Digital Transformation in the 22nd Century: ITS America's Vision to Champion Digital Infrastructure and Building the US National Strategy on Digital Transformation

Introduction

In June 2022 ITS America launched a 'digital infrastructure campaign' to help US leaders, policy makers, transportation advocates, public agencies and the tech industry recognize the importance of investing in digital transformation. As the country's historic beginnings of transportation began with concrete and steel, the next century will see us build off those important investments with digital infrastructure including investments like fiber, 5G, edge computing, data, software, data, and other digital technologies.

In partnership with members from the public and private sectors, ITS America held a series of workshops in Washington D.C. and events across the country to ask:

- *What does digital infrastructure mean to you?*
- *How would you define it?*
- *How do you plan to invest in a technology-enabled future?*
- *What barriers exist for you to support digital transformation in your work?*
- *How can we accelerate this work to champion American leadership and innovation?*

Most recently at the 2023 Transportation Research Board Annual Meeting, global ITS innovators came together to answer these questions and shared the below ideas on what a vision for this work looks like and how we can achieve these goals this year.

What's the problem we're trying to solve?

There are millions of phones, devices, sensors, and vehicles out in the world and they don't always communicate with each other. Each iPhone and connected technology generate enormous amounts of information and data, and it's still unclear how we use that information to make better decisions. Even if we get data, like how fast a car is speeding, or whether a corridor is congested, sometimes transportation agencies don't have upgraded systems to use that information in real-time to advance goals like eliminating crashes, reducing congestion, and promoting more equitable transportation options. Public agencies historically rely on older systems and outdated digital processes. In addition to outdated systems, with how tech has disrupted our worlds with GPS, ridesharing, the iPhone and the internet, people expect real-time information that's' reliable and easy to access.While all this is taking place, the private sector and tech companies are investing billions in these products without clear governmental goals or coordination across sectors leaving public agencies not knowing how to upgrade systems, what to invest in, and without the ability to maximize federal funding.

Combine these challenges with the fact that it's really hard to partner across public-private sectors and the various federal and national efforts are disjointed, it's no wonder folks ask 'what is digital infrastructure?' or 'why would we invest in it?'

Why is this so important?

Digital infrastructure can help save lives. By sharing connected vehicle data with cities and states, agencies can understand where high-crash areas exist and deploy different policies and technology

solutions. By understanding where rideshare and other transportation services are being deployed, cities like Los Angeles can ensure that underserved communities get equal access to services. By getting real-time information about weather or congestion, traffic management centers across the country can send weather alerts or re-route traffic to protect travelers and help them find alternative, safer routes that also reduce greenhouse gas emissions.

In short, digital infrastructure matters because it advances our goals to save lives, promote sustainability, and provide more access and opportunities to all communities.

What's the solution?

ITS America stakeholders recommended three key activities for USDOT and its stakeholders to complete by the end of 2023:

1. **Develop a National Digital Infrastructure Strategy that is multimodal** – We need a national strategy that includes a vision, definition use cases and a roadmap to deploy digital infrastructure. This strategy would also outline the various stakeholders – from cities and states to telecom companies and data providers - identify roles and responsibilities, create clear goals, prioritize use cases, calculate a benefit-cost analysis to show the return on these investments, outline what assets are included in digital infrastructure (like fiber, hardware, data platforms, operating systems, networking and communications, apps and other needs). The strategy would also outline performance measures to help the public and private industry understand what technologies meet our goals, and how, along with best practices we're learning from early adopters. ITS America members believe we can complete this vision and strategy by Fall 2023.

2. **Develop a reference architecture** – This is a tech industry term that means we need a way to design this system so that everyone is playing by the same rulebook. These are literal architectures – designs – for how we build software and connect different systems so that different technology 'talks' to each other and we can build off the work of other innovators. For those familiar with ITS, this is similar to the ITS architecture that helps traffic signals talk to each other. This would build off the existing ITS architecture required by federal law.
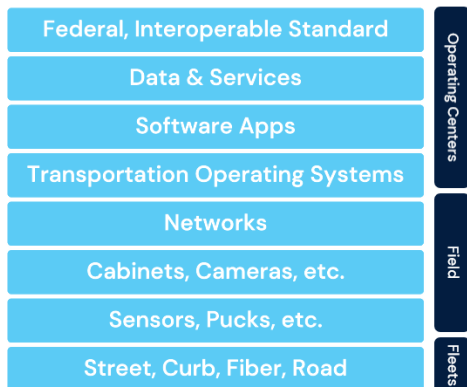
3. **Show how we can use formula and discretionary funding to invest in digital infrastructure –** With the billions of investment in the Infrastructure Investment and Jobs Act (IIJA), we need to make it easier for public agencies to know how to invest these formula and discretionary dollars into digital infrastructure, including fiber, hardware, signals, networking and communications. Some communities have sought federal funding for digital infrastructure like fiber only to be denied. This makes it more important than ever that federal, state and local leaders – as well as the tech industry – know how we can use current IIJA funding available to public agencies.

What's the cost if we don't do this now?

The risks of not acting are severe. If we don't' create a national digital infrastructure strategy and standard to deploy these innovations, research shows we could lose

- $2.4 trillion in exports over the next two decades with aging infrastructure
- $10 trillion in potential gross domestic product losses by 2039
- $74 billion in freight congestion annually
- $35 billion annually in airport trip delays
- $88 billion in congestion costs to Americans

And most importantly, the risk of not acting is we lose 42,915 lives a year – the number we lost in 2021 due to traffic fatalities.

In short, we can't NOT act. The time is now to make change and join ITS America in this opportunity. We must think big, start small, and move quickly to address these enormous societal costs.

How do we get this done? How can you get involved?

Despite all these challenges, it's important to note that we've done this before. In the 1970s IBM computers didn't talk to other computers, but now they do with internet standards. In the 1990s, ITS devices didn't talk to each other. Now they do with the ITS architecture.

We're not talking about recreating the wheel. What we're talking about is bringing together national stakeholders, developing consensus on our vision and framework for digital infrastructure, and showing public agencies how they can use Infrastructure Investment and Jobs Act funding to invest in digital infrastructure.

Get engaged:

1. Join ITS America as a member to learn more about this work and become a thought leader in this space
2. Become a part of ITS America's Digital Infrastructure Working Group launching this spring to help develop the national strategy, vision, and roadmap for deployment
3. Learn more about ITS America's work to create a reference architecture, or design standard, that helps different systems 'talk' to each other, based off the ITS architecture
4. Attend the 2023 ITS America Annual Conference and Expo, April 24-27th and attend the April 24th Digital Infrastructure Workshop we are leading with partners at USDOT

As the leading nonprofit advocating for the scaled deployment of transportation tech, ITS America services as the national hub to align existing national efforts towards a national coalition to demand action to develop a digital infrastructure strategy to help all communities be safer, greener and smarter.

For more information or to join ITS America email membership@itsa.org.