ONE HUNDRED NINETEENTH CONGRESS

Congress of the United States
House of Representatives
COMMITTEE ON ENERGY AND COMMERCE
2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-6115

Majority (202) 225-3641
Minority (202) 225-2927

MEMORANDUM

To: Members, Energy and Commerce Committee
From: Majority Staff
Re: Communications and Technology Subcommittee Hearing

I.   INTRODUCTION

On Wednesday, June 4, 2025, at 10:30 a.m. (ET), the Subcommittee on Communications and Technology will hold a hearing in 2123 Rayburn House Office Building entitled, "AI in the Everyday: Current Applications and Future Frontiers in Communications and Technology." The following witnesses are expected to testify:

II.   WITNESSES

- Chip Pickering, Chief Executive Officer, INCOMPAS
- Ronnie Vasishta, Senior Vice President of Telecom, Nvidia
- Jim Shea, Chief Executive Officer, DeepSig, Inc.
- Asad Ramzanali, Director of AI and Technology Policy, Vanderbilt Policy Accelerator, Vanderbilt University

III.   BACKGROUND

The growth in consumer-facing applications utilizing artificial intelligence (AI) has increased dramatically in recent years, to the point where nearly every American uses some form of AI on a weekly basis, even in some cases without awareness of the AI-enabled technologies underpinning these services.[1] Users of these applications often do not interact directly with the foundational layers of technology that the apps are built on, but the infrastructure and model

---

[1] Ellyn Maese, *Americans Use AI in Everyday Products Without Realizing It*, GALLUP (Jan. 15, 2025), https://news.gallup.com/poll/654905/americans-everyday-products-without-realizing.aspx.

layers of the "tech stack" are critical to delivering AI-powered services that are becoming more embedded in everyday life.[2]

Current AI technology models have various use cases and typically fall into categories such as machine learning, deep learning, neural networks, robotics, image processing, and natural language processing.[3] Generative AI (GenAI), is a subset of deep learning models that are trained on massive amounts of data to produce, or generate, a specific outcome in response to a prompt or inquiry. These models can learn patterns and images, generate high-quality text and computer code, and process complex data types.[4] Significant recent advancements in GenAI have led to increasing capabilities related to data processing speed and insight generation, improving the efficiency and performance of complex tasks, and amplifying human decision-making.[5]

The United States is leading the world in AI innovation, and as development accelerates, the benefits will accrue to the communications and technology industries as well. There are numerous examples of AI being used to optimize and secure our networks, increase public safety, improve content moderation practices on social media platforms, and give the media and entertainment industries additional resources to enhance their work.

IV.   SELECTED ISSUES

A. Artificial Intelligence Applications in Communications Networks

AI is currently being deployed throughout communications networks to help optimize network usage, enhance cybersecurity, and improve public safety operations.[6] Communications networks using AI can leverage advanced analytics to determine the most efficient allocation of resources during peak usage.[7] It can automate certain processes, including troubleshooting network issues and managing routine maintenance, which reduces the hands-on time needed to do these tasks.[8] Some network operators deploy AI to monitor and automate core network functions, which they have found to reduce the number of outages.[9] Additionally, AI enables

---

[2] *See* Brad Smith, *Microsoft's AI Access Principles: Our Commitments to Promote Innovation and Competition in the New AI Economy*, image 3 (Feb. 26, 2024), https://msblogs.thesourcemediaassets.com/sites/5/2024/02/The-Tech-Stack-for-AI-1.png.

[3] Laurie A. Harris, *Overview of Artificial Intelligence*, CONGRESSIONAL RESEARCH SERVICE (Oct. 24, 2017), https://www.crs.gov/reports/pdf/IF10608/IF10608.pdf.

[4] Kim Martineau, *What is Generative AI?,* IBM RESEARCH (Apr. 20, 2023), https://research.ibm.com/blog/what-is-generative-AI.

[5] Laurie A. Harris, *Artificial Intelligence: Overview, Recent Advances, and Considerations for the 118th Congress*, CONGRESSIONAL RESEARCH SERVICE (Aug. 4, 2023), https://www.crs.gov/reports/pdf/R47644/R47644.pdf.

[6] Diana Goovaerts, Julia King, *Money Pit or Money Maker: AT&T, Windstream Talk AI ROI*, FIERCE NETWORK (Jan. 2, 2025), https://www.fierce-network.com/cloud/money-pit-or-money-maker-att-windstream-talk-ai-roi.

[7] Niall Byrne and Krishnamurthy Srinivasan, *AI-Powered Network Optimization: Unlocking 5G's Potential with Amdocs* (Feb. 27, 2025), https://cloud.google.com/blog/topics/telecommunications/ai-powered-network-optimization-unlocking-5gs-potential-with-amdocs/.

[8] *Id.*

[9] Jeff Heynen, *AI's Impact on Broadband Networks*, DELL'ORO GROUP (Aug. 10, 2023), https://www.delloro.com/ais-impact-on-broadband-networks/.

communications providers to improve customer service, with providers using AI to improve the speed and quality of responses to consumer inquiries[10] and detect and block robocalls.[11] Across the board, companies are utilizing AI to increase efficiency, performance, and service, while reducing their operation and expenditure costs.[12]

Internet service providers also use AI to improve both cybersecurity and physical security of their networks.[13] In the recent Salt Typhoon cyberattack, Chinese hackers were able to exploit known vulnerabilities in access points to gain entry into communications networks and then used advanced tactics to evade detection for more than a year.[14] This event was a clear indication of how vulnerabilities can lead to significant national security consequences.[15] AI can be used to bolster the security of our networks and prevent similar incidents in the future by implementing systems to detect malware, run pattern recognition, and detect even the smallest unusual behaviors or specific patterns before they compromise the network.[16] AI's ability to learn from previous behavior allows for rapid, actionable insights when confronted with new or unfamiliar information or behaviors and makes it particularly valuable as a tool to help defend our networks.

However, as much as AI can be used to provide defensive protection of critical systems, the defenses are only as good as the next malicious actor using AI for novel, advanced cyberattacks. GenAI's ability to replicate high-quality, accurate speech has increased hackers' ability to convincingly craft phishing emails or replicate otherwise legitimate voices over the phone.[17] Social engineering attacks have become more sophisticated and amplified with the ever-improving quality of deepfake images and videos.[18] In general, utilizing AI has allowed the

---

[10] Rose de Fremery, *How AI Customer Service Can Help Enable Better Interactions*, VERIZON, https://www.verizon.com/business/resources/articles/s/how-ai-customer-service-can-help-enable-better-interactions/ (last accessed Apr. 1, 2025).

[11] John Popham, *Robocalls No Match for AI-powered Virtual Assistant*, GEORGIA TECH COLLEGE OF COMPUTING (Feb. 20, 2023), https://www.cc.gatech.edu/news/robocalls-no-match-ai-powered-virtual-assistant.

[12] *AI and Automation Revolutionizing Telecom AI,* MISCHA DOHLER (Jan. 23, 2025), https://mischadohler.com/ai-and-automation-revolutionizing-telecom-ai.

[13] Marsha Abarinova, *Verizon Digs Into How to Prevent Fiber Cuts from Happening*, FIERCE NETWORK (Aug. 15, 2024), https://www.fierce-network.com/broadband/verizon-digs-how-prevent-fiber-cuts-happening.

[14] Michael Freeman, *Breaking Down Salt Typhoon*, ARMIS (Dec. 18, 2024), https://www.armis.com/blog/breaking-down-salt-typhoon/.

[15] Devlin Barrett, Jonathan Swan, Maggie Haberman, *Chinese Hackers Are Said to Have Targeted Phones Used by Trump and Vance*, NEW YORK TIMES (Oct. 25, 2024), https://www.nytimes.com/2024/10/25/us/politics/trump-vance-hack.html.

[16] Rosalie Chan, *Cybersecurity Professionals Say Generative AI Can Be Exploited in Cyberattacks — But It Can Also Be a Powerful Defense*, BUSINESS INSIDER (May 7, 2024), https://www.businessinsider.com/ai-secure-5g-networks-combat-cyber-threats-2024-5.

[17] Sam Sabin, *ChatGPT-Written Phishing Emails Are Already Scary Good,* AXIOS (Oct. 24, 2023), https://www.axios.com/2023/10/24/chatgpt-written-phishing-emails; Alex Seitz-Wald, *Democratic Operative Admits to Commissioning Fake Biden Robocall That Used AI*, NBC NEWS (Feb. 25, 2024), https://www.nbcnews.com/politics/2024-election/democratic-operative-admits-commissioning-fake-biden-robocall-used-ai-rcna140402.

[18] Lucia Stanham, *AI-Powered Cyberattacks*, CROWDSTRIKE (Jan. 16, 2025), https://www.crowdstrike.com/en-us/cybersecurity-101/cyberattacks/ai-powered-cyberattacks/.

volume of attacks to increase in a way that was not previously possible.[19] The defense of our critical infrastructure and sensitive information is paramount, making it crucial that we understand the risks and opportunities that artificial intelligence can present.

AI can also advance public safety operations and assist first responders by giving them advanced tools to help protect lives. Public safety answering points can integrate AI into their call receiving operations to sort and manage non-emergency calls, which helps human public safety call takers prioritize the most important calls during high call volumes.[20] As large language models progress, they can be utilized for real-time translation between different languages, further assisting both call takers and first responders in the field.[21] Some providers are utilizing AI to predict severe weather and monitor threats to infrastructure as well as adapt the network in real time when disaster related outages are detected, minimizing impact and down time for response efforts.[22] Further, as public safety answering points are upgraded to Next Generation 9-1-1 technology and move towards an internet protocol based system, it is important to explore how AI can protect and enhance these critical communications networks.

B. AI Application in the Technology and Media Industries

The media industry is applying AI across the sector to enhance the experience of their users. Streaming services, for example, are using predictive AI to analyze viewer preferences and consumption[23] to aid decisions on what type of content to produce, when to produce it, and where to release it.[24] Screenwriters may utilize it to improve the screenwriting process by helping produce research, visuals, and proofs-of-concept when developing a story.[25] Complex visual effects and computer generated images are getting boosts from AI for realistic face-swaps and de-aging actors on screen, along with significantly reducing post-production and sound design time and costs.[26]

---

[19] Vasu Jakkal, *How AI is Transforming Cybersecurity: Tackling the Surge in Cyber Threats*, MICROSOFT SECURITY (Feb. 4, 2025), https://news.microsoft.com/source/canada/features/ai/how-ai-is-transforming-cybersecurity-tackling-the-surge-in-cyber-threats/.

[20] James Careless, *Filling the PSAP Gap with AI-Enabled ViizViital,* ALL THINGS FIRSTNET (Apr. 9, 2025), https://allthingsfirstnet.com/filling-the-psap-gap-with-ai-enabled-viizviital/.

[21] James Careless, *FirstNet Webinar Spotlights the Power of AI for Helping Public Safety,* ALL THINGS FIRSTNET (Mar. 13, 2025), https://allthingsfirstnet.com/firstnet-webinar-spotlights-the-power-of-ai-for-helping-public-safety/.

[22] Press Release, *Ready for Anything: T-Mobile Strengthens Powerful Technology Arsenal for Hurricane and Wildfire Seasons*, T-MOBILE (May 1, 2025), https://www.t-mobile.com/news/network/2025-hurricane-and-wildfire-season-preparedness.

[23] Lisa Richwine, *Disney Sees AI Helping to Personalize New ESPN App*, REUTERS (Aug. 28, 2024), https://www.reuters.com/technology/artificial-intelligence/disney-sees-ai-helping-personalize-new-espn-app-2024-08-28/.

[24] Ryan Kido, *From AI to Z: Unleashing Artificial Intelligence's Impact On The Global Entertainment Economy*, FORBES (Feb. 5, 2024), https://www.forbes.com/councils/forbestechcouncil/2024/02/05/from-ai-to-z-unleashing-artificial-intelligences-impact-on-the-global-entertainment-economy/.

[25] Frank Deese, *Screenwriters vs. the Machine: Embracing AI in the Storytelling Process*, ROCHESTER INSTITUTE OF TECHNOLOGY (Jul. 25, 2024), https://www.rit.edu/news/screenwriters-vs-machine-embracing-ai-storytelling-process.

[26] Neil Sahota, *The AI Takeover in Cinema: How Movie Studios Use Artificial Intelligence*, FORBES (Mar. 8, 2024), https://www.forbes.com/sites/neilsahota/2024/03/08/the-ai-takeover-in-cinema-how-movie-studios-use-artificial-intelligence/.

AI can be used in creative and personal ways, such as re-creating people's own voices using past recordings after medical illnesses leave them with difficulty speaking.[27] Even professional sports leagues are using AI to produce optimal schedules that balance rules associated with sports media broadcasting, projected TV ratings, promoting competitive matchups, and minimizing team travel.[28]

Social media companies and other platforms often turn to AI to help moderate massive amounts of content that is posted on their platforms. AI-driven content moderation enables companies to more effectively detect, review, and remove content that violates legal requirements or platform terms of service.[29] Doing so allows companies to improve site safety and the quality of their content before it is reported. However, it is important that AI be trained in such a way to avoid bias when it is used for content moderation, otherwise content that is legal or does not violate terms of service could be improperly removed.[30] Companies that utilize AI algorithms for this purpose must balance safeguarding users from harmful content with upholding freedom of expression protected by the First Amendment.

C. Infrastructure Needs

Ensuring that the United States is a global leader in AI development will require significant investments in advanced semiconductors and state of the art data centers to store and process data.[31] Storage capacity at data centers is expected to grow from 10.1 zetabytes (ZB) to 21 ZB from 2023 to 2027.[32] Additionally, the increased demand for power to data centers is expected to increase by 160% by 2030.[33] In order to keep up with those demands, data centers will need to consume approximately five times the amount of fiber optic connections within a data center than they do currently,[34] and they will rely on strengthening fiber connections to deal

---

[27] Maria Sherman, *With Help from AI, Randy Travis Got His Voice Back. Here's How His First Song Post-Stroke Came To Be*, ASSOCIATED PRESS (May 6, 2024), https://apnews.com/article/randy-travis-artificial-intelligence-song-voice-589a8c142f70ed8ccf53af6d32c662dc; Steven Overly, *How AI Is Transforming a Lawmaker's Life After a Terrible Diagnosis*, POLITICO (Sept. 9, 2024), https://www.politico.com/news/magazine/2024/09/09/ai-jennifer-wexton-qa-00177949.

[28] Rick Maese, *How AI Shaped Your Favorite NFL Team's Schedule*, WASHINGTON POST (May 15, 2025), https://www.washingtonpost.com/sports/2025/05/15/nfl-schedule-ai/.

[29] Nafia Chowdhury, *Automated Content Moderation: A Primer*, STANFORD CYBER POLICY CENTER (Mar. 19, 2022), https://fsi-live.s3.us-west-1.amazonaws.com/s3fs-public/automated_content_moderation_a_primer.pdf

[30] AIContentfy Team, *The Role if AI in Content Moderation and Censorship,* AIContentfy (Aug. 11, 2023), https://aicontentfy.com/en/blog/role-of-ai-in-content-moderation-and-censorship.

[31] David Chernicoff, *From Billions to Trillions: Data Centers' New Scale of Investment,* DATA CENTER FRONTIER (Mar. 13, 2025), https://www.datacenterfrontier.com/machine-learning/article/55272808/from-billions-to-trillions-data-centers-new-scale-of-investment.

[32] Fierce Telecom Newsroom, *AI Growth Creates Unprecedented Demand for Global Data Centers*, FIERCE NETWORK (Jan. 21, 2024), https://www.fierce-network.com/newswire/ai-growth-creates-unprecedented-demand-global-data-centers.

[33] Comments of INCOMPAS, *Request for Comments on Bolstering Data Center Growth, Resilience, and Security*, National Telecommunications and Information Administration, Docket No. 240823–0225 (Nov. 11, 2024), https://incompas.org/wp-content/uploads/2024/12/11-04-24-INCOMPAS-NTIA-Comments.pdf.

[34] Diana Goovaerts, *AI Demands 5x More Fiber in the Data Center*, FIERCE NETWORK (Aug. 14, 2023), https://www.fierce-network.com/data-center/ai-demands-5x-more-fiber-data-center.

with the increased workloads.[35] Mobile 5G and other wireless networks will also be crucial to the advancement of AI technologies by providing additional applications for AI driven, wirelessly connected devices.[36]

V.   KEY QUESTIONS

- How can AI be used to enhance efficiency within our communications networks?
- How can we use AI to secure our communications infrastructure from malicious actors?
- What opportunities and challenges does AI present across various sectors of the communications and technology industries?

VI.   STAFF CONTACTS

If you have any questions regarding this hearing, please contact Kate Harper or Dylan Rogers of the Committee Staff at (202) 225-3641.

---

[35] Linda Hardesty, *Zayo Says AI is Already Driving Demand for Fiber*, FIERCE NETWORK (Oct. 31, 2023), https://www.fierce-network.com/broadband/zayo-says-ai-already-driving-demand-fiber.

[36] Dr. Tingfang Ji, *What's the Role of Artificial Intelligence in the Future of 5G and Beyond?,* QUALCOMM (Sep. 20, 2021), https://www.qualcomm.com/news/onq/2021/09/whats-role-artificial-intelligence-future-5g-and-beyond; Comments of INCOMPAS, *Request for Information on the Development of an Artificial Intelligence Action Plan,* Docket No. NSF-2025-OGC-0002-0001 (Mar. 18, 2025), https://aicompetitioncenter.com/wp-content/uploads/2025/03/INCOMPAS-Comments-on-OSTP-AI-Action-Plan.pdf.