



July 5, 2023

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Director
Office of Science and Technology Policy
Executive Office of the President
Eisenhower Executive Office Building
1650 Pennsylvania Avenue
Washington, D.C. 20504

**Re: Request for Information: National
Priorities for Artificial Intelligence
Docket No. OSTP-TECH-2023-0007**

Applied Intuition welcomes the opportunity to provide comments in response to the White House Office of Science and Technology Policy ("OSTP") request for information ("RFI") on "National Priorities for Artificial Intelligence."

Applied Intuition's mission is to accelerate the world's adoption of safe and intelligent machines. The company provides software solutions to safely develop, test, and deploy autonomous systems at scale. Autonomy programs across industries and 17 of the top 20 global automotive original equipment manufacturers ("OEMs") rely on Applied's solutions to develop, test, and deploy autonomous systems at scale.

Below, please find Applied's responses to questions 4, 17, and 19 from OSTP's request for information.

4. What are the national security benefits associated with AI? What can be done to maximize those benefits?

Artificial intelligence ("AI") has critical national security benefits for the U.S. military. Near-term national security applications of AI include supporting rapid analysis in intelligence; providing early threat warnings through advanced sensing; utilizing autonomous vehicles for military logistics; and enabling human-machine teaming for unmanned systems. AI can save precious time for command, control, communications, computers, intelligence, surveillance, and reconnaissance ("C4ISR") systems, such as sorting through massive amounts of data to provide insights and predictions. Autonomous systems, which rely on AI and machine learning ("ML") technologies, can increase mission effectiveness, reduce collateral damage, lower costs, offset personnel shortages, and increase warfighter safety.

Autonomous capabilities have unique advantages, since computers can operate without fear, bias, or fatigue, reducing the likelihood of fatal decisions.

To maximize these national security benefits, AI-empowered autonomous systems must be continuously tested and validated in modeling and simulation software to ensure their safety, trust, and performance before they are fielded. Virtual testing software enables users to evaluate the performance of an autonomy stack in limitless scenarios that would otherwise be difficult or costly to replicate in real-world testing.¹ The U.S. Department of Defense should drive trusted AI and autonomy adoption at the speed of relevance through an enterprise-level, all-domain software development and testing pipeline, based on commercial best practices. Additionally, collaboration with allies and partners is crucial in the development of trusted AI and autonomy to counter the combined strength of potential adversaries.

17. What will the principal benefits of AI be for the people of the United States? How can the United States best capture the benefits of AI across the economy, in domains such as education, health, and transportation? How can AI be harnessed to improve consumer access to and reduce costs associated with products and services? How can AI be used to increase competition and lower barriers to entry across the economy?

Autonomous vehicles (“AVs”) represent an important application of AI-enabled technology that will revolutionize transportation, bringing significant mobility and economic benefits. AVs hold the promise to not only improve roadway safety by removing human error, but to also provide expanded access to the world for Americans with mobility challenges, including people with disabilities and the elderly. AVs can also better connect rural and urban underserved communities to resources and jobs that have been previously out of reach due to limited transportation options. Validating the safety of AVs through AI-empowered software, like modeling and simulation tools, is critical for the public to fully capture these accessibility benefits.

Today, millions of Americans find their ability to travel limited by mobility challenges or disabilities. A study by the U.S. Department of Transportation (“USDOT”) estimated that 25.5 million Americans face travel-limiting disabilities,² with another USDOT study finding that roughly 560,000 people with disabilities never leave their homes due to transportation difficulties.³

¹ Test & Evaluation for Autonomous Military Vehicles: How Virtual T&E Tools Enable Comprehensive Evaluations (Part 2), Applied Intuition, (Aug. 15, 2022), <https://blog.applied.co/blog-post/test-evaluation-for-autonomous-military-vehicles-part-2>.

² Accessibility, U.S. Dep’t of Transp. (Feb. 10, 2023) <https://www.transportation.gov/accessibility>.

³ Bureau of Transp. Stat., Transportation Difficulties Keep Over Half A Million Disabled At Home (2012), https://www.bts.gov/archive/publications/special_reports_and_issue_briefs/issue_briefs/number_03/entire.

Whether due to an inability to operate a vehicle, as is the case for the many of the 7.6 million Americans with significant vision impairment,⁴ or due to a lack of accessible or convenient public transportation options, these citizens are partially or completely cut off from the rest of the world, including access to employment. By providing on-demand and accessible transportation, AVs can provide independence to many of these individuals, opening up economic and social opportunities.

Access to AVs can provide similar benefits to aging and elderly Americans, who are estimated to represent 20% of the U.S. population by 2030.⁵ This population includes millions of seniors living in rural areas that already have limited transportation options.⁶ With roughly 600,000 older adults giving up driving per year,⁷ the number of seniors in need of new transportation options will continue to grow as the U.S. population ages. The lack of access to a vehicle presents serious issues for the elderly; for example, older Americans without access to a vehicle make 15% fewer trips to the doctor and 65% fewer trips to visit friends and family.⁸ AVs can provide a lifeline for seniors, especially those in rural or underserved communities, reconnecting them to their communities and providing a level of independence that could otherwise be lost.

For underserved rural and urban communities in what have been described as “transit deserts,” AVs represent a tool for increasing economic opportunity and access to resources. Studies have shown that access to transportation and average length of commute are connected to upward mobility,⁹ and have linked public transit access to greater income and reduced unemployment.¹⁰ Whether by providing connections to existing public transit or carrying passengers directly to potential employment, AVs can increase job access significantly, with projections indicating that AV adoption could increase access to jobs within a metropolitan area by 45% by 2040.¹¹

⁴ Blindness Statistics, Nat'l Fed'n of the Blind, <https://nfb.org/resources/blindness-statistics> (last visited June 26, 2023).

⁵ Dabid Dudley, The Driverless Car is (Almost) Here, AARP The Mag. (Dec.2014/Jan. 2015), <http://www.aarp.org/home-family/personal-technology/info-2014/google-self-driving-car.html>.

⁶ See Amy Symens Smith and Edward Trevelyan, ACS-41, U.S. Census Bureau, The Older Population in Rural America: 2012-2016 (2019), <https://www.census.gov/library/publications/2019/acs/acs-41.html>.

⁷ Transportation, Nat'l Ass'n of Area Agencies on Aging, <https://www.n4a.org/transportation> (last visited June 26, 2023).

⁸ Transp. For America, Aging in Place, Stuck Without Options: Fixing the Mobility Crisis Threatening the Baby Boom Generation (2011), <https://t4america.org/docs/SeniorsMobilityCrisis.pdf>.

⁹ Mikayla Bouchard, Transportation Emerges as Crucial to Escaping Poverty, N.Y. Times (May 7, 2015), <https://www.nytimes.com/2015/05/07/upshot/transportation-emerges-as-crucial-to-escaping-poverty.html>.

¹⁰ Gillian D. White, Stranded: How America's Failing Public Transportation Increases Inequality, The Atlantic (May 16, 2015), <https://www.theatlantic.com/business/archive/2015/05/stranded-how-americas-failing-public-transportation-increases-inequality/393419/>.

¹¹ Richard Ezike et al. Where Are Self-Driving Cars Taking Us?, 6 (2019), <https://ucsusa.org/sites/default/files/attach/2019/02/Where-Are-Self-Driving-Cars-Taking-Us-web.pdf>.

AVs represent a vital application of AI-enabled technology, one that can open up access to the world for millions of Americans, allowing them increased access to healthcare, education, and employment, while lowering transportation costs and increasing transportation options. The deployment of AVs at scale offers an unprecedented opportunity to not only bring economic opportunity to those lacking transportation access, but to allow greater independence for Americans with mobility challenges.

Validating the safety of AVs before their widespread deployment is critical to unlock these economic and societal benefits. Today, autonomous vehicle developers utilize a combination of physical and virtual testing since on-road testing alone is not sufficient; simply put, software should be tested in software. Physics-based simulation software augments real-world tests by producing a virtual environment to continuously validate the performance and safety of an autonomy stack in a secure setting. Additionally, AI-empowered simulation software enables test engineers to evaluate the performance and safety of AVs through virtual scenarios that would otherwise be difficult, costly, or dangerous to replicate in real-world testing.

19. What specific measures – such as sector-specific policies, standards, and regulations – are needed to promote innovation, economic growth, competition, job creation, and a beneficial integration of advanced AI systems into everyday life for all Americans? Which specific entities should develop and implement these measures?

At the federal level, the USDOT, including the National Highway Traffic Safety Administration (“NHTSA”) and Federal Motor Carrier Safety Administration (“FMCSA”), can help clear paths to widespread AV deployment by updating regulations to reflect the nature of evolving technologies. While these agencies have taken some steps to account for AV innovation, including issuing interpretations to clarify that an automated driving system (“ADS”) can be considered the driver or operator of a vehicle,¹² and by amending existing regulations to reflect the needs of ADS-equipped vehicles,¹³ additional changes are needed to provide regulatory certainty to AV developers as they design and deploy their vehicles across the country.

Policymakers should encourage the use of technologies that support safe AV deployments, including modeling and simulation software.

¹² Safe Integration of Automated Driving Systems-Equipped Commercial Motor Vehicles, 84 Fed. Reg. 24449 (May 28, 2019), <https://www.federalregister.gov/documents/2019/05/28/2019-11038/safe-integration-of-automated-driving-systems-equipped-commercial-motor-vehicles>.

¹³ Occupant Protection for Vehicles With Automated Driving Systems, 87 Fed. Reg. 18560 (Mar. 30, 2022), <https://www.federalregister.gov/documents/2022/03/30/2022-05426/occupant-protection-for-vehicles-with-automated-driving-systems>.

Specifically, regulators at NHTSA should take a software-first approach to testing AVs by adopting virtual testing as the norm for any future AV safety validation. NHTSA's current safety validation approach relies on lab and track testing, which cannot adequately address every edge case scenario. As noted above, physics-based virtual simulation software allows developers to test and validate the safety of AV technologies in a more cost-effective and time-efficient manner. AI-empowered simulation increases test coverage to provide a deeper understanding of system performance and safety.

Congress has recognized the promise of simulation technologies as a valuable tool for NHTSA to independently audit, assess and validate the safety of ADS-equipped vehicles in the Fiscal Year 2023 ("FY2023") Appropriations Act Report,¹⁴ and has provided the agency with up to \$3,500,000 in FY2023 to support the virtual review, assessment, and validation of AVs. However, legislators should also pass a federal AV bill that sets virtual testing as the norm for any AV safety validation work that the government does. Funding and support of simulation technologies can help NHTSA and other USDOT regulators accelerate the safe and efficient adoption of AV technologies across our transportation system.

Finally, greater access to federal funding for projects that include AVs would be beneficial. Providing funding for state and local governments to integrate AVs into their transportation systems would help educate regulators and the public at large on the benefits of AVs and the day-to-day realities of AV operations. Federal funding could also help rural and underserved communities attract investment in AV operations that would otherwise go to larger cities which are already comparatively better served by the existing transportation system. This in turn could help speed the arrival of many of the economic and social benefits of AV deployment discussed in the answer to Question 17 above.

Applied Intuition appreciates the opportunity to weigh in on the National Priorities for Artificial Intelligence. We look forward to continued engagement with OSTP to provide subject matter expertise on the benefits and opportunities around AI.

Sincerely,
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¹⁴ H.R. Rep. No. 117-402 at 57 (2022).