Florida Statewide ITS Strategic Plan

Integration of ITS into the MPO Transportation Planning Process Issue Paper

1. INTRODUCTION

The Metropolitan Planning Organization (MPO) planning process provides a forum for coordination, communication and informed decision making by planners, State and local governments, elected officials, and a broad array of stakeholders including the public. It is through this process that capital, operating and management strategies to improve the performance of the transportation system are made. This is a continuous process that responds to changing conditions and new opportunities as they arise.

The deployment of ITS technologies must become an integral component of transportation plans and programs. The successful implementation of ITS depends on people and institutions working together pursuing common objectives. As we work to" mainstream" ITS, a number of barriers, issues and challenges must be addressed, including:

- Advocacy and Leadership
- Institutional and Interjurisdictional Cooperation and Coordination
- Architectural Conformance and Technical Compatibility of ITS Projects
- Human Resourcing
- Financial Opportunities and Constraints
- ITS and Local Growth Management Issues

Each MPO must begin to integrate ITS planning and programming into their Long Range Transportation Planning process. To accomplish this, ***Interim Guidance on Conformity with the National ITS Architecture and Standards*** has been issued by the USDOT. Conformance to the National ITS Architecture and Standards is required by the **Transportation Equity Act for the 21st Century (TEA-21)**. These guidelines define a flexible process allowing each MPO to plan for ITS based on local area transportation needs and resources.

2. BARRIERS, ISSUES AND CHALLENGES

The current transportation planning practice in Florida, as with most other areas of the country, has been conducted within a framework of competing strategies. The ?traditional" elements of infrastructure improvements which increase roadway capacity or transit services are analyzed against ?non-traditional" ITS strategies, including refinements for facilities management, transportation system user information dissemination and assimilation, and safer transportation facilities and services.

While the?traditional" transportation planning processes can adequately consider and prioritize those infrastructure improvements of most overall benefit, and those capable of satisfying regional needs, the process typically does not lend itself to adequately assessing ITS-type operational improvements. Also, the existing transportation planning processes are not well suited to assess how to optimize a mix of infrastructure and operational improvements to address regional needs.

Most significantly, ITS initiatives are often considered corollary to other more ?traditional" infrastructure improvements, and/or worse yet, considered as stand-alone incompatible improvements that must compete for funding and prioritization for implementation. The barriers to the integration of ITS planning into the ?traditional" MPO planning processes are many and varied, but not insurmountable. However, they often do not enable the consideration and evaluation of a comprehensive wider range of solutions to the regional and statewide transportation needs issues.

2.1. ADVOCACY AND LEADERSHIP

The FDOT has assumed a leadership role to facilitate the integration and mainstreaming of ITS into the overall MPO planning process through this ITS Strategic Plan project. The FDOT has also established an ITS Working Group comprised of ITS Project Engineers from each of its eight Districts and its Central Office to discuss, coordinate, and direct ITS policy research and project delivery throughout the state.

District offices will also continue to lead the integration and mainstreaming of ITS planning and implementation within the MPO process. This will include coordination through existing FDOT liaison between the planning offices in the Districts and MPOs within their boundaries. The cross-cutting nature of ITS planning and integration will also require increased participation by District operations and production offices in the MPO planning process.

Florida has had extensive experience with ITS projects, in particular in the installation and maintenance of urban traffic control systems in both large and small urban areas. Florida has also gained extensive experience in the planning, deployment, operation and management of Freeway Management Systems. Such systems are planned and/or in place in Orlando, Daytona Beach, Jacksonville, Miami-Dade County and Broward County. Other significant ITS efforts include the TravTek motorist information system operational test conducted in Orlando, and the preparation of areawide ITS Early Deployment Plans for the Orlando and Jacksonville urban areas.

The Florida experience, particularly in the areas of initial procurement, operations and maintenance, clearly reveals a need for statewide procurement policies and standards for systems architecture and equipment, which FDOT is in a unique position to provide. Without such policies and design standards, one-of-a-kind projects and products, possibly of higher costs for design, operations and maintenance may result. It is important that ITS architecture and standards be considered in the planning stages as well as during design. There is both a need and a role for MPOs to play in assuring this consideration during the planning process.

The Florida experience has also clearly demonstrated that leadership roles must be assumed to overcome the many issues and challenges that will most likely continue in the deployment of ITS technologies. The overall program leadership can best be provided by FDOT working in close partnership with Florida's MPOs in the planning, prioritization and programming of ITS.

2.2. INSTITUTIONAL AND INTERJURISDICTIONAL COOPERATION AND COORDINATION

Institutional and interjurisdictional relationships must be fostered to enable ITS to be mainstreamed into the planning and programming of transportation improvements. MPOs should assume the primary role and responsibility for interjurisdictional and intergovernmental coordination within their urban areas and the State should assume this role and responsibility in rural areas and where plans or projects involve multiple MPOs. A framework must also be created that integrates operational and managerial strategies with multi-jurisdictional, multi-stakeholder framework. In most cases throughout Florida, neither FDOT nor the MPOs have had much experience in actually operating the transportation system. This has been primarily the responsibility of the local agencies. Planning for operations, with ITS as an operational tool, will be a critical new element in the MPO planning process.

Promoting interagency and interjurisdictional cooperation is crucial to the successful implementation, operation and management of ITS initiatives. Public sector agencies such as FDOT, MPOs, counties, cities, transit agencies and transportation management associations, other organizations providing services and having responsibilities directly related to the transportation system such as those involved in emergency services (police, fire, medical, etc.), emergency management and environmental protection, as well as private sector entities such as communications and information providers, can benefit and all have roles in successfully advancing ITS projects together.

One prototypical example of multi-institutional coordination is when mutually beneficial arrangements to share facilities and resources allow reductions in costs and information sharing among various user and consumer stakeholders. Funding, design and staffing support commitments should be defined early during the planning process. Interagency coordination and commitments relative to technical issues such as operating protocols, as well as an agreement among stakeholders to define roles in the collection, sharing, maintenance and exchange of resources and data must also be defined early during the planning process.

Almost transparent to the nature of the various agreements that may be required, the cooperation and coordination needed to successfully address all issues requires committed leadership within all agencies involved in ITS implementation.

2.3 ARCHITECTURAL CONFORMANCE AND TECHNICAL COMPATIBILITY OF ITS PROJECTS

The technical compatibility and interoperability of ITS initiatives is a crucial element of attaining coordinated deployment plans. The National ITS Architecture provides the common framework

for ITS project compatibility in standards and technology. Conformance to the National ITS Architecture will allow implementing agencies to pursue initiatives eligible for Federal funding. This conformance will lead to system designs that are not only compatible and will work together, but will also cost less to develop. Conformance to the National ITS Architecture and Standards is required by TEA-21 and Interim Guidance on conformance has been issued by USDOT.

There are 25 MPOs in Florida that encompass 27 U.S. Census designated Urbanized Areas. Several of these MPO areas are adjacent to each other. Such MPOs and FDOT should coordinate with each other, specifically regarding ITS projects, to assure that technical compatibility is achieved within the overall work plans. Statewide coordination, through MPO and FDOT working relationships, will also be required to assure that regional ITS plans along major corridors between urbanized areas are compatible.

2.4 HUMAN RESOURCING

The ITS project planning processes must recognize that the technical skills required to design, operate and maintain ITS initiatives are inherently different from those basic skills required for ?typical" infrastructure improvement projects. These skills are not typically available in local engineering and public works organizations. Furthermore, State and local agencies have limited staffing capabilities and their abilities to augment these resources is also limited.

It is crucial that planning for ITS deployment initiatives include provisions for acquiring or improving the skills of existing staff. Recent experience in Florida has also seen a movement towards the funding of operational and maintenance activities for ITS deployment initiatives via formal FDOT/MPO/local interagency funding and/or reimbursement agreements. Also, special training in emerging technologies and ITS management skills is becoming readily available through courses offered or sponsored by the private sector, local colleges, technical schools, the Florida Chapter of ITS America, and FHWA and FDOT.

2.5 FINANCIAL OPPORTUNITIES AND CONSTRAINTS

TEA-21 yielded sizable increases in NHS funding and an opportunity to provide a statewide funding source for ITS. One of the most difficult obstacles to ITS initiative deployment is that transportation improvement funding is limited, and the ?traditional" planning process introduces difficult trade-offs and choices between investing in infrastructure improvements, ITS initiatives, and/or a combination of both. Evaluating and documenting ITS project benefits has been a challenge to the "traditional" MPO planning process. Another challenge lies in the area of ITS post-deployment funding for system management, operations, maintenance and life-cycle upgrades. These are areas crucial to the successful deployment of ITS, but not usually considered as part of the "traditional" MPO infrastructure project planning process. Funding assistance to support system operation and ensure its viability has been successfully implemented recently by FDOT and the MPOs in Broward County and Palm Beach County.

The integration of ?non-traditional" highway and transit stakeholders into the transportation planning process provides opportunities to ameliorate, or overcome, some of the ?traditional"

financial constraints. ?Non-traditional" stakeholder partners include private sector consumers and suppliers of ITS, such as local and regional intermodal transportation authorities, commercial vehicle operators, providers of freight transportation services as emphasized in TEA-21, fire and police protection agencies, communications and other technical services providers, design-build-operate franchisers, and information resellers. Integrating these types of private sector stakeholders into the transportation planning process has the potential of not only providing opportunities to reduce the public costs of ITS investments, but also increases the support base and advocacy for the advancement of ITS programs and projects.

2.6 ITS AND LOCAL GROWTH MANAGEMENT ISSUES

Growth management and development issues are normally associated with concurrency, the provision of new capacity to the transportation system to accommodate additional development traffic prior to or concurrent with the development. The provision of ITS is not normally viewed as adding capacity to raise the Level of Service of the transportation system, but rather as a technique to help to maximize its operation and safety and maintain design capacity. In addition, unlike capacity improvements which are facility and segment specific, ITS must be viewed from an overall system perspective. Individual ITS improvements on a facility may not be effective unless they are integrated into an overall ITS system for the entire area. ITS can, however, be a valuable tool and be an integral part of Florida's growth management initiatives by:

1. Providing enhanced real-time traffic information and data for growth management and transportation planning purposes.
2. Providing an overall improvement and operational framework for the system that a developer can participate in through impact fees or other mitigation measures as a condition of development approval.
3. Providing a practical means for development to meet concurrency requirements when capacity improvement options are not available.

Each MPO, working with local governments, should consider the benefits of ITS to growth management and concurrency in the development of the regional architecture for the urban area. In addition, local governments may consider modifications to their concurrency management systems to allow developers to contribute individual components of the area's architecture in lieu of capacity enhancement projects.

3. ITS PLANNING PROCESS AND CONFORMANCE WITH NATIONAL ITS ARCHITECTURE

Integrating ITS into statewide and metropolitan planning is critical to the successful deployment of ITS programs and technologies. The goal is "mainstreaming" ITS into the planning and decision-making process so that ITS provides its benefits in concert with other investments to achieve local, regional, and State transportation system visions.

Each of Florida's MPOs need to begin considering their approach and role on how to integrate planning for the deployment of ITS into their planning process. The National ITS Architecture provides a resource to planners upon which to base their ITS deployment planning process. The National ITS Architecture will also help reduce ITS acquisition costs, facilitate future system expansions and modernization programs, and provide the linkages necessary for subsystem and inter-system compatibility.

Each State, region, local area and MPO has their own unique requirements and criteria with respect to project planning and/or project development activities. Such a diverse set of circumstances and approaches to planning demands flexible guidelines for ITS implementation, such as those contained in the USDOT's ***Interim Guidance on Conformity with the National ITS Architecture and Standards***.

Integrating ITS into the MPO transportation planning process must also be flexible enough to accommodate local/regional needs. A sample model for integrating ITS planning and urban transportation planning is presented in Figures 1 and 2. Depending on where each MPO is in the transportation plan update process, ITS may initially have to be pursued as a separate process until the next plan update by which time a single and fully integrated planning process must be in place.

The level of involvement of the MPO in the ITS process can vary depending on factors such as resources (staffing/expertise/financial), the existing and projected future demand for ITS within the urbanized area, and the current involvement and expertise of other local area agencies. A list of the various roles the MPO may assume in the process is as follows:

1. ITS Data and Information

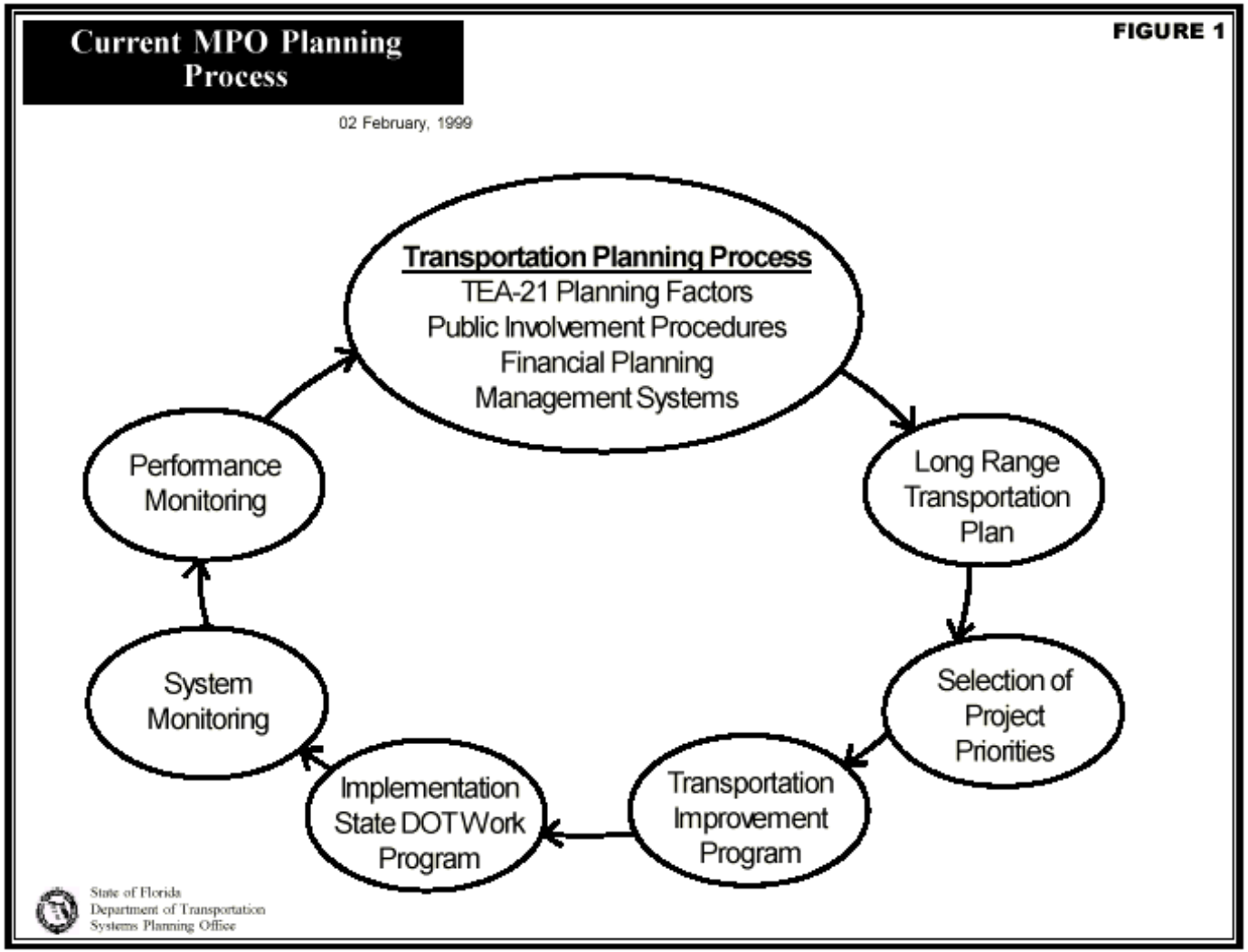
   - Maintain inventory of current ITS applications
   - Planning data and information needs determination
   - Data collections coordination (location, standards, responsible agency)
   - Special data collection efforts
   - Planning data/information repository - database management
   - Data/information reporting
   - Performance monitoring (using data/information to report on performance on MPO area transportation system)

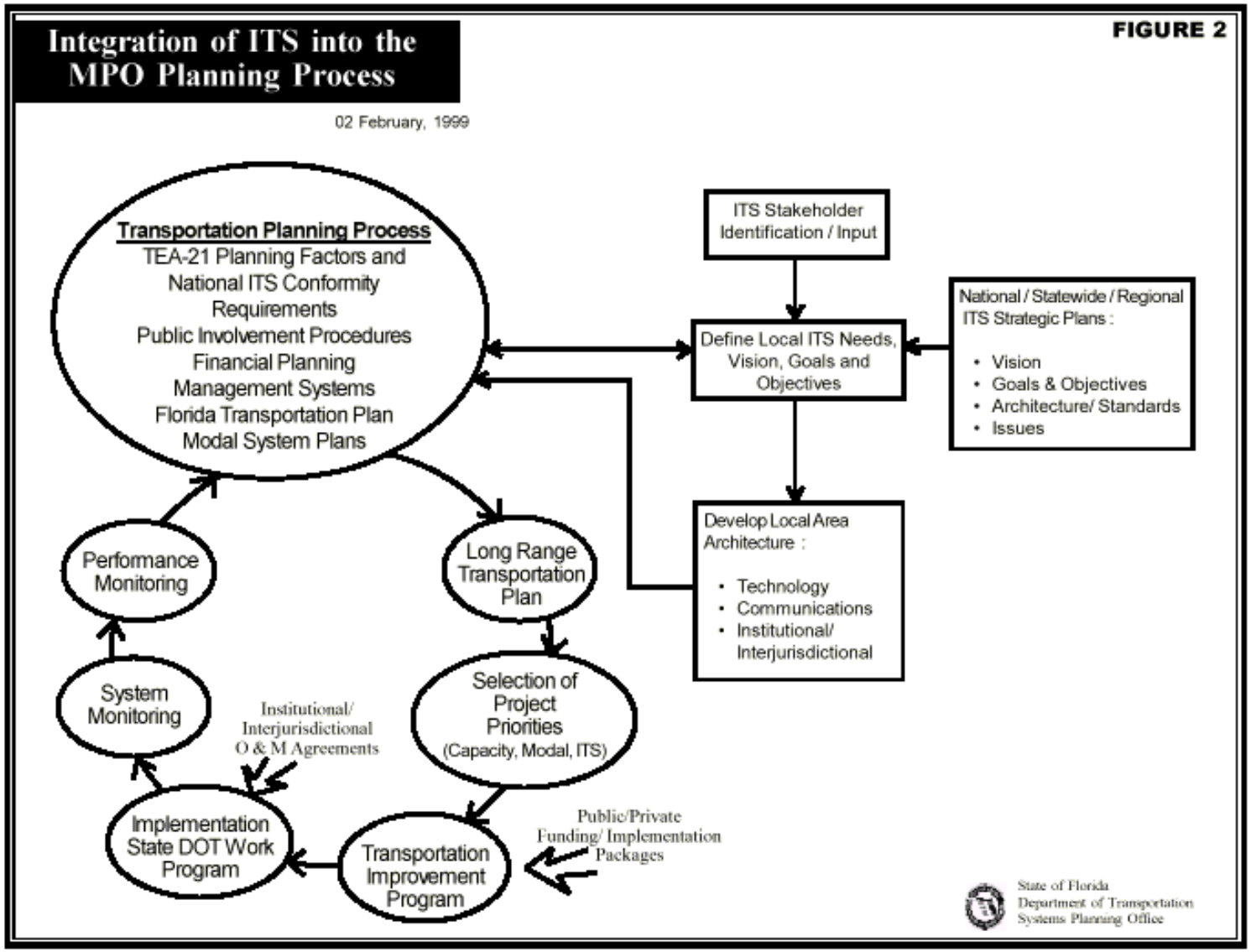
2. ITS Plan Development

   - Identify stakeholders - provide forum for input
   - Resource/information clearinghouse
   - Plan developed by others - provide input and coordination
   - Develop plan and regional architecture
   - Integrate ITS plan and regional architecture into transportation planning process

3. ITS Plan Implementation

- Priority setting - inclusion in TIP
- Funding coordination including public/private partnerships
- Ensure conformance to architecture and standards


Current MPO Planning Process
FIGURE 1
02 February, 1999
Transportation Planning Process
TEA-21 Planning Factors
Public Involvement Procedures
Financial Planning
Management Systems
Long Range Transportation Plan
Selection of Project Priorities
Transportation Improvement Program
Implementation State DOT Work Program
System Monitoring
Performance Monitoring
State of Florida
Department of Transportation
Systems Planning Office


Integration of ITS into the MPO Planning Process
FIGURE 2
02 February, 1999
Transportation Planning Process
TEA-21 Planning Factors and National ITS Conformity Requirements
Public Involvement Procedures
Financial Planning
Management Systems
Florida Transportation Plan
Modal System Plans
ITS Stakeholder Identification / Input
Define Local ITS Needs, Vision, Goals and Objectives
National / Statewide / Regional ITS Strategic Plans :
• Vision
• Goals & Objectives
• Architecture/ Standards
• Issues
Develop Local Area Architecture :
• Technology
• Communications
• Institutional/ Interjurisdictional
Performance Monitoring
Long Range Transportation Plan
System Monitoring
Institutional/ Interjurisdictional O & M Agreements
Selection of Project Priorities (Capacity, Modal, ITS)
Implementation State DOT Work Program
Transportation Improvement Program
Public/Private Funding/ Implementation Packages
State of Florida Department of Transportation Systems Planning Office

4. Interjurisdictional/Interagency Coordination

   - Coordinator
   - Facilitator
   - Lead agency
   - Information provider

To move towards the implementation of the Interim Guidance on conformity, the FDOT and the FHWA Division Office have agreed on the following first steps:

- Florida's MPOs need to begin considering how to meet the intent of the guidance and how they will integrate ITS into their respective planning processes. Each MPO needs to set its own direction.

- The process should not hold up current planning or project development activities.

- No new documentation will be necessary - the consideration of ITS should be integrated into the existing process and documentation.

- The process should be based on where the MPO is currently at with respect to ITS planning (i.e., some MPOs may have an Early Deployment Plan (EDP) or may have already begun to consider ITS).

- The early emphasis should be on the identification of and seeking of input from stakeholders - this can be accomplished by expanding the current CAC process or as a separate effort at the discretion of the MPO.

- Early emphasis should not only look at technology, but also on communications, data flow and interjurisdictional cooperation.

- The role of the MPO should be defined in an element of the UPWP - there does not necessarily have to be a separate ITS element, ITS can be considered in a broader element such as CMS or System management at the discretion of the MPO.

- A clear process to identify and establish the national architecture conformity of new ITS projects entering the TIP needs to be established.

4. CONCLUSION

The mainstreaming and deployment of ITS initiatives provides valuable opportunities to maximize the operational efficiency and safety of the transportation infrastructure and the quality of the services provided to all transportation consumers.

The successful integration of ITS initiatives into the overall transportation planning, programming, and project delivery process should not require making radical changes to the "traditional" highway and transit infrastructure planning and programming framework, which has served the many stakeholders well over the years. Rather, success in advancing ITS initiatives requires a major shift of thinking from capacity improvements to the operation of the system, not a shift in the transportation planning process.

The overall transportation project planning and delivery process remains one of receiving input from stakeholders, establishing a vision, setting goals, identifying actions, prioritization, resource allocation, and the evaluation of results. Plan development to include the advancing of ITS initiatives would include a more diverse base of customer partners, as well as the balancing of perspectives and interests to address emerging technologies, new institutional and interjurisdictional relationships, and the development of innovative funding partnerships and their potential to provide new opportunities and strategies for ITS.

In addition to the Statewide Guiding Principles contained in this strategic Plan, each MPO should consider the following guidelines in the integration of ITS into their transportation planning process.

- Consideration of ITS should be included at all stages of the multi-modal transportation planning process.
- Institutional and interjurisdictional cooperation and coordination in the planning, deployment, operation and management of ITS must be established.
- ITS must be planned on a regional, integrated and interoperable basis in conformance with the National ITS Architecture and standards.
- Stakeholders must recognize the unique challenges of ITS and identify the barriers these challenges create.
- ITS should be introduced into the planning process as a combination top-down and bottom-up approach.
- Transportation professionals should recognize opportunities for including ITS as an integrated element alongside "traditional" infrastructure improvements.
- Advocates for ITS should be identified and promoted within the planning environment.

- Potential ITS projects should be evaluated to determine the proper role for the public sector, private sector, or public/private partnerships.

- Resource centers should be identified and developed to encourage the dissemination of ITS information.

As they do with conventional transportation infrastructure, the MPOs will play a critical role in the planning and programming of ITS deployment. The ITS Strategic Plan will define the goals and objectives of the ITS program in Florida. It will also define, in general, how to achieve these goals. Based on this plan and other Federal and State guidance, the MPOs, in cooperation with appropriate stakeholders, will define the ITS applications of benefit to their areas based on their transportation system vision and on current and projected future needs and constraints.