

AI in Transportation: Roundtable Discussion

March 11, 2024



On March 11, 2024, ITS America held a roundtable discussion on the impact of artificial intelligence in transportation, hosted at the Washington, D.C. Department of Transportation (DDOT) headquarters.

ITS America is taking a balanced approach to AI, encouraging deployment in ways that are safe and sustainable for communities. We believe there are significant AI-powered solutions that can drive our transportation safety sustainability, and equity goals forward. AI should be transparent, explainable, and human-centric, all with the goal of being a trustworthy technology in our nation's infrastructure. It is critical that we have a workforce ready to drive AI forward in the transportation industry, as well as sufficient cybersecurity protections in both the public and private sector. Without these vital aspects, we will not be able to successfully deploy AI and digital infrastructure tools at scale in our transportation networks.

In this report, we have provided a high-level summary of conversation among the roundtable of public and private sector AI thought leaders from a state DOT, transit agency, technology companies, and academia. The briefing's attendees included representatives from the U.S. Department of Transportation, industry associations, state and local DOTs, and private sector companies.

Roundtable Discussion Highlights:

1. AI is inherently neither good nor bad, but implementation and uses matter.

Participants were asked whether AI was "friend" or "foe", and they all generally agreed that AI can be considered both. However, it depends almost entirely on how these systems are utilized. Much like the dawn of the internet in the early 21st century, many people did not know whether the impacts of the internet would be used for good or bad, or just how transformative it would be. This highlights the need to focus on implementation and how we use AI in a transportation context. We have the power to determine the transparency standards, security, privacy, and experiences driving the future of AI.

2. Building trust in AI is critical for safety and increased deployments.

Among the participants, explainability, transparency, and human-centric were three major themes that emerged from this conversation. Regardless of technical expertise, AI applications should be readily understood and explainable to the public to build trust. Easily explainable AI tools may increase support and hasten adoption of AI in transportation. Additionally, AI solutions should be created for human needs and applied to achieve real human outcomes rather than just for technology's sake. Using up-to-date data that is accurate and free from biases places human needs and experiences at the core of AI inputs and outputs. Humans should generally know when they are interacting with an AI-powered tool (i.e., chatbot, vehicle technology, etc.). Without transparency, explainability, and diverse human input, we will not gain trust from the public or government agencies

3. Cybersecurity is a vital component of AI deployments and must be prioritized.

It is critical that both the public and private are prepared to combat cybersecurity challenges, and as AI adoption grows, there is a larger surface area for attacks. States, the federal government, and the private sector should continue to work collaboratively to address cybersecurity and ensure systems are secure. This is not an AI-specific issue, but rather an all-encompassing challenge with technology and further emphasizes the need to support practitioners with proper cybersecurity resources and protocols.

Including safety brakes on AI tools for critical infrastructure will help ensure that cybersecurity threats are minimized. Ultimately, robust cyber protections for critical, safety-oriented infrastructure in the transportation industry must be prioritized so that people feel safe using advanced transportation technology.

4. We must prepare the current and future workforce to drive AI forward.

One speaker remarked “We can drive AI, or it can drive us.” There is a need to consciously educate and engage with our communities on transportation issues, technology, and engineering. This should start as young as K-12 schools and continue up to community colleges and four-year universities. Speakers agreed that STEM education and related fields must remain a top educational priority to ensure we have a workforce which can meet the challenges associated with AI deployment. Civil engineering programs, for example, could be updated to include a bigger focus on technology and putting digital infrastructure learning on par with hard infrastructure skills. When an organization might not have the right employees or workforce resources yet, seeking out pilot projects and university partnerships are a great way to get things off the ground. Whether at a community college, four-year university, or other educational setting, improving AI literacy and developing the future transportation workforce is critical.

Beyond education, governance structures within organizations should be set up in a way that encourages the development of technology skills and policies for use of AI. It is vital that AI augments and enhances the transportation workforce, not replaces it. AI can and should be focused on decision-support, rather than blanket decision-making. Without these guardrails, AI tools for infrastructure and transportation lose its human element. Successful, large-scale deployments of AI tools and digital infrastructure are contingent upon a large workforce skilled in advanced transportation technology.

5. Government agencies must prepare to deploy AI and communicate effectively to the public.

Readiness for AI will depend on the risk tolerance of agencies, much like other new innovations and technologies. AI must be explainable, otherwise governing bodies will not be able to communicate effectively with the public and build trust. AI tools should not be so complex that only specialized engineers know what went into them (i.e., no black boxes) and understand the outputs. These aspects will make people more prepared to use and interact with AI in their everyday life.

The roundtable discussed how the U.S. is leading the world in general AI developments, but that our use of AI solutions for transportation purposes is falling behind other countries. Members once again echoed that strong communication between governments, technology developers, and the public is key to speeding up successful deployments and garnering more support. To proliferate AI in transportation networks and catch up to other countries, communicating the technology’s benefits and safety measures will be of utmost importance.

Data use and privacy are two areas where better communication to consumers can broaden adoption and support for AI tools in transportation. Some people may not even know that automated technologies are already in place and have been for a while. Traffic signals have been using some form of automation and “AI” for years when determining intersection light colors (red vs. green vs. yellow), and there are built-in safeguards as well to prevent conflicting greens (i.e., both turn to flashing red). Communicating these types of use cases and analogies will be crucial to gaining support from skeptical thought leaders and the public.

Procurement of technology products at the state and local agency level was also mentioned by the speakers and audience. It can be difficult to operate in a digital environment with outdated or restrictive procurement policies, particularly policies that were not set up for digital infrastructure and AI solutions for transportation. The speakers noted that authorizing federal funding for technology operations and maintenance is a great way to get more digital infrastructure deployed at scale.

6. We need a common nomenclature on AI that is understandable.

While roundtable participants agreed that the nomenclature can be difficult since there are many AI-related terms, they emphasized the need to have a common standard language for conversations with the public and government leaders. Companies are actively working on improving and simplifying the way we talk about AI, but they cannot tackle this challenge alone. The transportation and technology industries can help develop tools to inform the public, in a digestible manner, about developments in AI-powered tools and how they can take advantage of them to keep their communities safe. To this effect, ITS America is developing a guide that simplifies AI terminology for a wide audience so that leaders in government and the public can have a better grasp on AI uses and language.

7. AI presents many exciting opportunities to improve transportation.

Even recognizing the challenges, each member of the roundtable was excited about the future of transportation and AI, and offered specific opportunities they are most excited about: promising workforce development initiatives; digital twinning; efficient engineering; low-cost cellular communications equipment deployed at scale; and optimizing project management procedures all were listed as critical opportunities. Large or small, these represent exciting developments for transportation technology deployment, fueled by developments in AI. While there are challenges that remain for widespread deployment, there are great opportunities for transforming the way we work, how people move, and how we can improve infrastructure.

Conclusion

Shaping the deployment of AI in transportation and harnessing its power to transform transportation networks in the U.S. to deliver safer, greener, smarter mobility for all is up to us. Digital infrastructure and AI solutions for transportation should be placed on par with hard infrastructure, and collaboration between government agencies and industry is necessary to achieve this vision. ITS America is working closely with our members and partners to create a set of AI principles that will help guide the industry forward. With AI poised to transform our transportation networks, national AI policy frameworks, increased investments in AI research and development, and robust support for workforce development will help ensure that AI solutions improve all transportation modalities and save lives.