NOCoE
National Operations Center of Excellence

Digital Infrastructure Summit

Summary Report

September 2026

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Introduction and Executive Summary

The National Operations Center of Excellence (NOCoE) convened the 2026 Digital Infrastructure Summit to examine how transportation agencies can expand digital infrastructure deployments and sustain the services they provide. Building on the December 2025 Digital Infrastructure Peer Exchange, the two-day summit brought together public agencies, national associations, researchers, and industry representatives to share deployment experience and identify remaining barriers. Transportation Systems Management and Operations (TSMO) provided the operational context for the discussion, connecting technology investments to safety, mobility, and reliable movement of people and goods.

Digital infrastructure includes the technologies and systems used to collect, exchange, and apply transportation information. Sensors, communications networks, software, and connected devices support services such as work-zone notifications, wrong-way detection, traffic-signal operations, freight information, and more. Throughout the two days, data accuracy and quality were imperative to capturing the full value of digital infrastructure technologies in the TSMO environment. For example, a published work-zone feed must reflect actual field conditions and reach the receiving application before it can help a driver respond to a closure.

Industry leaders from across sectors illustrated how they deploy digital infrastructure and connect it to existing infrastructure and services, such as existing cameras, communications networks, traffic management systems, and commercially available vehicle data. However, implementation often requires updates to contracts, reporting practices, software connections, and staff training modules. Panelists and participants reiterated that once these connections are established, gaps may remain, and testing is required to establish whether the services are working as intended.

Across both days, interoperability was at the forefront of the discussions. Agencies and their partners need to agree on the information being exchanged, its format, and the accuracy and timeliness required for the application. “Real-time” data needs to be defined in contracts and is not needed for every data transfer, service, or application. A federated approach would allow agencies to retain their systems while sharing selected information through common interfaces. Many relevant standards already exist, but implementation choices and insufficient testing can prevent consistent exchange. Practical implementation guidance, validation, and coordination with receiving organizations can help distinguish these problems from gaps that require updates to standards, or the development of new standards.

The benefits of partnerships were on full display across the two days. Executive-level partnerships with multiple states demonstrated that cross-jurisdictional coordination can support day-to-day operations, especially when major events occur, planned or unplanned. These partnerships leverage industry and local connections, bringing together local governments, metropolitan planning organizations, transit operators, emergency services, highway patrol, freight partners, and more. The TSMO environment and its digital infrastructure are embedded in local-level coordination efforts that State Departments of Transportation (DOTs) cannot accomplish alone. Organizations must prioritize continuity of these relationships through staff and leadership changes. Workforce development remains a critical aspect of scaled deployment of digital infrastructure. Staff need to be trained not just in the technology with data management, cybersecurity, and information technologies, but also in contracting. Funding for digital infrastructure is structurally different with data subscriptions, and agencies need to be strategic about their revenue streams to support continued advancements in digital infrastructure to support operations.

The closing discussion revisited the 2025 findings and identified practical needs for further work: durable governance arrangements, phased deployment, better use of existing data, and a planned transition from legacy equipment. Taken together, the summit examples show that expanding digital infrastructure requires agencies to connect deployment decisions with the services they can operate and maintain.

Day 1 - Session 1: TSMO to Advance Digital Infrastructure

Session Details

Moderator: Tracy Larkin Thompson, Nevada DOT & NOCoE SAC Chair
Panelists: Jennifer Krygowski, AASHTO; Steve Kuciemba, ITE; Laura Chace, ITS America, Martin Knopp, FHWA Office of Operations

PANEL AND DISCUSSION SUMMARY

Industry association and federal leaders emphasized the need for coordination across several dimensions to address and responsibly implement rapidly evolving transportation technologies. To advance broad, interoperable deployment of digital infrastructure, participants described the need for a national direction that supports interoperability, while allowing agencies to adapt to their own unique needs. Existing ITS architecture, systems, and investments are relevant foundations, but further efforts need to connect existing infrastructure with new deployments and strengthen its capabilities.

Participants also emphasized that agencies are at varying levels of preparedness to implement scalable, interoperable digital infrastructure. State Departments of Transportation (DOTs), Metropolitan Planning Organizations (MPOs), and local governments have different levels of staff and financial resources that create unique needs at each level. Local agencies, particularly smaller ones, often have smaller workforces, with employees often carrying multiple professional responsibilities. Emergency management, law enforcement, towing services, and other key personnel need to be a part of the conversation with these local entities, where the digital infrastructure provides tangible benefits.

The panelists focused on the need for workforce development tailored to different career stages to increase effective deployments of digital infrastructure. Recruitment, coordination with university curriculum developers, and training for early-career professionals are essential to prepare the next generation of the TSMO workforce. Further, training for mid-career and more experienced practitioners will look different. To effectively deploy digital infrastructure, agencies need staff with skill combinations in transportation engineering, operations, IT, data, cybersecurity, and procurement. Digital technology advancements provide an opportunity to enhance workforce capability and strengthen organizational resilience, but broader institutional support from national associations is needed to prepare the workforce for the rapidly changing ITS environment.

During the Q & A session, the audience linked procurement constraints to rapidly changing technologies. States have unique procurement processes, but time and financial resource constraints are a common challenge. Statewide digital infrastructure planning is emerging, and it is crucial to establish priorities, identify investment needs, and create implementation roadmaps. However, participants noted that a

digital infrastructure plan would need to help agencies secure investment and not just create a planning obligation for staff without funding to implement the plan. These plans need to expand upon pilot projects and move to scaled deployments. Practitioners need to bring safety, operations, and IT staff together before pursuing grant funding.

Digital infrastructure does not have the same planning or funding strategy as physical infrastructure. The open discussion debated how agencies will pay for recurring data subscriptions, given that funding traditionally used for capital assets and domestic sourcing requirements are lengthy and often with delays. Digital infrastructure should be viewed as the foundation for future innovations in enterprise capability that supports transportation operations, safety, and mobility. Success will depend on leadership, collaboration, workforce readiness, funding strategies, and scaled deployment.

> TSMO is where digital infrastructure proves its value
> **— Laura Chace, ITS America**

Key Takeaways

1. TSMO provides an operational basis for explaining and evaluating the benefit of digital infrastructure investments
2. Interoperability should balance flexible operations at the local level, as needs vary across the nation
3. Workforce development, at all stages of careers from students through senior professionals, is imperative for deployment of digital infrastructure
4. National alignment needs to accommodate agency readiness, and include local partners (fire services, highway patrol, and others)



Session 1: TSMO to Advance Digital Infrastructure Panelists (l to r): Jennifer Krygowski, AASHTO; Laura Chace, ITS America; Steve Kuciemba, ITE; Martin Knopp, FHWA Office of Operations; and Tracy Larkin Thompson, Nevada DOT & NOCoE SAC Chair. Source: NOCoE

Day 1 - Session 2:
Defining Digital Infrastructure

Session Details

Moderator: Brian Cronin, USDOT ITS Joint Program Office
Panelists: Alasdair Cain, USDOT OST-R; David Man, Bay Area Metro; Chris Armstrong, Cavnue; Timothy Drake, Miovision

PANEL AND DISCUSSION SUMMARY

The panel discussed the need for a shared definition of digital infrastructure that helps agencies identify priorities and connect technology investments to transportation needs. Future initiatives must include a federated approach to allow agencies to retain existing systems while sharing information through common interfaces. Common understanding is needed to bring local agencies, transit operators, ports, and other partners together. Digital infrastructure is the foundation of the future of all modes of transportation, and a shared definition will help make the case for investments to local political leaders.

Agency readiness for digital infrastructure deployment includes planning, partnerships, workforce capacity, data strategy, and organizational culture. Participants stressed the importance of knowing what data an agency holds and treating those data as an asset. Common terminology can support planning and procurement, but needs will be localized.

The ITSA Digital Infrastructure Committee has drafted a proposed taxonomy connecting risk, network importance, operational complexity, and agency readiness to different levels of service (Critical corridors, High-priority corridors, Managed network, and Baseline network). The presentation included deployment tiers, lifecycle considerations, and an agency playbook to help prioritize investment. The approach recognizes that different operating environments require different capabilities, and all investments cannot be made simultaneously. The risk-based approach considers exposure, safety, reliability, network criticality, and operational complexity, not just the functional classification system (see Figure 1). The taxonomy reinforces that lifecycle planning coordination is needed in planning, safety, operations, and other offices to coordinate risk-scoring and tiered deployments.

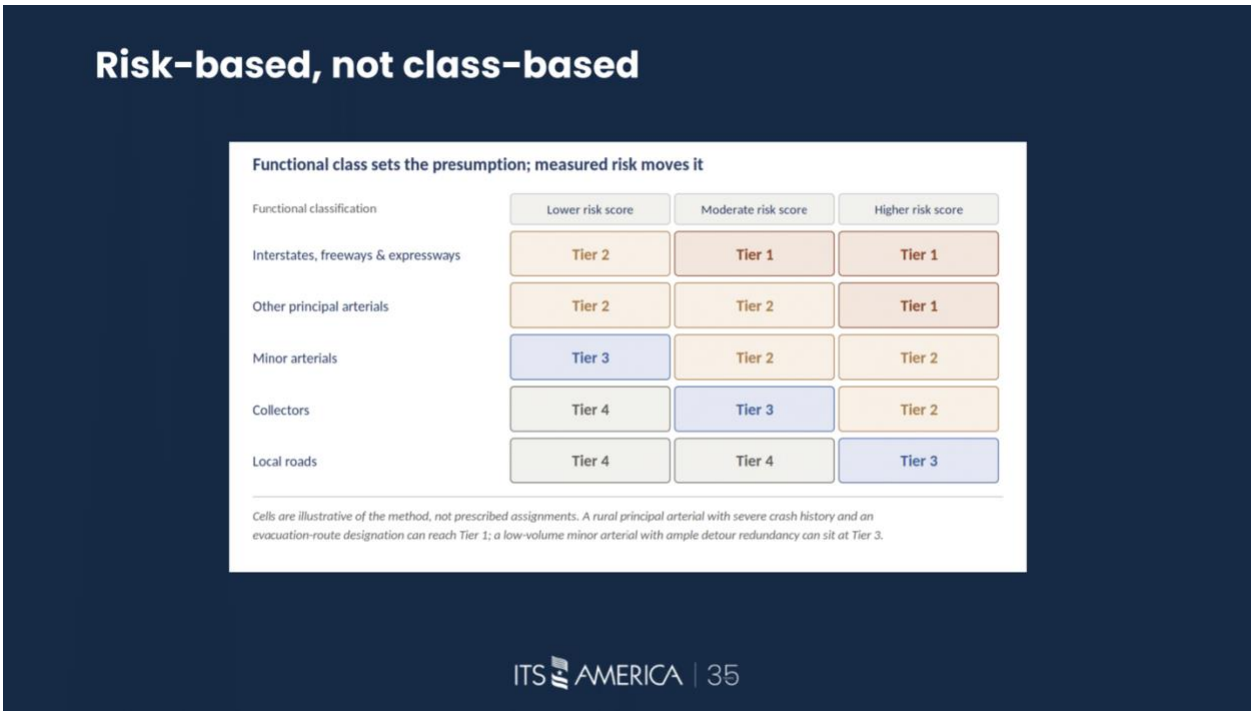


Figure 1: ITSA's proposed taxonomy shown here which uses risk, network importance, operational complexity, and agency readiness to guide coordinated, tiered digital infrastructure investments across four service levels. Source: ITS America

Industry perspectives linked technology and data to the use cases they support. Hardware and software require a clear operational purpose, while procurement processes often move more slowly than technology development. Collaboration around an agency's needs can help align products with existing systems and avoid disconnected deployments.

The open discussion with the audience emphasized dependable information for users. Road closures and railroad-crossing gate status can provide immediate value for freight operations, provided the information is accurate and appropriate for the receiving vehicle or application. Excessive or incorrect messages can undermine trust. Questions about regional interoperability reinforced the value of starting with specific services that agencies and partners can support. The regional 511 discussion illustrated that gathering information from many local and transit agencies requires agreement on the particular service being delivered, rather than attempting to connect every dataset. Not every dataset or every service needs to be interoperable. But agencies should be aware of which users (internal and external) need the data, the format in which it should be sent, and when it should be available, before procuring new digital infrastructure technologies.

The audience also raised questions about data ownership and whether data itself should be considered infrastructure. These distinctions affect access, commercial interests, and recurring costs such as subscriptions. Participants linked the definition of digital infrastructure to funding eligibility, asking whether a definition that excludes data would also leave agencies without a way to support the subscriptions needed to maintain digital and physical operations.

Key Takeaways

1. A shared definition should help agencies identify services, requirements, and investment priorities with local partners.
2. Deployment needs vary with risk, operating conditions, user needs, and agency readiness.
3. Federated exchange can connect jurisdictions while retaining existing agency systems.
4. Accurate, dependable information is essential to user trust and useful applications.
5. Each agency system does not need to be interoperable, but partner data needs are important considerations when procuring new technologies.

Day 1 - Session 3: Use Cases of Digital Infrastructure Applications

Session Details

Moderator: Lisa Wilson, Utah DOT
Presenters: Neil Boudreau, MassDOT; JoAnna Hand, FDOT; Skylar Knickerbocker, Iowa State University

PANEL AND DISCUSSION SUMMARY

The presenters highlighted work zones, wrong-way detection, and vehicle-generated data use cases to show the practical challenges of delivering useful operational information in the field. These applications depend on accurate field data, agency integration, and delivery to the users and partners responsible for acting on the information.

MassDOT's Work Zone Manager (WZM) demonstrated that adopting a specification still requires adjustments during implementation. Devices need to be associated with the correct work zone and accurately represent their limits and changing conditions. In Massachusetts, connected arrow boards provide a location reference, while project specifications helped establish consistent device practices. The operational focus of the WZM is to disseminate information to the districts, Mass 511, and third parties, but it is also available to the public. MassDOT also shares its WZDx data with Apple, and CWZ feeds with Waze and Google.

FDOT described statewide systems and a data-exchange platform supporting TSMO applications. Manual TMC verification, vendor lane-closure reports, and smart-work-zone feeds provide multiple sources that need to be reconciled. The operational gap today is that feeds are not integrated. The verified RTMC feed integrates with FDOT's SunGuide, but the smart work zones and LCNS vendor feeds are separate. These segmented feeds need to be joined, so that agencies can integrate existing assets with a scaled approach.

Florida deploys wrong-way detection on ramps for advanced detection and warning to other motorists if needed **(see Figure 2)**. An alert needs to reach agency systems and the TMC, support a law-enforcement handoff, and lead to an appropriate action, including warning motorists using a DMS message. Existing cameras and machine learning can expand detection, but agencies also need communications, operating procedures, and established partner relationships to effectively improve safety outcomes.



Figure 2: *Florida's wrong-way detection system combines cameras and machine learning with agency communications, law-enforcement coordination, and motorist warnings to support timely safety responses. Source: Florida Department of Transportation*

In Iowa, commercially available vehicle movement data is utilized to supplement roadside sensors and provide information on roads without sensors. Success depends on an agency's assessment of the vehicle data quantity, quality, and timeliness before establishing processes for how the information will be used in their system. Calibration and comparison with reference measurements can help establish whether the data suits a particular use, especially when informing safety decisions.

Questions about work-zone data quality brought the discussion back to contractors and field practices. MassDOT described incomplete telephone reports, such as a first lane closure being reported without a later closure, cancellation, or removal being recorded. FDOT emphasized training, simpler collection tools, automated reporting where practical, and quick feedback to vendors. Participants also asked how these practices could extend to arterial roads and work undertaken by other agencies, where the state may have less direct contractual control.

Agencies need to validate that information displayed matches the condition in the field, and that it remains accurate as it passes through agency systems and receiving applications. NCHRP Research Report 1121 provides related methods for integrating and sharing transportation data **(Linked here).**

In the Q&A, participants identified work-zone events that appeared in an agency feed but did not reach a navigation application. Formatting errors and differences in how providers accept or verify events were identified as possible causes. Sending a feed therefore did not demonstrate that a warning reached the driver.

Audience members noted that the future role of physical TMCs will likely adapt given the advancement of automation. Agencies will still need to manage responses and coordinate with local partners even as automation becomes more prevalent in procured technologies. FDOT explained that automation can make operations more efficient and support satellite centers, but it shifts costs rather than eliminating

them. Its regional centers also maintain relationships with counties that support incident response. MassDOT, which operates one TMC, described efforts to add staff. The exchange showed that decisions about facilities and automation need to account for the response coverage and local coordination each agency must retain.

Key Takeaways

1. Agencies need to verify both field accuracy and delivery to receiving applications.
2. Contracts, training, vendor feedback, and operating procedures support sustained data quality.
3. Vehicle-generated data can expand coverage when its quality meets the application's needs.
4. Detection systems require an effective response process and partner coordination, not just capable technology.

Day 1 - Session 4: Connected Devices and Systems

Session Details

Moderator: Laurie Matkowski, Lumenor Consulting.
Presenters: Darran Anderson, TxDOT; Alan Davis, Georgia DOT; John Contestabile, Skyline Technology Solutions.

PANEL AND DISCUSSION SUMMARY

For the closing discussion on Day 1, the panelists described how agencies connect devices and systems to manage transportation operations and share information with public-safety partners. To expand an application beyond a pilot or a single corridor, organizations need to assign operating responsibilities and agree on what information partners will exchange.

TxDOT described investments in sensors, communications, data storage, and analysis to help staff make operational decisions. These investments are a part of the Cooperated & Automated Transportation Program, which integrates ITS into the strategic plan for Operations, Bike/Pedestrian, Ports, AI, and other plans in the state.

Districts can tailor deployments to local needs, but staff may have difficulty seeing conditions across the state when information remains in separate systems. Statewide coordination and assessments of staff, systems, and resources help identify what each agency can deploy and maintain. Agencies considering AI applications also need to assess whether their existing data are accurate and usable by those applications.

Georgia DOT described how statewide systems, common traffic-signal infrastructure, fiber communications, and roadside units support connected applications. Investments are deliberate and strategic, focusing on layering scalable solutions. GDOT restructured its contract to a pay-for-performance contract, baselined by the availability of devices, and now sees an uptime of 99.5% (**See Figure 3**).

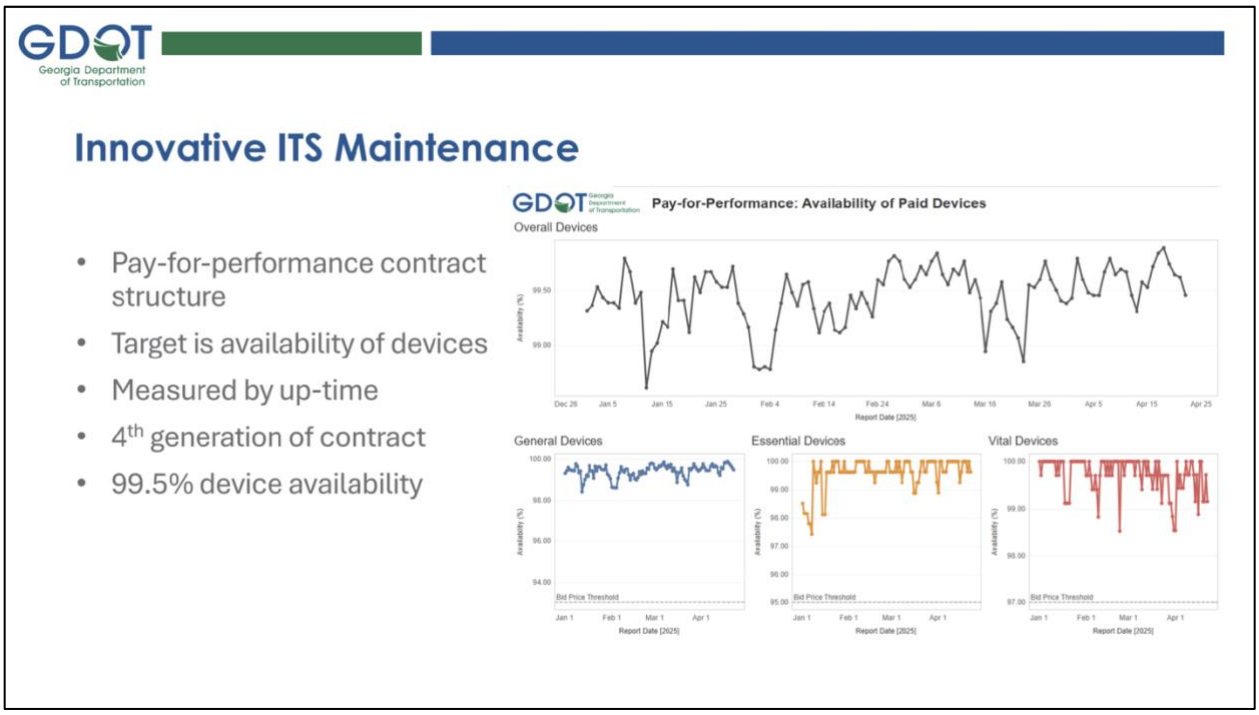


Figure 3: *Georgia DOT's scalable, connected infrastructure and performance-based maintenance contract have achieved 99.5% device uptime. Source: Georgia Department of Transportation*

The agency's approach to performance-based maintenance emphasized keeping equipment operational after installation. A pilot at the port of Savannah focused on improving freight mobility with TIM and signal priority advancements. Freight applications focused on predictable travel, not necessarily the quickest.

Through the Digital Interstates program, Georgia also has installed over 1,400 miles of fiber on interstate routes under their Design-Build contract, which includes RSUs, CCTVs, and other ITS assets in the Public-Private partnership. Further, the program serves as a revenue generator for the agency with the commercialization of unutilized fiber.

The final panel presentation focused on the idea that optimizing digital infrastructure investments is about more than data. The people involved and supporting processes are more important than the technology itself. Delivering the right information to the right people at the right time is how organizations can make well informed decisions to improve system performance. Transportation professionals must engage with public safety and emergency management partners to create a collaborative environment. This is particularly relevant when considering large scale events and major disruptions which are often subject to higher degrees of public scrutiny. Defined personnel roles and standard processes to support digital infrastructure's capability to maintain operational integrity during large scale events are perhaps the most visible demonstration of the value of interoperable digital infrastructure. Agencies need strong data integration that exists within a broader digital infrastructure strategy centered on strong leadership, cross-sector collaboration, and effective procurement and deployment frameworks.

Audience members asked how much integration is necessary for agencies to work together. Participants explained that partners may accomplish a shared task by exchanging selected information without connecting every function of their systems. Identifying who sends and receives the information, and when it is needed, helps agencies define the scope and connections required.

Participants also described the difficulties of adapting older systems. Agencies may have purchased a system for one purpose without requiring it to share data, and the system may become harder to maintain or improve over time. Agencies need to assess existing equipment and software, plan replacements or upgrades, and include data-sharing requirements in procurement processes. Participants described the accumulated burden of keeping single-purpose systems in service until they fail. TxDOT pointed to technology refresh funding as one way to address replacement needs. The exchange linked this concern to AI readiness: assessing candidate applications also requires checking whether district systems and staff can build, operate, and maintain them.

The audience asked what agencies should consider to expand applications across projects and jurisdictions. Demonstrating benefits can build support, but agencies also need an identified service owner and agreed decision-making responsibilities as more partners join. This is particularly necessary during large-scale events, where interoperability is needed across multiple jurisdictions. Georgia DOT emphasized that expansion often encounters process, staffing, or cultural barriers even when the technology is available. Work-zone data exchange was discussed as an example in which adding a feed also requires a workable reporting process. TxDOT emphasized demonstrating a meaningful benefit and assessing whether costs and arrangements across jurisdictions would allow the application to grow. Participants also discussed pooled-fund collaboration as a way for agencies to learn from one another's deployments.

Key Takeaways

1. Agencies and partners should define the mission and operating process before specifying integration.
2. Maintained assets and common platforms support additional applications.
3. The level of interoperability should reflect the information and timing required for the service.
4. Scaling requires ownership, governance, staff capacity, and ongoing resources.

Day 2 - Session 5: Digital Infrastructure Partnerships and Benefits

Session Details

Moderator: Matt Hardy, ITE
Presenters: John Corbin, FHWA; Trish Hendren, The Eastern Transportation Coalition; Matthew Miller, Iowa DOT

PANEL AND DISCUSSION SUMMARY

Grounding the session in the safe system approach to highlight the need for effective partnerships, the panelists discussed how agencies operate digital infrastructure and deliver safety benefits under collaborative efforts. Roadway owners, technology firms, vehicle manufacturers, contractors, and transit operators each contribute information or services. They need to coordinate how information is produced, shared, and used because no single organization controls every part of the process.

FHWA described initiatives to help agencies along a corridor exchange information and understand conditions across the transportation network. Participants emphasized developing iNODE-related concepts for a national digital operating environment through which agencies and partners could share operational information.

FHWA's EDC-8 Connected Corridors initiative emphasizes standards developed with participating organizations, agreed responsibilities for coordination, and the exchange of work-zone information. Further specifications would address incidents, weather, and planned events. FHWA is focused on bringing participants together, with agencies and partners implementing the services (FHWA, EDC-8 Connected Corridors, 2026–2027 initiative, https://www.fhwa.dot.gov/innovation/everydaycounts/edc_8/connected_corridors.cfm).

The Eastern Transportation Coalition (TETC) described how it supports continuing collaboration among the twenty-one agencies. An executive board provides guidance, but steering committees and group co-chairs steward the work forward in TSMO, Freight, and Innovation programs. TETC's shared procurement, data services, training, and technical assistance help agencies coordinate as they advance their digital infrastructure. The coalition still faces decisions about funding and which activities to prioritize. With twenty states and the District of Columbia as members, TETC provides coalition agencies with alternative options for sustainable funding, including its marketplace, which allows members cheaper access to data, without going through the Request for Proposal process.

Iowa described how work-zone information can be gathered from different state sources, converted into compatible formats, checked, and distributed. Under a federated approach, states could retain control of their data and systems while sharing information through agreed connections, as bad data is a safety and public trust problem. Users would need to be able to identify where information came from and assess its reliability. Independent checks and measures of confidence in the data could help them do so (**See Figure 4 below**).

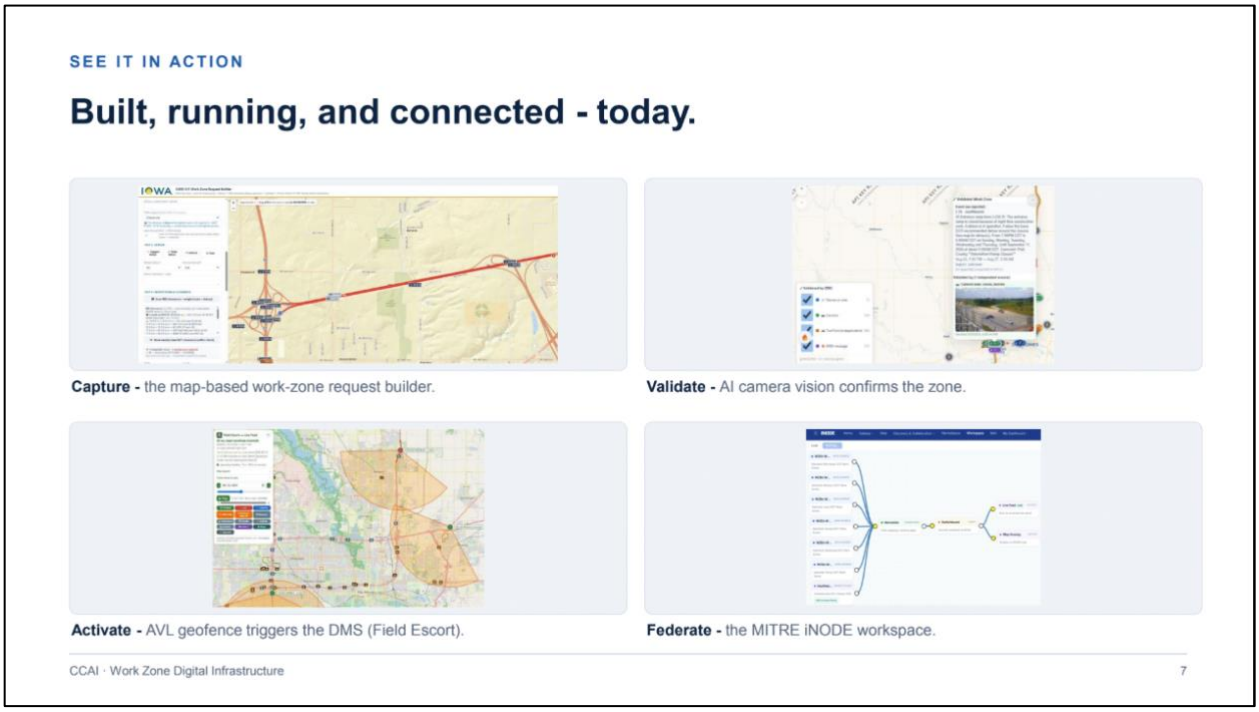


***Figure 4**: Iowa's federated approach would enable states to retain control of their systems while standardizing, validating, and sharing reliable work-zone data to help improve safety and public trust. Source: Iowa Department of Transportation.*

Audience members asked how other states and private firms could use the approaches demonstrated at the summit. Participants discussed roles for consultants and developers who connect systems, while recognizing that additional connections can create more work for agencies. Again, panelists highlighted the need to organize efforts with local partners, including emergency services, transit agencies, MPOs, Highway Patrol, and others. The response identified system integration as a continuing role for consultants and developers, including connecting new data services to existing TMC infrastructure. Participants cautioned that asking contractors to report more frequently can add effort unless the collection process is made easier. Existing sources, such as electronic construction ticketing, were discussed as opportunities to obtain useful information through work already being performed.

Participants discussed how to explain and measure the benefits of partnerships. A coalition helps agencies work together, but it can be difficult to separate the coalition's contribution from the work of its members. Participants highlighted measuring the services and outcomes that the partnership helps agencies deliver, then explaining those benefits in terms agency leaders and transportation users can understand. Member agency leaders have different priorities, making a single account of coalition value difficult. The discussion used disruptions and truck-parking coordination as examples of benefits that may be apparent during an event even when the partnership has no physical asset to inaugurate. Audience members also asked how transit could be included more explicitly, since road closures and major events affect transit services as well as road users.

Key Takeaways

1. Advancing Digital Infrastructure must be aligned with the safe system approach, focusing on safety and mobility of the traveling public.
2. Partnerships provide coordination and operating support needed to deliver digital services.
3. Established coalitions offer examples of staffing, shared procurement, and training services that can reduce resource burden for state agencies.
4. Federated data exchange needs validation and clear responsibilities to support trust.

Day 2 - Session 6: Connected Corridors and Large-Scale Digital Infrastructure

Session Details

Moderator: Nicholas Ramfos, AASHTO
Presenters: Tracy Larkin Thomason, Nevada DOT; Kristina Boardman, Wisconsin DOT; Gregg Brunner, Michigan DOT

PANEL AND DISCUSSION SUMMARY

The panelists described how Nevada, Wisconsin, and Michigan are using digital infrastructure to support connected corridors, statewide operations, and freight movement **(see Figure 5)**. Coordination across

state lines is particularly important when closures, travel restrictions, and freight disruptions affect routes beyond the jurisdiction where they begin.

Nevada DOT described the I-80 coalition's efforts to connect existing state systems and share information about closures, work zones, travel restrictions, and truck parking. Outreach among agency leaders helped establish support, followed by coordination among operations staff to determine how information could be exchanged across borders. State legacy systems should be maintained and adapted when feasible, making it important to connect the information they already collect.

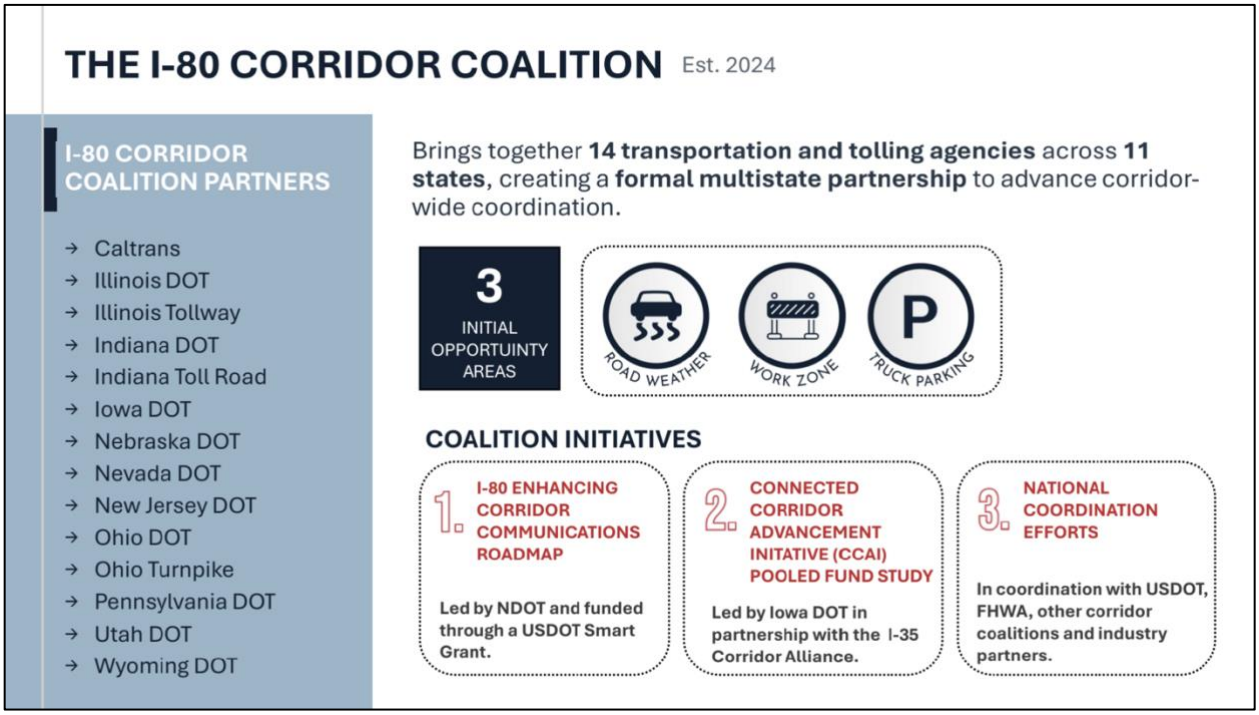


Figure 5: *Nevada DOT's I-80 coalition connects existing state systems to share critical travel information and coordinate operations across state lines. Source: Nevada Department of Transportation*

The 2024 I-15 lithium fire illustrated why corridor partnerships need to reach beyond neighboring states on a single route. Nevada coordinated with California and Arizona at both executive and operational levels as the disruption affected alternate routes and fuel supply. Interstate corridors connect with other highways and metropolitan networks, where local agencies may have different systems and responsibilities. Major events, such as the I-15 lithium fire, reinforce the need for digital infrastructure to support cross-jurisdictional coordination.

Wisconsin DOT described telecommunications permit fees and dark-fiber leasing as sources of revenue for ongoing ITS costs. The agency also discussed cybersecurity assessments that combine capability maturity considerations with the NIST Cybersecurity Framework. For work zones, Wisconsin's lane-closure system, WisLCS, and its Work Zone Manager support reporting and delivery of information through 511. Connected devices, such as arrow boards, can help verify activity in the field rather than relying entirely on manual reports.

Michigan DOT emphasized the philosophy that digital and physical infrastructure are one system. The agency described its work with Cavnue on automated-vehicle corridor infrastructure and a SMART grant focused on improving freight wait-time information. Border crossings require coordination with customs,

agencies on both sides of the border, and private freight users. One of five international bridges in Michigan, the new Gordie Howe International Bridge utilizes prepaid tolls, highway-to-highway connectivity, nonmotorized paths, and smart freight mobility.

The following discussion with the audience emphasized how corridor partnerships can continue through leadership changes. Participants asked whether states joining multiple corridor initiatives could create another set of disconnected efforts, and they marked concerns that joining too many corridor coalitions could place undue stress on the organization. They also discussed the need for dedicated staff to retain and share knowledge, track initiatives, and coordinate partners. Commitments and operating responsibilities need to become part of agency business practices so that the work continues beyond individual champions. An audience question specifically asked whether dedicated staff would be needed to keep these efforts connected. Nevada's response emphasized having someone track the initiatives. The concern extended beyond the number of coalitions: frequent turnover among agency leaders and staff can interrupt relationships unless responsibilities and knowledge are structured for retention within the organization.

Panelists also discussed the difficulty of maintaining digital infrastructure when ongoing costs compete with other priorities. Initial deployment support does not guarantee funding for maintenance, replacements, cybersecurity, or staff. Michigan emphasized continuing relationships with vendors, counties, and industry, while the state examples showed different approaches to securing resources. Expanding corridor services requires agencies to plan for continued operation alongside new deployment. Wisconsin described uncertainty about continuing funding, including the ability of local partners to sustain their contributions. The discussion also returned to how agencies determine that a work zone is active and whether workers are present. Questions about procedures for starting and ending an activity reinforced that a connected device must be supported by a reporting process that reflects current field conditions.

Key Takeaways

1. Corridor services need cross-border coordination and connections to regional and local networks, but organizations need to be strategic and not over-commit.
2. Deployment status needs to distinguish operational services from demonstrations and planned capabilities.
3. Maintenance, cybersecurity, and sustainable funding are essential to resilient operations.
4. Institutional commitments and dedicated coordination can preserve services through leadership changes.

Day 2 - Session 7: Defining Standards in Digital Infrastructure

Session Details

Moderator: Mike Brooks, ITSA
Presenters: Siva Narla, ITE; Justin Anderson, USDOT; Stephanie Dock, District Department of Transportation

PANEL AND DISCUSSION SUMMARY

The panelists discussed how standards and implementation guidance help agencies and vendors exchange information consistently. Many foundational standards already exist, but different implementation choices can still prevent systems from working together. Panelists stressed the need to determine whether an interoperability problem comes from a missing requirement, different interpretations of an existing standard, insufficient testing, or unclear operating responsibilities before developing another standard. This gap identification is crucial to resolving any interoperability issues.

Agencies and vendors can use implementation profiles to select the options in a standard that will apply to a particular service. This reduces the number of choices each implementer needs to make and establishes common requirements for exchanging information. Verification and validation are also needed to check that systems implement those requirements correctly and support the intended use. Participants emphasized practical guidance that agencies can apply without adding unnecessary complexity. Data quality requirements should reflect the application: accuracy, reliability, location, and timeliness have different implications for different operating decisions, and not every dataset needs to be real time.

Participants called attention to vehicle manufacturers' concerns about trusting infrastructure data and liability when a vehicle acts on that information. Certificates and other technical security mechanisms address some concerns, but agencies still need to identify authoritative sources and establish whether the data are accurate enough for the intended use. Lane geometry, digital speed limits, and changing roadway conditions illustrate why organizations need processes for updating information and determining which source should be relied on.

Stephanie Dock described urban requirements that extend beyond freeway applications, including curb use, utilities, transit, bicycles, emergency vehicles, and changing restrictions. Sustained operations depend on communicating these changes across systems and specifications, with consistent terminology so that recipients interpret the information correctly. The discussion emphasized that a service cannot stop at the transition from a freeway to a local arterial. The travelling public’s journey does not end on the interstate, and digital infrastructure investments on local and arterial roads are crucial for the user, especially in urban environments.

The open discussion with the audience raised questions about a governance playbook that would identify responsible offices, authoritative sources, quality-review procedures, and acceptable accuracy. Participants also asked how pilots could lead to repeatable deployments without each agency starting over. Dock described the SMART grant curb work as an example of agencies sharing knowledge across jurisdictions while retaining local requirements. Participants stressed establishing operating arrangements and recurring funding as part of the program. Capital funding alone does not provide the resources to maintain operational status quo.

Panelists described complementary roles for federal agencies, associations, standards organizations, industry, and state and local implementers. Federal participation can provide a neutral setting for coordination, while agencies and vendors bring practical deployment experience. Staff responsible for policy, planning, procurement, and legal matters also need to participate because their decisions affect adoption and continued operation. Shared procurement was discussed as a way to reduce the burden on individual agencies, including smaller local governments.

Participants noted that emerging applications may require informal coordination before their requirements are mature enough for a standard. Bringing policy, planning, and legal staff into those

conversations helps identify adoption barriers that a technical group may miss. In the procurement discussion, cooperative purchasing arrangements and agreements among agencies were offered as ways to make implementation more accessible to local governments.

Audience questions on cybersecurity emphasized basic practices that agencies still need to address. Participants discussed assessing existing systems, detecting unauthorized access, recovering from disruptions, and training staff. FHWA's cybersecurity training and procurement language were identified as resources to support this work. Agencies must integrate security in operating and procurement decisions rather than treating it as a separate task after deployment.

On vehicle acceptance, the response identified manufacturers' concern for user control over in-vehicle features as well as liability. A driver may disable an available feature, so agencies cannot assume that publishing a compliant message means every equipped vehicle will use it.

The closing discussion also addressed user choice and vehicle acceptance: publishing standards-compliant information does not by itself ensure that its benefits will be actualized. Systems, processes, and organizational integration are needed to realize the benefits of digital infrastructure to operations and maintenance.

Key Takeaways

1. Agencies should distinguish standards gaps from implementation, testing, governance, and operating gaps.
2. Data quality and timeliness requirements need to reflect the application.
3. Urban and local requirements, source authority, and user trust are essential to interoperability.
4. Cohesion between testing, cybersecurity, procurement, and operations are vital to aligning resources, technology, and organizations to the digital infrastructure of the future.

Day 2 - Session 8: What's Next: Identifying Gaps in Deployment

Session Details

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REVISITING THE 2025 PEER EXCHANGE FINDINGS

The final session used the 2025 Digital Infrastructure Peer Exchange findings to examine what remained unresolved after the summit's presentations and discussions. The roundtable connected national coordination needs with practical questions about agency operations, investment priorities, and the partners needed for deployment.

The key takeaways from the 2025 Digital Infrastructure Peer Exchange (Linked here) were confirmed and expanded upon at the 2026 Digital Infrastructure Summit. Isolated projects deliver benefits, but scaling requires institutional capacity, including workforce development and training as central to the mission of championing digital infrastructure in operations. Texas and Georgia illustrated how deployments can

build on existing infrastructure, and how staffing, procurement, and service ownership are pivotal to scaled deployment. Data consistency and usable information are foundational, evident in MassDOT's work-zone and Florida DOT's wrong way driving initiatives. The need for federated approaches to evolve legacy systems was reiterated at the summit. Participants noted that some systems are unable to support certain digital infrastructure advancements, and a federated approach to deployment can support risk-based decisions to modernize digital and physical assets. At both events, the lack of federal funding was discussed, but participants at the 2026 summit focused on sustainable procurement and contractual practices, ensuring that future investments consider data subscriptions and the different nature of procuring digital assets compared to physical infrastructure.

Governance, funding, fragmented systems, data consistency, and workforce capacity remained relevant concerns. The summit added examples of how these barriers affect implementation, including differences in state procurement rules and the difficulty of sustaining partnerships through leadership changes. Relationships need to become part of established business practices so that coordination continues when individual champions leave.

A national framework was proposed as a way to connect institutional arrangements with technical requirements. Its purpose and scope still required clarification: a shared vision, an implementation strategy, and system architecture would serve different needs. Interstate corridors and metropolitan networks also present different operating conditions, and investments to update the digital infrastructure supporting local operations should be holistic, not just considering level of service.

Remaining Barriers to Deployment

Legacy systems raised two related issues: how to exchange information from equipment already in use, and when continued support is no longer appropriate. Translating existing data into shared formats could support near-term exchange. However, some field devices cannot be updated to address cybersecurity vulnerabilities. Replacement planning therefore needs to consider security and continued support alongside the cost of keeping equipment operational.

State agencies cannot resolve every gap independently. Local streets, ports, rail connections, border crossings, and emergency operations affect the same trips and disruptions as interstate corridors. Suggestions for broader participation included metropolitan planning organizations, transit and tolling organizations, railroads, IT departments, and Canadian partners. Navigation providers were another important connection: direct engagement could establish what roadway information would improve the services travelers already use.

Defining a successful investment remained an open question. More funding would support deployment, but continued investment also depends on prioritizing digital infrastructure within agency programs and demonstrating its contribution to transportation outcomes. The discussion connected these needs to governance operating models, workforce capacity, and partnerships that can sustain services beyond an initial project.

Priorities to Move Forward

Several proposals provided a basis for practical follow-up. An implementation framework could explain why a service is needed, what capabilities it requires, and how it can be introduced in different settings. Starting with a limited set of shared information, such as work-zone activity, would allow the exchange process to be tested before expanding its scope. Existing data could be translated where feasible, with common requirements identifying the information needed for each service.

Other proposed work included a model for decommissioning legacy equipment, examples of workable governance arrangements, and measures that define successful deployment. Conversations with navigation providers could begin with specific information needs, such as changes to signs and roadway restrictions, then examine the effort required to supply and maintain those data. Emergency management and the consequences of disrupted digital systems also warranted further attention.

These proposals suggest documenting operating costs, testing delivery to receiving applications, and considering service continuity when planning expansion. They are practical implications of the discussion rather than adopted requirements. Together, they offer a way to assess whether an application can be supported through routine operations, changes in personnel, and significant disruptions.

Conclusion

The summit demonstrated that digital infrastructure already supports transportation operations, while the ability to sustain and expand those services varies across agencies. Deployment examples revealed where an incomplete report, an incompatible format, or an unsupported connection can interrupt delivery. The benefit to the traveling public and to agency staff depends on the service functioning across all of these points.

National coordination can help establish consistent exchange of information while accommodating different agency systems and resources. Its scope needs to account for local streets, transit, freight facilities, and emergency operations. Partnerships are more likely to endure when their procedures, agreements, and institutional knowledge are maintained beyond individual projects or staff tenures.

The discussions and deployment examples suggest the following opportunities for further work.

Define the service and purpose for evaluation.
Identify the problem, intended users, and expected benefit, then establish the information quality and availability needed. Florida's wrong-way detection example in Session 3 illustrates why the service needs to include the response: an alert must reach the TMC, support a law-enforcement handoff, and lead to an appropriate action. Evaluation could examine the reliability and timing of those steps alongside detection performance.

Verify delivery and use of the information.
Follow an event from the field to the receiving application. In Session 3, work-zone events appeared in an agency feed but did not reach a navigation application, with formatting and provider verification identified as possible causes. MassDOT's Work Zone Manager and its distribution through Mass 511, Apple, Waze, and Google provide specific connections to examine. Checks should cover the initial closure, subsequent changes, cancellation, and removal so that publishing a feed is followed by confirmation that receiving applications reflect current conditions.

Make implementation practices reusable.
Document the standards choices, contract provisions, and validation methods that another agency could adapt. MassDOT's use of the Connected Work Zone (CWZ) standard in Session 3 required changes to its project specifications when devices did not associate correctly with a work zone; connected arrow boards then provided a location reference. Sharing those adjustments would make the deployment experience more useful than identifying the standard alone. The implementation profiles described in Session 7 offer a complementary way to specify which options apply to a particular service.

Plan for continued operation and replacement.
Include recurring costs and replacement needs in investment decisions. Georgia DOT's performance-based maintenance contract in Session 4 linked payment to device availability and achieved reported uptime of 99.5%. Wisconsin's telecommunications permit fees and dark-fiber leasing in Session 6 illustrated approaches to supporting ongoing ITS costs. These examples provide specific practices to assess for local applicability. Legacy-device concerns also support establishing replacement criteria that account for whether equipment can still be updated and secured.

Test expansion with the partners affected.
Confirm which additional connections are useful and can be maintained. The I-80 coalition in Session 6 identified closures, travel restrictions, and truck parking as services for cross-state exchange. The I-15 lithium fire showed why coordination also needs to reach alternate routes and partners beyond a single corridor. Expansion planning could use these examples to identify the local, freight, and emergency-response connections needed for a defined service. The Eastern Transportation Coalition's shared procurement and technical assistance in Session 5 also provide approaches to reducing the burden on participating agencies. Coordination across sectors, staff-level, and jurisdictional boundaries are pivotal to making the most of digital infrastructure investments.