Minnesota Guidestar Board of Directors'

Statewide ITS Action Plan

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Introduction

In March of 2000, the Minnesota Guidestar Board of Directors completed its *Statewide ITS Strategic Plan 2000*. This plan is the Board of Directors' guide for implementation of an integrated statewide program for Intelligent Transportation Systems. Specifically, the Strategic Plan:

1. Establishes a mission, vision and goals for ITS in the State;

2. Explores impediments and issues that need to be overcome;

3. Develops a list of actions to address issues and impediments

4. Suggests programs for deployment along with deployment strategies for use by agencies, institutions, cities and counties as a roadmap for future ITS investments; and

5. Provides a historical overview of the Minnesota Guidestar Program and the projects that have been deployed since the previous Strategic Plan was adopted in 1997.

Following the completion of *ITS Strategic Plan 2000*, the Guidestar Board of Directors requested that a detailed plan be developed to articulate specific activities that should be undertaken to support the action items that were developed as part of *ITS Strategic Plan 2000*. To facilitate the development of this action plan, the Board of Directors had two working meetings in which Board members engaged in in-depth discussions of each of the following action items:

Action Item 1: Develop high-level principles to guide ITS deployment and create criteria for measuring accomplishments

Action Item 2: Oversee development of the ITS message

Action Item 3: Communicate the ITS benefits message to all affected groups

Action Item 4: Continue to investigate ways to improve project delivery

Action Item 5: Continue to support research and operational tests

Action Item 6: Continue to support system integration and interoperability

Action Item 7: Continue to facilitate innovative program partnerships

The comments and suggestions made at these meetings were organized into specific activities to be undertaken to facilitate the implementation of an integrated statewide ITS program. The following pages outline the action items and related activities. Activities for each action item are divided into three categories, ongoing, short-term and long-term. The ongoing activities should be done on a regular basis; short-term activities should be completed within the next six to twelve months; and long-term activities should be completed within one to ten years. As a first task, agencies, organizations, individuals and groups will be assigned responsibility for these activities, based on their level of interest.

1. Develop high-level principles to guide ITS deployment and create criteria for measuring accomplishments.

ITS deployment activities receive state and federal funding. This funding, combined with efforts at the local level and through the private sector, makes up the funding for ITS projects throughout the state. Because this funding is limited, ITS efforts need to follow the principles that reflect the ITS vision for the state.

Deployment Principles

The Minnesota Guidestar Board of Directors has developed the following principles that reflect the ITS Strategic Plan as well as the Commissioner of Transportation's goals:

- Promote safe and efficient travel by improving travel times, reducing potential safety problems, reducing energy use and decreasing negative environmental impacts.
- Support a statewide communications and information infrastructure.
- Support the development of integrated regional transportation operations and communications systems.
- Support an efficient multimodal infrastructure transportation system that promotes economic development.
- Support statewide transit programs.

Deployment Criteria

In addition to providing high-level principles to guide ITS deployments, the Guidestar Board has concluded that criteria need to be established from which programs and projects can be evaluated. Having such criteria in place will allow project managers and policymakers to determine if deployment efforts have been successful. The Board has suggested the following guidelines and criteria:

- Program and project objectives should be developed prior to deployment. As the program is deployed, results should be monitored and compared against objectives.
- Baseline conditions for programs and projects must be defined before deployment so that before and after comparisons can be made. Another way to measure overall progress is to benchmark against peer cities, regions and states.
- Create program-specific measures to assess the level of effectiveness. The following should be considered:
  - Safety: measured in terms of reduction in the number of crashes, personal injury, deaths and property damage.
  - Efficiency: measured by user travel time and congestion reduction. Also includes timely deployment. A benefit-cost analysis should be used to measure cost effectiveness.
  - Quality of life: measured by reduction in environmental impacts and energy use, in less travel-related stress, and in less aggressive driving behavior.
- Program and project migration and mainstreaming targets should be developed after a program or project is determined to be successful. An annual review of targets should be conducted.

Ongoing, Short-Term and Long-Term Activities

In order to expand the high-level principles that guide ITS deployment and to facilitate development of criteria for measuring accomplishments, the following ongoing, short-term and long-term activities are suggested:

Ongoing

1. As programs and projects are deployed, results of the deployment should be compared to objectives set prior to deployment.
2. Record conditions after deployment so that a comparison can be made to baseline conditions.
3. Compare plan objectives against current status.
4. Compare schedule and mainstreaming targets against actual progress.
5. Ensure that products are compatible with the state's infrastructure.

Short-Term

1. Develop clear objectives for all programs and projects.
2. Determine what activities and programs need to be integrated and to what extent they should be integrated.
3. Conduct a comprehensive review of past ITS projects and programs to determine cost, benefits, and lessons learned and resulting deployments.
4. Develop baseline conditions for all programs and projects.
5. Create program-specific measures to assess the level of effectiveness in increasing safety, efficiency and quality of life.
6. Create a detailed plan for each project that sets a timeline, reviews financial resources, assigns task responsibilities and creates points in the process for evaluating progress.
7. Break programs into logical projects and set a realistic delivery date for each project.

Long-Term

1. If a program or project is determined to be successful, migration and mainstreaming targets should be developed. Once established, an annual review of targets should be conducted.

2. Oversee development of the ITS message.

Most transportation officials and practitioners are familiar with the term ITS; however, fewer understand what ITS aims to do. Policymakers and the driving public are even more unfamiliar with the concept. Because a broad support base is needed to further develop ITS programs and projects, it is in the best interest of the ITS community to define the concept and develop a message that is comprehensible to practitioners, policymakers and the driving public.

The Message

The Minnesota Guidestar Board of Directors has determined that the following points need to be included in the development of an ITS message:

- An estimate of the benefits of ITS by using real life examples.

- Link the message to desired outcomes such as improved safety, increased mobility, and enhanced economic productivity and development.
- Emphasize what ITS is capable of doing without focusing necessarily on the technology.
- Modify the message to fit the audience, e.g., the message to policymakers is not the same message that is given to the driving public.

Involvement of Organizations and Agencies

When developing the ITS messages, it is suggested that organizations and agencies responsible for, or familiar with, ITS deployment be contacted to provide input on the benefits of ITS and to develop a comprehensive list. The Minnesota Guidestar Board has identified the following organizations and agencies that should be approached when the benefits package is being identified:

- State agencies – The Minnesota Department of Transportation, The Department of Public Safety and MN Planning
- Local units of government – officials and practitioners
- The modal offices at Mn/DOT
- Area Transportation Partners (ATPs)
- Emergency medical service providers
- Institutions – The University of Minnesota, The Center for Transportation Studies, hospitals and medical centers
- Purveyors of mayor events and parking services
- ITS Minnesota
- Private sector companies that have completed ITS projects in the state
- National organizations – ITS America and the Federal Highway Administration
- The driving public
- Vendors

Ongoing, Short-Term and Long-Term Activities

Ongoing

- Continue to seek input on the benefits of ITS from agencies and organizations.

Short-Term

1. Contact agencies and organizations to develop a comprehensive list of benefits associated with ITS that can be incorporated into the ITS message.
2. Review reported ITS benefits from other sources (ITS America, ITS Minnesota, Guidestar program outcomes, etc.).
3. Develop a primary ITS benefits message that is flexible enough to allow it to be targeted to multiple groups.

Long-Term

- Develop ITS benefit messages that are targeted to specific groups and agencies.

3. Communicate the ITS benefits message to all affected groups.

Once the ITS benefits message is developed, it is important that efforts be undertaken to deliver the message to all affected groups (elected officials, policymakers, project managers, governmental agencies, practitioners, the media, students, vendors, and the traveling public). As mentioned in the preceding action item, it is important that the message be tailored to different groups. In addition to targeting audiences to receive the ITS benefits message, groups should be targeted to deliver the message. For example, it may be more effective for the American Association of State Highway and Transportation Officials to present information to practitioners or policymakers.

Involvement of Organizations and Agencies

The following groups should be contacted to work individually or in combination with the Guidestar Board to deliver the ITS message:

- American Association of State Highway and Transportation Officials (AASHTO)
- ITS America
- ITS Minnesota
- North Central Institute of Transportation Engineers
- County and city engineers and planners
- Mn/DOT District Engineers
- Mn/DOT's Office of Advanced Transportation Systems
- Federal Highway Administration

After the ITS message has been developed and the various groups and agencies have agreed to help spread the ITS message, forums for delivering the message should be identified. Because the message cannot always be delivered through face-to-face contact, other options need to be explored. The following methods will be useful in delivering the ITS message:

- Face-to-face meetings with interested groups and organizations
- Presentations at conferences and conventions
- Breakfast or lunch forums
- Newsletters
- Media coverage and press releases
- Presentations at schools, cities, counties and other government agencies

Ongoing, Short-Term and Long-Term Activities

Ongoing

1. Continue to update and refine a list of targeted recipients. Make sure the message that was developed for the group still applies.
2. Continue to look for appropriate venues for delivering the ITS message (conferences, lunches, forums, etc.)
3. Use the materials developed for delivering the ITS message. Refine the materials as needed.

Short-Term

1. Develop a prioritized list of targeted message recipients for the next year. Begin delivering the message to these groups.
2. Develop a list of organizations and agencies that can help deliver the ITS message. Contact these organizations and agencies to enlist their assistance.
3. Begin to develop a package for message distribution that does not necessarily require face-to-face meetings with the targeted audience.
4. Create press releases highlighting the benefits of ITS (e.g., benefits of the snowplow given the significant amount of snowfall this year).

Long-Term

1. Develop relationships with the targeted recipients. Build on these relationships to establish new ones.
2. Partner with organizations and agencies that also deliver the ITS message.
3. Have a complete package for delivering the ITS message that includes face-to-face presentations, forums, conferences, seminars, websites, pamphlets, etc.
4. Develop a list of annual forums, conferences, seminars, etc., where a booth could be set up and presentations could be made.

4. Continue to investigate ways to improve project delivery.

The Minnesota Guidestar Board of Directors knows that continued financial support for ITS depends not only on policymakers, the public, and practitioners being aware of what ITS can do, but also on project visibility. ITS projects often incorporate advanced technology and require the coordination of both the private and public sectors; projects occasionally take longer to deliver than anticipated.

Impediments

The Guidestar Board of Directors has identified the following impediments to timely deployment:

- Intellectual property issues take time to resolve.
- Burdensome procurement procedures – too many people have to sign off.
- The project identification and request for proposal (RFP) process could be improved. RFPs for ITS programs often represent a multi-year timeframe. By the time the agency gets to a specific project, the specific technology identified in the RFP may be obsolete. In addition, the RFPs are selected based on low-bid. There should be more consideration of value bids.
- In some cases, the level of knowledge of technology by those involved in the program or project is insufficient.
- Staffing problems (rotations, transfers, departures).
- Things can go wrong – the technology may not be capable of being implemented.
- Lack of interjurisdictional and interagency cooperation.
- Cultural differences between the public and private sectors.

Once impediments to delivery are identified and understood by those working on ITS programs and projects, a definition of "timely delivery" should be developed before the program or project is deployed. Timely delivery can vary by project size, level of project complexity and level of public and private sector involvement.

In order to help project managers improve delivery on a project-by-project basis, the Board of Directors has suggested the following steps:

- Break programs into logical projects and set a delivery date for each. Make sure to identify interdependencies. Set realistic timelines.
- Develop a detailed plan for program and project delivery that includes financial resources and responsibilities.
- Select appropriate points in the project process for evaluating progress. Compare to schedule developed for the project.
- Assign staff to monitor program and project progress.
- Provide a post project review that identifies "lessons learned" that can be applied to other projects or programs. Solicit input from the client and agencies involved in the project.

Ongoing, Short-Term and Long-Term Activities

Ongoing

1. Define "timely delivery" at the start of each project.
2. Break the project up into short tasks. Select appropriate points in the process for evaluating progress. Compare against the schedule.
3. Project managers should monitor program and project process.
4. Complete post-project review that identify "lessons learned"

Short-Term

1. Consider revising the request for proposal (RFP) process.
2. Break programs into logical projects and set a delivery date for each project.
3. Develop a form or select a software program that can help project managers create a detailed plan for program and project delivery.
4. Develop a post-project review that identifies "lessons learned".
5. Define and distinguish operational tests from deployment efforts.

Long-Term

1. Develop an educational program for staff to increase the knowledge base of old and new technologies and the state's infrastructure.
2. Streamline project management so that there are fewer people required to "sign-off" on a project.
3. Develop and implement standards for a statewide infrastructure.

5. Continue to support research and operational tests.

Before a product is mainstreamed into ITS deployments it has likely gone through a research and development process, including operational testing. Often, project managers and end users of the product are unaware of how deployments are developed. While, in most cases, it is not necessary for every user and project manager to understand how a product is developed, understanding the general process of basic research, applied research, operational or field testing, and deployment puts into perspective the amount of time, financial resources, and effort that is needed to mainstream ITS projects and programs. Policymakers and decision makers that control funding for ITS may be more likely to support additional funding for ITS programs if they understand how long it can take to see the benefits of an idea from concept to deployment. It may also help project managers and implementing agencies understand some of the delays that can occur when new concepts are implemented. The Minnesota Guidestar Board of Directors believes that the following steps, if taken, can create a greater understanding of the research process, and in turn create support for research and operational testing:

- Define the key components. The public and private sectors may have different definitions for basic research, applied research, operational testing and deployment.
- Define a general process. Although the private and public sectors may have different approaches to conducting research, similarities should define a general process.
- Develop a message that is focused on the importance of research and development for continued success of mainstreaming ITS programs and projects. Messages should be targeted to key audiences: policymakers who control funding, those interested in developing products, and project managers and implementing agencies.
- Develop a research strategic plan using the University of Minnesota ITS Institute's Strategic Plan as input.
- Bring good research ideas to the Guidestar Board for direction and support.

To further support greater understanding of the research process, the Guidestar Board of Directors also recommends distinguishing deployment efforts from operational testing and recommends the following:

- Define the terms operational testing and deployment. Explain how they are related and how they are different. (May want to adopt the expression pilot project instead of operational testing.)
- Develop a database that identifies and tracks operational tests. Show how some projects end at the operational testing stage and how some move on to deployment.

Strategic Partnerships

Additional support for research and operational testing can come from partnerships involving academia and the public and private sectors. Both the private and public sectors have an interest in getting ITS programs and projects mainstreamed. Efforts that are done jointly have the potential to expand research and testing, as well as expedite the transfer of research into practice. The Guidestar Board of Directors recommends the following for fostering partnerships:

- Create a list of best management practices in forming partnerships that can be used in the outreach process.
- Develop a solicitation process through Mn/DOT that would allow individuals to define a problem and present solutions to that problem.

- Identify a group to provide partnership information and place individuals in contact with agencies or firms that may be willing to engage in partnerships.
- Host forums and participate in conferences where researchers, practitioners and the private sector are together.
- Create a spot on the Guidestar Board of Directors' agendas to bring in people to talk about research partnerships that they have participated in.

Ongoing, Short-Term and Long-Term Activities

Ongoing

1. Deliver the message on research, operational testing and deployment.
2. Host forums and participate in conferences where researchers, practitioners and the private sector are together.
3. Bring in people to Guidestar Board Meetings to talk about research and partnerships that they have participated in.

Short-Term

1. Develop a glossary of the key components of research, operational testing and deployment.
2. Outline a general process for bringing a product to deployment.
3. Develop a message that focuses on the importance of research and operational testing to deployment.
4. Develop a database that identifies and tracks research operational tests.
5. Create a list of best management practices in forming partnerships.
6. Improve coordination and strengthen ITS research expertise at Mn/DOT, especially in the area of traffic, to work with researchers on the development, integration and deployment of ITS research results.
7. Generate a list of firms and agencies that are interested in partnering on ITS projects.

Long-Term

1. Develop a research strategic plan.
2. Create a solicitation process through Mn/DOT that would allow individuals to define a problem and present a solution to that problem.
3. Identify a group to provide partnership information and place individuals in contact with agencies or firms that may be willing to engage in partnerships.

6. Continue to support system integration and interoperability.

The Guidestar Board of Directors supports the development of a statewide architecture that promotes system integration and interoperability across Minnesota.

Barriers to Integration and Interoperability

Development of a statewide architecture is feasible; however, the following barriers must be overcome:

- **Funding:** There are limited funds for long-term maintenance and operation of ITS projects.

  Board Recommendation: Sell the "benefits message" in order to get additional funding for long-term operation and maintenance needs. Also encourage Mn/DOT Districts to help fund ITS implementation in their regions. Provide financial support for those that use statewide standards.

- **Staffing:** Given the shortage of personnel knowledgeable about ITS, often there is no one available to champion or mainstream ITS projects. Additionally, information may not be forwarded to those that need to make decisions on ITS issues.

  Board Recommendation: Share knowledgeable staff (Mn/DOT) with other agencies that lack trained ITS professionals. Such a person could be used to champion the mainstreaming of ITS in other agencies.

- **Knowledge:** Most transportation practitioners lack the technical understanding needed to integrate ITS projects. There is also a shortage of ongoing training for practitioners once they have entered the field.

  Board Recommendation: Find or develop training programs that can be used by those wanting to learn more about current ITS technologies. As part of the outreach process, educate vendors, managers and practitioners on the importance of integration and interoperability.

- **Technology:** Technology is rapidly being developed, but is often slow to be implemented. As a result, there are many gadgets available with no specific implementation need or plan. By the time a technology or gadget is programmed for implementation, it may not fit with the in-place system or it may be obsolete. Additional problems are created when staff does not understand the technology – they may be unaware how difficult it may be to use and integrate a specific technology.

  Board Recommendation: Develop and enforce standards that must be complied with if a technology is to be used. Set up pilot projects that have standards the private and public sectors can follow and model.

- **Institutional:** In an effort to deliver ITS programs and projects at the lowest possible cost, government officials often award contracts to the lowest bidder. While this may save some money up front, it can lead to significant additional costs and time delays if the vendor does not understand system needs. Additionally, contracts often spell out a specific type of technology instead of performance outcomes. The type of technology that is called for may be more difficult to integrate than other options available.

  Board Recommendation: Consider moving away from low-bid contracts. At the very least, make the low-bidder explain how their products comply with existing standards. Also, consider developing performance-based contracts instead of technology-specific contracts. Be committed to the development of statewide standards and architecture. Explore alternative procurement methods.

  The private sector should develop products that fit into the state's architecture. Products provided by the private sector should be high quality and be produced in a cost-efficient manner. When developing these products, manufacturers should look at proven technology as well as new technology.

Ongoing, Short-Term and Long-Term Activities

Ongoing

1. Pursue funding for long-term operation and maintenance needs.
2. Deliver the message that explains the importance of system integration and interoperability.

Short-Term

1. Develop a list of groups that should receive information on the importance of system integration and interoperability.
2. Consider revising the request for proposal process (RFP) to allow for performance-based outcomes rather than technology specific requests.
3. Consider moving away from low-bid contracts.
4. Develop a message that explains the importance of system integration and interoperability.
5. Calculate estimated costs associated with long-term operations and maintenance of products in the state's infrastructure.
6. Look at allocating funds through Mn/DOT Districts for ITS projects so that statewide use is increased.
7. Set up pilot projects that have standards that the private and public sectors can follow and model.

Long-Term

1. Develop an educational program that increases the knowledge of ITS technology and the state's infrastructure.
2. Share knowledgeable staff with other agencies that lack trained ITS professionals.
3. Develop and implement standards for a statewide infrastructure.

7. Continue to facilitate innovative program partnerships.

The mainstreaming of ITS requires the dedication of both the public and private sectors. Working together, the two will provide Minnesotans with projects that improve their quality of life, increase safety on their roadways and reduce the time they spend in congestion.

Barriers to Successful Partnerships

The Guidestar Board of Directors has identified the following barriers to successful partnerships:

- Real or perceived funding restrictions and limitations.
- The potential for funding cuts to Mn/DOT's Office of Advanced Transportation Systems.
- Protection of proprietary information.
- Project specifications in contracts are too prescriptive.
- There is no "go to" person that facilitates relationships or puts people into contact with one another.
- The public and private sectors are wary of one another. Lack of open-mindedness.
- Communication between the two sectors is not always present.

To help overcome these barriers and promote effective partnerships, the Guidestar Board of Directors recommends the following:

- Include partnership efforts in the outreach process.

- Develop and distribute literature on the creation of successful partnerships
- Work with a person at Mn/DOT to put people and groups into contact with one another.
- Continue to promote the public and private sector mix of the Board.
- Review the membership of the Board to ensure that there is adequate representation of end users, the media, local government and Mn/DOT Districts.
- Develop a more open solicitation process so that there are opportunities for individuals to define a problem and present a solution to that problem.

The Board of Directors believes that the following steps by the private sector will also promote innovative partnerships:

- Use forums to promote ITS and what it can do. Invite targeted groups to those forums.
- Continue to approach Mn/DOT and other public agencies with ideas and projects.
- Adopt and conform to public-sector standards.
- Develop the high-quality products that the pubic sector wants.
- Get feedback from consumers/end users and report the information to public agencies as well as to other private sector groups.

Ongoing, Short-Term and Long-Term Activities

Ongoing

1. Deliver the message on partnerships.
2. Host forums and participate in conferences where researchers, practitioners and the private sector are together.
3. Bring in people to Guidestar Board Meetings to talk about partnerships that they have participated in.
4. Promote the mix of the Guidestar Board of Directors so that there is equal representation of the private and public sectors.
5. Review Guidestar Board of Directors membership to make sure that groups are not underrepresented.

Short-Term

1. Create and distribute a list of best management practices in forming partnerships.
2. Generate a list of firms and agencies that are interested in partnering on ITS projects.

Long-Term

1. Create a solicitation process through Mn/DOT that would allow individuals to define a problem and present a solution to that problem.
2. Identify a group to provide partnership information and place individuals in contact with agencies or firms that may be willing to engage in partnerships.