' participation in—though not direction of—international standard-setting work could improve public-private coordination and support U.S.-preferred outcomes.

While the focus here has mainly been on technical standards, it is also important for the U.S. government to **work closely with allies on aligning regulatory approaches to technology.** In addition to promoting positive U.S.-preferred norms such as environmental and social sustainability of technology, these efforts would help minimize the scope for misuse or ethical breaches of new technologies. The OECD Principles on AI, for example, are designed to ensure that development of AI technologies adheres to global democratic and human rights values. The **International Bioethics Committee** (IBC), housed under UNESCO, is another body working to develop normative requirements to safeguard human rights in the development and use of biotechnologies.

GETTING ORGANIZED

Promotion of critical technologies is a complex and challenging undertaking, even within a single country. The challenges are compounded when coordinating efforts with other countries. An effective technology alliance will require organizational structures and processes—both within the United States and across allies and partners—that maximize the benefits of cooperation and remove or overcome obstacles.

Effective organization starts at home. The Biden administration has taken some useful first steps in this regard. They have rhetorically made the case for promotion and protection of critical technologies and for coordinating these efforts with allies. The White House has created a new senior position in the National Security Council staff for technology policy coordination and has elevated the head of the Office of Science and Technology Policy (OSTP) to cabinet level to improve internal U.S. government coordination. And it has made technology cooperation a top agenda item for plurilateral forums of like-minded countries such as the Quad and G7, as well as in bilateral engagement with Europe, Japan, and other technology partners. Meanwhile, the U.S. Congress has taken steps to provide legislative and financial support for allied technology cooperation, including through measures such as the **U.S Innovation and Competitiveness Act (USICA)** passed by the Senate in June.

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However, there are still gaps and inconsistencies in Washington's efforts at home to set the groundwork for a technology alliance. Announcing a new policy direction is one thing; carrying it out in a sustained and consistent way is far more challenging. This **requires a well-functioning interagency process** under the direction of the White House that deploys relevant parts of the U.S. government. The Biden administration has been slow to appoint senior officials at the under- and assistant-secretary level at key economic agencies, who are critical to effective policy formulation and implementation. Even when these officials are in place, they need to be empowered to do the day-to-day work of coordinating policy with allies, with direction—but not micromanagement—from the White House.

Moreover, Washington needs to make important substantive investments at home if it wants to win support from allies for its positions on the cross-cutting issues discussed above. To promote its preferred approach to global data governance, for example, the United States needs to **enact comprehensive federal privacy legislation.** It needs to

revitalize the U.S. approach to standard setting, doing more to support the efforts of private companies and experts in this area. And it needs to **recommit to the U.S. innovation base** by, among other things, increasing federal R&D spending, investing in skills, and building digital infrastructure. (Detailed recommendations in these areas were included in the CSIS Trade Commission's **October 2020 report**, *Sharpening America's Innovative Edge*.)

One more chore for the Biden administration is to **reconcile the tension between its appeal to allies for technology cooperation, on one hand, and its stated preference to "buy American" and to onshore production of critical technologies and supplies, on the other.** Allies will be reluctant to sign onto cooperation if they have doubts about what is in it for them. This is an even more pointed question for **allies still subject to tariffs** imposed by the Trump administration.

Progress on these domestic organizational and messaging challenges will need to be complemented by work to organize international cooperation on technology promotion. Again, the Biden administration has made a good start on agenda setting in the Quad and G7 and with bilateral partners such as Japan, South Korea, and Germany. It has wisely avoided calling for a single T12 forum with a predetermined group of countries; the kind of "**variable geometry**" it has been promoting is more suited to an issue area with a complex mix of critical technologies and country capabilities.

But there is still work to be done to stitch all these strands together. It is especially important for Washington to **resolve its differences with Europe over the regulation of technology and data**, or at least to **close the gap enough to align transatlantic (essentially, G7) and transpacific (Quad) approaches** to these issues. It will also be important to **pull in other economies as needed that are not in the Quad or G7 but have advanced capabilities** in key technologies—such as the Netherlands, South Korea, and Taiwan on semiconductors or Finland and Sweden on 5G—without making the web of allied cooperative efforts too cumbersome.

With more alignment of key players within a technology alliance, Washington will then want to **reinforce and build out work in international institutions** in which it retains disproportionate influence to develop U.S.-preferred rules, standards, and norms. NATO and the OECD have done useful work to promote common principles on AI, for example; the latter has also done important work on data governance. Allies will also need to align positions in standard-setting bodies with a more diverse membership such as the International Telecommunication Union.

CONCLUSION

There are many other important lines of effort needed to promote allied technology cooperation that strengthens U.S. and allied competitiveness and national security. In a thoughtful **article in *Foreign Affairs*** in October 2020, Jared Cohen and Richard Fontaine outlined a number of other priority technologies for cooperation—including quantum computing, drones, and financial technology—as well as potential forms of collaboration—joint assessments of risk, coordinating investments in R&D, and even aligning education and immigration policies. And as mentioned earlier, the protection side of the ledger also requires work to align allies' export control, investment screening, and other technology control policies. But the White House needs to start somewhere, and encouraging collaboration among relevant groups of allies and partners on the four technologies, two cross-cutting issues, and various organizational steps identified in this brief would be a good place to focus initial efforts and begin building an effective T12. ■

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This brief is made possible through the generous support of Fujitsu, the Mitsubishi Corporation, the NEC Corporation of America, and Nippon Telegraph and Telephone.

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