

## QUAD PARTNERSHIP FOR EMERGING TECHNOLOGIES AND CYBERSECURITY

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*(Views expressed in the brief are those of the author, and do not represent those of ISSI)*



**“In our first year of cooperation, we established the Quad’s dedication to a positive and practical agenda; in our second year, we are committed to deliver on this promise, making the region more resilient for the 21st century,”<sup>1</sup> said the Joint Statement of the second in-person meeting of Quad leaders. In addition to global health security, climate, and infrastructure, the most prominent elements of Quad’s ‘practical agenda’ includes cybersecurity, critical and emerging technologies. What promises these Quad leaders have made in the realm of emerging technologies and cybersecurity? How would they deliver these promises? What are the core objectives the Quad leaders are aiming to achieve?**

In the joint statement,<sup>2</sup> the Quad leadership recognised the need to adopt a collective approach to enhance cybersecurity in agreement with the Quad’s broader vision of an open and free Indo-Pacific. They expressed their commitment to defend their critical national infrastructure (led by Australia) by timely exchange of threat information among their national Computer Emergency Response Teams (CERT), identification and evaluation of possible risks in the global supply chains of digitally enabled services and products (led by India). In addition to ensuring software and Managed Service Provider (MSP) security for government procurement through aligning the foundational principles and

1 United States of America, Department of State, US Embassy & Consulates in Australia, *Quad Joint Leaders’ Statement*, May 24, 2022, <https://au.usembassy.gov/quad-joint-leaders-statement/>.

2 Ibid.

cybersecurity standards (led by the US), they also agreed to utilise their collective purchasing power to enhance the broader software development ecosystem. With respect to the issue of capacity building (led by Japan), the Quad members reached an agreement to coordinate and build programmes under the *Quad Cybersecurity Partnership: Joint Principles*<sup>3</sup> in the Indo-Pacific region. They will also initiate the first-ever *Quad Cybersecurity Day* to enhance the awareness in the most vulnerable sectors of the region for maintaining good cyber hygiene and protection from cyber threats.

In the realm of critical and emerging technologies, the Quad leaders emphasised the advancement of security and interoperability in the area of 5G and beyond 5G. In this regard, they not only welcomed the *Prague Proposals on Telecommunications Supplier Diversity*<sup>4</sup> but also signed a new *Memorandum of Cooperation on 5G Supplier Diversification and Open RAN*. They also agreed to strengthen their engagement especially for 5G, biotechnologies and quantum technologies through Track 1.5 events, forging collaboration and investment forums with the private industry. They also expressed concerns vis-à-vis their capacity issues and vulnerabilities in the global semiconductor supply chains. To better leverage their complementary strengths and enhance their resilience against various regional risks, the Quad leaders launched *the Common Statement of Principles on Critical Technology Supply Chains*.<sup>5</sup> They also expressed their satisfaction with the progress made with the cooperation of the Telecommunication Standardisation Bureau (TSB) of the International Telecommunication Union (ITU) on the new *International Standards Cooperation Network (ISCN)*.<sup>6</sup>

Whether it is a Joint Statement of the Quad Leadership, the *Quad Cybersecurity Joint Principles* or related documents, a frequent reference to the Quad's vision based on freedom and openness hints toward a deep and active normative conflict in the global technological landscape. Despite global consensus on the growing impact of technological developments and threats posed by malicious cyber threats, there are visible ideological differences among great powers and their allies over the nature of the regulatory framework for cyberspace. The US-led bloc of countries, including Quad countries, openly expressed their desire to protect the freedom of the internet as well as the freedom of assembly, expression and association in cyberspace. The Eastern bloc led by Russia and

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3 Japan, Ministry of Foreign Affairs of Japan, *Quad Cybersecurity Partnership: Joint Principles*, accessed on July 20, 2022, <https://www.mofa.go.jp/files/100348060.pdf>.

4 "The Prague Proposals," Prague 5G Security Conference 2021, November 30, 2021, [https://www.nukib.cz/download/Prague\\_Proposals\\_on\\_Telecommunications\\_Supplier\\_Diversity.pdf](https://www.nukib.cz/download/Prague_Proposals_on_Telecommunications_Supplier_Diversity.pdf).

5 Japan, Ministry of Foreign Affairs of Japan, *Common Statement of Principles on Critical Technology Supply Chains*, accessed on July 21, 2022, <https://www.mofa.go.jp/files/100348059.pdf>.

6 United States of America, the White House, Statements and Releases, *FACT SHEET: Quad Leaders' Tokyo Summit 2022*, May 23, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/23/fact-sheet-quad-leaders-tokyo-summit-2022/>.

China disagreed with the Western ideology at various international forums including the United Nations (UN). Russia being the pioneer in bringing the issue of ICT regulation to the UN in 1994 supports the idea of cyber sovereignty where every state must have the right to regulate its cyberspace and digital infrastructure according to its own national security needs. Russia and China do not consider cyberspace as an unregulated space but they are opposed to the concept of “automatic application” of existing norms and international law in cyberspace, critical and emerging technologies.<sup>7</sup>

Currently, a staggering economic obliteration at the global level is concocting these deep ideological differences and the great power competition has started manifesting itself vis-a-vis diversification of global supply chains and global standardisation for 5G and semiconductors. The increasing US focus on the diversification of global supply chains within the Quad framework and global standardisation for semiconductors and 5G are complexly linked with the emerging “US-China semiconductor decoupling.”<sup>8</sup> In the existing semiconductor value chain, the US is leading the global market in the most knowledge-intensive activities like electronic design automation (EDA), chip design, etc. In terms of revenue, most of the World's top companies in the realm of chip designs and EDA like Intel are US based. On the other hand, approximately 75 per cent of global manufacturing of semiconductors is happening in East Asia. This concentration of different specialities in different regions of the world happened due to the inability of integrated device manufacturers (IDMs) in the US to bear the enormous cost of Research & Development (R & D) for chip designs as well as the chip manufacturing in the 1980s. This paved way for the “foundry business model.” Because of industry-friendly policies, advanced infrastructure and skilled labour, Taiwan and South Korea emerged as the centre of global semiconductor manufacturing. China is leading the world in terms of capital-intensive activities like assembly, testing, packaging, etc. Furthermore, China and the US are the top two consumers of semiconductors in the world.<sup>9</sup> Consequently, a highly organised and integrated global supply chain for semiconductors bursting with massive multilateral collaborations came into existence. These supply chains facilitated fast and cost-effective digitalisation across the globe. So, where do things go wrong?

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7 Aamna Rafiq, “The First Ever UN Security Council High Level Open Debate on Cyber Security: An Assessment,” Institute of Strategic Studies Islamabad (ISSI), September 28, 2021, <https://issi.org.pk/issue-brief-on-the-first-ever-un-security-council-high-level-open-debate-on-cyber-security-an-assessment/>.

8 Justin Feng, “The Costs of US-China Semiconductor Decoupling,” Centre for Strategic & International Studies (CSIS), last modified May 25, 2022, <https://www.csis.org/blogs/new-perspectives-asia/costs-us-china-semiconductor-decoupling>.

9 Ibid.

With the rapid advancement of emerging technologies like artificial intelligence, big data, cloud computing, robotics and quantum computing along with the rolling out of 5G and the Internet of Things (IoT), the world is increasingly becoming smart and automated. This has increased the global demand for reliable semiconductor chips with high performance and storage capacity. According to Gartner, the deployment of 5G in smartphones alone has increased the global semiconductor revenue by 26.3 per cent (US\$595 billion) in 2021. The total global semiconductor revenue is projected to increase by 13.6 per cent from 2021 and reach US\$676 billion in 2022.<sup>10</sup> The interesting question is who dominates these mobile 5G applications? It is none other than the famous Chinese company Huawei. Despite the US sanctions it managed to survive with colossal losses. Currently, China is fast outpacing the US in the qualitative and quantitative development of 5G. In addition to civilian, the military application of 5G will alter the fundamental characteristics of contemporary warfare.<sup>11</sup> China is ranked first in the world to declare 5G patents. China owns approximately 40 per cent of essential standard patents for 5G. There are 47,000 patent families, which include more than 210,000 declared standard-essential patents for 5G worldwide. China owns 18,728 patent families including 6,583 families exclusively owned by Huawei.<sup>12</sup> Owning the 5G patents is one of China's many efforts to end its dependency on other countries. Furthermore, the 2021 report by the US National Security Commission on Artificial Intelligence has also predicted that China would soon replace the US as the world's "AI Superpower."<sup>13</sup>

The US is well behind China and it is a difficult pill for the US to swallow. This Quad partnership is one of many desperate measures the US is taking at the national and international levels to contain China's development in the realm of critical and emerging technologies. The US is aiming to strangulate China in two ways. First, Washington would reduce its overdependence on the Chinese market for semiconductors. However, it must not take any revolutionary measures and have to rely on a gradual pull out because China is the world's largest market. According to various estimates, the US Tech companies would lose 37 per cent of their revenues and 18 per cent of their global

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10 Stamford Conn., "Gartner Forecasts Worldwide Semiconductor Revenue to Grow 13.6% in 2022," Gartner, Inc, April 26, 2022, <https://www.gartner.com/en/newsroom/press-releases/2022-04-26-gartner-forecasts-worldwide-semiconductor-revenue-to-grow-13-6-percent-in-2022#:~:text=Semiconductor%20revenue%20for%20smartphones%20is,55%25%20of%20all%20smartphones%20produced>.

11 Arjun Kharpal, "'Pathetic' performance has left US 'well behind' China in 5G race, ex-Google CEO Eric Schmidt says," *CNBC*, last modified February 17, 2022, <https://www.cnbc.com/2022/02/17/us-well-behind-china-in-5g-race-ex-google-ceo-eric-schmidt-says.html>.

12 "China Ranks first in Declared 5G Patents in the World," *CGTN*, last modified June 8, 2022, <https://news.cgtn.com/news/2022-06-08/China-ranks-first-in-declared-5G-patents-in-the-world--1aGW1cliXW/index.html>.

13 The National Security Commission on Artificial Intelligence, Final Report (March 2021), <https://www.nscai.gov/wp-content/uploads/2021/03/Full-Report-Digital-1.pdf>.

market share as a result of this pullout.<sup>14</sup> This is where India becomes a key piece of this great power chessboard. India is a Quad member that is leading the initiative of identification and evaluation of possible risks in the global supply chains of digitally enabled services and products and could be the next big market for the US. India is one of the world's leading sourcing destinations that accounted for 55 per cent of (US\$200 - 250 billion) of global service sourcing business in 2019-2022. The contribution of the IT industry to India's GDP is 8 per cent. The revenue of the Indian IT industry is expected to reach US\$227 billion in 2022 as compared to US\$196 billion in 2021. The investment in the IT market will increase to US\$101.8 billion in 2022 from US\$81.99 billion in 2021. The value of the Indian big data market is expected to reach US\$7 billion by 2030 due to local AI demand. Interestingly, the US market's contribution to this Indian big data industry is approximately 60 per cent.<sup>15</sup> On the other hand, the US is encouraging its allies, especially Quad members, South Korea and Japan. However, the Allies are reluctant to pull out from the Chinese market. For example, South Korea rejected the US proposal of forming a semiconductor industry alliance between the US, South Korea, Japan, and Taiwan in early 2022.<sup>16</sup>

What we now know is a tug-of-war situation between the US and China. With whom other key countries will decide to align will play a key part. However, in this tug-of-war, who is going to lose is more important than who will win because whoever loses will also determine the downfall of the global economy and security.

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14 Feng, "The Costs of US-China Semiconductor Decoupling."

15 "IT & BPM Industry Report," India Brand Equity Foundation, last updated May 2022, <https://www.ibef.org/industry/information-technology-india>

16 Feng, "The Costs of US-China Semiconductor Decoupling."