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Intelligent Transportation System (ITS) Activities and Needs in IDOT District Offices

By
Jeremy R. Chapman
Rahim F. Benekohal

A study conducted by
Traffic Operations Laboratory
Department of Civil and Environmental Engineering
University of Illinois at Urbana-Champaign

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16. Abstract

While most of the ITS activities are a part of Gary-Chicago-Milwaukee (GCM) Corridor project, there are many other ITS projects throughout Illinois. This study summarizes the needs, current and planned ITS activities in IDOT District Offices. Interviews were conducted with key District personnel involved with ITS. The districts are looking to ITS as a tool to get more done and improve their services to the public, however, they are making decisions based on limited information they can get. The districts are very concerned that new ITS projects are being handed down with only construction funds. This poses a concern because ITS installations will need maintenance, but those funds are not provided, and will have to trade off with existing maintenance needs. The districts are very concerned with their workloads. ITS is becoming an additional responsibility for existing employees who were already overworked. Districts are implementing various levels of ITS on their own initiative, and there are many projects that each district would like to use ITS as a part of. The districts are learning about ITS applications from vendors who are trying to sell products. Several recommendations are made to deal with these issues

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INTRODUCTION

There are many ITS related activities in Illinois and most of them are conducted or sponsored by IDOT. Within IDOT itself, there are many ITS activities that are done by different offices. While most of the of the ITS activities in Chicago area coordinated by the ITS Office as a part of Gary-Chicago-Milwaukee (GCM) Corridor projects, there are other activities that are not a part of GCM. There are also many activities within IDOT that are outside of Chicago area. There is no single document to provide information on all ITS activities within IDOT. The purpose of this study is to compile information on the needs, current and planned ITS activities in IDOT District Offices.

STUDY APPROACH

The key individuals and offices that were involved with ITS projects or were planning ITS projects needed to be identified. On September 2000, we made a presentation to the top management at IDOT and recommended establishing of a statewide ITS committee. Subsequently, Director of Highways established an ITS Coordinating Committee that has a representative from each IDOT District. The ITS Coordinator Committee representatives were:
- District 1: Ken Jonak
- District 2: Kevin Marchek
- District 3: Dan Devine
- District 4: Randy Laninga
- District 5: Carl Phillips
- District 6: Bill Davison
- District 7: Steve Miller
- District 8: Jennifer Obertino
- District 9: Kevin Grammer

In spring 2001 arrangements were made to meet with these individuals and interview them. The key contact person at each district was the ITS Coordinator. In most of the Districts, the Coordinators invited other IDOT personnel to participate in the interviews. The goal of the interview was to collect information on project goal, description, current status, cost, source of funding, findings, main emphasis area within ITS, effectiveness of the ITS project, and their experience with the project. A copy of the questions asked is given in Appendix A This report summarizes the results of the interviews. It is pretty much organized by the order the questions were asked.

SPECIAL CHARACTERISTICS OF IDOT DISTRICTS

ITS technologies can be used more effectively to manage transportation challenges when the unique characteristics of the region they are implemented are considered. We were interested in finding out what each IDOT District considers to be the unique characteristic for that district. Question Number 4 asked, "What special characteristics does your geographic area have?" The responses are presented separately for each district primarily because the characteristics are distinct, and the categorization is needed for better evaluation of the information.

District 1

This district is comprised mainly of the City of Chicago and the surrounding suburbs. There are also rural areas in both Kane and Will Counties to consider besides the heavy urban areas. Additionally, this district works extensively (and cooperatively) with the City of Chicago, the Chicago DOT, and there are also some "tricky" political divisions to work within.

The Gary-Chicago-Milwaukee (GCM) corridor, and additional partnerships with Indiana and Wisconsin all place District 1 in a unique position. They have significant levels of interstate truck traffic that follows the GCM corridor through Chicago as it goes around Lake Michigan. Truck traffic is not limited to just interstate routes however. There are significant levels of intermodal truck traffic originating in or around the City of Chicago, which then heads out on the interstates as well. These interstate routes, however, also provided for another political subdivision in the Tollway Authority. Additional pressures are placed on this highway system every time there is a special event in the downtown area. Concerts are common, as are major sporting events (Chicago has an NFL team, 2 Major League baseball teams, an NHL team, and an NBA team) that results in almost daily additional event traffic generation.

Beyond the interstate system, district 1 works with all of the applicable political subdivisions to maintain a massive public transportation system (which includes both buses and light rail) between the suburbs and the downtown central business district. This transportation system also connects everyone to the two major airports in the area (O'Hare and Midway). The final "unique" problem faced in District 1 is that there is virtually no frequency bandwidth left for use new wireless technologies, so they are forced to hardwire almost everything.

District 2

This district share borders with Iowa and Wisconsin, so they work frequently in cooperation with other states as well as the municipalities and counties within their boundaries. There are two significant, distinct, urban areas, which are the Quad Cities and Rockford. In the Quad Cities, there are five Mississippi River crossings in the freeway system. The maintenance of these crossings is shared between Iowa and Illinois, and must be coordinated accordingly. Beyond the two urban areas of the Quad Cities and Rockford, this district is now facing the continuation of urban sprawl out of the Chicago suburbs. This sprawl is now moving into the easternmost portion of the district in the DeKalb and Sycamore areas.

District 3

This district has a unique situation in that they handle a significant amount of Chicago interstate traffic and I-80 alone has approximately 25% truck traffic. This situation is very unusual, and puts excessive wear on "standard-design" interstate pavements. Their location is somewhat centralized, and they have the I-39 (Illinois river) bridge which is 1.5 miles long and it experiences periods of high wind conditions due to its high elevation over the river, and the exposed nature of the entire span. They also have a border with Indiana and have to communicate effectively regarding US-24 & also maintain the weigh station on Indiana border. IL-17 has had increased truck traffic as well as another route to Chicago. The border of district is very close to Chicago and the urban sprawl of the suburbs is entering the district from the north. District 3 is also responsible for the Kankakee and Bloomington-Normal metro areas, and has been decided upon as the most likely site for the 3rd Regional Airport.

District 4

This district is somewhat unique in that contains no weigh stations. Additionally, the bridge to Gulfport, Iowa is the only Mississippi River crossing in the entire district. The Illinois River cuts through the district, but there are very few river crossings. This can become a difficult situation when construction or emergency situations dictate the need for alternate routes. The other major situation that District 4 has to deal with is a main rail line and switchyards. These lines are located in East Peoria, and with 3 major at-grade traffic crossings, traffic can be tied up for significant periods of time.

District 5

This district is faced with several very unique features. Within the district boundaries are both a nuclear power plant and a munitions dump (which is also a hazardous materials disposal site). Despite this district being primarily rural, it has the second-most interstate lane miles in the state (second to District 1). Interstate 70 enters this district from the east (from Indiana), and a Port of Entry is maintained at that point. With all of those interstate miles maintained, there are also 8 rest areas in the district that are all equipped with real-time weather information for travelers. The other area of potential concern is that the lower third of the district is in the Mid-America earthquake zone.

District 6

The most unique feature about this district is that it is very spread out. The district office is located approximately 100 miles away from it furthest urban area. The city of Quincy, IL, which lies on the Mississippi River, is this city. The other interesting (and challenging) features of this district are: the Interstate 55 corridor, which is the main route between St. Louis and Chicago, and that the Central Office for IDOT and the state government offices are both located in Springfield, which is where the District 6 office as well. The proximity of these additional offices tends to lend an additional level of input to any project.

District 7

This district has a few unique characteristics. Most importantly, the district consists of mostly small towns with only one or two traffic signals per town. The other unique aspect of these signals is that ALL traffic controllers in the entire district are Eagle brand controllers. Approximately 5 or 6 traffic signals in all of District 7 are not on state routes, which can lead to a lot of work, considering the spread-out nature of the district. Despite this amount of work, there are only two people running all of operations for District 7, and (at the time of the interview) one will be retiring soon.

District 8

This district is very unique in that it shares a very large metropolitan area with an adjoining state. The St. Louis / East St. Louis interstate loops system (IDOT / MoDOT joint work) are part of this interagency cooperation. There are several bridges crossing the Mississippi river, which are shared between the states, and also in the Emergency Patrol Vehicle (EPV) patrol areas. Some of these patrols operate 24 hours a day, 7 days a week. The patrol vehicles attempt to keep traffic flowing along the interstate routes at all times, especially in the bottleneck areas and on the bridges.

District 8 has also been one of the more innovative districts, and is trying to embrace proven new technologies, and incorporate them into the existing system of about 280 emergency call boxes (many of which have been in place for approximately 30 years). Finally, as part of a new joint program with the Missouri Dept. of Transportation, the web site: www.gatewayguide.com has gone operational, and there has been a lot of good interaction with MoDOT for ITS on a team approach.

District 9

The southernmost district in the state, District 9 has many high-speed rural intersections to deal with. Fortunately, their main office location is very central. They have to deal routinely with other states to maintain shared bridges along both the Kentucky and Missouri borders, and these bridges are in constant threat of barge collisions whenever the weather becomes prone to producing fog.

MAIN CHALLENGES FOR DISTRICTS

Short-Term Challenges

Each IDOT has its own unique characteristics and that imposes transportation challenges that may be unique. Of course there are common challenges that are district are facing, but we wanted to find out what are the main challenges for each district in the short term. Question 5 asked " What are the main challenges anticipated for your area in the short-term (present to 5 years)?"

There are many challenges that were identified as the main challenges for the districts in the next five years. Most of these involve reconstruction of various parts of the Interstate system. Interstate 70 is going to have 22 miles reconstructed, and the main challenge there is going to be the traffic management and emergency services. In the Champaign-Urbana and Danville areas, traffic congestion and truck routes are a major challenge. A

construction project along Interstate 74 is going to spend $385 million with between $4 & $10 million for ITS work alone. Interstate 190 is being extended to Chicago O'Hare International Airport. The Kingery Expressway is being reconstructed. The "Complex" and the "Tri-Level" interchanges are going to be reconstructed. There is a bridge reconstruction project in Quincy, and another bridge project over the lake south of Springfield that may prove troublesome with commuter traffic. Interstates 55 & 74 will both be under construction in Bloomington. A significant project involving IL-34 conversion from urban to metropolitan area; a major communications study is being undertaken; and Edwardsville 157 & 159 both under construction simultaneously.

General concerns are that there is just a general lack of capacity on the Interstate system and more lanes are needed to accommodate growing traffic demand. To make this situation worse, the existing mass transit systems are not or cannot be frequently utilized to reduce the automobile traffic demand. Additionally, to compound these problems, all of this work has to be done as experienced staff either retires or leaves for private consulting work due to the strong job market.

Other concerns that were uniformly expressed were a desire for ITS training and/or funding guidelines from the Federal government, and a desire for a major improvement of the statewide Sign Inventory Database, and the inclusion of traffic signals in that system into a easy-to-use "web-based" system.

Some districts are also going to be installing or are already in the process of installing automatic switches and detectors for railroad (approximately 8 blank-out signs in one location), and another district is adding 2 new railroad pre-emption systems. Other related concerns are emergency vehicle pre-emption costs, and the costs associated with telephone access to maintain remote access for the monitoring of traffic signals.

Additional concerns include the installation of a vehicle detection system, cameras & dynamic message signs in a specified focus area from the Mississippi River to Interstate 55, the implementation and support of a "smart" map with bus transit, and continued cooperation and partnership with the DOTs of neighboring states, respectively. The continued growth at the Quad Cities International Airport as well as a feasibility study for the Interstate 74 corridor in the Quad Cities are also reported as upcoming challenges.

Finally, there is a growing need for incident management on Interstate 90 between Interstate 39 and the Wisconsin border. IL-13 is also going to face significant work in the next 5 years with the challenge of construction zone management for the reconstruction of the I-57 / IL-13 interchange, bridges, railroad bridge, grade realignment, etc, and signalization from Murphysboro to Marion (where there is currently no available ROW). There is also going to be the construction of a downtown Carbondale railroad underpass.

Long-Term Challenges

To find out what are considered to be the long-term main challenges for the districts, we asked them the following questions: "Question 6: What are the main challenges anticipated for your area in the long-term (5 years or more)?" The main challenges for the long-term are similar to the short-term, and are mostly massive reconstruction efforts. Reported was the major rehabilitation of all Interstates, the reconstruction of the Dan Ryan and Kennedy expressways, upgrading existing roadway corridors to provide direct routes from Peoria to Chicago and Peoria to Quincy, expansion of US-20 to a 4-lane divided facility from Freeport to Galena, the construction of a new river bridge, a new bridge along a new alignment at Cape Girardeau, the 3rd Chicago area airport, a high-speed rail corridor, and just keeping ahead of the growth and demand on available capacity of the roadway system.

Besides the new bridges being planned for construction, several districts expressed concern regarding existing bridges. Bridge maintenance is a large concern with several dozen major bridges in the state that are all going to need to either be repaired or replaced over the course of the next 20 to 30 years. Another expressed concern is bridge closings that occur due to barge collisions (improved communications, who did what, when, where, etc…). There are currently no on-barge collision avoidance systems, and most collisions are due to poor visibility. Another concern is the continued growth (mostly unrestricted) along Interstate 39 and in DeKalb.

Railroad concerns go beyond the new high-speed rail corridor, however, and these include upgrading train crossings and railroad pre-emption devices, and the proposed intermodal facility (rail and truck) in Rochelle.

Construction requirements for ITS are also lacking, and there is no one information clearinghouse at the state level for the answering of related questions. Beyond this, there is also a need for more operations and maintenance funding (when ITS is installed, the funding is only for the initial equipment, and not routine maintenance), and a better continuity for the planning-construction-operations phases of the work. The other concern with ITS is that in any effort to keep costs down on construction projects, the mainstreaming of ITS will lose in a tradeoff with other, "more necessary" systems.

The demand by the public for instant information via the Internet, and through in-car devices is only going to grow over the next ten to twenty years, and this needs to be kept up with, especially for the summer road construction season, and for the current road conditions as a result of winter weather. This system can only work effectively, however if there is good incident management & information sharing between districts and between states, so relationships must be maintained as well.

Some districts have more minor concerns as well, such as the need for a dedicated traffic signal engineer, phone lines to signal controllers, and portable testing equipment (conflict monitors, loop finders, ground rod testers, etc.). Additionally, districts are having

problems with maintenance (cities that are paid to handle maintenance are billing for work that is not completed) and there is currently no remedy for this problem.

Most districts also expressed interest in a computerized traffic signal database to replace and supplement the current traffic sign database.

EXPOSURE TO ITS LITERATURE

We wanted to find out how much exposure the interviewees had to ITS literature, so we asked them: "What ITS publications (if any) does your district receive / have available?" While most districts reported receiving publications related to ITS, a few reported receiving none at all. This list includes all of the publications cited by the interviewees, with the caveat that not all districts receive all of these publications.
- TRB publications (Transportation Research Records)
- Traffic Technology International
- PC Trans
- ITS International
- ITE Journal
- ITS America
- ITS World
- ITS Technology
- Parking Today
- Internet pages

HOW CAN ITS HELP

After being asked about the challenges anticipated for the future in each district, interviewees were asked about ways they thought ITS could solve these challenges. They were asked the following question: "How can ITS help solve challenges to your district?"

Some districts felt that ITS should be utilized in traffic management, primarily for providing real-time delay information, alternative routes, and road closures for construction zones and for emergency situations. In a related manner, many felt that ITS could also be beneficial in the optimization of signal & corridor progression, to aid in increasing capacity on existing roadways without adding more lanes, and to increase roadway efficiency.

The most common response for the use of ITS was for information sharing. This information sharing was on several fronts: public information dissemination (road conditions, emergency situations, detour routes, etc); inter-state cooperation regarding bridge closings, road closings, detour routes, etc.; public relations and interagency

communication & media relations; and weather stations at points to provide real-time road conditions and bridge deck conditions.

Another area that ITS could be utilized for is safety. Rest area security and monitoring could be performed remotely. Additionally, ITS could be used for video monitoring, detection and surveillance of dangerous areas of the roadway and for work zones & detour route. This could allow for improved incident response times, and decreased congestion could be achieved through the use of variable message signs, and in some cases reversible lanes.

Finally, ITS could be used for management and consolidation of the systems that are already in place; new systems like Pre-Pass; collision avoidance for barges; and more equipment (such as laptops, monitoring & testing equipment, etc.)

ITS BUDGET IN DISTRICTS

We asked what is ITS budget for their districts. No district reports having a dedicated ITS budget, and most also reported that ITS funding comes only as line items in individual projects. They indicated that a separate funding should be available for ITS projects, as discussed in the next section.

BARRIERS IN IMPLEMENTATION OF ITS IN DISTRICTS

The degree of ITS implementation in districts varied considerably and we wanted to know the perceived and actual barriers for that. So we asked them "What are important barriers that should be overcome in the implementation of any ITS project in your district?" Every district expressed that the greatest concern to the implementation of ITS in their district is a significant lack of staffing to implement and maintain the new systems.

The next major concern was a lack of training and the maintenance of a long-term knowledge base through employee retention and the need to establish an ITS information clearinghouse at the Central Office or the University for the districts to contact as needed. The employee retention problem is pointed to as a result of the current economy, and the demand for engineers with experience has inflated salaries faster than the DOT is raising wages.

Besides salaries, funding was expressed as a concern as well. There is insufficient funding to install, maintain, and upgrade ITS systems. The replacement of existing equipment draws away funding from new ITS systems, and the only money going to ITS systems comes from individual projects, and not from an annual dedicated ITS budget. Once this equipment is installed, there needs to be operations and maintenance funding dedicated to it as well. The districts also pointed out that there is a lack of infrastructure

to act as the backbone for these new ITS systems. There also is currently a lack of equipment at the district level.

The public, generally, is still uninformed of what ITS systems are now being used for and their perception mostly lies with the idea that ITS systems are "pie-in-the-sky" and "technology for the sake of technology". In some interviewees, this assumption was prevalent. The misconception about ITS need to be corrected through information dissemination, support for education and training, providing funds to visit agencies that have implemented similar ITS project, and opportunities to learning from peers experience and know-how. There were a few examples of how Illinois benefited from such activities, but the need to do more was very obvious.

Other concerns lie with the IDOT internal organizational structure. The most common suggestion was that the Division of Highways and the Office of Planning and Programming should work more closely in development and installation of ITS systems. Another concern was that ITS activities should be moved to the forefront and be integrated into the project early on. The ITS components of a project should not be a last-minute add-on afterthought.

CHALLENGES AND EXPERIENCES WITH ITS VENTURES

Issues with Previous ITS Ventures

There has not been widespread use of ITS in districts, but some districts had experienced some issues with the previous ITS projects. We asked them " What specific issues has your district faced in previous ITS ventures?" The main concerns that the districts pointed to are the followings.

A lack of funding was a major concern. Either there was insufficient funds to do the project at all or a lack of funds to operate and maintain the project after installation. Also, the lack of funding sources that are not tied up in Central Office or the Office of Planning and Programming was mentioned.

Another issue was the lack of state standards and state specifications on ITS. Some districts had to borrow specs from other districts, cities, etc. and used them without knowing what they really meant. Also, districts did not comfortable to confirm or deny the information vendors were providing and did not know when the vendors over-stating their product capabilities.

Another issue was the lack of support and expertise to deal with the technology itself, especially for the communications side of the equipment. This leads to integration problems and difficulties in the interconnecting of systems (esp. signal systems). The lack of support and expertise from within IDOT itself produces an information overload by

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vendors and publications that the districts do not have time to sort out. Another issues mentioned was the lack of experience in how the systems work or where certain systems work better than others.

Another issue mentioned was the lack of public support for ITS projects. The public does not pay attention to signs, nor do they necessarily understand what the technology does for them. This needs to be addressed through better public relations and information dissemination through media outlets.

Solutions to the Issues

The districts had a few ideas on what they would have done differently to address some of the problems faced in earlier projects. The main suggestion is to have a Central Office clearinghouse of ITS information, where all the districts can turn at any time when they have concerns, questions, problems, etc.

Additionally, there was interest in being able to have a district-level staff member with this expertise that is assigned to ITS only, so that they are always available for projects. The need for education in ITS should not stop at this one person. Every one in the office that is involved in projects at any level should have a base amount of ITS knowledge.

It was suggested that this education could be maintained, and encouraged by several methods. The first was a rotation engineer program where employees go though training in ITS and in operations, and working at a district office. The second was by hiring experienced consultants to develop the first sets of ITS plans, and by working closely with these consultants, IDOT could gain the necessary experience and knowledge to start developing their own later.

Besides this information clearinghouse, ITS needs to moved to the forefront, such that IDOT gives top level support, and makes it well-known that everyone should care about development and use of ITS in projects. Additionally, Federal dollars should be dispersed to ITS systems that are well maintained, as a means of encouragement to developing good projects.

Issues in the Future ITS Ventures

The issues that districts pointed to as the greatest concerns for future ITS ventures are as follows. There is a need to have additional staffing to oversee the entire planning and installation process or to hire experienced subcontractors to do the work in lieu of the district office. This would also free up time for people who are currently splitting time between ITS and their regular job duties. Also, the new Illinois First projects are currently swamping the district offices, and more time (man-hours) is needed for ITS projects.

There is a need to solve funding problems and to have money that has been earmarked specifically for ITS projects. Also there is a need to have guaranteed money, staff, and time to handle the operations and general maintenance of these ITS projects upon installation.

There is a need to have specific standards for determining the appropriate technologies for each project and how these technologies are to be implemented.

There is a need to have coordination between various organizations and partnerships to better enable the effectiveness and scope of each project. The groups mentioned for involvement in these partnerships were: Illinois DOT (ITS Office and individual districts); Iowa DOT; Wisconsin DOT; private corporations and other similar groups; the Gary-Chicago-Milwaukee (GCM) Corridor project; the Tollway Authority; the Federal Highway Administration (FHWA); individual municipalities, counties, etc. Political boundaries need to be blurred (or ignored) for ITS projects because traffic problems do not normally end at these lines.

There is a need to have an improved communications staff. Since they will be handling sensitive information that demands high accuracy, the current non-technical people are a problem. They don't know when software isn't working and there is a tremendous learning curve involved regarding ITS technologies.

There is a need to have continuous training programs for the purpose of keeping up with the new technology and this is very important. Also there is need for better plan for employee retention. The current turnover rate is high, and this rapid change has led to a "brain drain" from the public to the private sector, which is detrimental to the success of ITS projects.

The need to have a better understanding of Federal mandates and the issues therein as well as the liability the district may have if an ITS project is installed that causes collisions.

There is a need to better inform the public about what each ITS venture is supposed to accomplish. Public relations are crucial, especially when introducing technology such as cameras, so that the public understands the capabilities of the cameras and what they will be used for.

ITS IMPLEMENTATION PLANS IN DISTRICTS

Short-Term ITS Implementation Plan

The districts were asked to respond to the following question "How does your district want to see ITS implemented in the short-term (present to 5 years)?" The districts had a

few ideas of how they would like to see ITS utilized over the next five years. Most of these ideas are rather simplistic, but look toward future expansion of these systems.

Signal progression and coordination, while currently a common technology, is not installed in many locations where it would be useful and is quickly becoming necessary. Additionally, traffic management and real-time traveler information are both uses that are a high priority for these districts.

Video monitoring systems at intersections, and along interstates at ramps, etc are also a technology that is currently in use but needed in many locations. Another use for video is for detection along construction zones as a replacement for loops in one-way operations. Buried loops are expensive to keep moving, and the video technology is easily portable.

Some districts want to see any new ITS funding to go to funding and upgrading existing programs, and not start installing new programs until the needed operations and maintenance costs are covered. In contrast, however, some districts want Illinois to become a leader in intelligent technologies and start testing new products on a regular basis, and become aggressive in its use of ITS.

A major request for the next five years is the development of interconnections between agencies, and the installation of conduit along highways and interstates for the development of a statewide backbone for future ITS projects. In addition to this, most districts feel that technology should be included at the early stages of the design (i.e. Phase 1 of the Project Report Checklist, not an add-on at the end).

Other ideas are: a control center, and systems integration in the Quad Cities; fiber optics between controllers, etc; and just more cell phones for district employees.

Long-Term ITS Implementation Plan

They were asked, "How does your district want to see ITS implemented in the long-term (5 years or more)?" This question was only intended to derive a wish list of ideas for where IDOT could take the future of intelligent technologies in the state. What the districts came up covers many important areas as listed below.

The installation of permanent variable message signs on bridge structures for the purpose of information dissemination to drivers regarding upcoming road conditions and emergency situations.

Information sharing through a permanent connection with neighboring states for the purpose of disseminating information about road conditions and emergency situations that occur along the border. This would allow drivers to know what to expect prior to crossing the border, and probably finding an alternative route earlier. This could extend to a complete interstate coordination system. Specifically, the need for bi-state transit and bus use coordination with St. Louis & MoDOT.

The coordination of freight with airports, railroads, trucking companies, etc is an eventual necessity and ITS would be a good mean to accomplish it.

Most districts are looking for some sort of complete fiber optic systems interconnections for ease of control and a central location from which to monitor the systems.

Another idea was for the installation of video detection systems (and sharing with the state police, with limits) for the purpose of detecting emergency situations, and watching over intersections (red-light running enforcement) and "at-risk" locations.

Some of the recommendations were not related to the technology proper, but rather to the current operations of IDOT. Districts would like to see better coordination and uniformity of all systems statewide (and for all municipalities within each district), and better funding (i.e. a statewide pot of dedicated money).

Some districts would like to see the integration of technologies and geographical information systems (GIS), and also the creation of "smart" arterials and "smart" corridors, such that changing traffic conditions can be met with an adaptive response.

Finally, some other recommendations are much more practical. Some districts would just like to see an upgrade in new signal systems, or just use ITS for a "realistic" benefit only.

NEEDS FOR ITS INFORMATION AND SOURCES

Needs for ITS Information

The interviewees were asked to respond to "What types of ITS applications would you like to receive more information on?" Most districts felt that they had the need for additional information about specific types of ITS systems. The requests, for the most part, are rather simple to fulfill.

The biggest request was better information regarding what types of work are being done. The districts would like to know what other districts are doing, and specifically the larger districts would like to know what the smaller districts are doing. The other related request was to conduct scanning tours of "real" applications (i.e. visiting other districts, other cities, other states, etc.) to see how they could be used locally.

The second major request was for up-to-date information on emerging technologies, and their applications, the corresponding products and vendors, and where they are used. Other than these general requests, there were several specific requests for information. These requests were:
- Traffic control centers, software, communicating with 9-1-1 systems
- Lane signals (advance notification of closures)

- Communications equipment (enough info to judge individual products)
- Incident management / emergency response, etc. – Joint efforts
- Lighted crosswalk – pavement embedded lights (especially for mid-block locations.)

ITS Sources for Decision Making

The participants were asked to respond to "What resources does your district have on hand to help with ITS decision-making?" The responses are listed below:
- None
- The internet (world-wide web)
- Magazines
- FHWA publications
- ITS America / ITS Midwest publications
- Vendors
- Scanning tours
- City of Bloomington

ITS EXPERTISE IN DISTRICTS

Expertise within Districts

Interviewees were asked to respond to "What expertise do you feel is available within your individual district regarding ITS?" Several individuals were named specifically, and almost all of them were members of the ITS Coordinator committee.

Expertise Available to Districts

The participants were asked to respond to " What ITS expertise is available to your district (from outside sources) at the present time?" The responses are as follows:
- Outside consultants
- The internet (World Wide Web)
- IDOT ITS Office & communications people at Central Office
- Distributors and sales reps
- GCM Corridor project
- Former employees (retired or private sector)
- Other districts
- The University of Illinois
- Scanning tours & contacts met on those tours
- Annual meetings

Expertise Needed at Districts

The responses to the question of " What expertise do you feel is currently lacking that your district would like access to, regarding ITS?" are summarized below.

The answers to this question had a wide range and reflected the diversity in the districts fairly well. Although it ranged from no concerns to a desperate need for help, the need for available experts seemed to be almost uniform. There were requests for experts in ITS funding, in ITS systems integration, and in telecommunications.

Besides available experts, the general consensus was the need for more office staff. There is a definite need for an ITS person or staff & technicians at each district office, along with a dedicated traffic signal engineer at each district office. Other requests were for more staff for the ITS Office, for more tech-savvy people, and for a dedicated Central Office person to operate an ITS information clearinghouse and facilitate information sharing between the districts on a regular basis. To support these additional staff members, there also was a request from some districts for more office space.

The need for more travel freedom for scanning tours (outside of Illinois) also was requested frequently. There was talk of visiting neighboring states (such as Wisconsin and Iowa), and also larger trips to see Salt Lake City Olympic preparations, etc.

Besides scanning tours, there is also a need for more training. While one district stated that they had no real concerns, the majority expressed that they currently have no practical experience and general knowledge only. There was an expressed need for better understanding of the communications portion of the work, as well as making sure that all employees involved in ITS have a base level of guidance and the "right" training.

The other requests were for: more direct support from the Central Office for ITS initiatives; a dedicated ITS budget; and information regarding incident management and ITS architecture.

ITS PROJECTS IN DISTRICTS

The interviewees were asked to respond to "Do you have ITS projects in the planning, design or implementation stages, or ITS projects that have already been installed? If so, how many?" Their responses are: 18 in planning, 5 in design, 10 in implementation, and 24 currently in operation. Each district was given a blank form to describe the ITS projects that are not typical signal coordination type activities. ITS activities that are going on in Chicago area are not a part of this because there is a recent report that describes them, and there is no need to duplicate that work here. These sheets were returned by Districts 2, 3, 4, 6, & 8, and the information they provided is attached to this report as they provided it in Appendix B.

CONCLUSIONS AND RECOMMENDATIONS

As a result of these interviews, several conclusions have been drawn, and through these conclusions, several recommendations have also been made.

Conclusion 1 and Recommendations

The districts are looking to ITS as a tool to get more done and improve their services to the public, however, they are making decisions based on limited information they can get. They would like to be more knowledgeable. It is recommended that district employees working on ITS projects should be able to participate in (and receive funding for) viewing tours (for exposure to existing ITS projects), as well as continuing education (including ITS and telecommunications training).

Conclusion 2 and Recommendations

The districts are very concerned that new ITS projects are being handed down with only construction funds. This poses a concern because ITS installations will need maintenance, but those funds are not provided, and will have to trade off with existing maintenance needs. It is recommended that additional funding should be available for ITS projects so that these projects are not competing for the already allocated repair and maintenance money that is in short supply.

Conclusion 3 and Recommendations

The districts are very concerned with their workloads. ITS is becoming an additional responsibility for existing employees who were already overworked. While it is understood that finding and hiring new engineers is not a quick process, it is recommended that filling empty positions should be expedited either by transferring qualified, existing employees to districts where they are more needed, or to recruit more aggressively to fill these empty positions with qualified engineers or technicians, and then provide additional training as necessary.

Conclusion 4 and Recommendations

Districts are implementing various levels of ITS on their own initiative, and there are many projects that each district would like to use ITS as a part of. It is recommended that more support at upper management level should be provided through directives, training, funding, etc.

Conclusion 5 and Recommendations

The districts are learning about ITS applications from vendors who are trying to sell products. This seems reversed from the normal process where the staff is knowledgeable

about the products before approaching the vendors. It is recommended that IDOT employees involved in ITS projects should be able to get any and all necessary information regarding the applications they are interested in through an information clearinghouse or a central office staff that is dedicated to ITS work.

APPENDIX A

DRAFT 1 – PAST, PRESENT AND FUTURE ITS ACTIVITIES IN IDOT
INTERVIEW QUESTIONS

1. Date: _____

2. Name of person completing this survey: _____

    Title: _____

Contact information:

- Phone number   (_____)   _____ - _____

- Fax number   (_____)   _____ - _____

- Email address   _____@_____

3. Name of Unit: _____

Brief description of unit's responsibilities:

_____

_____

_____

4. What special characteristics does this area have?

_____

_____

_____

_____

_____

5. What are the main challenges anticipated for this area in the short-term (present to 5 years)?

_____

_____

_____

_____

_____

_____

6. What are the main challenges anticipated for this area in the long-term (5 years or more)?

_____

_____

_____

_____

_____

7.   What ITS publications (if any) does your agency receive / have available?

_____

_____

_____

8.   How can ITS help solve challenges to your unit?

_____

_____

_____

9.   Current ITS budget: $_____

10.   What are important barriers that should be overcome in the implementation of any ITS project?

_____

_____

_____

_____

_____

_____

11.   What specific issues has your unit faced in previous ITS ventures?

_____

_____

_____

_____

_____

_____

12.   What would be done differently to overcome these issues?

_____

_____

_____

_____

_____

_____

13.   What issues are anticipated in future ITS ventures?

_____

_____

_____

_____

_____

_____

14.   How does your unit want to see ITS implemented in the short-term (present to 5 years):

_____

_____

_____

_____

_____

_____

15.   How does your unit want to see ITS implemented in the long-term (5 years or more):

_____

_____

_____

_____

_____

_____

16.   What types of ITS applications would you like to receive more information on?

_____

_____

_____

_____

_____

_____

17.   What resources does your unit have on hand to help with ITS decision-making?

_____

_____

_____

_____

_____

18.   What expertise do you feel is available within your unit regarding ITS?

_____

_____

_____

_____

_____

_____

19.   What expertise do you feel is available to your unit (from outside sources) at the present time regarding ITS?

_____

_____

_____

_____

_____

_____

20.   What expertise do you feel is currently lacking or entirely unavailable right now that your unit would like access to regarding ITS?

_____

_____

_____

_____

_____

_____

21.   Do you have ITS projects in the planning, design or implementation stages, or ITS projects that have already been installed? If so, how many?

                [   ] Planning stages
                [   ] Design stages
                [   ] Implementation stages
                [   ] Currently operational

Additionally, please complete an informational sheet about each project. Please make additional copies of the sheet as necessary.

1.   Project name: _____

2.   Lead organization: _____

3.   Project manager/contact person: _____

4.   Status of implementation:
               [   ] Proposed
               [   ] Committed
               [   ] Under Development
               [   ] Operational

5.   Starting year: _____

6.   Completion year: _____

7.   Primary project area in ITS: _____

8.   Project location: _____

9.   Project cost: _____

10.   Brief description of the project:

_____

_____

_____

_____

_____

_____

11.   Project goals:

_____

_____

_____

_____

12.   Is there a follow-up or next phase to this project? If yes, please describe.

_____

_____

_____

_____

13.   Is this project a stand-alone project, or is it part of another ITS project/program? Please describe.

_____

_____

_____

_____

APPENDIX B