Written testimony for the record for The United States House Select Committee on Strategic Competition between the United States and the Chinese Communist Party

Hearing on
"Commanding Heights: Ensuring U.S. Leadership in the Critical and Emerging Technologies of the 21st Century"

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Chairman Gallagher, Ranking Member Krishnamoorthi, and distinguished members of the Select Committee, thank you for inviting me to submit a written testimony for the record, in lieu of my attendance in person.

The Chinese government and the U.S. government are in a strategic competition, and at stake are alternate visions for the future world order. Technology will play a central role in how the world order is contested, shaped and sustained, especially in the political, economic, military, social and information domains.

The technological aspects of the competition are not measurable through the R&D of technology: the "winner" will not be determined by who races to have more cutting-edge technology. The winner of the strategic competition will be determined by who can best apply those technological outputs consistently and effectively to coherent national strategies.

This testimony briefly describes China's national strategy for the R&D of critical and emerging technologies and the implications of this strategy for the United States. It then argues that the U.S. government must engage in a two-fold response: First, severe weaknesses in the U.S. innovation system must be addressed, and industrial policy must be strengthened. Second, China's efforts to undermine the United States' competitiveness should be decisively countered.

China's National Strategy and its Implementation

China's vision for technology's application to national strategy is attached to the "Chinese Dream" of the "great national rejuvenation of the Chinese nation".[1] According to the Chinese Communist Party (CCP, 'the Party'), national rejuvenation will be achieved once China is, in

[1] Qiushi magazine commentator, "以中国式现代化全面推进中华民族伟大复兴", Qiushi, January 2023: http://www.qstheory.cn/dukan/qs/2023-01/01/c_1129246990.htm; Also see Xi Jinping's 13 March 2023 speech to the first session of the 14th National People's Congress framed strength of science and technology within the context of achieving national rejuvenation. He called for "We must fully implement the strategy for invigorating China through science and education, the workforce development strategy and the innovation-driven development strategy, and focus on achieving greater self-reliance and strength in science and technology." English translation available at: http://english.scio.gov.cn/m/topnews/2023-03/15/content_85168965.htm

party-speak, a "rich, strong, democratic, civilized, harmonious, and modern socialist country". Each of those terms is politically loaded. They carry specific meanings that are defined on the Party's terms, and are connected to the CCP's protection, maintenance and expansion of its own power.

Importantly, national rejuvenation is not achieved through the Party's delivery of domestic results alone, it is also dependent on the CCP's exercise of power internationally. As Daniel Tobin argued in a March 2020 testimony before the U.S.-China Economic and Security Review Commission, Beijing's aim through national rejuvenation is to achieve "nothing less than preeminent status within the global order".[2] The CCP's concept of state security is a lens for viewing its rejuvenation efforts. State security strategy is informed by expansive threat perceptions require it to extend power beyond the PRC's borders.[3] It is relevant not least because of technology's central role to the exercise of power across the aforementioned political, economic, military, social and information domains.

The vision for technology is not just placed at the top of national rejuvenation strategy and forgotten at a practical level. It filters down to the most granular levels of state planning, as outlined briefly below:

1) **Agenda-setting establishes specific strategic priorities based on the objectives of national rejuvenation.**

Example 1: Xi Jinping's Work Report to the 20th Congress of the Communist Party of China[4]: Mentions technology dozens of times, and among other things, calls for China to: "Join the ranks of the world's most innovative countries, with great self-reliance and strength in science and technology". In a section on modernizing China's industrial system, he highlights:

> *"We will consolidate our leading position in industries where we excel, work faster to shore up weaknesses in sectors vital to China's development security, and improve our capacity for securing the supply of strategic resources. We will promote the integrated and clustered development of strategic emerging industries and cultivate new growth engines such as next-generation information technology, artificial intelligence, biotechnology, new energy, new materials, high-end equipment, and green industry."*

[2] https://www.uscc.gov/sites/default/files/testimonies/SFR%20for%20USCC%20TobinD%2020200313.pdf

[3] I describe in more detail: "Double-Edged Sword China's Sharp Power Exploitation of Emerging Technologies", National Endowment for Democracy Sharp Power and Democratic Resilience Series, April 2021 https://www.ned.org/wp-content/uploads/2021/04/Double-Edged-Sword-Chinas-Sharp-Power-Exploitation-of-Emerging-Technologies-Hoffman-April-2021.pdf (and in upcoming) , "Engineering global consent: The Chinese Communist Party's data-driven power expansion," Australian Strategic Policy Institute, October 2019, "https://ad-aspi.s3.ap-southeast-2.amazonaws.com/2019-10/Engineering%20global%20consent%20V2.pdf?VersionId=eIvKpmwu2iVwZx4o1n8B5MAnncB75qbT.

[4] English Translation available at: "Transcript: President Xi Jinping's report to China's 2022 party congress", Nikkei Asia, 18 October 2022: https://asia.nikkei.com/Politics/China-s-party-congress/Transcript-President-Xi-Jinping-s-report-to-China-s-2022-party-congress.

Example 2: The Constitution of the Communist Party of China (2017 Revised)[5]: Discusses technology's role in the country's modernization, and national defense.

> *"The Party shall promote the synchronized development of new industrialization, information technology application, urbanization, and agricultural modernization, and shall build a new socialist countryside, take a new path of industrialization with Chinese characteristics, and build China into a country of innovation and a global leader in science and technology."*
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> *"The Communist Party of China shall uphold its absolute leadership over the People's Liberation Army and other people's armed forces; implement Xi Jinping's thinking on strengthening the military; strengthen the development of the People's Liberation Army by enhancing its political loyalty, strengthening it through reform and technology..."*

2) **The agenda is translated into action plans with clear timelines that set the pace for achieving those goals. (Note: Timelines do not reflect a start and end date, but rather a period of development.)**

Example 1: Made in China 2025[6] is a significant document outline the PRC's industrial policy and building of self-reliance, with implementation plans for between 2020 and 2025.

Example 2: "Outline of the 14th Five-Year Plan (2021-2025) for National Economic and Social Development and Vision 2035 of the People's Republic of China"[7] includes sections focused on strengthening China's science and technology power, improving enterprises' ability to innovate, supporting talent, and improving institutional science and technology management systems.

3) **These are further translated into issue and sector specific plans across government departments and administrative divisions.**

Example 1: More detailed five year plans issued by government departments with responsibilities in the issue area or sector, such as the 14th Five Year Plan for National Science

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[5] English translation available at: "Constitution of the Communist Party of China," Xinhua, http://www.xinhuanet.com/english/download/Constitution_of_the_Communist_Party_of_China.pdf

[6] Original at: "国务院关于印发《中国制造 2025》的通知,"gov.cn, 8 May 2015: https://www.gov.cn/zhengce/content/2015-05/19/content_9784.htm; English translation available at: "Notice of the State Council on the Publication of "Made in China 2025"

国务院关于印发《中国制造 2025》的通知," CSET, 8 March 2022: https://cset.georgetown.edu/wp-content/uploads/t0432_made_in_china_2025_EN.pdf. Also see: Jost Wübbeke, Mirjam Meissner, Max J. Zenglein, Jaqueline Ives and Björn Conrad, "Made in China 2025: The making of a high-tech superpower and consequences for industrial countries" MERICS, December 2016: https://merics.org/sites/default/files/2020-04/Made%20in%20China%202025.pdf

[7] Original at: "中华人民共和国国民经济和社会发展第十四个五年规划和 2035 年远景目标纲要" Gov.cn, 13 March 2021: https://www.gov.cn/xinwen/2021-03/13/content_5592681.htm; English translation available at: "Translation: Outline of the People's Republic of China 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2035 中华人民共和国国民经济和社会发展第十四个五年规划和 2035 年远景目标纲要," CSET, 12 May 2021: https://cset.georgetown.edu/publication/china-14th-five-year-plan/.

and Technology Popularization and Development; the 14th Five Year Plan for the Development of the Big Data Industry; or the 14th Five Year Plan for National Informatization.[8]

Example 2: Local governments often issue their own action plans. Since last year, for instance, numerous provinces, municipalities and lower administrative districts have released metaverse-related actions plans, like Shanghai's "Action Plan for Fostering the Metaverse (2022-2025)".[9]

4) **Finally, these objectives are implemented through a range of policy tools not limited to but including preferential policies and regulation.**

Example 1: Creation of incentive structures such as preferential tax policies, like the 2022 decision to increase pre-tax deductions for science and technology R&D.[10]

Example 2: The 2021 Data Security Law of the PRC. Article 16 describes the state's support for R&D of data and data security related technologies. Article 17 describes the state's role in the development of standards for those technologies, and Article 11 describes its intent to participate in international standards setting.[11]

Example 3: Technology standards setting through the Standards Administration of China (SAC), and other government agencies. The SAC issues standards, some which are requirements and others that are encouraged, such as the technical requirements for facial recognition technologies used in security systems. For example, in biometric surveillance, the Ministry of Public Security has set facial recognition guidelines that include capabilities for Uyghur detection. [12]

As China's visions for the R&D of critical and emerging technology are being implemented, there are far-reaching consequences. Fundamentally, R&D in China is taking place so that technology is explicitly designed to meet the party-state's needs. By directing R&D processes, the Party-state's values are also being built into the design of critical and emerging

[8] "科技部 中央宣传部 中国科协关于印发《"十四五"国家科学技术普及发展规划》的通知" https://www.gov.cn/zhengce/zhengceku/2022-08/16/content_5705580.htm; "十四五"大数据产业发展规划" https://www.gov.cn/zhengce/zhengceku/2021-11/30/5655089/files/d1db3abb2dff4c859ee49850b63b07e2.pdf ; ""十四五"国家信息化规" http://www.cac.gov.cn/2021-12/27/c_1642205314518676.htm

[9] "政策密集发布 多地争抢元宇宙发展先机"*Xinhua Net*, 12 April 2022, http://www3.xinhuanet.com/techpro/20220412/1161ffb0b1a14caca9f9af4b06f67693/c.html;

[10] "财政部 税务总局 科技部关于加大支持科技创新税前扣除力度的公告" 22 September 2022: https://www.gov.cn/zhengce/zhengceku/2022-09/27/content_5712999.htm

[11] "中华人民共和国数据安全法" NPC.gov, 10 June 2021: http://www.npc.gov.cn/npc/c30834/202106/7c9af12f51334a73b56d7938f99a788a.shtml

[12] Dahlia Peterson and Samantha Hoffman, "Geopolitical Implications of AI And Digital Surveillance Adoption," Brookings, June 2022: https://www.brookings.edu/wp-content/uploads/2022/06/FP_20220621_surveillance_exports_peterson_hoffman_v2.pdf; "Dahua and Hikvision Co-Author Racial and Ethnic PRC Police Standards," IPVM, March 30, 2021, https://ipvm.com/reports/racial-ethnic-standards; Leo Kelion, "Huawei patent mentions use of Uighur-spotting tech," BBC News, January 13, 2021, https://www.bbc.com/ news/technology-55634388; "China: Police 'Big Data' Systems Violate Privacy, Target Dissent," Human Rights Watch; Charles Rollet, "China Government Spreads Uyghur Analytics Across China," IPVM, November 25, 2019, https://ipvm.com/reports/ethnicity-analytics.

technologies as it is iteratively developed. Standards, meanwhile, are being set not just through China's participation in international standards setting bodies like the International Telecommunications Union, but also de-facto, through the market.

Current ways for doing due diligence and mitigating risk are not effective enough to coherently and carefully deal with the problem. U.S. and other non-PRC companies assist PRC R&D and supply critical technologies to PRC companies. For example, according to IPVM reporting, US-based company Nvidia continues to supply hardware to PRC company Hikvision. Hikvision embeds the hardware in surveillance devices that it sells to the PRC government, and which the government deploys for purposes that involve human rights violations.[13]

Complicating matters is how critical and emerging technology cannot be compartmentalized in terms of use. Many emerging and critical technologies are inherently dual-use. The dual-use nature is not turned on or off, rather it is innate to the technology itself. Those uses are permanently embedded in the technology, whether or not the end-user recognizes it. The Chinese Party-state sets itself apart because it is setting itself up to exploit that inherent dual-use at all times, for example, with the absorption of data though IoT devices.

Recommendations for Guaranteeing United States Competitiveness

The United States must proactively set an agenda that puts American interests at its core, ideally in coordination with allies, while simultaneously reacting to the realities of strategic competition with China. The United States does not lack a vision or the capacity for innovation. Still, at a government level, the vision is not coherent. National security strategy, industrial strategy, and education strategy, among other issue areas, must align. The CHIPS and Science Act of 2022 is a positive example of this approach, but more robust policy across emerging and critical technology is needed.

A few starting points include:

- **The U.S. government must clearly define the problems it is trying to solve through technology and then determine how technology supports those objectives.** Technology in and of itself is not the solution. When technology is applied to problem-solving, the solution it provides is only as good as the articulation of the problem it is said to solve and the clarity of how that solution is connected to the original problem set. Defining the problem requires a significant level of coordination across foreign policy, defense policy, education policy, and trade and commerce.

- **The United States should establish a Department of Industrial Policy:** The Biden Administration has been implementing a new industrial policy that serves as a starting point for competing with China's state-led development approaches. The aversion to industrial policy in the United States means there is no leader for the design and

[13] "Hikvision Uyghur Recognition, NVIDIA-Powered, Sold To PRC China Authorities", IPVM, 26 July 2023: https://ipvm.com/reports/hikvision-uyghur-nvidia; Charles Rollet, "Hikvision AI Products Powered By NVIDIA, Despite Sanctions," IPVM, 6 March 2023: https://ipvm.com/reports/hikvision-nvidia-use.

delivery of industrial policy in the United States. The closest is the United States Department of Defense, which oversees a well-formed system for driving innovation, but these efforts should be grown across the U.S. economy.

- **Attract foreign talent, including PRC talent, but manage risk.** Immigration controls based on clear understanding of the risks individual researchers can pose to the integrity of technology R&D are critically important. At the same time, attracting valuable skills, including from Chinese citizens, and *retaining* that talent is equally important. Reforms to the immigration system are required, including to address the complex hurdles international students face in securing a good job after graduation while on temporary visas.

- **Protecting American innovation by protecting intellectual property**. In January, President Biden signed the Protecting American Intellectual Property Act of 2022, which allows for sanctions to be imposed for significant IP theft. But, when IP protection focuses on theft, it misses the ways where through emerging and critical technology, digital supply chains create an alternate and not overtly illegal route to key data acquisition and access to IP.

- **Protect access to critical supply chains:** Emerging from covid, the United States and many other countries have re-examined supply chain security, having realized the severe supply chain vulnerabilities they are exposed to, particularly as China more openly pursues economic warfare. That said, methods for assessing risk do not go far enough. Usually, they are based on our own perceptions of national security. However, the ways the PRC approaches security strategy mean we are failing to see important vulnerabilities that not only undermine the United States' national security but also the national security of its allies.