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March 6, 2025

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Acting Assistant Secretary for Research and Technology
United States Department of Transportation

Re: Research to Support Establishing a National Strategy for Transportation Digital Infrastructure [Docket (DOT-OST-2026-0430)]

Introduction

Alteryx welcomes the opportunity to provide input to the Department of Transportation on development of a National Strategy for Transportation Digital Infrastructure (TDI). Development of a TDI strategy represents an important opportunity to modernize multimodal transportation systems through secure, interoperable digital integration.

A well-designed TDI Strategy will directly advance the Department's core statutory missions: improving safety across all modes; enhancing infrastructure resilience in the face of extreme weather and supply chain disruptions; promoting equitable access to transportation systems; and strengthening U.S. economic competitiveness. Digital infrastructure—when grounded in high-quality data, governed analytics, and responsible AI—can serve as a force multiplier across each of these priorities.

Alteryx is a leading global provider of data science and analytics automation software with headquarters in Irvine, California. Alteryx develops and deploys sophisticated, AI-powered low-code/no-code analytics software, including both desktop and cloud-based offerings, that make advanced analytics and artificial intelligence/machine learning (AI/ML) generated insights available to workers in diverse fields of business and government. Alteryx has become a leader in the safe and responsible governance of AI, with all of our AI work governed by our Responsible AI Principles (https://www.alteryx.com/trust/ai-principles).

Alteryx partners with the Department of Transportation to provide a secure, scalable analytics automation platform enabling the Department, as well as state and local agencies, to integrate, prepare, analyze, and operationalize transportation data across environments. Our platform supports multimodal data harmonization, AI enablement, federated analytics architecture, and governed deployment of operational workflows.

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Alteryx does not replace operational systems of record. Rather, our platform enables integration, harmonization, workflow orchestration, and governed analytics across legacy systems, cloud data platforms, GIS systems, asset management tools, and AI/ML environments. In this way, Alteryx serves as an enabling layer between raw transportation data and mission-critical decision-making.

Summary

Our nation faces a range of transportation challenges, and a TDI Strategy represents an important and timely opportunity to employ technological solutions to help the Department solve them more rapidly and cost-effectively. It offers tremendous opportunities to encourage technological modernization, embrace new ways of working integrate emerging technologies, and establish effective agency governance to ensure these goals are accomplished in alignment with laws, regulations, and the Department's responsibilities to taxpayers. To realize these ambitions, Alteryx recommends three main thematic priorities for the TDI strategy:

(1) **Invest in the data layer** to ensure accurate, organized, accessible data is available to support adoption of AI and other key TDI technologies.
(2) **Democratize data work** to enable workers across the transportation ecosystem to leverage data insights and put data to work on behalf of the Department's mission.
(3) **Embrace automation – with robust governance** – to build trust and speed application of AI and automation technologies to solve real-world problems.

Together, these principles ensure that AI and advanced analytics are not layered onto fragmented or poorly governed systems, but instead are built upon secure, interoperable, and mission-aligned foundations. In the following sections, we will elaborate on these themes before offering responses to specific questions posed by the Department's Request for Information (RFI).

Invest in the Data Layer

A modern TDI architecture must prioritize the data layer, a critical foundation for enabling adoption of AI and other capabilities. Too often, digital modernization efforts focus first on applications or AI tools without adequately investing in data quality, integration, and governance. This approach increases risk, undermines trust, and limits scalability. Key to the success of the TDI strategy will be investment in building a secure, well-governed data layer that demolishes organizational siloes, enables the seamless flow of data across the Department, and fosters data-driven collaboration with key partners, all while maintaining appropriate protections and procedures.

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In practical terms, investing in a strong foundational data layer requires investing in technologies that enable:

- Structuring, cleaning, and preparing multimodal transportation data for analytics and AI use;
- Harmonizing data across aviation, highway, rail, maritime, transit, and pipeline systems;
- Fostering API-driven interoperability;
- Supporting hybrid and cloud deployment models;
- Establishing federated, interoperable analytics architectures that allow agencies to securely retain data ownership while enabling cross-jurisdiction insight generation; and
- Embracing approaches to governance that ensure the quality, provenance, and appropriate use of data without bogging down processes or further burdening the workforce.

Democratize Data Work

Across the more than 425 information systems maintained by the Department in the aviation, highway, rail, maritime, transit, and pipeline domains, DoT and its partners are drowning in data; however, much of that data is inaccessible to much of the workforce. Organizational siloes have prevented workers in one part of the Department from leveraging data held in others. In some cases, regulations have limited access or led to overly restrictive internal policies. However, the most significant challenge is that most workers across the organization are not empowered to be data workers. Too often, working with data – data curation, data analytics, data governance – is seen to be the provenance of data scientists, who are called in for expensive, narrow projects. That model will not be sufficient to help the Department meet the transportation challenges of the future.

The TDI Strategy should help transform every DoT worker into a data worker. Secure, governed, self-service analytics tools put the power in the hands of subject-matter experts, rather than data scientists, to prepare data, generate insights, and automate workflows within defined guardrails. Democratizing data work also reduces long-term reliance on expensive, bespoke contractor-built analytics solutions that are difficult to maintain or audit.

In addition to addressing organizational siloes and internal policies, the TDI Strategy can guide democratization of data work in three important ways. First, it should embrace technologies that empower individual workers to leverage data in their daily responsibilities. Self-service analytics (that is, making data analytics technologies available for use by individual workers rather than restricting their use to small teams of data scientists or contractors) help individual workers achieve greater efficiency, more visibility into their areas of responsibility, and greater ability to solve problems

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at the point of contact. Second, the Department should invest in training its workforce to engage with data. While many self-service analytics technologies are useful with minimal training, greater data literacy can help the Department tackle more advanced data challenges and identify where data can be leveraged for creative problem-solving. Finally, the Department can democratize data work by cultivating curated, analytics- and AI-ready data sets. Taking data from cloud platforms, business applications, and files and preparing, enriching, and structuring it for analytics and AI creates data sets that workers can use with confidence and speed.

Embrace Automation – With Robust Governance

Automation of repetitive tasks can help workers across the transportation ecosystem work more efficiently, produce more consistent outcomes, and maintain alignment with legal and organizational requirements. Automation is particularly valuable in transportation contexts involving high-volume, repetitive analytical processes such as inspection data validation, maintenance scheduling, congestion modeling, and grant compliance monitoring.

Whether automating data analytics workflows or using AI technologies such as agentic AI to automate tasks, the secret to effective automation is maintaining governance structures that allow for automated tasks to be explainable, auditable, and transparent. The TDI Strategy should embrace automation as a preference wherever automation can reduce workloads, improve efficiency, and ensure quality and consistency of outcomes; and it should prioritize robust governance as a key automation enabler.

Alteryx sees great potential when well-governed AI and analytics are brought together. Automated analytics helps enterprises save time and money, produce more consistent outcomes, and enable workers to focus their efforts on higher-priority tasks. Analytics also provide the foundation – in the form of well-structured, prepared, validated data – that enable AI tools to work more effectively and accurately. As agentic AI demonstrates, the marriage of automated analytics and AI promises enormous opportunities to transform TDI across a range of domains and missions.

Many organizations have been hesitant to embrace automated analytics and AI tools, however, because of uncertainty about the degree to which these technologies can be trusted to deliver consistent, accurate, understandable results. In fact, a recent survey of 1,400 global business and IT leaders found that only 28% trust AI to support decision-making, and nearly half (49%) of leaders cite high-quality, accessible, and well-governed data as the top factor for agentic AI to achieve its full

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potential.[1] That distrust is why robust governance is so important in promoting adoption of these capabilities. Establishing effective governance is important in two areas, in particular: ensuring the integrity of data used in automated analytics and AI operations, and ensuring the transparency and auditability of these operations.

Automation is desirable in a wide range of use cases, but it is not always simple. The enterprise data used in automated tasks is inherently complex, often coming from numerous and varied sources and formats. Harnessing that data requires domain context, careful preparation, and structured logic. Effective data governance requires investment in data storage, preparation, and analytics platforms that ensure data quality and traceability. Furthermore, as enterprises increasingly embrace technologies like agentic AI, it is also critical that governance structures enable enterprises to understand how and why agents are acting, and be able to intervene when appropriate. AI governance should prioritize enabling human-in-the-loop oversight, auditability and transparency.

Human-in-the-loop oversight, auditability and transparency go hand-in-hand. Auditability ensures that AI and agent decisions are understandable and traceable, while transparency enables users to see what data is used, for what purposes, and with what guidance or instructions. A human decision-maker in the loop is vital to ensure accuracy of inputs and outcomes by validating data semantics, correctly interpreting metrics, and flagging data quality issues. Together, these three foundational principles enable organizations to trust the integrity of data inputs and AI outcomes, and therefore to maximize automation in low-risk scenarios while maintaining human authority in high-risk decisions.

Ultimately, AI systems deployed within TDI should augment – not replace – human judgment, particularly in safety-critical or regulatory contexts, and that requires robust, agile, effective governance.

A TDI Strategy that embraces these three principles – investing in the data layer, democratizing data work, and embracing automation with robust governance – will enable the Department of Transportation to unlock the potential of a wide range of technologies and digital infrastructure to help it solve the transportation challenges of the coming decades. In the remainder of this submission, we offer specific answers to questions posed by the RFI that outline how these principles can be applied to the TDI Strategy

[1] Alteryx, "2026 Executive Insights on AI, Agentic AI, and Enterprise Readiness," 2026. https://www.alteryx.com/resources/report/2026-executive-insights-on-ai-agentic-ai-and-enterprise-readiness.

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Responses to Selected RFI Questions

A.1. How should Transportation Digital Infrastructure be defined?

TDI should be understood as a federated, interoperable digital ecosystem consisting of public and private technologies that integrates multimodal transportation data, enables predictive and operational analytics, supports AI-driven decision-making, and ensures secure, governed data exchange across jurisdictions and operational domains. This digital ecosystem includes the data, communications systems, network technologies, software applications, and computing used to provide these capabilities. Importantly, though many discussions of digital infrastructure currently focus on adopting AI and other emerging capabilities, these technologies will only be effective when they are integrated into a strong foundation of a well-governed, well-curated data layer, which sits at the core of TDI.

TDI should also be explicitly mission-oriented: it should enable measurable improvements in safety outcomes, infrastructure resilience, operational efficiency, and equitable access. Digital infrastructure is not an end in itself, but a strategic enabler of these public policy goals.

A. 5. What TDI use cases or applications should be prioritized?

Alteryx has seen data analytics employed to help government organizations and private businesses in the transportation arena save significant amounts of money and labor. We have helped airlines save thousands of hours of labor by optimizing maintenance schedules, major metropolitan governments enhance citizen services by improving siting of transportation infrastructure, and the Federal Aviation Administration improve situational awareness and incident response across airports throughout the country. Our experience is that organizations can achieve rapid returns by prioritizing those use cases where automated analytics can eliminate the need for workers to perform repetitive tasks and where analytics can identify patterns and insights from large data sets that individuals may be unable to see on their own.

In particular, we see tremendous opportunities to apply automated analytics and AI technologies to address use cases such as:

- Predictive maintenance for highways, rail systems, and runways;
- Connected vehicle safety analytics and crash hotspot detection;
- Port congestion and supply chain resilience modeling;
- Traffic flow optimization and emissions reduction;
- Grant fraud detection and compliance automation; and
- Infrastructure equity and access analysis.

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These use cases offer rapid return on investment by reducing manual workloads, improving safety outcomes, and enabling proactive rather than reactive decision-making.

A. 6. How should U.S. DOT leverage or expand existing programs to advance TDI development and deployment?

In advancing its TDI Strategy, the Department should consider leveraging the following existing programs:

- Building on its existing Centers of Excellence, the Department should establish a new Transportation Data and Analytics Center of Excellence to develop reusable analytics workflow libraries and governance best practices that can be adopted across the Department and its state and local partners.
- Existing grant programs (e.g., IIJA, RAISE, INFRA, SMART) should incorporate incentives to encourage grantees to include interoperable data architecture and analytics modernization components.
- The ITS Joint Program Office should expand pilots incorporating federated analytics, connected vehicle data harmonization, and AI-enabled safety modeling.
- Finally, the Department should leverage its procurement processes to encourage modular, interoperable analytics procurement and require transparency, auditability, and other governance safeguards in, or accompanying, AI acquisitions.

B. 1. What are the key elements of a TDI system architecture that can accommodate the operation of all transportation modes including surface, maritime, and aviation?

A modern TDI architecture must prioritize the data layer, a critical foundation for enabling adoption of AI and other capabilities. The TDI data layer should support distributed data ownership, API-driven interoperability, hybrid and cloud deployment models, workflow orchestration, and embedded governance. The TDI data layer should enable the structuring, cleaning, and preparation of that data into usable forms; integrate multimodal data across aviation, highway, rail, maritime, transit, and pipeline systems; establish federated, interoperable analytics architectures that allow agencies to securely retain data ownership while enabling cross-jurisdiction insight generation; and embrace approaches to governance that ensure the quality, provenance, and appropriate use of data without bogging down processes or further burdening the workforce.

C. 4. How can AI applications be safely deployed to accommodate data exchange and data use across jurisdictional boundaries?

As discussed above, a robust, well-governed data layer and the establishment of agile, effective AI governance are cornerstones of safe AI deployment.

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Establishing a means of maintaining valid, well-governed data is a significant challenge. Recent research conduct by *FedScoop* analysts found that the lack of reliable, accessible, AI-ready data was the single most commonly cited hurdle to AI adoption by federal government agencies.[2] Investing in tools that can help the Department organize, prepare, validate, access, and track data across its constituent parts and among its partners will improve trust and accelerate adoption.

Also vital to building trust is creating governance structures and tools that allow for users to see, understand, and track how automated capabilities, including AI, are using data. Alteryx maintains a robust AI governance program built upon its Responsible AI Principles, and recommends these principles as the basis for AI governance at the Department. Moreover, the Department can operationalize AI governance by building systems that integrate key governance functions – transparency, explainability, and auditability – directly into automated workflows, AI agent environments, and other AI capabilities. In addition, Alteryx highlights the importance of federated architecture, role-based access controls, data classification frameworks, and human-in-the-loop oversight as central elements of operationalizing AI and data governance. Critically, such safeguards enable workers across the transportation ecosystem to generate and share insights without requiring centralized pooling of sensitive data or other organizational stovepiping.

D.1. What data governance principles, access controls, and cybersecurity measures are needed to ensure trust, accountability, and privacy?

Effective data governance requires a comprehensive framework of policies, procedures, and standards designed to maintain data quality, security, and compliance, and to ensure organizational access to appropriate data and visibility into how data is used throughout the entire data lifecycle. As important as security, privacy, and compliance are, effective data governance is equally oriented toward ensuring appropriate, timely access to data in support of organizational missions. Core principles for effective data governance include accountability, transparency, auditability, integrity, and compliance, which help ensure data is accurate, accessible, and protected throughout its lifecycle. As the Department embraces automation and AI capabilities, governance must be integrated directly into workflows and AI environments to ensure that it helps users access these capabilities at speed.

Conclusion

[2] Alder, Madison. "Data, talent, funding among top barriers for federal agency AI implementation." *FedScoop*. October 10, 2024. https://fedscoop.com/data-talent-funding-among-top-barriers-for-federal-agency-ai-implementation/.

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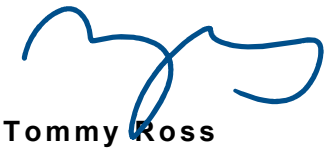
Embracing digital infrastructure can offer tremendous potential benefits for our transportation system, our economy, and our society. Alteryx applauds the Department of Transportation for moving forward with development of a TDI Strategy that will guide investments in digital technologies, including automation, analytics, and artificial intelligence, that can produce transformative improvements in the Department's ability to advance safety, modernization, and efficiency across the nation's highways, railways, airways, and waterways. Investments in a strong foundational data layer, democratization of data work, and AI-driven automation with robust governance must be prioritized to ensure the success of this strategy. Alteryx looks forward to continuing to partner with you to define and implement policies that will empower the Department to access transformative solutions to the nation's transportation challenges.

Sincerely,



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