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USDOT Integrated Corridor Management (ICM) Initiative Transit Data Gaps for Bus Transit Systems Initial Planning Workshop Notes

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16. Abstract

This document contains the notes from an Integrated Corridor Management (ICM) workshop on bus transit data gaps. Workshop participants discussed the primary issues surrounding the integration of bus transit into an integrated corridor management approach. Specific data gaps were also identified. Conclusions were also drawn about the current status of bus transit and the system's reactions to events that could be handled using an ICM approach.

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USDOT Integrated Corridor Management (ICM) Initiative
Transit Data Gaps for Bus Transit Systems Initial Planning Workshop Notes

APTA Bus and Paratransit Conference
Austin, Texas
Tuesday, May 6, 2008, 6:00 – 8:00 PM

Facilitated by Steve Mortensen and Chris Hill

Participants:

Name	Agency
Christy Bailly	Metro Transit (Minneapolis / St. Paul)
Josh Johnson	SW Research Institute
Pablo Valle	METRO (Houston)
Jon Twichell	AC Transit
Bill Hiller	Booz Allen
Brendon Hemily	ITS America
Gwo-Wei Torng	Noblis
Nancy Skowbo	AC Transit
Yehuda Gross	US DOT
Koorosh Olyai	DART
Alan Gorman	DART
Steve Mortensen	FTA

During the Transit Data Gap Workshop, participants worked to identify the issues, specifically data gaps, which are currently affecting transit agencies and Integrated Corridor Management Systems. Conclusions that were gathered from this discussion are described below:

- Transit agencies are more able to support mode shift resulting from planned and special events rather than unexpected major incidents on adjacent roadways (e.g., some transit agencies may not have sufficient spare vehicles and may not be able to deploy them quickly enough to accommodate the mode shift).
- Transit agencies need to work with their traffic agency counterparts to identify thresholds at which transit agencies would increase service to accommodate mode shift (e.g., identify incident severity and estimated duration at which transit service would be increased).
- It may not be necessary to collect and provide transit vehicle passenger load data in real time to determine when to increase service. A bus driver could communicate this information to dispatch via the on-board mobile data terminal (MDT) (e.g., the bus driver could press "bus full - send backup vehicle" button on MDT).

Steve Mortensen: Steve provided a welcome and overview. Steve directed participants to the ICM (Integrated Corridor Management) website: www.its.gov/icms/index.htm for further info.

Chris Hill: Following brief presentation on ICMS (Integrated Corridor Management System) context and perceived transit data gaps, Chris asked participants to share related experiences and their opinions on transit data needs in an ICM context.

Jon Twichell: In addition to the federal ICM effort, state and regional money is being used on I-80 north to Vallejo. Adjacent to one of the bridges is a large parking garage. Information that is currently available to people who run the system needs to be turned into information for the public. Freeway signs will have real-time parking availability and real-time travel times for mass transit. It will probably get going in the next couple of years.

Christy Bailly: As part of the Urban Partnership Agreement on the I-35 Corridor, we have signs on the freeway that compare the travel time of a car vs. a bus in real-time. Auto information is measured in real-time; bus information is a guesstimate based on schedule times. Information is not displayed in highly congested conditions. If a park-and-ride lot is full, signs will direct drivers to the next available lot with space.

Josh Johnson: You expressed challenges of using bus data to get arterial street speeds and travel times (i.e., buses as probes). Buses stop and don't travel as fast as autos. However, we can get time stamps from when buses stop to pick up passengers. We can also get some data from traffic signals.

Yehuda Gross: Situation may be different with express buses at rush hour. With information, the driver can select the best route since he/she is not so constrained by multiple stops.

Alan: A big challenge is communications infrastructure - to get data to a central set of servers and then disseminate information to the public. This is essential to get them on to public transit.

Chris Hill: An important question raised in ICM Phase 1 is whether or not there is opportunity to respond to situations using transit vehicles. Would there be enough capacity to deal with a significant mode shift?

Steve Mortensen: Some transit agencies were concerned that they didn't have enough elasticity or alternative vehicles to accommodate additional riders.

Koorosh Olyai: Transit is viable to respond to ICM situations.

Josh Johnson: San Antonio has spare buses for special events that operate from park and ride lots. However, the agencies have to provide overtime for drivers on weekends.

Yehuda Gross: We need yellow school buses – can we get them during an emergency?

Brendan Hemily: The use of transit in an ICMS depends on the type of event. It is straightforward if you can plan for it. If there is an accident on a highway, it's different. It may not be feasible to deploy transit in response. There needs to be a hierarchy of different events - 30 minute closure vs. a major catastrophe.

Jon Twichell: People listen to car radios for traffic reports. Those who manage information need to give a specific recommendation, not just a statement of the problem.

Yehuda Gross: Every 10 minutes they give reports and maybe give alternate routes. They don't say park and take transit.

Steve Mortensen: We need actionable vs. generic information. We want to provide the traveling public enough information so that they can make educated route and mode choice decisions at the correct times and locations.

Chris Hill: What information do you need to make a decision? Can you get it?

Yehuda Gross. We need to give managers a list of solutions too, not just information.

Christy Bailly: We need real-time information online for routes. We need to send information by email and PDAs (Personal Digital Assistants). We need to design a way for loop detectors to give information on available capacity for various routes.

Yehuda Gross: If you are shifting from highways to arterials – you need to alter signal timing to accommodate new traffic flows. This has a major impact on transit.

Steve Mortensen: Consider the application of real-time parking availability. Montgomery County and the Chicago area are pursuing it. Progress is being made in this area.

Yehuda Gross: These are independent projects that need to be integrated into larger systems.

Gwo-Wei Torng: How many people switch from car to bus in these circumstances in the PM peak period? I would guess very few. It may be easy to take the bus to an initial destination, but how and when can I get back to where I left my car? Switching route (easy) vs. switching mode (hard).

Jon Twichell: We need to be connecting with drivers when they are willing to think about mode change. There is value in making them do it during an incident. They are then more willing to continue and do it again.

Alan: Google transit provides capabilities for trip planning. It includes near real-time data on buses, such as speed, direction, and routes.

Chris Hill: What about data relating to space on buses/rail to handle people? Do you need to know real-time passenger loads? Can you get it? Is an approach where a driver calls it in sufficient?

Brendan Hemily: RT (Real-Time) load information systems are not accurate. Plus, agencies have typically only equipped 15%-20% of transit vehicles with APCs (Automated Passenger Counters). The traffic engineering community is reluctant to provide transit signal priority, so put in real-time load as criteria for providing priority (i.e. buses would be granted priority when passenger loads are higher). The best approach for identifying and communicating to dispatch when extra buses are needed is for bus drivers to use a simple canned message – full bus – on the vehicle mobile data terminal.

Christy Bailly: Service planners have 10% of the fleet with APCs, but they lose data easily and have no way of gathering data in real-time. We may not want to include it – we couldn't respond to it; we don't have the resources.

Chris Hill: The discussion suggests that there is no strong need for very accurate, real-time passenger counts.

Brendan Hemily: However, real-time *location* is essential.

Chris Hill: Is it typical for transit agencies to know real-time location?

Christy Bailly: For Metro Transit – yes.

Brendan Hemily: The ITS (Intelligent Transportation System) Deployment website says that 50% of transit systems are equipped with AVL (Automatic Vehicle Location).

Chris Hill: What other needs do we have in this context?

Koorosh Olyai: We need to think about institutional approaches. In Texas we have co-located the decision-makers/operators out of the same location. There are no institutional issues – they are all working together side by side.

Chris Hill: Earlier it was suggested that we need to present solutions, rather than information. In a multi-agency environment, what makes sense to communicate across agencies? What will provide the greatest value for ICM?

Christy Bailly: We're separate, but we have Mn/DOT (Minnesota Department of Transportation) information for freeways in our control center.

Jon Twichell: The Texas model is good for others. There are 26 transit agencies in the Bay area. To get everybody in the same room would be difficult.

Koorosh Olyai: Toll roads are not co-located with transit in Texas, but we have data feeds. A relationship is helpful but not mandatory.

Chris Hill: What information needs to be shared between agencies if we don't have the luxury of co-location?

Brendan Hemily: The vast majority of agencies are not co-located.

Yehuda Gross: It depends on who runs transit. If it is county or city owned, you'll find co-location, such as Montgomery County, Maryland.

Brendan Hemily: The objectives of highway and transit agencies are different. The transit agency wants to keep the bus on schedule; they are not concerned about clearing roads after an incident. In a TMC (Traffic Management Center) they need to predict time to clear; measure traffic flows; make decisions on deployment of EMS (Emergency Medical Services). What is needed is a hierarchy of situations and a trigger to say we're going to involve transit to support incident response.

Jon Twichell: We had a gasoline truck overturn – it melted a level of highway. We had to re-route traffic and transit. The coordination worked really well.

Christy Bailly: We use "direct connect" to communicate between transit and the highway agencies. It was almost as fast as being in the same room. Direct connect is a Nextel 2-way radio.

Brendan Hemily: When does it make sense to trigger it for lower level unplanned events?

Jon Twichell: An accident that closes an HOV (High Occupancy Vehicle) lane.

Chris Hill: Recognizing the threshold helps define what the data needs are.

Josh Johnson: We should be considering a decision support system. Establish thresholds – set up alarms that trigger when you reach those thresholds. Send alarm to operator – they can manage at that point.

Chris Hill: In conclusion, the issues discussed this evening will be used in developing a white paper on the transit data gap. Steve will likely be looking for people to review the white paper.

Steve Mortensen: We want to keep the transit community engaged.