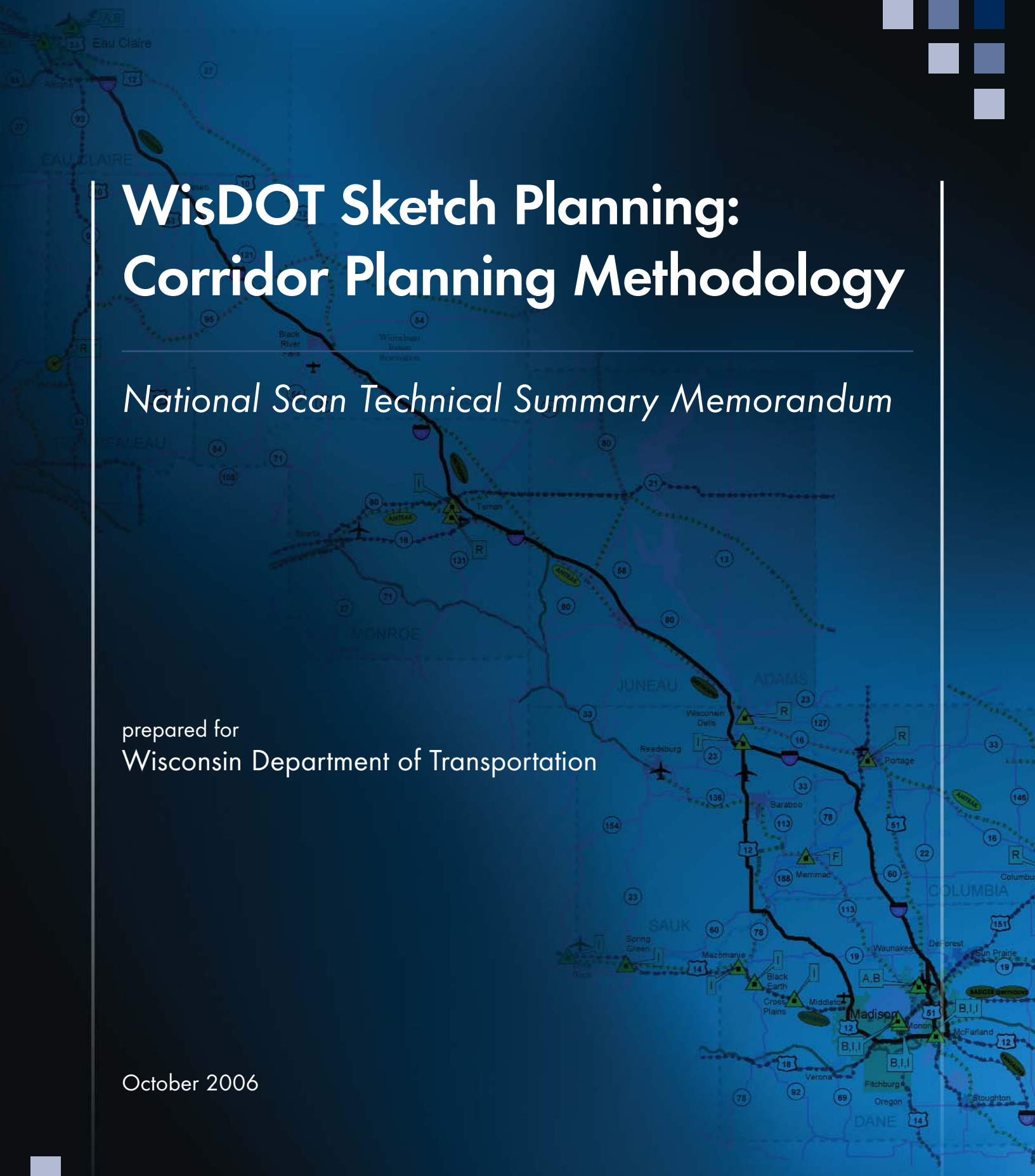
WisDOT Sketch Planning: Corridor Planning Methodology

National Scan Technical Summary Memorandum



prepared for
Wisconsin Department of Transportation

October 2006

draft report

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1.0 Introduction and Summary

The Wisconsin Department of Transportation has initiated the Corridor Planning Methodology for Traffic Operations project whose goal is to develop a methodology and associated tool that will enable the Bureau of Highway Operation's (BHO) ITS program to complement instead of compete against traditional projects. The sketch planning effort will develop a method for that evaluation and will do so in a fashion that leverages versus parallels planning and programming processes.

Wisconsin was an early adopter of ITS, participating in such key ITS deployments including Milwaukee's Monitor system and were a founding partner in the Gary-Chicago-Milwaukee corridor. However, traditionally the ITS program has competed for funding against traditional highway project and in recent years has struggled.

Major tasks of this project include developing scenarios, a concept of operations as well as the tool itself which will be tested through three parallel projects in such functional areas such as signal systems, traveler information, and freeway operations. The tool will measure the impact of ITS projects on the Wisconsin backbone system and will capture both quantitative as well as qualitative metrics.

The project encompasses four separate planning efforts that, when folded together, will comprise the overall sketch plan for statewide traffic operations:

1. Corridor Planning Methodology for Traffic Operations;
2. Ramp Control and Surveillance;
3. Travel Warning and Information Systems; and
4. Traffic Signal Systems.

On of the early activities of the project was to was to conduct an environmental scan national best practice for traffic operations sketch planning tools and it is the subject of this technical memorandum.

1.1 NATIONAL SCAN APPROACH

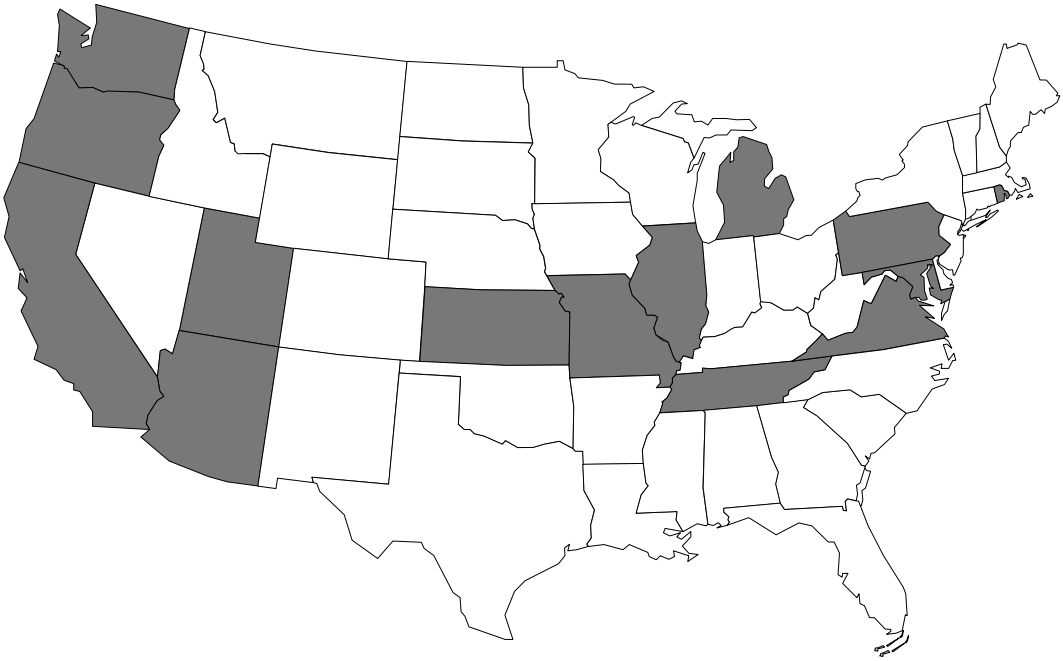
The Cambridge Systematics project team developed a list of interview questions, included in Appendix A of this document, designed to obtain information from state DOTs and MPOs on their practices and activities planning for operations. The interview questions were submitted to Wisconsin DOT and approved.

The Cambridge Systematics team then developed an initial list of agencies that were thought to have successful operations programs and to have developed some procedures for planning for operations project and programs. This is list

was updated the input from FHWA Office of Operations as well as the AASHTO Subcommittee on Systems Operations and Management. In addition, a brief literature search was conducted to include state DOT reports, NCHRP, and TRB initiatives. The findings of that search are also provided in this memorandum.

An initial list of six MPOs and 13 DOTs were identified for the interviews. A representative of each agency was also identified and contacted through e-mail in August 2006. Several agencies declined to participate for various reasons and after several follow-up e-mails and phone calls to set up interviews, the final set of interviews was conducted. There were interviews conducted with five MPOs and eight DOTS. One MPO (Mid-America Regional Council in Kansas City) provided responses for two states, Missouri and Kansas, so a total of 14 states participated in the interviews. The states included in the scan are illustrated in Figure 1.1.

Figure 1.1 States Included in National Scan



A summary of responses follows in the next section. Proceeding from that section are the detailed responses of each agency to each question. The contact information for each respondent is in Appendix B at the end of this document.

1.2 SUMMARY OF SCAN RESPONSES

In conducting interviews with staff of eight state DOTs and five MPOs representing a total of 14 states, two strategies emerged as being key to the planning for and successful development of operations and ITS programs and projects:

1. Maintaining an active, multi-agency Operations Committee that coordinates on all phases of program and project development; and
2. The collection, use, and reporting of performance data that can show the benefits of operations programs and projects.

The remainder of this section providing additional summary information and analysis. The following paragraphs describe a summary of the responses to the interview questions.

1.2.1 Organization and Project Development Processes

- Of the 14 states for which we obtained information, five were characterized as centralized organizations and nine were decentralized.
- Most states conduct operations/ITS planning at the Central Office.
- Most state DOTs conduct operations planning within the Traffic Operations or Operations Divisions. Exceptions are:
  - Maryland, where the ITS Program, CHART, is a division-level program external to Traffic Engineering;
  - Rhode Island, where the statewide TMC manages operations planning; and
  - Tennessee, where operations planning is divided among Planning and Maintenance, where Traffic Engineering is housed.
- The five MPOs interviewed typically have one staff person assigned to manage operations/ITS activities conducted by the agency.
- The process DOTs use to hand off operations projects from planning to design and construction varies across the states that were interviewed.
  - In many cases where DOTs are decentralized the planning staff turns over implementation to DOT Districts or Regions; and
  - Notable exceptions are Maryland and Utah, where the Central Office typically manages the entire implementation process for operations/ITS projects.
- For most state DOTs, planners do not participate in operations/ITS projects after the planning is completed and the project is funded.
  - Exceptions are in Maryland, Rhode Island, and Utah.
- Most states and regions have an active Operations/ITS Committee. Comments indicated that the committees were considered to be a valuable resource and the champion for the continued support of the operations programs.

- The committees were found to be a facilitator of coordinated activities among agencies and instrumental in assisting the planners obtain funding for projects;
- The composition of committee members was different in every area, with some committees having executive-level membership, others having technical-level members, and still other having a two-tiered structure with both executive and technical levels; and
- Several of these committee structures should be examined as a possible model.

1.2.2 Performance Data

- All states contacted reported that they collect some data on operations activities.
  - Table 1.2 indicates the status of performance monitoring in each of the states interviewed.

Table 1.1 Performance Monitoring in States Interviewed

State DOT	Incident Duration (Outcome)	Travel Time/ Reliability (Outcome)	Customer Satisfaction (Outcome)	TMC Activities (Output)	Traveler Information (Output)
CalTrans	●	●		●	●
Illinois DOT	●			●	●
Maryland SHA	●			●	●
PennDOT					
Rhode Island DOT	●			●	●
Utah DOT	●	●	●	●	●
Tennessee DOT			●		
Washington State DOT	●	●		●	●
Virginia DOT	●			●	●
Arizona DOT	●			●	●
Missouri DOT	●			●	●
Kansas DOT	●			●	●
Oregon DOT	●	●		●	●
Michigan DOT				●	●

- From Table 1.1, most states interviewed collect incident duration data, TMC activities, and traveler information data.
  - Four of the 14 states are collecting and archiving travel speed data; and
  - Two states regularly collect customer satisfaction data.

- Performance measure reporting is conducted in numerous ways:
  - Several states (WSDOT and MD SHA in particular) have well-known annual reports that cover performance of all functions of the DOT; and
  - Several other states have monthly or weekly on-line performance reports for operations.
- Eight of the 14 states report that performance data is used for planning activities. Examples of using performance data for planning are:
  - CalTrans recently provided performance data as justification for a $19 billion statewide bond program, which is on the November 2006 ballot;
  - Illinois DOT uses congestion data to identify geographic focus areas for projects and to assist in identifying solutions;
  - Maryland SHA uses performance data for program expansion justification;
  - Rhode Island uses performance data to document the need for ITS deployment;
  - Washington State DOT uses congestion data to rank corridors and to identify problems and solutions;
  - Hampton Roads PDC uses congestion data to identify problem areas;
  - Portland Metro uses congestion data to assist in project selection for plan updates; and
  - Southeast Michigan COG uses travel speed to help calibrate the regional travel demand model.

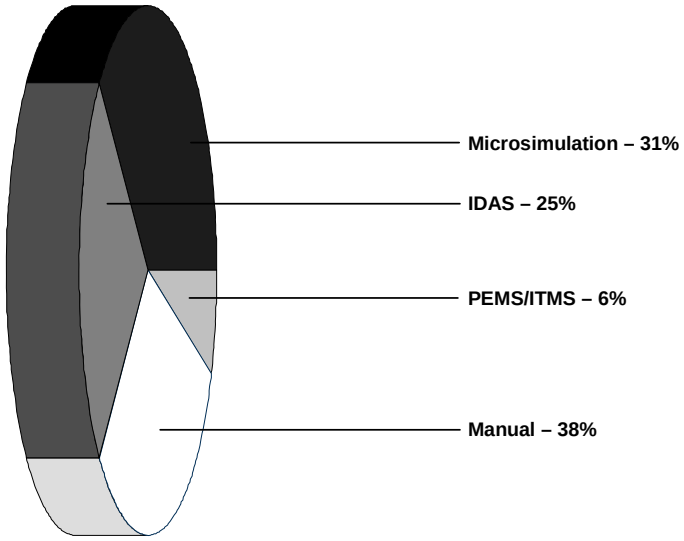
1.2.3 Long-Range Planning Process

- All states interviewed indicated that their short-range and long-range transportation plans at least mention the need for efficient operations of the transportation system.
- Only three states have identified specific operations-related goals or targets in their plans. The most comprehensive set of goals in the CalTrans TMS Master Plan and TMS Action Plan.
- Both Maryland SHA and Washington State DOT have included incident clearance time goals in long-range and operational plans.

1.2.4 Sketch Planning Tools

- Only a few states have adopted the use of operations planning tools statewide.
  - CalTrans has developed two tools for internal use, PeMS and ITMS and they are used extensively;
  - Many of the states report using simulation models (CORSIM, VISSIM or Paramics) on a project by project basis;
  - Sketch planning tools, such as IDAS, have been used for individual projects in several states;
  - Several states and MPOs use manual or spreadsheet methods for benefits calculations; and
  - Official adoption of the use of specific tools statewide was not found.

Figure 1.2 Sketch Planning Tools in Use



- Satisfaction with the usefulness of existing tools varied widely.
  - Some interviewees reported that their agency was satisfied while several other were dissatisfied.

- Most states not currently using operations planning tools reported that they are not considering adopting new tools.
  - Three areas did report that the use of IDAS was under consideration.
- In addressing whether agencies suggest improving existing tools or adapt new tools tailored for operations planning, most agencies had no opinion with the reason given that they did not have enough experience with the use of tools to provide a comment.
  - Of the agencies that did have an opinion most said the existing tools should be improved; and
  - Whether or not the agency is using operations planning tools, the champion for the use of those tools is the division that conducts the planning of operations projects.

1.2.5 Barriers to Sketch Planning

- Barriers reported by interviewees to developing operations/ITS projects were varied and no consensus of a specific barrier or barriers can be noted. Most often cited barriers to development of operations projects were:
  - Lack of an operations culture within the agency, agencies are unable to articulate the benefits of operations projects;
  - Lack of trained operations personnel; and
  - Lack of experience in using analytical tools.
- The best method for obtaining information on planning tools was found to be in-person training, which was mentioned by almost responders. Other often mentioned methods were peer-to-peer meetings and webcasts.

2.0 Detailed Responses to Interviews

This section provides the detailed responses to all the questions solicited during the national scan. The interview questions themselves are provided in Appendix A. The format of this section is tabular, allowing the reader to more easily assess responses across each state.

Category: Responsibility for Planning of Operations/ITS Question: What division is responsible for planning for Operations/ITS?	
National Scan Participating Organization	*Response*
CalTrans	Traffic Operations Division is responsible for planning, design, maintenance and operations of the operations program. They work closely with Transportation Planning to move projects and programs into and through the planning process. Transportation Planning is responsible for planning on the entire transportation system in California, of which operations is a part.
Illinois DOT	IDOT Central Bureau of Operations and the IDOT Office of Planning and Programming. The ITS Office within the Central Bureau of Operations is responsible for finding funds, obtaining grants, providing technical guidance and support, providing overview of project implementation, and assuring that ITS investments meet state and Federal requirements and statewide objectives. The ITS Office also determines needs for ITS projects, defines the projects and submits them to the Office of Planning and Programming. The ITS Office had four staff until recently, and now has one permanent staff. The Office of Planning and Programming is responsible for capital programs. The ITS Office initiated and managed a statewide ITS Strategic Plan and Architecture to help establish the statewide objectives and program.
Maryland State Highway Administration (SHA)	Office of CHART is responsible for Operations/ITS planning. The Office has four divisions: Administration, Systems Integration, ITS Development and Operations. ITS Development division coordinates with other divisions and the Districts to define projects and conduct operations planning. They will often design projects. Most roadway projects in SHA do not have ITS in them. Its projects are primarily separate projects managed by CHART. The Districts review CHART projects and may revise them. Another group outside CHART, the SHA Traffic Engineering and Design Office has Traffic Development and Support Division, which is responsible for research on future technology and ITS devices. Coordination between CHART and that research group needs to be improved. CHART has a separate line item in the SHA budget for their projects and operations. CHART internally decides on how to spend their budget. CHART and its high profile within SHA is the legacy of a SHA Administrator (Hal Kassoff) who was a national champion of ITS and Operations.
PennDOT	PennDOT is decentralized but central office is responsible for direction, goals and objectives. District planners and MPOs take direction provided by central office and plan individual ITS/operations projects. TSOP document sets long-range direction. Each region develops regional operations plan (ROP) – taking TSOP and customizing to regional needs. Operations/ITS planning is a shared responsibility between Central Office and the Districts/MPOs. ROP includes same stakeholders as for regional ITS architecture.
Rhode Island DOT (RIDOT)	There is no statewide planning department in Rhode Island. There is a statewide MPO, which includes ITS in the statewide plan. RIDOT does ITS planning through the Traffic Management Center.
Utah DOT	Office of Operations, Traffic Management Division identifies needs and recommends projects. Office of Systems Planning and Programming conducts the planning process to get projects into the STIP.
Tennessee DOT	Joint responsibility of Project Planning, Long-Range Planning, and Maintenance – Traffic Engineering.
Washington State DOT	Maintenance and Operations is responsible for planning ITS projects. Strategic Planning and Programming is responsible for obtaining project funding.

Category: Responsibility for Planning of Operations/ITS Question: What division is responsible for planning for Operations/ITS?	
National Scan Participating Organization	*Response*
Hampton Roads Planning District Commission (HRPDC)	Transportation Planning conducts all MPO planning. There are 11 staff in three group within the planning staff: Long-range plan, Data/GIS/TIP, and Operations and Management planning, project selection process and special transportation studies, which includes congestion management, ITS, operations, and freight.
Maricopa Association of Governments (MAG)	MAG has an ITS Program with staff. The ITS Program also conducts congestion and safety programs.
Mid-America Regional Council (MARC)	Within MARC's transportation committee structure, the M&O Work Group conducts operations/ITS activities along with the Congestion Management Process, the ITS Architecture and the Operation Green Light (OGL) Program.
Portland (OR) Metro	Metro has an Operations Group, currently one staff member.
Southeast Michigan Council of Governments (SEMCOG)	SEMCOG has an employee who is in charge of ITS and Operations work. He has other duties as well but occasionally draws help from others. As one of three Federal grantees developing a Regional Concept of Operations, SEMCOG anticipates it will continue to provide services to an Operational Committee that is being set up as part of that project. SEMCOG developed the regional ITS architecture and is responsible for maintaining it.

Category: Responsibility for Planning of Operations/ITS Question: How are the results of operations planning handed off to design or construction?	
National Scan Participating Organization	*Response*
CalTrans	Traffic Operations develops projects, programs and processes for operations in CalTrans. Depending on the location (which District) and type of project, Traffic Operations may manage design and construction or Districts may take over and manage implementation. Different Districts have different capabilities so their responsibilities vary. For example, some rural Districts pool design resources so one District may provide design services to another.
Illinois DOT	The ITS Office has oversight responsibility after projects are turned over to design and construction, however with dozens of active projects underway concurrently, the small staff cannot keep up with every projects. Therefore, often it must relay on the Districts to monitor most projects regularly with the ITS Office available for assistance as required. This limits the ability to systematically address solutions.
Maryland SHA	The CHART ITS Development division plans, funds and develops the project concept. Sometimes they prepare design also. Other times the design and construction is sent to SHA.
PennDOT	Projects go through normal development process. Once ITS/Operations projects are included in the TIP and STIP, the central office has role to play in project implementation. The ATMS/ATIS Section assists Districts in implementing ITS. There are two liaisons to help Districts, one serves the eastern half of the State, the other the western half. They provide technical assistance but are not directly involved in design. The Central Office generally responds to request for help but the liaisons may be proactive in helping out where they see deficiencies.
RIDOT	TMC comments on all projects. Comments may include any ITS elements in a project. Credibility of TMC is very good and if they ask for ITS deployments in a design/construction project it is almost always included. There have only been a couple of exceptions. There is a statewide ITS plan in place that was developed by the TMC. This plan is handed off to design for implementation.
Utah DOT	Traffic Management Division manages ITS project design and construction in coordination with Region office project managers.
Tennessee DOT	Long-Range Planning recommends projects to Programming with input from Project Planning and Traffic Engineering. Design Division prepares ITS design and Construction Division manages construction.
Washington State DOT	Once projects are in the STIP, design is conducted by one of the seven Regions or the Seattle Urban Office.
HRPDC	VDOT handles design and construction.
MAG	Arizona DOT handles design and construction.
MARC	In general, MARC works with KDOT and MoDOT for operations planning and DOTs handle design and construction. With OGL, MARC is responsible for design and construction.

Category: Responsibility for Planning of Operations/ITS Question: How are the results of operations planning handed off to design or construction?	
National Scan Participating Organization	*Response*
Portland Metro	Metro determines projects for TIP. The Planning Process is linked to Operations through the Congestion Management Process. CMP must include system management/operational strategies, many of which are enabled or supported by ITS. Planning for operations is also accomplished through the development of Regional Concepts of Transportation Operations, which identifies needed physical improvements (projects) as well as relationships, procedures, and resources.
SEMCOG	MDOT, and to a lesser extent, the County Road Commissions are responsible for implementing ITS projects. Since SEMCOG is responsible for the regional architecture they have provided conformity letters to designers for specific projects.

Category: Responsibility for Planning of Operations/ITS Question: Do planning staff continue to participate as projects advance to next stages?	
National Scan Participating Organization	*Response*
CalTrans	Currently Planning staff does not participate after design has begun. CalTrans is considering developing a Corridor Mobility Program. The Corridor Mobility Program would define a person responsible for managing all activities within a defined corridor, including planning, design, construction, operations and maintenance. This Corridor Mobility Program, if adopted fully by CalTrans, would create major changes to current CalTrans organizational structure and business practices.
Illinois DOT	ITS Office can only monitor a few large or statewide projects. District operations staff monitors most projects.
Maryland SHA	Yes, throughout the project.
PennDOT	Planning staff at District level do not participate as projects move into design and construction. Central office liaisons are involved all the way through planning and programming to operations and maintenance.
RIDOT	TMC staff continues to participate as projects advance.
Utah DOT	Yes, throughout the project.
Tennessee DOT	No, not directly. Maintenance Division – Traffic Engineering section monitors ITS projects.
Washington State DOT	No, not usually.
HRPDC	No, except for that the projects are monitored through the Congestion Management Process.
MAG	No, except for that the projects are monitored through the Congestion Management Process. CMAQ is the primary funding source for operations projects. MAG has separate categories for O&M and for ITS infrastructure projects. AZDOT now includes replacement costs in all ITS implementation projects.
MARC	Operations projects are listed in the TIP. The use of the funds is monitored by MARC. MARC works with the Kansas City Scout Program for freeway operations and OGL for arterial operations.
Portland Metro	No, except for that the projects are monitored through the Congestion Management Process.
SEMCOG	Other than architecture conformity, SEMCOG has not participated in the design and construction stages of projects.

Category: Responsibility for Planning of Operations/ITS Question: Are these activities conducted at the Central Office or at the District/Region level?	
National Scan Participating Organization	*Response*
CalTrans	Mostly Central Office, except when the Districts take over implementation.
Illinois DOT	Central Office plans projects and places them in the Work Program. District implements and operate the projects.
Maryland SHA	Central Office, Office of CHART.
PennDOT	N/A
RIDOT	All ITS activities are centralized.
Utah DOT	Central Office.
Tennessee DOT	The Regions are responsible for operating the system. The Central Office decides what capital ITS investments are made, and where.
Washington State DOT	Planning and funding is conducted at the CO, implementation is done in the Regions.
HRPDC	HRPDC works with the local VDOT District.
MAG	MAG generally works with the District.
MARC	In Kansas most DOT coordination is with the Central Office, in Missouri contacts are in the District.
Portland Metro	Most interactions are with the ODOT Region. Policy issues are coordinated with the ODOT Central Office.
SEMCOG	N/A

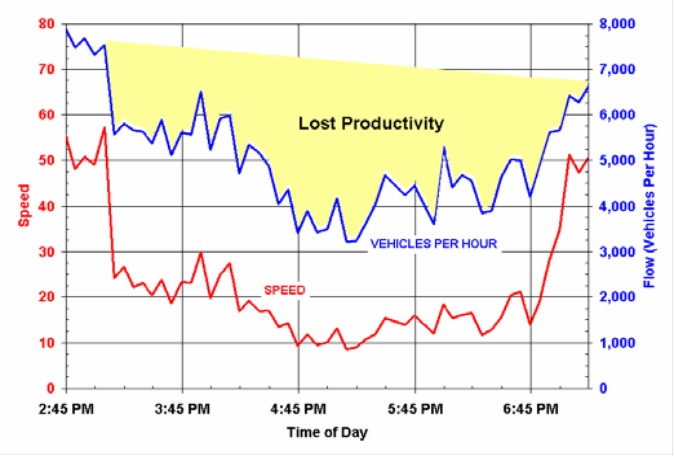
Category: Responsibility for Planning of Operations/ITS Question: How would you characterize your agency, centralized or decentralized?	
National Scan Participating Organization	*Response*
CalTrans	Decentralized.
Illinois DOT	Decentralized.
Maryland SHA	Centralized.
PennDOT	PennDOT is decentralized but Districts look to central office to provide strong central direction on Operations and ITS. The goal is to balance statewide direction with regional needs.
RIDOT	Centralized.
Utah DOT	Decentralized, CO directs the Regions and the Region implement projects.
Tennessee DOT	Centralized, CO determines policies and budgets.
Washington State DOT	Decentralized.
HRPDC	VDOT is decentralized.
MAG	AZDOT is centralized.
MARC	KDOT is centralized, MoDOT is decentralized.
Portland Metro	ODOT is decentralized.
SEMCOG	MDOT is generally decentralized but not as much in ITS. There is a statewide director and a statewide ITS committee to coordinate activities.

Category: Responsibility for Planning of Operations/ITS Question: Is there a regional or statewide Operations/ITS Committee that meets regularly? Are participants internal or external to your agency?	
National Scan Participating Organization	*Response*
CalTrans	There is not a formal committee to address operations only. The Deputy District Directors for Operations teleconference monthly and meet quarterly to discuss policies, standards and implementation issues. There will likely be groups forming that will meet statewide to address specific issues such as technology, software or traveler information. Transportation Planning Managers also meet quarterly.
Illinois DOT	Yes, there has been a long history of various operations-oriented committees, task forces, and work groups. For example, a Committee was established about 1985 for a project called Operation Greenlight (signal systems upgrades) by CATS, the Chicago MPO. Participants were local agencies, MPO and DOT. That Committee eventually evolved into the Gary-Chicago-Milwaukee (GCM) Corridor. GCM continues today with several operations committees. In addition, in the Chicago metro area, IDOT is an active participant and chairs the Advanced Technology Task Force, and participates in both the Transportation Management Task Force and the Intermodal Advisory Task Force (for freight). These committees overview research and development of devices and software and coordinates operations and maintenance of the participating agencies in the region. The GCM work groups perform similar function in the GCM corridor including coordination of operations functions with Wisconsin DOT, Illinois DOT and Indiana DOT, plus several toll agencies and transit agencies.
Maryland SHA	The CHART Board was started in the mid 1980s. Current Board members represent SHA, Maryland State Police, Maryland Transportation Authority (toll roads), Maryland DOT Office of Traffic Safety, Maryland DOT Office of Maintenance, the University of Maryland Center for Advanced Transportation Technology and various local governments. The Board is chaired by the Chief Engineer of SHA. The Board meets monthly. The Board has two subcommittees: the Technical Group and the Deployment Group. The Technical Group coordinates agency activities in communications network development, ITS device maintenance, systems integration and traffic engineering. The Deployment Group coordinates agency planning for operations and systems development. Both groups meet monthly.
PennDOT	PennDOT has a statewide team that meets once per month to discuss the progress of TSOP projects and once per month to discuss the progress of other ITS/operations projects/initiatives/efforts/etc. This statewide team consists of PennDOT and FHWA personnel. Each Regional ITS Architecture area has a committee of PennDOT personnel and major external stakeholders. Some regions already had a structure in place prior to the development of our architectures. The remaining regions formalized a structure as part of the architecture development process. The goal was that these committees would see the value in meeting regularly after the architectures were adopted to discuss and coordinate new projects. The effort to develop Regional Operations Plans relies on these regional committees for input and direction. It is premature to say that these committee processes are systemic and repeatable in every region, but current statewide situation could generally be characterized as the beginnings of a formal structure that is working towards systematic and repeatable processes.
RIDOT	N/A

Category: Responsibility for Planning of Operations/ITS Question: Is there a regional or statewide Operations/ITS Committee that meets regularly? Are participants internal or external to your agency?	
National Scan Participating Organization	*Response*
Utah DOT	Traffic Management Committee, which was set up by state law, advises UDOT statewide on traffic operations. Agencies represented include law enforcement (Utah State Police and local police), environmental quality, transit, the Utah League of Cities, Utah Association of Counties and at-large members. The Traffic Management Committee meets monthly. There are three geographically based Technical Subcommittees that meet individually to address local issues: Salt Lake City region, Ogden City region (northern Utah), and Provo/Orem City region (south of Salt Lake County).
Tennessee DOT	TDOT has just initiated the ITS Coordinating Committee. The Committee is an internal committee with representatives from Long-Range Planning, Project Planning, Design, Maintenance – Traffic Engineering, Incident Management, Community Relations, Information Technology, General Services (communications), and Public Transportation. A description of roles for each participating division has been documented.
Washington State DOT	Several groups within WSDOT meet regularly. The Region's Maintenance Engineers meet monthly. The Assistant Region Administrators for Operations meet monthly, the Region Traffic Engineers meet quarterly and an ITS Systems Planning group meets semiannually.
HRPDC	Yes, They started a regional ITS Committee in the early 1990s. The ITS Committee consists primarily of traffic engineers and traffic operations staff from all 13 local jurisdictions, the local transit agencies, the Virginia Department of Transportation (VDOT), the Virginia State Police, the Virginia Port Authority, the Department of Navy, the Federal Highway Administration, and the Hampton Roads MPO. The Committee managed the development of the Regional ITS Strategic Plan (Congestion Management Plan: A Regional Effort or COMPARE) and Regional ITS Architecture. The initial plan was adopted in 1995 and updates were completed in 2000 and 2004. The Long-Range Plan and TIP both include management and operations and a process has been developed to prioritize those projects. ITS/Operations funding is from the $40 million of RSTP and CMAQ funds that the region receives each year. The TIP selection process for all proposed projects using RSTP includes an evaluation and methodology according to six categories. They are: • Transit; • Planning Studies; • Transportation Demand Management; • Enhancement Projects; and • ITS and M&O. Candidate projects are evaluated and scored according to criteria and performance measures within each category. Projects are then selected based upon their scores/ranking, funding availability, and other criteria agreed upon by the Transportation Technical Committee. Average travel speed, level of service, cost-effectiveness, and crash rates are among measures to score and rank operational projects. In 2005 the Committee managed the Regional Concept of Operations and had it approved by the MPO Board. Details on this process and the Committee's activities are published in a TRB paper (06-1172) presented at the 2006 TRB meeting.

Category: Responsibility for Planning of Operations/ITS Question: Is there a regional or statewide Operations/ITS Committee that meets regularly? Are participants internal or external to your agency?	
National Scan Participating Organization	*Response*
MAG	Yes, Committee first started when Phoenix was selected as a MDI site. There are now 22 members from MAG, AZDOT, cities and public safety. They meet monthly to coordinate operations and infrastructure projects. The Committee managed the development of the MPO Regional Concept of Operations in 2003. The Committee also monitors the MAG managed regional signal timing project. MAG is developing a MPO operations project application. It will ask for information on staff needs (FTEs required), budget needs and availability of funds for the project. Project justification description will also be required.
MARC	For freeway operations the KC Scout Program is a joint effort of KDOT and MoDOT. MARC staff serves on the KC Scout Board of Directors, which serves as a policy-level steering committee for the project. OGL is a regional arterial management program working with Federal, state and local agencies to develop and implement a system that will coordinate traffic signal timing plans and communication between traffic signal equipment across jurisdictional boundaries. OGL has a Steering Committee who reports to MARC's Board of Directors and a Technical Advisory Committee that each meet monthly.
Portland Metro	TransPort is an operations committee started in 1993. It focuses on project implementation and coordination. Recently TransPort was made a subcommittee of the Metro Technical Committee. Metro is creating a joint policy-level committees for TDM and TSM.
SEMCOG	MDOT has an internal ITS Committee that coordinates project and activities across the State. SEMCOG, through an FHWA grant, is developing a Regional Concept of Operations for Southeast Michigan. Part of this project involves the formation of a Regional Operations Committee that includes representatives of the municipalities forming the SEMCOG region. This committee is currently serving to guide the development of the COO but may be made permanent. Long-range goals, objectives, membership, and activities for the Committee are currently being discussed.

Category: Responsibility for Planning of Operations/ITS Question: Does your agency collect data on Operations/ITS activities?	
National Scan Participating Organization	*Response*
CalTrans	Yes
Illinois DOT	Yes
Maryland SHA	Yes
PennDOT	Yes
RIDOT	Yes
Utah DOT	Yes
Tennessee DOT	Yes
Washington State DOT	Yes
HRPDC	Yes
MAG	Yes
MARC	Yes
Portland Metro	Yes
SEMCOG	Yes

Category: Responsibility for Planning of Operations/ITS Question: Which activities? Service patrols, DMS usage, incident duration or clearance, travel times, customer satisfaction?	
National Scan Participating Organization	*Response*
CalTrans	The Transportation System Management (TMS) Master Plan (see http://www.dot.ca.gov/hq/traffops/sysmgtpl/reports/MasterPlan.pdf) outlines goals, objectives and performance measures for operations in CalTrans. Measures are identified in detection, traffic control, traveler information and incident management. Customer satisfaction measures were not included. CalTrans implemented a performance measurement system called PeMS several years ago. PeMS tracks speeds from all available freeway detectors across the State. CalTrans tracks and reports output and outcome measures for all areas of operations. Travel time reliability is tracked through PeMS. Another measure that CalTrans tracks and uses is productivity. Productivity is defined as the total number of vehicles (and the people inside) served per hour at a given location, actually diminishes when demand is highest. It is expressed as capacity lost to congestion. The Exhibit below illustrates the concept of lost productivity using data from State Route 22 in Orange County. All four lanes of State Route 22 show a significant loss in productivity once severe congestion starts. The shaded area represents lost productivity. Congestion lasts for almost four hours. Speeds remain consistently under 35 miles per hour, and productivity per lane drops to as low as 50 percent and is hardly above 60 percent for most of the time that congestion is present. Productivity Loss during Severe Congestion  *Source: CalTrans TMS Master Plan.*
Illinois DOT	The GCM web site includes reports on travel time, congestion, incidents, construction, special events, DMS messages, highway advisories and weather. Customer satisfaction data is not regularly collected, though a major on-line survey was conducted jointly with RTA in late 2004 to assess user satisfaction with the travel information products offered to customers. Reliability is calculated from travel time data, and reported routinely on the www.gcmtravwel.com and www.gcmtravelstats.com web sites.

Category: Responsibility for Planning of Operations/ITS Question: Which activities? Service patrols, DMS usage, incident duration or clearance, travel times, customer satisfaction?	
National Scan Participating Organization	*Response*
Maryland SHA	Device maintenance, service patrols, DMS usage, incident duration. Travel times and reliability are not collected currently.
PennDOT	Do not have statewide programmatic system in place to collect operational data. One exception would be normal HPMS volume and classification data. Not currently using TMC data but using Traffic.com data on a limited basis for HPMS reporting and may expand this use in the future. Districts that have FSPs are collecting data on motorists assistance and customer satisfaction. To a lesser extent they are tracking DMS usage – mainly downtime. Philadelphia region is starting to track incident data. There is currently no statewide programmatic approach to collecting operations data. Cross cutting theme in developing TSOP was to look for opportunities under the 19 program areas to develop opportunities. PennDOT has started identifying performance measures.
RIDOT	The TMC collects operational data and puts performance measurements on web site, http://www.tmc.state.ri.us/news_managers.asp. Performance measures include incident detection, response and clearance statistics, 511 and web site usage and equipment maintenance activity. Travel times are not yet being posted. RIDOT puts a high priority on monitoring customer satisfaction through a web site survey. A new database has been implemented, which is interactive and more robust, and allows information to be put on web.
Utah DOT	UDOT collects and reports data on service patrols, DMS messages, incident clearance time, travel time and reliability. Benefit/cost studies are conducted during project development. Customer satisfaction surveys are part of UDOT overall, have also been conducted through focus groups.
Tennessee DOT	Traffic volumes and speeds at the present time, with periodic customer satisfaction surveys.
Washington State DOT	Service patrols, DMS usage, incident duration, travel time, reliability are all collected in detail. Customer satisfaction has not been tracked recently, except that service patrol drivers hand out comment cards to customers.
HRPDC	They started receiving travel time and speeds from VDOT detectors, however the detectors have proven to be unreliable. Currently HRPDC conducts extensive floating car travel time studies to monitor congestion trends on corridors. They also receive incident data from the VDOT TMC. HRPDC has developed a regional crash database for safety analysis purposes.
MAG	AZDOT sends MAG service patrol data, MAG monitors since CMAQ funds the service patrol. MAG has begun to calculate safety benefits of ITS and operations programs.
MARC	Incident data is obtained from KC Scout.
Portland Metro	Travel time and reliability data are collected by ODOT via inductive loop detectors in the freeway system. Incident data is collected in the form of logs kept by operators of the Transportation Management and Operations Center (TMOC), who also dispatch a fleet of response vehicles.

Category: Responsibility for Planning of Operations/ITS Question: Which activities? Service patrols, DMS usage, incident duration or clearance, travel times, customer satisfaction?	
National Scan Participating Organization	*Response*
SEMCOG	Is now collecting road sensor data from Michigan DOT's ITS Center including volume, occupancy and speeds. Currently has archived data back to 2000. They have been processing the data to obtain traffic counts and factors and to help calibrate and validate their travel demand models. They will also be using the data to calculate travel time information that can be used for system performance measures. SEMCOG is also collecting traffic count data from camera sensors used for the Oakland County Road Commission's actuated traffic signal system (SCATS). However, the data has not been processed or analyzed due to lack of resources. Other data (i.e., DMS usage, customer satisfaction, etc.) that comes from the MDOT MITS Center is collected, processed, analyzed and reported both by SEMCOG and MDOT. Here are links to two reports: • www.semcog.org/products/pdfs/FCPReport.2006.pdf; and • www.michigan.gov/mdot/0,1607,7-151-9621_11041_14581_14583_41672-,00.html.

Category: Responsibility for Planning of Operations/ITS Question: Are output or outcome measures collected and reported?	
National Scan Participating Organization	*Response*
CalTrans	Both are reported.
Illinois DOT	Until recently the focus was on output measures. IDOT is now looking at congestion, reliability and clearance times.
Maryland SHA	Both are reported. Outcome measure is incident clearance time. Travel time reliability is intended to be reported in the future. They are watching the NTOC Performance Measures activities and they hope there are national standards for Traffic incident Management (TIM) measures developed by NTOC.
PennDOT	Output only currently.
RIDOT	Both outcome and output.
Utah DOT	Both outcome and output.
Tennessee DOT	Output only currently.
Washington State DOT	Both outcome and output.
HRPDC	VDOT reports on output data.
MAG	AZDOT has data on service patrols, DMS usage and incident duration. MAG does not usually access the data but can obtain it when needed. MAG collects travel time data annually using floating cars.
MARC	Scout report output data on incidents and service patrols and outcome data on incident duration. Travel time is not yet tracked.
Portland Metro	Travel time and reliability are reported along with TMC output data.
SEMCOG	Now that they are collecting operational data from MDOT, they are looking at the use of travel time information to calculate travel time index and other mobility measures. MDOT has recently started producing performance measure reports from the MITS Center. These reports focus on service patrol activity, use of Dynamic Message Signs and other activities related to incident management.

Category: Responsibility for Planning of Operations/ITS Question: If so, how are the measures reported and how frequently?	
National Scan Participating Organization	*Response*
CalTrans	The Traffic Operations Division is currently developing an Annual Performance Report, the prototype is titled "The State of the System."
Illinois DOT	Real-time data is reported on www.gcmtravel.com. The GCM web site includes reports on travel time, congestion, incidents, construction, special events, DMS messages, highway advisories and weather. Customer satisfaction data is not regularly collected, though a major on-line survey was conducted jointly with RTA in late 2004 to assess user satisfaction with the travel information products offered to customers. Reliability is calculated from travel time data, and reported routinely on the www.gcmtravwel.com and www.gcmtravelstats.com web sites.
Maryland SHA	University of Maryland provides an annual report. There are quarterly updates available internally.
PennDOT	No regular reporting currently.
RIDOT	Variety of graphic and tabular formats are shown on the web site.
Utah DOT	Performance measures are reported monthly. UDOT is installing PeMS, a performance measurement system developed for CalTrans. UDOT has included reporting of performance measures (and management of PeMS) in a contract with Traffic.Com.
Tennessee DOT	No regular reporting currently. They plan to measure travel time, delay, and incident duration in the near future.
Washington State DOT	They work with the University of Washington, who provides quarterly reports. Data is available on-line anytime for internal use.
HRPDC	They receive VDOT TMC reports monthly.
MAG	AZDOT can report monthly.
MARC	KC Scout provides weekly, monthly and annual reports. MoDOT also uses Scout data for their monthly Tracker (formerly Dashboard) reports.
Portland Metro	All operations data is archived in a data warehouse managed by Portland State University. There is an on-line portal (password protected) that allow operating agencies to have access (portal.its.pdx.edu). Reports are available weekly. TransPort is updated in their monthly meetings.
SEMCOG	Now that they are collecting operational data from MDOT, they are looking at the use of travel time information to calculate travel time index and other mobility measures. MDOT has recently started producing performance measure reports from the MITS Center. These reports focus on service patrol activity, use of Dynamic Message Signs and other activities related to incident management.

Category: Responsibility for Planning of Operations/ITS Question: Is this information used for planning purposes?	
National Scan Participating Organization	*Response*
CalTrans	Yes
Illinois DOT	Yes
Maryland SHA	Yes
PennDOT	No
RIDOT	Yes
Utah DOT	No, not yet.
Tennessee DOT	Not currently, performance information will be used when it is available.
Washington State DOT	Yes
HRPDC	Yes
MAG	No
MARC	No
Portland Metro	Yes
SEMCOG	Yes

Category: Responsibility for Planning of Operations/ITS Question: If it is used for planning purposes, please explain how?	
National Scan Participating Organization	*Response*
CalTrans	They have found the productivity measure to be understandable by decision-makers. The performance measurement information was helpful in justification for the operations portions of the "Strategic Growth Plan." That Plan was embraced by the California Legislature and a bond program to fund $19 billion of CalTrans projects and programs is on the November 2006 ballot.
Illinois DOT	Congestion and incident data is used to determine the geographic areas to focus on and helps to identify problems. CATS now has access to real-time and historical data and they are using it for their Congestion Management Process.
Maryland SHA	Justification for the Program and its expansion. The Annual Report shows how CHART meets SHA Business Plan goals.
PennDOT	N/A
RIDOT	Measures are used to document the need for additional ITS deployments by showing the benefits through actual data.
Utah DOT	In the near future, UDOT will begin using congestion and crash data to identify projects for the ITS Deployment Plan.
Tennessee DOT	N/A
Washington State DOT	Congestion is considered for ranking corridors, for identifying operational problems and to help with possible solutions.
HRPDC	Delay data is used in the Congestion Management Process, congestion is used to identify problem areas.
MAG	N/A
MARC	They will use speed, travel time and volume data for planning when it is made available.
Portland Metro	Travel time data is used to calculate congestion, which is used in the Systems Condition report for RTP updates.
SEMCOG	Archived data from the MITS Center is being used to help supplement traffic counts and support travel demand modeling work. MDOT is using their performance measures in the Metro Region for operations planning.

Category: Agency Short-Range and Long-Range Plans Question: Do your short-range and long-range plans include policies, goals and objectives related to Operations/ITS?	
National Scan Participating Organization	*Response*
CalTrans	Yes, in the State Transportation Plan.
Illinois DOT	Yes, both IDOT and CATS have policies to operate and manage roadways in real time.
Maryland SHA	Yes, in the SHA Business Plan.
PennDOT	Yes, TSOP and Regional Operations Plans will serve as inputs to MPO's long-range plan. Regional ITS architecture should also provide input to plans. From TSOP and ROP's, projects will be identified and goals and objectives used to develop yearly business plans. Most metro areas are funding some level of ITS. There is less success in rural districts – it is harder to fund ITS and operations in these areas and statewide funds are more likely to be used. To the extent rural areas are interested in operations/ITS they tend to be more concerned with incident management.
RIDOT	Yes, mission, policy goals and objectives are included.
Utah DOT	No specific goals or policies in UDOT plans. There are operational goals in the UDOT Dashboard. The Dashboard tracks congestion on freeways and arterials. Both freeway and arterial data is from floating car studies.
Tennessee DOT	UDOT Long-Range Plan has policy of budgeting up to 5 percent of construction projects for ITS elements. There are operational goals in the UDOT Dashboard. The Dashboard tracks congestion on freeways and arterials. Both freeway and arterial data is from floating car studies.
Washington State DOT	Yes, the Washington Transportation Plan and the WSDOT Strategic Plan both have policies related to operations.
HRPDC	The ITS Strategic Plan has policies, goals and objectives for operations. The Plan has been adopted by the MPO.
MAG	Long-Range Plan has a section on Operations with polices and goals.
MARC	Long-Range Plan has general operations policies. Goals, objectives and targets are needed.
Portland Metro	Existing RTP mentions operations, but does not have specifics. The 2008 RTP update will include a project selection process that will include operations projects.
SEMCOG	TIP and Long-Range Plan do have Operational and ITS components. There are goals related to congestion with operations as an emphasis area. Are incorporating Operational considerations into priority corridor definition. It is anticipated that a Regional Operations Committee will be formed as a result of the Concept of Operations and that this committee will provide input to the plans. See pages IX, 13, 25, 26, 31, and 46-51 in the SEMCOG RTP report. http://www.semcog.org/Products/pdfs/2030rtp_main.pdf.

Category: Agency Short-Range and Long-Range Plans Question: If so, are specific measures of benefits considered when programming the STIP/TIP or LRTP?	
National Scan Participating Organization	*Response*
CalTrans	The State Transportation Plan is a high-level plan. Operations is mentioned but no specific goals are included. Specific operational goals and targets are included in the TMS Master Plan and the TMS Action Plan.
Illinois DOT	No specific goals or targets are included presently. IDOT is moving in the direction of creating targets and systematically measuring performance, but they are not there yet.
Maryland SHA	Yes
PennDOT	No specific goals.
RIDOT	Yes
Utah DOT	UDOT conducted a study of the 10 most effective project types, traffic signal timing was number one. The measures are used to sell the benefits of the ITS Program.
Tennessee DOT	No specific goals.
Washington State DOT	Yes there are specific goals for those policies. For example a goal for clearing any incident is 90 minutes.
HRPDC	Specific targets will be included in the Regional Concept when it is completed in 2007.
MAG	The Regional Concept of Operations has specific targets on many aspects of operations.
MARC	Not in Long-Range Plan. OGL has specific performance measures related to emissions and delay reductions for arterials.
Portland Metro	The current TIP criteria prioritize projects that reduce V/C ratios and vehicle hours of delay (based on the model). Some criteria also credit projects, qualitatively, for increasing reliability and for projects that utilize TSMO or ITS elements. It is anticipated that future data/monitoring advances will enable expansion of this process.
SEMCOG	Have not incorporated specific measures yet. Looking for ways to quantify impacts and benefits.

Category: Agency Short-Range and Long-Range Plans Question: Which measures? Congestion, safety, environmental, economic?	
National Scan Participating Organization	*Response*
CalTrans	The measures are described in the TMS Master Plan, there are many.
Illinois DOT	N/A
Maryland SHA	The SHA Business Plan specific targets for incident clearance time and lane closures.
PennDOT	From PennDOT's perspective they are looking at congestion measures including travel time and reliability measures. The Federal view is that safety benefits are being underplayed. Economic development is a big issue in Pennsylvania and economic benefits are at forefront.
RIDOT	Environmental.
Utah DOT	Travel time savings and safety are measured. Safety is defined as accidents prevented (including secondary crashes).
Tennessee DOT	N/A
Washington State DOT	For congestion, WSDOT does not like the standard measures such as the Congestion Index. University of Washington is working on different ways to present congestion. They measure reliability and find it useful. WSDOT has a clearance time goal of 90 minutes for incidents.
HRPDC	Congestion, air quality impacts, safety, cost-efficiency are used in project ranking system.
MAG	The Regional Concept of Operations has specific targets on many aspects of operations including travel time reduction on freeways and arterials, incident duration and clearance time, traveler information, transit operations and customer satisfaction.
MARC	OGL has performance measures for emissions, stop delay, travel time and fuel consumption.
Portland Metro	TSMO and ITS is most closely associated with congestion management and, to some extent, safety policies.
SEMCOG	N/A

Category: Tools for Operations Sketch Planning Question: How are the measures used calculated?	
National Scan Participating Organization	*Response*
CalTrans	They primarily use two tools for calculating measures: PeMS and the Intermodal Transportation Management System (ITMS). PeMS was developed for CalTrans by a private company and Traffic Operations is process of bringing the PeMS operations internal to the Traffic Operations staff. ITMS was developed as part of the ISTEA Management Systems process in the 1990s. It is GIS-based query system with many layers of information.
Illinois DOT	Measures are not yet calculated.
Maryland SHA	Incident data is sent to University of Maryland.
PennDOT	Yes, on a project by project basis.
RIDOT	Measures are used to validate program. Benefit/cost data are shown on the web site. An annual report is issued that also includes performance measures.
Utah DOT	Has just begun to calculate measures.
Tennessee DOT	Measures are not yet calculated.
Washington State DOT	They are working on methods to quantify benefits. They do not like to measure at the project level, performance should be measured systemwide or at least at a corridor level.
HRPDC	They have used several tools to calculate benefits.
MAG	Subjective assessments so far.
MARC	OGL used spreadsheet-based calculations of benefits, with the focus on air quality. Also OGL uses benefits to screen potential projects. More detailed analysis of signal operations for Operation Greenlight are conducted using TRANSYT, PASSER and SOAP.
Portland Metro	V/C and VHD are calculated using the regional travel forecasting model.
SEMCOG	Not yet calculating measures. Looking for high-level benefits evaluation techniques appropriate for project selection.

Category: Tools for Operations Sketch Planning

Question: What tools or methods are used in the calculation?

- Manual ITS Benefits Analysis (develop own spreadsheet)
- SCRITS, other spreadsheet tools
- Regional/statewide travel demand model
- ITS Deployment Analysis System (IDAS)
- Dynasmart-P
- Microsimulation models (HCM, VISSIM, Synchro)

National Scan Participating Organization	*Response*
CalTrans	In addition to PeMS and ITMS, they have used IDAS in a few cases and a number of microsimulation products many times. There is no statewide policy on which tools to use, Districts make their own decisions on the use of tools. CalTrans has used Paramics more than any other simulation model.
Illinois DOT	IDOT has used IDAS and simulation to access impacts of specific projects, such as ramp metering and HOV lanes. Input was obtained from the regional travel demand model.
Maryland SHA	UMD uses spreadsheets to calculate benefits.
PennDOT	Synchro is being used for signalized corridors and arterial corridors. PennDOT is not doing too much B/C analysis on operations/ITS. Cost is relatively easy to come up with but benefits are difficult. For many arterial corridor projects B/C analysis is being done. Analysis is most solid where before and after data are available. It is easier to measure delay and travel time savings for these projects and it is done regularly and programmatically. It is much harder to obtain benefits data on freeway/ITS side.
RIDOT	Incident management statistics are calculated through the database and displayed on the web site.
Utah DOT	The latest study used microsimulation to assess the effects of incidents and the use DMS and surveillance cameras. Utah DOT is now using GIS analysis of crash and congestion data to identify ITS needs at the system level statewide.
Tennessee DOT	N/A
Washington State DOT	To date they have used regional travel demand models with manual analysis to calculate benefits. They plan on using microsimulation for testing ITS during a construction project.
HRPDC	They always conduct before and after travel time studies for major projects. They have used IDAS to calculate benefits, and they have used CORSIM and will use Dynasmart-P.

Category: Tools for Operations Sketch Planning

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- Regional/statewide travel demand model
- ITS Deployment Analysis System (IDAS)
- Dynasmart-P
- Microsimulation models (HCM, VISSIM, Synchro)

National Scan Participating Organization	*Response*
MAG	They plan on using IDAS for benefits analysis.
MARC	Manual methods.
Portland Metro	Travel demand model.
SEMCOG	Tried using IDAS but found hard to use. May look into in the future. SEMCOG uses CORSIM/NETSIM. MDOT is using VISSIM in the Metro Region.

Category: Tools for Operations Sketch Planning Question: Are the tools you use effective in evaluating operations/ITS projects?	
National Scan Participating Organization	*Response*
CalTrans	They have not used any products enough to determine effectiveness. They are generally pleased with PeMS and satisfied with ITMS.
Illinois DOT	Yes, they should use the tools more often.
Maryland SHA	Yes
PennDOT	N/A
RIDOT	N/A
Utah DOT	Yes
Tennessee DOT	N/A
Washington State DOT	Somewhat, improvements are needed.
HRPDC	They found that IDAS was not accurate enough for air quality calculations and that a significant amount of post-processing was needed. They are going to use Dynasmart-P soon and they believe it will be more accurate.
MAG	N/A
MARC	N/A
Portland Metro	No. Simplistic assumptions are made regarding the capacity benefits of projects such as signal timing and interconnection.
SEMCOG	N/A

Category: Tools for Operations Sketch Planning Question: If none of these tools are being used, what current tools might you adapt to evaluate operations/ITS projects?	
National Scan Participating Organization	*Response*
CalTrans	N/A
Illinois DOT	N/A
Maryland SHA	N/A
PennDOT	Is not that familiar with ITS/Operations tools such as SCRITS, IDAS and Dynasmart-P. Does look at ITS cost and database information. It is hard to translate project-specific benefits from the Federal database to ITS project planning in PA.
RIDOT	Do not need new tools – adapt existing ones.
Utah DOT	N/A
Tennessee DOT	TDOT is considering IDAS
Washington State DOT	None
HRPDC	N/A
MAG	IDAS
MARC Planning to incorporate IDAS	Portland Metro
Conversion from EMME/2 to VISSIM is underway.	SEMCOG
Looking into various tools. No decision has been made.	

Category: Tools for Operations Sketch Planning Question: Do you believe it would be better to improve existing tools or to adapt to tools tailored to evaluating operations/ITS?	
National Scan Participating Organization	*Response*
CalTrans	They will look at expanding PeMS capabilities. Basically they do not need more tools, they need to use the tools they have better.
Illinois DOT	Existing tools are good, however they can always be improved. IDOT needs to use the tools more often to learn how to use them better.
Maryland SHA	Tools can always be improved.
PennDOT	Would prefer an existing tool that would allow you to customize the benefits data for PA. It should be easy to use.
RIDOT	Do not need new tools – adapt existing ones.
Utah DOT	Ready to begin using PeMS, they hope be able to forecast traffic.
Tennessee DOT	No opinion.
Washington State DOT	No opinion.
HRPDC	No opinion.
MAG	No opinion.
MARC	No opinion.
Portland Metro	If TSMO/ITS projects are being compared directly against "conventional" projects, improving existing tools is necessary. If TSMO/ITS projects are competing only among themselves, it would make more sense to adapt to those special tools. So, in my opinion, it depends on the agency's approach.
SEMCOG	No opinion on specific question. Notes that no matter what tool is used, good empirical data are needed to support tools.

Category: Tools for Operations Sketch Planning Question: If your agency has adopted the use of planning tools for operations, what group or individual was the champion? How was this accomplished?	
National Scan Participating Organization	*Response*
CalTrans	Traffic Operations has championed PeMS and the use of microsimulation. Transportation Planning led the development of ITMS.
Illinois DOT	The ITS Office was the champion of using tools to access operations project impacts.
Maryland SHA	CHART program.
PennDOT	N/A
RIDOT	TMC is champion. The MPO is on all committees related to ITS planning.
Utah DOT	Traffic Management Division.
Tennessee DOT	N/A
Washington State DOT	N/A
HRPDC	The Operations Management and Studies Group with the HRPDC staff.
MAG	N/A
MARC	N/A
Portland Metro	N/A
SEMCOG	MDOT championing use of sophisticated microsimulation tools.

Category: Tools for Operations Sketch Planning Question: If not, will your agency formalize the use of planning tools for operations within the next two years? If so, who is the champion? How will the process be set in place?	
National Scan Participating Organization	*Response*
CalTrans	N/A
Illinois DOT	N/A
Maryland SHA	Not sure.
PennDOT	No timeframe at this point.
RIDOT	N/A
Utah DOT	Traffic Management Division.
Tennessee DOT	Long-Range Planning.
Washington State DOT	Maintenance and Operations, they would like to see more standard accepted values of benefits developed nationally.
HRPDC	N/A
MAG	ITS Program in MAG. Adoption of IDAS will likely be tied to a larger GIS project. MAG needs guidelines and tools to assess the value of individual device locations, particularly DMS or cameras.
MARC	MARC staff.
Portland Metro	If IDAS is incorporated into Metro's suite of tools, it would be because of pressure from the regional ITS coordinating committee, channeled through Metro's operations staff person.
SEMCOG	Will definitely be within five years, not sure about two. Need to address infrastructure for collection and storage of large datasets.

Category: Tools for Operations Sketch Planning

Question: What are some of the barriers to developing operations/ITS projects?

- Lack of analytical tools and methods
- Lack of dedicated funding source
- Lack of knowledge and understanding of projects within organization
- Lack of data to evaluate cost-effectiveness of projects
- Diffusion of responsibility between different departments
- Competition or lack of cooperation between departments
- No resources available for planning, design and/or deployment
- Lack of trained personnel
- Others

National Scan Participating Organization	*Response*
CalTrans	Several issues including: Operations has not show enough progress/benefits, operations is alien to engineers (system builders), operations and capital improvement processes are very different, the DOT Business Model is antiquated (does not account for O&M), DOTs do not believe that efficient operations can make enough difference, and DOTs cannot attract and retain quality staff.
Illinois DOT	Several issues including: the agency culture of capital projects, not operating existing projects; lack of experience with using analytical tools; lack of trained staff in the specific tools; lack of time and staff to use the tools; lack of a dedicated funding source for operations.
Maryland SHA	CHART has solved their implementation problems by having a dedicated Operations/ITS budget. Before having their own budget many road projects had ITS elements that got cut when budgets were tight.

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National Scan Participating Organization	*Response*
PennDOT	The major barrier to raising the priority of operations/ITS is the inability to effectively and objectively communicate the needs and benefits to decision-makers. The root causes of these difficulties are that we do not have the technology infrastructure in place to develop an operations measure to establish the needs nor is it easy to demonstrate the benefits as mentioned previously. Decision-makers understand measures like "IRI" and "Number of Structurally Deficient Bridges"; we need to develop a performance measure that is as easily understood as these. Also a lack of dedicated funding source is a barrier. PennDOT has a statewide appropriation for transportation technology that includes ITS/Operations. It does not fund all statewide needs and is intended as jumpstart effort until long-range source is in place. This has not happened yet. Additional barriers are the lack of good analytical tools, knowledge of operations projects within the agency and benefits data. PennDOT and MPOs are not using Regional ITS architectures to fullest benefits. A lot of good information is hidden and buried – should be using as planning tools. Need to look at architecture and pull as much from them as they can. Did not have operations concept and functional requirements at top level when architecture started. The architecture effort was good at identifying information flows. PennDOT is developing a Statewide Operations concept. PennDOT and MPOs need to incorporate regional ITS architectures into their business planning and follow processes that have been laid out.
RIDOT	Lack of analytical tools and methods, tools are too hard to use. Lack of dedicated funding source. Lack of knowledge and understanding of projects within organization. Diffusion of responsibility between different departments, TMC has over time gained respect and cooperation of other departments and generally works well with them.
Utah DOT	They need ITS champions outside of UDOT, they have difficulty educating other agencies about the benefits of ITS; increasing funding for operations and maintenance is a challenge.

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- No resources available for planning, design and/or deployment
- Lack of trained personnel
- Others

National Scan Participating Organization	*Response*
Tennessee DOT	TDOT has internal support for operations and they have developed partnerships with other agencies. They need more support for continuing Operations and Maintenance funding, the backlog for capital funding hurts O&M, urban sprawl means capital needs may never catch up.
Washington State DOT	Time and work force resources are needed. Operations staff views planning as taking away from their time needed to conduct operations.
HRPDC	Accuracy of data available for planning use, MPO staff resources and lack of training on tools at the local level.
MAG	Lack of a dedicated funding source for O&M.
MARC	Operations has high institutional overhead, meaning agencies are still project-oriented not focusing on operations, budgets and staff are not available for operations.
Portland Metro	Operations/ITS is a new or different concept to many local decision-makers, which represents an obstacle or barrier to adoption. There is little doubt that these strategies are cost-effective so the lack of use of IDAS or other benefit/cost tools seems moot. Besides familiarity, there is uncertainty about how to fund these projects, whether it should be from general transportation funds or if a sub-allocation should be made at the regional level. Furthermore, ITS has been emphasized heavily in the past so there is some work to be done to clarify the relationship between TSMO/Operations and ITS (i.e., they are not interchangeable as the use here of "operations/ITS" would suggest).
SEMCOG	Lack of analytical tools and methods, lack of funding, lack of knowledge, lack of trained personnel and understanding of projects within organization are all barriers. There is a large volume of data available but some uncertainty about how to most effectively use it. Interagency coordination has been a problem but has greatly improved. This mainly impacts design work, which SEMCOG is not directly involved in.

Category: Information on Planning Tools for Operations/ITS

Question: What is the best method to disseminate information on planning tools for operations/ITS?

- In-person training sessions
- Web sites
- Webcasts
- Written documents and materials
- Peer-to-peer meetings
- Conference sessions and presentations
- Other
- Others

National Scan Participating Organization	*Response*
CalTrans	It depends on the type of tool and how familiar the staff is with that tool. All of the above methods may be useful.
Illinois DOT	In-person training is the best method. Webcasts or webinars are also helpful. They like to volunteer for Federal pilot training projects, it keeps costs low.
Maryland SHA	It depends on the type of tool and how familiar the staff is with that tool. All of the above methods may be useful.
PennDOT	The most effective tool for disseminating information is FHWA ITS specialist who is proactive in looking for information and passing it along to PennDOT. Current rep is very good at making sure PennDOT has information. It is hard for PennDOT staff to find information since they have to worry about day-to-day activities. Rely heavily on FHWA input to find things. Webcasts are effective. PennDOT has difficulty funding travel to conferences.
RIDOT	In person training sessions are best. Peer-to-peer meetings and conferences are also good.
Utah DOT	It depends on the type of tool and how familiar the staff is with that tool. All of the above methods may be useful.
Tennessee DOT	TDOT likes the NHI courses they have taken. They like to hear presentations from vendors on new products and peer-to-peer exchanges are helpful.
Washington State DOT	It depends on the type of tool and how familiar the staff is with that tool. All of the above methods may be useful.
HRPDC	In-person training is the best method. Peer-to-peer meetings and webcasts are also beneficial.
MAG	It depends on the type of tool and how familiar the staff is with that tool. All of the above methods may be useful. They also believe user groups are helpful.

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- Webcasts
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- Peer-to-peer meetings
- Conference sessions and presentations
- Other
- Others

National Scan Participating Organization	*Response*
MARC	It depends on the type of tool and how familiar the staff is with that tool. All of the above methods may be useful. They have used on-line training and webinars in addition to in-person training.
Portland Metro	E-newsletters (like TRB) are helpful. Webinars are too long. Metro is planning a local conference/event to educate decision-makers about ITS.
SEMCOG	In-person training is good if geared toward the state and local issues. Not as good if is generic. Training sessions should be offered in conjunction with major conferences. This would make it easier for technical personnel to obtain permission to travel. Web sites and webcasts are effective also.

A. List of Interview Questions

Interview with _____ Agency _____

Title _____ Date _____

Phone _____ E-mail _____

Responsibility for Planning of Operations/ITS

- What division is responsible for planning for Operations/ITS?
- How are the results of operations planning handed off to design or construction?
- Do planning staff continue to participate as projects advance to next stages?
- Are these activities conducted at the Central Office or at the District/Region level?
- How would you characterize your agency, centralized or decentralized?
- Is there a regional or statewide Operations/ITS Committee that meets regularly? Are participants internal or external to your agency?

Performance Measurement

- Does your agency collect data on Operations/ITS activities?
- Which activities? Service patrols, DMS usage, incident duration or clearance, travel times, customer satisfaction?
- Are output or outcome measures collected and reported?
- If so, how are the measures reported and how frequently?
- Is this information used for planning purposes?
- If so how?

Agency Short-Range and Long-Range Plans

- Do your short-range and long-range plans include policies, goals and objectives related to Operations/ITS?
- If so, are specific measures of benefits considered when programming the STIP/TIP or LRTP?
- Which measures? Congestion, safety, environmental, economic?

Tools for Operations Sketch Planning

- How are the measures used calculated?
- What tools or methods are used in the calculation?
  - Manual ITS Benefits Analysis (develop own spreadsheet)
  - SCRITS, other spreadsheet tools
  - Regional/statewide travel demand model
  - ITS Deployment Analysis System (IDAS)
  - Dynasmart-P
  - Microsimulation models (HCM, VISSIM, Synchro)
- Are the tools you use effective in evaluating operations/ITS projects?
- If none of these tools are being used, what current tools might you adapt to evaluate operations/ITS projects?
- Do you believe it would be better to improve existing tools or to adapt to tools tailored to evaluating operations/ITS?
- If your agency has adopted the use of planning tools for operations, what group or individual was the champion? How was this accomplished?
- If not, will your agency formalize the use of planning tools for operations within the next two years? If so, who is the champion? How will the process be set in place?

Barriers to developing Operations/ITS projects

- What are some of the barriers to developing operations/ITS projects?
  - Lack of analytical tools and methods
  - Lack of dedicated funding source
  - Lack of knowledge and understanding of projects within organization
  - Lack of data to evaluate cost-effectiveness of projects
  - Diffusion of responsibility between different departments
  - Competition or lack of cooperation between departments
  - No resources available for planning, design and/or deployment
  - Lack of trained personnel
  - Others

Information on Planning Tools for Operations/ITS

- What is the best method to disseminate information on planning tools for operations/ITS?
  - In-person training sessions
  - Web sites
  - Webcasts
  - Written documents and materials
  - Peer-to-peer meetings
  - Conference sessions and presentations
  - Other

B. Interview Contact List

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PennDOT

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RIDOT

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