0-6879: Cross Border ITS Systems with Traffic Management Centers

Background

Traffic management centers (TMCs) in Texas play a vital role in managing traffic operations in many major metropolitan areas. TMCs have deployed extensive detection, monitoring, and communication infrastructure to allow Texas Department of Transportation (TxDOT) operators to manage incidents and reduce collisions, provide traveler information through roadside assets, provide traffic status to broadcast media, and support work zone monitoring and construction information. Currently, there is no cross-border TMC or traveler data exchange along the Texas-Mexico border to inform the traveling public of the traffic conditions on the other side of the border, so travelers do not have information on traveling conditions between border sister cities.

What the Researchers Did

Researchers evaluated the current state of the practice and future plans in the United States, Mexico, Canada, and other regions around the world to advance cross-border intelligent transportation systems (ITS). Researchers also captured the stakeholder needs for a cross-border TMC along the Texas-Mexico border. Researchers then developed a framework and an action plan for TxDOT to lead the deployment of cross-border TMCs and share data to improve the traffic conditions along the Texas-Mexico border and adjacent border cities.

What They Found

Regarding the state of the practice, researchers found:

- The most used technologies that are currently being used at land ports of entry are license plate readers and radio frequency identification (RFID).
- The Lower Rio Grande Valley is the only current ITS architecture that includes interfaces to Mexican agencies.

- The Mexican TMCs are currently dedicated mainly to capture and use security information, and traffic operations are not a high priority.
- No cross-border TMCs operations have been found at the U.S.-Mexico or U.S.-Canada borders. The proposed TMC in Tijuana that will exchange data with the San Diego TMC is the only planned binational TMC along the border.
- There are examples of cross-border efforts in several parts of Europe.

ITS technology high priorities for a cross-border TMC implementation plan are:

- Surveillance cameras.
- Vehicle detectors.
- RFID readers.
- Wired and wireless communications.
- Portable and permanent dynamic message signs.
- Technology for information dissemination to users.
- Wait time measuring systems at ports of entry.

The action plan for implementing a basic, and in the future an advanced, cross-border TMC consists of 23 actions. These actions are divided into legal/regulatory, institutional/policy, technology, and financial areas. Figure 1 shows a timeline for the actions.

Based on experience in prior work at other TMCs, and cross checking with the U.S. Department of Transportation ITS knowledge resources database,[1] the cost estimate for a basic TMC with four international crossings is between $8 million and $12 million. This estimate does not include the cost of the building to house the TMC.

What This Means

As connected vehicle technologies grow in capabilities and use, current technologies for disseminating border crossing wait times and traveler information may become obsolete. Based on the developed action plan, over three-quarters of the actions require TxDOT intervention. A Mexican counterpart to TxDOT will need to be determined, but the most likely candidate is Secretaria de Comunicaciones y Transportes.

Once a border region is chosen for implementation, researchers recommend beginning with the legal/regulatory and institutional/policy actions. Financing actions are important as well, especially encouraging Mexican agencies to prioritize ITS projects in the planning process and defining the funding mechanism and source.
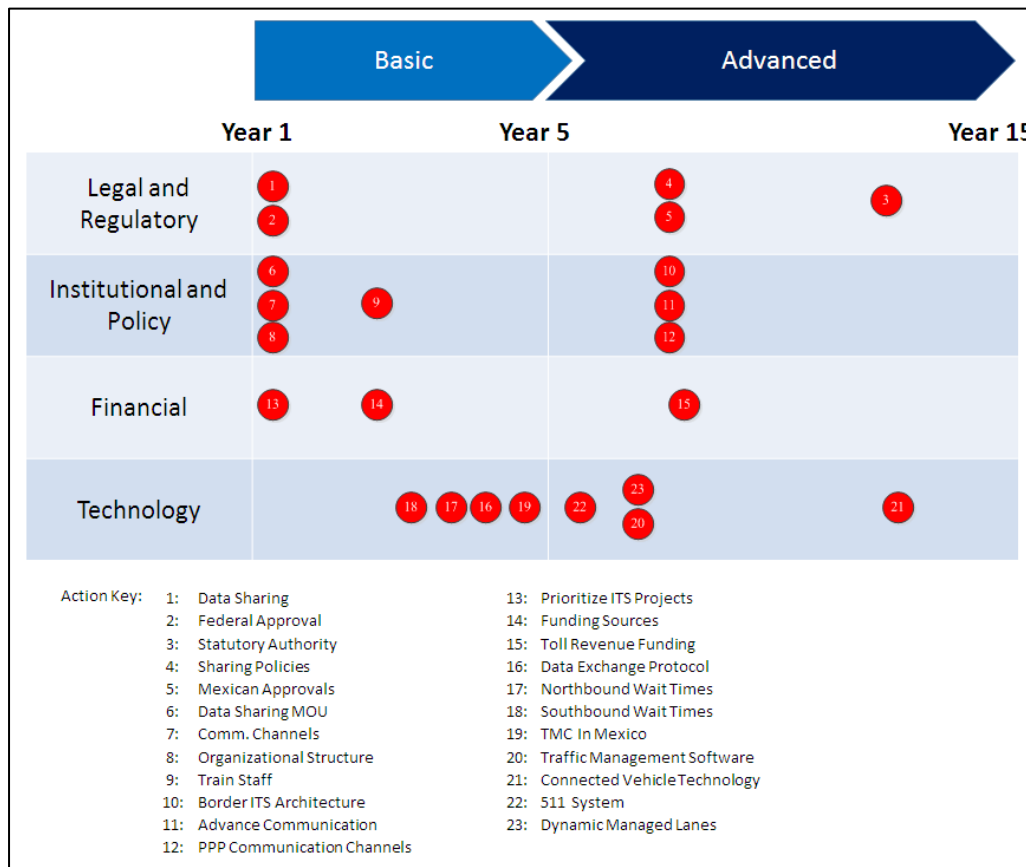

Figure 1. Actions Timeline for Cross-Border TMC Implementation.