1.   INTRODUCTION

The Illinois Statewide Intelligent Transportation Systems (ITS) Architecture and Strategic Plan consists of four primary components:

- Concept of Operations,
- Statewide ITS Architecture Document,
- Statewide Turbo Architecture® databases, and
- Statewide ITS Strategic Plan.

This document presents the Illinois Department of Transportation's (IDOT) Statewide ITS Strategic Plan. This is a living document that will evolve as ITS projects are developed and deployed across the state. The sections of the document are as follows:

- Section 2 – Program Goals and Objectives
- Section 3 – Problem Identification and Prioritization
- Section 4 – System Architecture Overview
- Section 5 – Communications Inventory and Planning
- Section 6 – Alternatives Analysis
- Section 7 – Priority Strategies and Project Proposal Evaluation
- Section 8 – Implementation Plan
- Section 9 – Operations and Maintenance Plan
- Section 10 – Project Funding
- Section 11 – Program Management

Transportation planning in Illinois faces many challenges, including transportation demand, an aging population, suburban growth, rural accessibility, air quality, and intermodal freight transportation. To address these challenges, IDOT has outlined a number of policies directed towards improving the surface transportation system across the state. These include (in no particular order):

- Target transportation investments to support business employment growth and **enhance the economy** of Illinois.
- Provide a transportation system that offers a high degree of **mobility** in a reliable and safe fashion.
- **Preserve and manage** the existing transportation system.
- **Reduce congestion**, **improve highway safety**, optimize service and **operation efficiency**, develop **intermodal connections**, and *utilize transportation technology advances*.
- Ensure a compatible interface of the transportation system with **environmental, social, and energy considerations**.
- **Follow a comprehensive transportation planning process**, **promote coordination** among public and private sector transportation systems, and support efforts to **promote stable funding** for the public component of the transportation system.

- **Improve highway safety** by institution and supporting public awareness and safety enforcement programs to lower the number of fatalities and life-altering injuries in crashes on Illinois streets and roads.
- **Provide a secure transportation infrastructure** in conjunction with the Illinois Office of Homeland Security and other agencies.

ITS is one of tools available to IDOT and other transportation agencies to accomplish these goals.

1.1   Purpose of the Document

The Illinois Statewide Intelligent Transportation Systems Strategic Plan provides a performance-driven direction for the deployment of ITS on a statewide basis. The plan is a mechanism for the identification and prioritization of ITS projects within a single framework to insure maximum benefits from state and federal ITS funding. This document builds upon the groundwork defined by the Statewide Concept of Operations and Statewide ITS Architecture process, as well as numerous studies performed by ITS stakeholders in Illinois. These include:

Transportation Improvement Plans/Programs
- Davenport-Rock Island-Moline Urbanized Area, FY 2004-06 Transportation Improvement Plan (Bi-State Regional Commission)
- Champaign Urbana Transportation Improvement Program, FY 2004-2006 (Champaign Urbana Urbanized Area Transportation Study, CUUATS)
- Danville Area Transportation Improvement Plan, Fiscal Years 2004, 2005, 2006 (Danville Area Transportation Study, DATS)
- Macon County FY 2002 – FY 2004 Transportation Improvement Program (Macon County Regional Planning Commission)
- FY 2004-06 Transportation Improvement Program for the Dubuque, Iowa/Illinois Urbanized Area (East Central Intergovernmental Association, ECIA)
- Transportation Improvement Program, Fiscal Years 2004 Through 2008, St. Louis Metropolitan Area (East-West Gateway Council of Governments, EWGCG)
- Kankakee County Transportation Improvement Program FY 2004-2006 (Kankakee Area Transportation Study)
- McLean County Transportation Improvement Program, FY 2004-2006, Bloomington-Normal Urbanized Area (McLean County Regional Planning Commission)
- Rockford FY 2004 Transportation Improvement Program (Rockford Area Transportation Study, RATS)
- Springfield Fiscal Years 2004-2006, Transportation Improvement Program (Springfield Area Transportation Study, SATS)
- Peoria Urbanized Area Transportation Improvement Program, Fiscal Years 2004-2006 (Tri-County Regional Planning Commission, TCRPC)
- Illinois Statewide Transportation Improvement Plan, FY 2004-2006 (IDOT)

ITS Strategic Plans/Business Plans
- Regional Transit ITS Plan (Regional Transportation Authority, RTA)
- Kentucky ITS Strategic Plan, ITS Business Plan (Kentucky Transportation Cabinet, KTC)

- Illinois ITS/CVO Electronic Credentialing Business Plan (Illinois CVISN Task Team)
- Northeastern Illinois ITS Early Deployment Plan Update (Chicago Area Transportation Study, CATS)

Other Studies
- Illinois Comprehensive Highway Safety Plan (IDOT)
- 2005 Illinois State Transportation Plan (IDOT)
- Gary-Chicago-Milwaukee Corridor Program Plan (IDOT)
- 511 Traveler Information Program Assistance, Draft Technical Memoranda (PBS&J)
- Illinois Statewide Mutual Aid Plan (Illinois Emergency Management Agency)
- Illinois Department of Natural Resources (DNR) Strategic Plan (Illinois DNR)
- Amber Alert Notification Plan (IDOT)

In addition to these documents, this Statewide ITS Strategic Plan utilizes stakeholder outreach conducted by the Project Team throughout the process to chart a course to make the systems and integration outlined in the Statewide Concept of Operations and ITS Architecture a reality.

1.2   Overview of Intelligent Transportation Systems

Intelligent transportation systems can be defined as "the *integrated* application of sensor, computer, electronics, and communications technologies and management strategies to provide traveler information to increase the *safety and efficiency* of the surface transportation system." Or, simply put,

People using technology in transportation to save time, lives, and money

The most visible components of ITS are the physical infrastructure that interface with the traveling public. This "intelligent infrastructure" includes the following components[1]:

- Arterial Management Systems
- Freeway Management Systems
- Transit Management Systems
- Incident Management Systems
- Emergency Management Systems
- Electronic Payment Systems
- Traveler Information
- Information Management
- Crash Prevention and Safety
- Roadway Operations and Maintenance
- Road Weather Management
- Commercial Vehicle Operations
- Intermodal Freight

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[1] USDOT ITS Joint Program Office website – Technology Overview

In addition, emerging in-vehicle technologies are creating an "intelligent vehicle" initiative that includes the following components[2]:

- Collision Avoidance Systems
- Collision Notification Systems
- Driver Assistance Systems

In order for these intelligent transportation systems to be most effective, they must work together in an integrated manner. This less visible integration component requires various wireline and wireless communications systems to support the exchange of data between management centers, personnel, vehicles, field devices, and the traveling public.

Before this level of integration can be realized and ITS can be deployed, transportation managers must identify a framework upon which ITS should be built. This framework should:

- Identify ITS goals and objectives, a concept of how ITS will be operated
- The various stakeholders and systems that are involved
- The transportation services that partner agencies perform or plan to perform
- Individual functional requirements for ITS
- Functional links between partner agencies and that data exchanged over those links
- Applicable standards that apply to the exchange of information, and
- Any applicable or necessary agreements between partner agencies

Acknowledging the need for this framework before deploying ITS, in 2001 the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) developed a rule/policy that requires regions that plan to deploy ITS to develop a regional ITS architecture in order to receive Federal funding for such projects. The Illinois Statewide ITS Architecture has been developed to provide a framework for the planning, deployment, and operation of ITS in Illinois.

Many groups are involved in the planning and operation of ITS systems. These stakeholders include: public officials, transportation planners, law enforcement, emergency management personnel, public/private transportation providers, civic groups, and the media and other information providers. Appendix A includes a comprehensive listing of ITS stakeholders in Illinois. Each one plays a key role in the collection, processing, and distribution of transportation information to other partner agencies and the traveling public.

There are several proven benefits to the implementation of ITS systems. These benefits are typically measured by an increase in system capacity/throughput, cost savings, increased customer satisfaction, reductions in delay/travel time, reduced energy usage/environmental impacts, and improved safety. ITS projects often provide high return on investment, some with cost-to-benefit ratios of 20:1 or more. Performance measures for ITS are defined in Section 2.4.

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[2] USDOT ITS Joint Program Office website – Technology Overview

1.3   Need for an ITS Strategic Plan

Many of the transportation improvement plans listed in Section 1.1 do not include references to ITS initiatives, but rather focus on traditional transportation projects, including road and bridge construction or transit. Others do include ITS, but only to a limited level. The listed ITS strategic plans cover other states, specific regions or corridors, or specific ITS programs in Illinois. This Illinois Statewide ITS Strategic Plan identifies the appropriate statewide ITS initiatives in these documents, and then, based on extensive project outreach, expands upon these projects to outline a strategy to deploy ITS projects to meet needs and requirements identified by stakeholders and defined in the Statewide ITS Architecture.

By documenting ITS initiatives across Illinois, this plan serves as a starting point for bringing ITS projects and systems together into an integrated plan. It identifies top-priority ITS projects that can be deployed in the short-term, "enabling" ITS projects that support other initiatives, and mid- and long-term ITS deployments that will build upon those ITS projects that precede them. This plan also documents an implementation strategy for making these projects a reality, which includes the identification of funding sources – both for initial deployment and ongoing operations and maintenance. This document concludes with recommendations for ITS program management that will guide the implementation and continuing planning of ITS in Illinois.

Furthermore, this Statewide ITS Strategic Plan contains recommendations for metropolitan planning organizations (MPO) and regional planning commissions (RPC) to create their own regional ITS strategic plans. These may be separate studies conducted at the regional level, or simply portions of regional transportation improvement plans or long-range transportation plans. Areas with an existing regional ITS architecture should be the first to consider developing and implementing these plans.

This ITS Strategic Plan is intended to provide the maximum benefit to end users by coordinating deployment priorities on a regional and statewide basis, leading to a more efficient, integrated transportation system.

1.4   Benefits of an ITS Strategic Plan

Based on the goals and objectives defined in Section 2, this ITS Strategic Plan provides guidance to ensure that, over time, ITS initiatives are incorporated into the transportation infrastructure and integrated with existing systems and with each other. By bringing together representatives from different transportation agencies across different transportation modes, this Strategic Plan documents the most pressing transportation needs from across the state, identifies and prioritizes potential ITS solutions to address these needs, and defines a series of ITS projects that will implement these solutions.

In addition, Section 5 of this document defines a vision for a statewide communications network that would support requirements for the exchange of transportation information between regions and across the state. Section 8 of this document defines an Implementation Strategy that will guide the deployment of the identified ITS projects, from both the high-level statewide

perspective and for those ITS project managers that will directly lead ITS deployment at the local level.

On August 10, 2005, the "Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users," or SAFETEA-LU, was signed into law by the president in Aurora, Illinois. This national transportation bill includes a number of provisions for transportation operations and freight movement, but it does not include separate ITS deployment funding as in past transportation bills. This will require that funding for ITS projects come from the same sources as traditional transportation projects. By defining a comprehensive strategy for ITS deployment, this plan should serve as a resource for leveraging funding and help to identify when ITS can be deployed as part of, or in conjunction with, traditional transportation projects.

Lastly, this Strategic Plan outlines a recommended program management structure for ITS within IDOT. A multi-agency, multi-disciplinary approach to ITS is needed to lead the planning and deployment of ITS in the state and provide transportation stakeholders   `with a central source to help define, coordinate, and manage their ITS initiatives.

Above all, this Illinois Statewide ITS Strategic Plan outlines a comprehensive direction for the future of ITS in Illinois. It will allow transportation stakeholders to be more aware of other related or similar initiatives as they plan, deploy, operate and maintain their own ITS projects. This will encourage integrated, interoperable systems and promote the sharing of information, and should also maximize available funding and leverage resources to the benefit of the traveling public in Illinois.