Congress of the United States

Washington, DC 20515

November 01, 2023

The Honorable Gina Raimondo
Secretary
U.S. Department of Commerce
1401 Constitution Ave. NW
Washington, DC 20230

Dear Secretary Raimondo,

We are writing to express our concerns about the national security risks posed by the People's Republic of China's (PRC) significant involvement in RISC-V and the organization's semiconductor chip design architecture with the explicit purpose of undermining U.S. export controls and leapfrogging our technological leadership in chip design.[1] Urgent action is needed to prevent U.S. technology and technical know-how from contributing to the PRC's utilization of this technology.

RISC-V is an open-source technology instruction set used for the development of custom processors. At a basic level the open-source technology model allows anyone to design, manufacture and sell processors, without royalties or licensing fees.[2] PRC membership in the RISC-V Alliance has increased dramatically since 2018 just as the U.S. government started to strengthen U.S. export control restrictions toward PRC firms involved in the semiconductor industry. The intellectual property used to design semiconductor chips is currently dominated by western firms, including ARM, Intel, and AMD. The U.S. and other governments have typically required licenses for certain use and users of chip architecture, but RISC-V allows the PRC to use open-source architecture to develop advanced chips without needing a license from the U.S. government. For example, leading PRC AI firm Biren is on the Department of Commerce's Entity List and is reportedly working with RISC-V technology.[3]

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[1] Cao, Ann. South China Morning Post. "Tech war: China bets on RISC-V chips to escape the shackles of US tech export restrictions." December 2, 2022. https://www.scmp.com/tech/tech-war/article/3201887/tech-war-china-bets-risc-v-chips-escape-shackles-us-tech-export-restrictions

[2] Qualcomm. "What is RISC-V, and why we're unlocking its potential." September 8, 2023. https://www.qualcomm.com/news/onq/2023/09/what-is-risc-v-and-why-were-unlocking-its-potential

[3] Shivakumar, Sujai, et al. "A Seismic Shift: The New U.S. Semiconductor Export Controls and the Implications for U.S. Firms, Allies, and the Innovation Ecosystem." November 14. 2022. https://www.csis.org/analysis/seismic-shift-new-us-semiconductor-export-controls-and-implications-us-firms-allies-and

While the benefits of open-source collaboration on RISC-V promise to be significant for advancement and development of the U.S. semiconductor industry, it can only be realized when contributors are working with the sole aim of improving the technology, and not aiding the technological goals and geopolitical interests of the PRC. In response, the United States should build a robust ecosystem for open-source collaboration among the U.S. and our allies while ensuring the PRC is unable to benefit from that work.

The PRC already understands the national security implications of RISC-V technology. A leading academic at the Chinese Academy of Engineering, Ni Guangnan (倪光南) recently remarked that RISC-V architecture "provides opportunities for China to take the initiative in the development of the chip industry" and linked the development of RISC-V technology to the PRC's desire to achieve "technological self-reliance."[4] Ni further suggested PRC success in RISC-V will contribute to the PRC becoming "an open-source power" with contributions in both hardware and software.[5]

The PRC is also moving to dominate the production of RISC-V chips. In 2022, the PRC reportedly represented a staggering 50% of all RISC-V chips shipped globally, which is a figure that is likely to increase without U.S. government intervention.[6] Additionally, early this summer, the China Electronic Industry Standardization Technology Association (中国电子工业标准化技术协会) announced the formation of a "RISC-V Working Committee" to promote "China's industrial development" and "internationalization of Chinese standards." Leading participants of the new committee featured PRC firms on the Department of Commerce Entity List, including HiSilicon Technologies and the National University of Defense Technology.[7] On the global stage, the "international organization" "RISC-V Alliance" is increasingly dominated by PRC firms, allowing the PRC mass access to U.S. firms expertise in RISC-V.[8]

While the RISC-V Alliance has shifted its headquarters to Switzerland, potentially in an anticipatory move to avoid U.S. restrictions, much of its work is said to involve U.S. semiconductor engineering talent. The U.S. government cannot sit idly by while U.S. innovation and technical expertise on RISC-V is funneled to the PRC through organizations like the RISC-V

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[4] Baijiahao. "RISC-V，我国 CPU 架构的最优解." September 06, 2023. https://webcache.googleusercontent.com/search?q=cache:SPInnER6pT8J:https://www.eet-china.com/mp/a249271.html&cd=9&hl=en&ct=clnk&gl=us

[5] Ni Guangnan. China Internet Information Magazine. "中国工程院院士倪光南：为 RISC-V 生态建设贡献中国方案." June 8, 2023. https://webcache.googleusercontent.com/search?q=cache:TyCnBg6WfiwJ:www.rmlt.com.cn/2023/0608/675171.shtml&cd=9&hl=en&ct=clnk&gl=us

[6] *Ibid.*

[7] Sina 新闻中心. "立足中国面向全球，中电标协 RISC-V 工作委员会正式成立." September 2, 2023. https://web.archive.org/web/20231006164229/https://news.sina.com.cn/shangxunfushen/2023-09-02/detail-imzkhpuq5014914.shtml

[8] RISC-V International. "RISC-V International Members." Accessed October 6, 2023. https://riscv.org/members/

Alliance. The U.S. government has authorities under the Export Control Reform Act of 2018 to require U.S. persons engaging with the PRC on RISC-V technology, or other instruction set architecture, to first receive an export control license from the Department of Commerce, like how the Department requires licenses for other semiconductor architecture technologies. Using this authority will grant the U.S. government insight into U.S. interactions with the PRC on RISC-V technology and prevent U.S. companies from transferring technical expertise on RISC-V without U.S. government approval.

Considering these developments, we would like your answers to the following questions by December 1, 2023:

- What is the Administration's plan to prevent the PRC from achieving dominance in the RISC-V technology and leveraging that dominance at the expense of U.S. national and economic security?

- What are the potential national security risks posed by the expanding use of RISC-V technology? How do existing U.S. government policies related to the use of open source technologies in sensitive systems address these risks?

- How is the Administration working with U.S. companies to address these potential security risks associated with these technologies?

- How could the Administration apply the authorities provided by the Executive Order 14017 on Securing America's Supply Chains to address the risks posed by RISC-V to cyber security and U.S. industry?

- How would PRC dominance in RISC-V hardware affect the cybersecurity concerns related to Internet of Things and its application to critical infrastructure?

Thank you for your consideration. We look forward to hearing your responses and working with you to strengthen U.S. national security and enhance American competitiveness.

Sincerely,

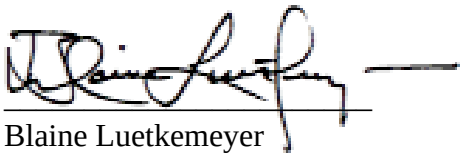
Mike Gallagher
Chairman
Select Committee on China

Raja Krishnamoorthi
Ranking Member
Select Committee on China

Marco Rubio
U.S. Senator

Dan Newhouse
Member of Congress

Kathy Castor
Member of Congress



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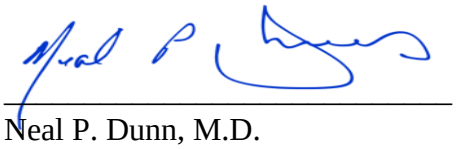

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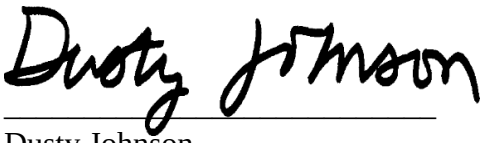

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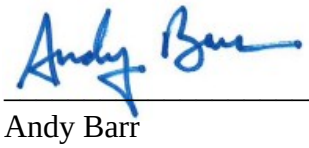

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Cc:

The Secretary of State, The Honorable Antony Blinken
The Secretary of Defense, The Honorable Lloyd Austin
The Secretary of Energy, The Honorable Jennifer Granholm