"AI in the Everyday: Current Applications and Future Frontiers in Communications and Technology"
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Chairman Guthrie, Ranking Member Pallone, Chairman Hudson, and Ranking Member Matsui, thank you for the invitation to speak with you today, and for your thoughtful engagement on artificial intelligence, telecommunications, and American competitiveness.

My name is Ronnie Vasishta and I am the Senior Vice President of Telecom at NVIDIA.

Many still think of NVIDIA as a chip company, but we are much more. NVIDIA is a full stack accelerated computing company. We've spent over three decades inventing the technology that powers modern AI. Our platforms support breakthroughs in healthcare, manufacturing, transportation, and energy. We serve over 40,000 companies and 6 million developers around the world.

We're proud to be an American company helping to drive American leadership and promote American infrastructure globally. AI is not just another app or algorithm. It is the engine behind a new industrial revolution. And just like the roads and grids of the past century, the countries that build AI infrastructure will define the rules, reap the rewards, and shape the next era.

Today, we are at an unprecedented point of inflection between this new AI-driven industrial revolution and the need to redefine how telecommunication networks are built and delivered. In this new era of AI, telecommunications infrastructure will continue to be critical national infrastructure, essential to any nation's productivity, security, stability, and global leadership but must evolve to meet changing demands. I am here today to talk about the necessary convergence of AI and telecommunications and the opportunity for renewed U.S. leadership it presents us.

Applying AI to telecommunications is not theoretical - it is happening today. In a recent NVIDIA-conducted survey of 450 telecom professionals, 80% of respondents said they believe

that AI is crucial for their company's future success, and two-thirds plan to increase spending on AI infrastructure this year.

Over the last few decades, the telecom industry has evolved based on standards defined by the international telecommunications community. The mobile wireless standards are commonly known as 2G, 3G, 4G, and most recently 5G. The international community is now working on 6G standards with a target completion date of 2030. While this may sound far into the future, the standardization process is well underway and initial field deployments may start as early as 2028. Whoever seizes the advantage in the development and deployment of AI-native wireless network infrastructure will win the 6G race.

Over time, the telecommunications equipment supplier base has consolidated. The United States invented the foundational cellular wireless technology and once led the world in its development but over the last few generations of standards we have lost an American wireless telecommunications infrastructure provider. Other countries have taken over this leadership role and now supply the vast majority of the world's critical telecom infrastructure, including here in the US. If we act now, AI offers a once-in-a-generation opportunity for the U.S. to reclaim leadership in mobile wireless networks.

Key implications of AI and telecommunications

Improved telecom operations: AI is extremely good at optimization. The application of AI to mobile network operations can increase energy efficiency, enhance security, and improve network resiliency. Another key benefit is improved spectral efficiency, which will enable more effective use of limited spectrum. These benefits are essential to the wireless networks of the future as consumers and businesses connect hundreds of billions of devices, including for mission critical applications.

Demand for delivery of new services: Traditionally, telecommunications networks delivered voice, data, and video. In the future, mobile networks will also be called upon to support a new kind of traffic—AI traffic. AI traffic will include the delivery of AI services to the edge, or inferencing at the edge. Mobile networks will support applications such as autonomous vehicles, smart glasses, generative AI services on phones or devices, holographic communication services, collaborative robots, and many more applications that we haven't thought about yet. The transmission of this massive increase in data needs to be resilient, fit for purpose, and secure.

Opportunities for economic growth: For the first time, the wireless ecosystem can spur economic growth without having to make costly investments in infrastructure that is specific to

mobile networks. Currently, telecommunications infrastructure, particularly the Radio Access Network, or RAN, are single-purpose, hardware-defined systems that are custom built for the sole purpose of delivering RAN services. Different vendors lack interoperability, and hardware upgrades are required for each new generation. Moving towards software-defined RAN architecture will enable the same infrastructure stack to run both mobile wireless services and AI applications. This is a game changer.

Enhanced Cybersecurity: In the 6G era, cybersecurity enters a new dimension—where artificial intelligence (AI) becomes a necessary requirement across the topology of the network as well as deeply embedded into every layer of the 6G stack. As 6G networks become decentralized and connect billions of IoT devices, AI is essential for real-time threat detection and automated remediation and incident response. It processes massive data streams to quickly identify and neutralize attacks, whether they are occurring on the device, at the network edge, or in the cloud. Together, AI and AI driven cybersecurity ensure that our hyper-connected world remains resilient, secure, and adaptive.

The convergence of AI and wireless infrastructure will fundamentally reshape the global telecommunications landscape. Fortunately, the U.S. is poised to lead in the development and deployment of these next generation networks.

NVIDIA is uniquely positioned to help drive this evolution. We are working closely with partners across the telecommunications industry and academia to provide tools and platforms to drive American innovation for the global ecosystem. Through our free 6G research software and tools running on accelerated computing hardware, NVIDIA provides a platform for the 6G developer ecosystem to simulate, develop, test and validate groundbreaking algorithms and methods that were not previously possible due to lack of data, tools, and hardware acceleration. Our 6G research platform is empowering thousands of researchers globally, including major universities, startups, and 6G research institutions in the United States. As these developers use this tool, it drives software improvements and builds a global ecosystem around U.S. platforms.

Today, mobile network operators around the world are investing in multi-purpose AI infrastructure that is monetizable and software upgradable, enabling them to run AI training and inferencing alongside mobile wireless services. We are working with T-Mobile in the United States, SoftBank in Japan, and others to validate the commercial, performance, and other benefits of software defined Radio Access Networks running on AI infrastructure

We recently announced the AI WIN Project, along with Booz Allen Hamilton, Cisco, MITRE, the ORAN Development Corporation (Cerberus/ODC), and T-Mobile. AI aims to deliver an

American, AI-native, full-stack, software-defined and secure wireless platform that will enhance spectral efficiency and lower operational costs on a unified, accelerated infrastructure, thereby enabling U.S. global leadership in 6G and beyond.

Conclusion: Ensuring U.S. leadership in next generation wireless networks requires immediate action to ensure U.S. companies lead the way in setting the standards, developing the infrastructure stack of the future, and deploying AI-native network solutions.

Congress and the U.S. government can help ensure U.S. leadership in next generation wireless networks by:

- Supporting R&D and continued innovation, with a focus on software defined networks. This includes supporting telecommunications work at the National Science Foundation, the National Telecommunications and Information Agency, and the Department of Defense's Office of Research and Engineering.
- Encouraging U.S. companies to participate in international standard making bodies, such as 3GPP, to promote technologies developed in the US,
- Enabling U.S. companies to win at every layer of the AI native wireless stack both domestically and in deployments around the world.

The telecommunications industry is facing a fundamental evolution with the adoption and deployment of AI and U.S. companies are working together to drive innovation and lead globally in the development and deployment of this new network architecture.

Thank you for the opportunity to speak to you today and I look forward to your questions.

Attachments:
State of AI in Telecommunications: 2025 Report