How will intelligent transportation systems (ITS) shape the future of transportation?

Intelligent transportation has evolved over the years. Today, the concept addresses how transportation systems can advance safety and mobility while taking into account advanced technologies like cloud computing and broadband capabilities. Examples of ITS projects range from smart tolling to connected vehicles to managing traffic flow with video analytics. Intelligent transportation aims to package these projects into a common infrastructure that can be utilized and integrated across states, regions and even globally.

What technologies help support intelligent transportation?

Data is at the heart of all ITS, and cloud computing can play a critical role in data collection, processing and analysis. ITS projects have sensors throughout their environments, and getting that sensor data back to an area where you can take advantage of it is critical. The data needs to be accessed by multiple applications and by multiple users. Cloud computing can help achieve these data-driven goals.

Two other technologies that are also proving valuable to ITS are software-defined networking and 5G. Both play a vital role in transporting data from the edge to the cloud.

What strategies can DOT leaders employ when applying for funding from the Infrastructure Investment and Jobs Act (IIJA) or other sources?

It’s an exciting time to work in this industry; transportation agencies are now able to receive levels of funding that they have not seen in a long time. To receive this money, transportation organizations will need to have a good business case and a clear explanation of how their projects tie to improving safety and resiliency to yield a better traveler experience.

When possible, transportation leaders should try to develop solutions that could be scaled up to a regional level. Even if the solution starts at a very small scale, leaders should already be thinking about how they could expand the technology in phase two.

Agencies should not paint themselves into boxes with the way that they have always done things. Now is the time to get those innovative pilot projects and proof of concepts funded.

What are some best practices for DOTs as they adopt new digital applications?

First, DOTs need a clear data strategy for every project. Transportation leaders need to know where they want the data to go, who is going to use the data and what type of data-sharing agreements should be in place. It’s important to include multiple stakeholders and data users in that discussion.

Second, cybersecurity is going to be critical for ITS projects. Given the integrated nature of ITS and the threat landscape that exists around critical infrastructure, DOTs have to involve cybersecurity experts early on in the process.

Third, building resilient programs is extremely important. Both government leaders and the public depend on solutions once they are in use. This makes it difficult when a system goes offline due to disaster recovery efforts or other unexpected challenges.

Finally, agency leaders should talk to their peers to share best practices and create a center for excellence. This can help them replicate good ITS ideas and avoid the pitfalls that other agencies may have already experienced. Let’s not let everybody recreate the wheel. Transportation pun not intended.