Memos to the
PRESIDENT

Network
Technologies

Special Competitive Studies Project

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PRESIDENT

Subject: Regaining America's Edge in Network Technologies

Purpose: This memorandum outlines four strategic recommendations to reclaim American leadership in network technologies and secure a competitive edge in the 5G and impending 6G races. This agenda calls for bold actions to boost innovation, streamline regulatory processes, dominate emerging concepts, and reposition the United States as the global leader in next-generation communications.

Objectives:

1. *Forge a Path to U.S. Preeminence in Network Technology:* Accelerate innovation by eliminating bureaucratic hurdles and leveraging private sector capabilities to rapidly deploy secure, next-generation infrastructure. This objective is designed to counter China's dominance by significantly upgrading our network base—from LEO satellite constellations to advanced data centers and robust cybersecurity frameworks—thereby reasserting American leadership on the global stage.

2. *Lead in Advanced 5G Applications:* Catalyze transformative breakthroughs by integrating AI with 5G, driving efficiencies across defense, manufacturing, healthcare, and beyond. By establishing a vibrant ecosystem for AI-powered 5G innovations, the United States can reinforce economic strength and enhance national security, ensuring that our technological edge propels us ahead of our adversaries.

3. *Position for 6G Development:* Invest proactively in early-stage research, talent development, and the creation of a "6G America" initiative to dominate the future of communication technologies. This forward-looking approach empowers the United States to shape and lead the next technological revolution, ensuring that we remain at the cutting edge of global network advancements for decades to come.

4. *Assert U.S. Leadership in Advanced Networks Globally:* Forge strategic alliances with allies to co-develop secure network technologies and establish international standards that reflect American values. By expanding trusted network initiatives from the first Trump Administration and incentivizing the global phase-out of Chinese equipment, this objective ensures that U.S. technological superiority and security imperatives define the future global network landscape.

Background

As the backbone of our digital economy, advanced network technologies like 5G and the forthcoming 6G are more than enablers of faster connections—they are the conduits through which the future of innovation will flow. Serving over 2 billion users worldwide[1] and a market worth over $100 billion,[2] these networks enable instant data exchange, smart automation, and seamless connectivity across industries. Furthermore, the increasing interplay[3] between networks and artificial intelligence (AI) is enabling high-stakes, data intensive applications, such as precision agriculture advanced manufacturing, telemedicine, and autonomous vehicles. In national defense, 5G networks are critical for enhancing battlefield communications, unmanned systems, and AI-driven decision-making.

China currently dominates the global 5G landscape,[4] controlling much of the infrastructure and exportable hardware that defined the first phase of this technology race.[5] With over 4 million base stations reportedly deployed in China,[6] equating to 206 per 100,000 residents compared to the United States' 77 per 100,000,[7] Chinese 5G networks cover 88% of mobile users,[8] while the United States lags at around 45%.[9] The recent Salt Typhoon attacks exposed critical vulnerabilities in U.S. and allied communications worldwide, underscoring the urgent need to secure and modernize the nation's network infrastructure against adversarial threats.[10] Furthermore, challenges faced by the United States in deployment,[11] manufacturing,[12] commercial viability,[13] spectrum allocation,[14] and end-to-end solutions[15] have allowed China to increase its lead in the 5G race. Without decisive action, the United States risks ceding technological and economic leadership to China for decades to come, jeopardizing our national security and economic prosperity.[16]

Recognizing the strategic importance of advanced networks, the first Trump Administration undertook concerted efforts to build secure 5G infrastructure in the United States by reducing regulatory barriers, banning Chinese equipment from American networks, and issuing a national 5G strategy.[17] Since then, the United States also launched a national spectrum strategy and a presidential memorandum to

[1] Global 5G Connections Hit Two Billion Milestone in Q3 2024, 5G Americas (2024).

[2] Global 5G Technology Market Size, Trends, Share 2032, Custom Market Insights (2024).

[3] The Integration of 5G-A and AI, Unleashing Technological Potential and Promoting Industry Innovation, Data Center Dynamics (2024).

[4] Welcome to the Arena: Who's Ahead, Who's Behind, and Where We Are Headed Next in the U.S.-China Technology Competition, Special Competitive Studies Project at 33 (2025).

[5] Ngor Luong, Forging the 5G Future: Strategic Imperatives for the US and Its Allies, Atlantic Council (2024).

[6] Juan Pedro Tomas, China Reaches Over 4 million 5G Base Stations, RCR Wireless (2024).

[7] The 5G Marathon, KPMG UK (2024).

[8] Catherine Sbeglia Nin, China to Surpass 1 billion 5G Connections This Year, RCR Wireless (2024).

[9] Petroc Taylor, 5G in the United States, Statista (2024).

[10] Dustin Volz, et al., How Chinese Hackers Graduated From Clumsy Corporate Thieves to Military Weapons, Wall Street Journal (2025); Chinese Hackers are Deep Inside America's Telecoms Networks, The Economist (2024).

[11] Jeffrey Sonnenfeld & Steven Tian, Why AT&T and Verizon's Infrastructure Woes Run Much Deeper Than Lead Cables, Fortune (2023).

[12] Mike Dano, Inside the Race to Put 'Made in the USA' on 5G, LightReading (2023).

[13] The Challenge of Monetizing 5G, PwC (2023).

[14] Ling Zhu, National Spectrum Policy: Interference Issues in the 5G Context, Congressional Research Service (2022).

[15] Manny Pham, The Slow Adoption of Standalone 5G, Developing Telecoms (2024).

[16] Keith Krach & Brendan Carr, If China Dominates 5G and 6G, No Defense System Can Protect America, The Hill (2024).

[17] Remarks by President Trump on United States 5G Deployment, The White House (2019); Dean DeChairo, Trump Order Clears Path to Ban Huawei 5G Equipment from United States, Roll Call (2019); National Strategy to Secure 5G, The White House (2020).

modernize spectrum policy, while establishing a $1.5 billion innovation fund to develop competitive and diverse supply chains.[18] As the competition shifts towards advanced 5G applications, private networks, and emerging 6G standards, the United States must act boldly to reassert its leadership in network technologies. Building on its previous endeavors, the White House must prioritize regaining America's edge by offsetting China's technological dominance, accelerating domestic innovation, and leveraging allied capabilities in building the secure networks of the future.[19]

Recommendations

Objective 1: Forge a Path to U.S. Preeminence in Network Technology

The United States must cut red tape to secure leadership in network infrastructure and outpace Chinese dominance:

- **Expand Connectivity Through Low-Earth Orbit (LEO) Satellite Networks**: The President can exploit narrow U.S. advantages in LEO satellites[20] by invoking Defense Production Act Title III authorities to fund and accelerate the development of critical LEO satellite technologies that support national security and commercial innovation.[21] The White House should establish a National LEO Network Partnership program to integrate private-sector capabilities with government needs, ensuring secure, high-speed connectivity for military operations and underserved rural areas.

- **Dominate Emerging Communication Technologies**: The United States can advance leadership in free-space optical communications and undersea cables through distinct, targeted strategies. For free-space optical communication, still a nascent technology, the Department of Defense should accelerate existing research, development, test, and evaluation (RDT&E) programs, focusing on secure, high-capacity applications for military and critical infrastructure needs. The maturity of undersea cables can be leveraged by collaborating with allies to secure strategic cable routes, reducing reliance on adversarial-controlled infrastructure. Implementing programs to enhance the security of undersea cable base stations[22] and conducting rigorous oversight of all new deployments will help ensure the security of U.S. and allied communications infrastructure.

- **Improve Spectrum Allocation to Empower Innovators:** Spectrum is the highway of the internet—it allows data to travel and keeps networks running smoothly. Efficient spectrum allocation enables faster networks and supports convergence with AI and the Internet of Things

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[18] National Spectrum Strategy, The White House (2023); Memorandum on Modernizing United States Spectrum Policy and Establishing a National Spectrum Strategy, The White House (2023); Biden-Harris Administration Launches $1.5 Billion Innovation Fund to Develop a More Competitive and Diverse Telecommunications Supply Chain, NTIA (2023).
[19] National Action Plan for U.S. Advantage in Advanced Networks, Special Competitive Studies Project (2023).
[20] Welcome to the Arena: Who's Ahead, Who's Behind, and Where We Are Headed Next in the U.S.-China Technology Competition, Special Competitive Studies Project at 47 (2025).
[21] Alexandra G. Neenan & Luke A. Nicastro, The Defense Production Act of 1950: History, Authorities, and Considerations for Congress, Congressional Research Service (2023).
[22] David Shepardson, US Agency to Launch Review of Undersea Cables, National Security Risks, Reuters (2024).

(IoT), while advancing innovation in nonterrestrial communications infrastructure.[23] The United States should fundamentally overhaul spectrum allocation to ensure maximum commercial access while preserving national security interests. The President should direct the National Telecommunications and Information Administration (NTIA) to work with the Federal Communications Commission (FCC) to repurpose underutilized government-held spectrum for commercial network applications, prioritizing industries that drive economic growth and innovation. Additionally, the Department of Defense and other federal agencies should relinquish or share underutilized spectrum, accelerating agreements that balance military needs with private-sector deployment. The administration should also work with Congress to fast-track spectrum auctions, ensuring high-value frequencies are allocated for commercial use while reinvesting revenues into critical infrastructure. Finally, the President should establish a fast-track spectrum-sharing framework, cutting bureaucratic delays and enabling dynamic, AI-driven spectrum management to optimize usage across commercial and defense sectors.

- **Fast-Track Regulatory Approval for Network Deployment***:* The Administration should align its planned permitting reform and deregulation efforts to accelerate approval for tower installations and small cell deployments. The FCC should establish a rapid deployment task force focused on creating a uniform permitting framework that minimizes administrative burdens and eliminates unnecessary red tape at federal, state, and local levels.

- **Turbocharge Rip and Replace:** Signed into law by President Trump in 2020, the rip-and-replace program aims to remove untrusted Chinese network equipment from the U.S. telecommunications infrastructure and replace it with secure alternatives.[24] The Administration should execute the program by leveraging existing funding authorities,[25] streamlining application and reimbursement processes, and establishing a centralized compliance office within the FCC. These measures will help reduce regulatory bottlenecks and ensure swift replacement of adversarial equipment with trusted solutions.

- **Secure Open RAN Systems:** Open Radio Access Network (RAN) is an evolving approach to building mobile networks that allows different vendors to supply compatible components, breaking away from traditional systems where a single provider controls everything. It has generated excitement for its ability to develop secure supply chains, prevent vendor lock-in, and lower costs.[26] As the technology is still maturing, it faces concerns over its performance, security, and interoperability. Adoption can be accelerated by establishing strict security standards for Open RAN components, creating a federal testing and validation program to identify and mitigate vulnerabilities,[27] and tapping into allied capabilities.

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[23] Peggy Hollinger & Yasemin Craggs Mersinoglu, The Satellite Spectrum Battle That Could Shape the New Space Economy, Financial Times (2024).

[24] President Signs Rip and Replace Bill Into Law, U.S. Senate Committee on Commerce, Science, & Transportation (2020).

[25] Public Law 118-159, Servicemember Quality of Life Improvement and National Defense Authorization Act for Fiscal Year 2025 at Sec. 5404(c) (2024).

[26] Chair Latta Opening Remarks on Strengthening American Communications Leadership with Open Radio Access Networks, U.S. House Committee on Energy & Commerce (2024); Chairman Hudson Delivers Opening Statement at Hearing on American Wireless Leadership, U.S. House Committee on Energy & Commerce (2025).

[27] Open Radio Access Networks Security Considerations, Cybersecurity and Infrastructure Security Agency (2024).

Objective 2: Lead in Advanced 5G Applications

As China begins early deployment of AI-powered advanced networks,[28] winning the next phase of the 5G competition requires a focus on high-impact innovation to spur new commercial use cases:

- **Supercharge AI and 5G Convergence**: The FCC and NTIA should launch a "5G-AI Innovation Fund" and establish a public-private partnership-driven R&D consortium to drive the development of AI-powered 5G applications in critical sectors such as defense, advanced manufacturing, precision agriculture, and telemedicine. Agencies can leverage private sector investment and university collaborations to fill funding gaps while aligning research efforts with national priorities. Additionally, the United States should provide targeted tax incentives to companies developing convergence applications that integrate AI and 5G technologies, prioritizing dual-use applications.

- **Promote Private 5G Network Deployment**: Federal agencies should support pilot programs and public-private partnerships to develop private 5G networks for high-security and industrial applications, while loosening regulatory restrictions on infrastructure deployment.

- **Scale Up 5G RedCap for IoT Dominance**: The United States can accelerate leadership in IoT applications by supporting low-power 5G applications such as 5G Reduced Capability (RedCap) through R&D and tax initiatives and fast-tracking regulatory approvals for RedCap-enabled devices such as smart cities and connected vehicles.

Objective 3: Position for 6G Development

While 6G is not expected to mature until 2030,[29] early investments can also accelerate advancements in current 5G applications, such as improving network reliability, increasing data transfer speeds, and expanding IoT capabilities. Victory requires an immediate focus on policy, talent, and research ecosystems:

- **Launch a 6G National Strategy**: The White House should launch a "6G America" initiative with clear goals for federal agencies, including timelines for pilot projects, workforce development programs, and partnerships with allied nations to secure the next-generation network ecosystem.

- **Shape Emerging Technical Standards**: The White House Office of Science and Technology Policy should convene a 6G Technical Leadership Council composed of industry leaders, government officials, and technology experts to expand and coordinate U.S. Government and industry participation in international standards-setting bodies like the International Telecommunication Union.[30]

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[28] Harry Baldock, China Unicom and Huawei Showcase 5G-Advanced With New Beijing Deployment, Total Telecom (2024).
[29] Arjun Kharpal, Tech Next-Gen Mobile Internet — 6G — Will Launch in 2030, Telecom Bosses say, Even as 5G Adoption Remains Low, CNBC (2023).
[30] Ananmay Agarwal, The Silent Struggle: How Technical Standards Shape Global Tech Power, Special Competitive Studies Project (2024).

- **Boost Private Sector R&D**: The U.S. Government should launch a "6G Innovation Initiative" that provides tax, grant, and prize-based incentives for companies pioneering breakthroughs in 6G foundations such as terahertz communication, AI-powered networks, and advanced MIMO systems.

Objective 4: Assert U.S. Leadership in Advanced Networks Globally

Reinforcing American leadership through strategic partnerships will give U.S. companies a competitive edge on the world stage:

- **Forge a Global Alliance for Secure Networks**: The United States should pursue targeted projects with like-minded nations to co-develop 5G/6G hardware, technical standards, Open RAN solutions, and best practices for network security.

- **Expand Rip-and-Replace Among Allies**: The White House should build on its previous efforts urging allies and partners to eliminate Chinese equipment from their network infrastructure,[31] emphasizing the risks of remote sabotage, espionage, and data theft from Chinese technology.[32] Using trade agreements and defense partnerships will help incentivize compliance with secure network standards.

- **Expand Trusted Network Initiatives**: The State Department should extend the Clean Network initiative[33] to include AI and IoT applications, ensuring that emerging technologies are built on a secure, trusted foundation while bolstering data privacy and security.

Conclusion

The challenges presented by China's advancements are substantial, but with strategic action, they can be transformed into catalysts for American strength. Success requires overhauling onerous regulations for driving innovation, aligning private-sector leadership with government initiatives, securing communications infrastructure against adversarial threats, and asserting U.S. leadership abroad. These actions will not only counter China's technological expansion but also ensure the resilience and competitiveness of U.S. network systems, supporting industries and defense systems that underpin national security and economic prowess. By executing these targeted recommendations, the United States can resolutely position itself at the forefront of the 5G and 6G evolution.

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[31] Mark Scott, How Trump Won Over Europe on 5G, Politico (2021).

[32] Dustin Volz, Dozens of Countries Hit in Chinese Telecom Hacking Campaign, Top U.S. Official Says, Wall Street Journal (2024).

[33] The Clean Network, U.S. Department of State (2017).