Pursuing a Technology Alliance: The T-14

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Key Points

- The leaders of the key techno-democracies should create a new technology policy grouping, a T-14.
  - The proposed T-14 would include Australia, Canada, Finland, France, Germany, India, Israel, Italy, Japan, Netherlands, South Korea, Sweden, United Kingdom, and the United States.
- The T-14 would be a core grouping of aligned nations with broad complementary technological capabilities, and shared goals and challenges. It would also have mechanisms to engage other countries, organizations, and stakeholders from industry and civil society.
- The T-14 would be an informal grouping so that members could coordinate a myriad of disparate technology and industrial policies, and national regulations with agility and adaptability.
- Forming the T-14 would promote the technological leadership of its members to:
Bolster their economic competitiveness and resilience;

- Enhance their national security; and
- Strengthen the democratic model of technology, such as by safeguarding and promoting shared norms and values.

- Heads of government should initiate the T-14 and appoint Sherpas to manage preparation and execution.
- To ensure its collaborative intent, there would be shared responsibility among the T-14 members, with no single member driving efforts.
- A rotating chairmanship, such as for G7, would be an effective mechanism to ensure shared leadership.

Introduction

The first decades of the 21st century are marked by geopolitical flux. The ascendance of a revisionist China as a major force on the global stage and the centrality of technology in global strategic competition require a fresh approach by the tech-leading democracies. For too long, their response has been ad hoc, disjointed and reactive.

A new grouping is needed for the tech-leading democracies to collaborate and coordinate on the areas that will define our future—AI, biotechnology, communications, semiconductors, and quantum computing foremost—and the strategies for industrial policy, supply chain resilience, and economic statecraft that will guide their development and deployment. Existing groupings and organizations—such as the G7, OECD, NATO—are not equipped to address such wide-ranging tech policy issues. Their respective missions are not aligned with what is needed and they either do not have all the right members or are too big to be effective. Others, such as the G20, have authoritarian states as core members.

The content and recommendations in this paper draw from the author’s work for the Technology Alliance Project at the Center for a New American Security—in particular the workshops for the effort culminating in the report Common Code and a Track II dialogue held in Paris in May 2022—and contributions to the Quad Tech Network initiated by the Government of Australia.

Framework
The basic framework for a technology alliance should have three legs: narrow gaps in strategic perspectives on China; harmonize regulatory regimes; and expand economic and technological cooperation.

To be successful, technology alliance members will need to address divergences in strategic perspectives with regards to China. This does not mean that such a grouping will result in full harmonization of threat perceptions of China and how to best balance economic benefits from engagement with China and protecting technological advantages. There are considerable differences between governments and the people of the proposed member countries. A shared understanding of the China challenge, however, will provide a roadmap for action by highlighting threats, challenges, and opportunities. Dialogue and information sharing, particularly when focused on shared vulnerabilities and concerns, will result in better alignment and constructive action.

Harmonizing regulatory regimes will be key to crafting effective plurilateral economic statecraft measures for dual-use technologies. Export controls, inbound and outbound investment controls, and sanctions are prominent levers and expanding in scope to deal with challenges posed by China. While the United States is well ahead of the other tech-leading democracies on these issues, coordination and alignment are essential to effective long-term policies.

The overriding purpose of the T-14 is to bolster the techno-democracies’ positions in global strategic competition against authoritarian and revisionist powers through greater economic and technological collaboration. The range of potential activities is broad, spanning supply chain resilience and diversification, standard-setting, promoting technology norms in accordance with liberal democratic values, human capital exchanges, and tech investment mechanisms to name a few.

**Recommended Agenda**

The proposed agenda for the T-14 has distinct actions in the ‘promote’ and ‘protect’ agendas, with an emphasis on affirmative and proactive measures. The objective is to maximize each country’s competitiveness in a global economy where leading capabilities in a range of foundational and transformational technology areas are a must and to boost the ability of less affluent, like-minded
countries to benefit. To achieve this, a baseline of coordination and cooperation by the tech-leading democracies is necessary.

The actions are grouped in three categories and represent the most promising and urgent areas for near-term action, as identified by experts from the T-14 countries.

1. Practical Leadership and Actionable Coordination

The T-14 member countries are well-positioned to take the helm in consequential tech sectors and promote lasting cooperation to ensure security and economic competitiveness. There are three specific technology areas where T-14 member countries should collaborate. Another key area of focus should be to address supply chain risks to create greater resilience in the event of a crisis, whether caused by man or nature.

**Semiconductors**, also known as chips, are a foundational technology of profound importance. Any electronic device, from calculators to supercomputers, and cars, airplanes, and weapon systems require chips. Modern society cannot function without them. Semiconductor supply chains are highly globalized and complex, and are optimized for efficiency. They are also very brittle, with nodes of outsized importance and several single points of failure. The Taiwanese firm TSMC is a global juggernaut that makes up about half of the world’s semiconductor manufacturing capacity and 92 percent of the world’s output of the most advanced chips. The bulk of TSMC’s operations are concentrated in the northwest corner of Taiwan, on the 100-mile strait that separates the island from China. Single points of failure include the Dutch firm ASML, the sole manufacturer of the lithography machines used to make the most sophisticated chips. ASML in turn has just one supplier for the high-quality optics those machines need: Carl Zeiss, a German company.

To bolster the global semiconductor value chain, the T-14, with the EU and Taiwan, should:

- *Align policies on the entire value chain.* At present, policymakers in these countries are pursuing industrial policies for chips. Much of the focus is on semiconductor fabrication. Less attention is paid to other parts of the value chain, which includes raw materials such as wafers and photoresists, design, and assembly, testing, and packaging.
Focus on geographic diversification. Much of the global chip value chain—mainly certain raw materials, fabrication, and packaging—is concentrated in east Asia, and Taiwan in particular. The potential loss of access to Taiwan’s semiconductor output poses a strategic vulnerability that should be addressed by promoting infrastructure developments in the T-14 and EU partner countries.

Address human capital shortfalls. There is a shortage of talent in the burgeoning chip sector. The partner countries should address this by bolstering secondary and tertiary education, promoting apprenticeships and training programs with tax incentives, and creating talent exchanges among them.

Critical minerals and rare earth elements are required inputs for strategic technology sectors. Minerals including lithium and cobalt are central to energy storage. Rare earth elements—a family of 17 heavy metals—are used in an array of applications such as electronic devices, medical devices, windmills, and fighter aircraft. China dominates the global market for these raw materials, accounting\(^1\) for 60 percent of the world's rare earth mining, 85 percent of rare earth processing, and 92 percent of rare earth magnet production.

To reduce dependence on China, the T-14 should:

Create new mining and processing capacity. There are adequate deposits for these inputs to meet demand. T-14 countries can fill some of the gaps. Australia, Canada, Sweden, and the United States, for example, have substantial deposits of many rare earths. Australia also enjoys major lithium deposits. Other materials will require partnerships with countries in Africa and South America. China’s predominance in rare earths processing and rare earths magnet manufacturing is a major vulnerability that requires action.

Improve and expand recycling techniques. Critical minerals and rare earths used in end products can often be reused. Japan made considerable progress in this area after Beijing curtailed rare earths exports over a territorial dispute in 2010.

Conduct R&D of synthetic alternatives. A transformational breakthrough would be scaling the ability to create man-made substitutes to ultimately end the need for mining and

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\(^1\) Xianbin Yao, “China Is Moving Rapidly up the Rare Earth Value Chain,” *Marsh McLennan - BRINK*, 7 Aug. 2022, [https://www.brinknews.com/china-is-moving-rapidly-up-the-rare-earth-value-chain/#:~:text=Although%20it%20has%20only%20about,rare%20earth%20permanent%20magnets%20manufactured.](https://www.brinknews.com/china-is-moving-rapidly-up-the-rare-earth-value-chain/#:~:text=Although%20it%20has%20only%20about,rare%20earth%20permanent%20magnets%20manufactured.)
processing. The requisite research is well-suited for international collaborative research, given the wealth of relevant researchers in T-14 countries. Some work in this area has already taken place. The US Department of Energy, for example, funded research\(^2\) that led to the creation of materials with the same properties as europium and terbium. Techniques to sharply reduce the need for rare earths is another important research area.

5G and 6G technologies will transform telecommunication with greater speeds, reduced latency, and higher throughput. Industry experts anticipate these technologies will enable novel capabilities such as autonomous vehicles, enhanced and virtual reality, smart cities, and greater efficiencies through automation in manufacturing and streamlined logistics.

- *Promote secure and trusted infrastructure.* The biggest challenge to stemming the proliferation of communications infrastructure produced and operated by untrusted vendors are a dearth of affordable alternatives. The T-14 should create and promote a certification model for sustainable development and support critical infrastructure development projects in the Global South with incentives, grants, and loan guarantees.

- *Focus on standards and interoperability.* Coordination among the T-14 on promoting standards and interoperability will help to ensure the integrity of 5G networks and promote security and resilience of Beyond 5G/6G technologies. One example would be to require built-in cyber protections for international standards. The T-14 countries can also agree to provide financial support, such as through tax incentives, for companies to participate in international standard-setting.

- *Focus on joint R&D and co-development.* The T-14 has major potential to develop 6G technologies and shape next-generation communications. Finland, India, Japan, South Korea, Sweden, and the United States are leaders in 6G-focused research that the other T-14 countries could contribute too.

Supply chain resilience is a sprawling, complex issue. Achieving meaningful results will require changes such as geographic diversification, addressing tradeoffs between efficiency and reliability, ensuring surge production capabilities, and stockpiling of essential items. The T-14 would have

the stature and the capacity to harness industry to conduct the requisite planning, coordination, and execution.

- **Prevent single points of failure and limit risks.** Supply chain chokepoints present risk. Such single points of failure can be mitigated when it is among one of the T-14 countries or one of its trusted partners. When it is within a problematic actor, the T-14 can address that vulnerability together, such as by jointly building new mining and processing infrastructure for rare earths, developing next-generation energy storage technologies, and building new advanced packaging facilities for semiconductors.

- **Reduce dependencies on authoritarian countries.** The overreliance on China for key inputs and manufacturing capacity has resulted in supply chain vulnerabilities across the spectrum of economic activity in the T-14 countries. Collectively, the T-14 countries have the financial resources to restore balance to promote competitiveness and reduce the risk of economic coercion.

- **Reshape supply chains for greater security and transparency.** Opportunities abound for the T-14 to collaborate on creating more transparent and accountable supply chains. AI and big data analytics show promise to gain greater insight and lower costs, while blockchain technology could increase efficiency, trust, and visibility.

2. **International Law, Norms, and Deterrence**

Reinforcing a rules-based order and countering challenges by authoritarians will be a central feature of technology competition. This will require protecting areas of technological advantage by constraining technology acquisition pathways and promoting technology uses aligned with democratic values.

**Export controls** are a tool of economic statecraft that have grown in significance and reach. They are also in need of updating. A new approach is needed to address dual-use technologies and the role of technology in economic statecraft. Furthermore, export controls need to be updated to knock down barriers to technology collaboration between the T-14 member countries, particularly to pursue defense system co-development.

To ensure that export controls serve to protect shared national security interests and do not unduly hinder collaboration between them, the T-14 member countries should:
• **Establish a new plurilateral export controls regime.** Export controls must meet the reality that the technologies of chief concern in the strategic competition—AI, biotechnology, semiconductors, quantum information science, especially—are inherently dual-use. Whereas military technologies were and continue to be controlled by international groupings that are largely effective, no such grouping exists for dual-use technologies. A new\(^3\) plurilateral\(^4\) export controls regime is needed the current context.

• **Address barriers to defense tech cooperation.** T-14 member countries face considerable hurdles to joint development of defense platforms. The International Traffic in Arms Regulations (ITAR), a U.S. regulatory regime, for example, has proved a hindrance for the Joint Strike Fighter program. The T-14 member countries should explore a limited “ITAR-free zone” to do away with unneeded regulatory hurdles.

**Investment reviews** are important tools to protect technological advantage. Reviews of inbound investments serve to safeguard a country’s tech-industrial base and critical infrastructure from undue control by foreign actors. Outbound investment reviews are geared to prevent an outflow of technology or knowledge from a country that its leaders do not consider to be in the national interest. At a more basic level, they could also prevent investments by corporations or research institutions in specific industries or capabilities in countries of concern.

To mitigate the risks associated with undesirable investments, the T-14 member countries should:

• **Develop minimum standards.** The T-14 countries should agree\(^5\) on the thresholds of investment-related national security risk, what industries and sectors are of potential concern, when and how to engage with industry and other stakeholders, developing a framework for information sharing among the 14 countries, and how to monitor and enforce compliance.

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• **Coordinate on priorities.** The T-14 should identify detailed priorities for industries and sectors of concern to ensure that each participating country has the capacity to administer those standards.

**International security** is under increasing pressure as authoritarian states seek to upend the rules-based system that has been the mainstay for global stability for decades. The tech-leading democracies should lead on setting norms for how technologies should and should not be used. They should also work together to mitigate and deter actions that violate those norms.

To bolster international security, the T-14 should:

- **Establish norms in accordance with international law.** The best way for the T-14 to ensure a beneficial technology future that aligns with values of openness, fairness, and equality is to lead by example. Unified norm setting in existing forums will blunt efforts by countries that seek to make the world safe for autocracy.

- **Coordinate on deterrence.** Economic coercion, IP theft, and malicious cyber activity are major threats to a country’s economic competitiveness and national security. A key function of the T-14 should be to form a unified response when a member country is subject to such actions. Doing so would minimize the impact of those actions, while formulating and announcing specific responses could deter nefarious actors from attempting those actions going forward.

- **Share information on the above.** Each of the T-14 countries has its own capabilities and experience when it comes to setting norms, bearing the impact of norms violations, and being the target of economic coercion, IP theft, and malicious cyber activity. Sharing of data, analyses, and lessons learned within the group will help to establish best practices for mitigating harm inflicted by nefarious actors.

3. **Standards**

Standard-setting is a fundamental driver of technological and economic competitiveness. The standard-setting process is meant to be a voluntary one and usually led by industry. When the process works as intended, technological merit drives the outcome—the best technology is chosen as standard. The Chinese government, however, has begun to subvert the process to advantage Chinese firms. Beijing rightly sees leadership in standards as a key determinant of success in
technological competition. The T-14 should strive to ensure that technological merit remains the determining factor.

To maintain the integrity of international standard-setting, the T-14 should:

- *Promote participation by T-14-based firms in international standard-setting.* The government of the T-14 countries should ensure that firms are able to send full contingents to meetings of standard-setting bodies, such as through grants and tax incentives. At the same time, simple reforms to how standard-setting operate should be implemented to prevent tactics such as bloc-voting. Recommended tech areas of focus are:
  - Critical digital infrastructure technologies
  - Central Bank Digital Currencies (CBDCs)

4. Looking Ahead

Areas for longer term cooperation include technology forecasting and horizon scanning, unified policies for data governance and data privacy, and joint R&D on artificial intelligence, green energy transition, quantum information science, and biotechnologies.

Recommendations for Operationalization

Actions speak louder than words. These recommendations will ensure that the T-14 becomes a constructive and effective grouping:

- Heads of government should initiate the creation of the T-14. Once established, ministerial meetings would provide regular high-level interaction and Sherpas would provide the institutional structure. Working groups would then develop implementation roadmaps for the recommendations and guidance of T-14 country leaders.
- The working groups should have a multidisciplinary make-up. The teams would comprise experts in technology, security, and geopolitics.
- The grouping should also engage with countries and entities beyond the T-14. The grouping should not be dogmatic about liberal democracy, but pragmatic on partnering with other countries and groupings when goals and capabilities align.
- Countries and groupings that could be suitable partners include Argentina, ASEAN, Brazil, Estonia, Kenya, Mexico, Nigeria, Singapore, South Africa, Spain, Taiwan (Track II discussions), and United Arab Emirates.
- The grouping should establish an Industry Council of Experts to involve industry stakeholders in T-14 activities. The council could be modeled on the APEC Business Advisory Council. Each T-14 member country would appoint three industry executives to serve on the council and act as a liaison between the government and private sector of each T-14 country.
- The European Union would participate as an observer of T-14 activity. The EU could engage in agreed-to actions in line with its competencies.
- Regulation would occur at the domestic level. Discretion for executing T-14 recommendations and guidance would reside with individual members.

Mr. Martijn Rasser wrote in his own personal capacity. The views and interpretations expressed by the author are solely his own.

The US-Japan NEXT Alliance Initiative is a forum for bilateral dialogue, networking, and the development of joint recommendations involving a wide range of policy and technical specialists (in and out of government) to stimulate new alliance connections across foreign, security, and technology policy areas. Established by Sasakawa Peace Foundation USA with support from the Nippon Foundation, the goal is to help improve the alliance and how it serves shared interests, preparing it for emerging challenges within an increasingly complex and dynamic geostrategic environment. Launched in 2021, the Initiative includes two overlapping lines of effort: 1) Foreign & Security Policy, and 2) Technology & Innovation Connections. The Initiative is led by Sr. Director James Schoff.