

## **Executive Summary**

### Geographic Area, Timeframe, and Service Scope

The DeKalb-Sycamore Area Transportation Study urbanized area boundary serves as the geographic region for the DeKalb-Sycamore Regional ITS Architecture. For the purposes of this architecture, the timeframe has been set at five (5) years from the date of this document, or 2011.

This regional architecture addresses transportation technologies and operational strategies for the DeKalb-Sycamore region; several statewide ITS services have been excluded from this regional architecture and are instead contained within the Statewide Illinois ITS Architecture. These include commercial vehicle services, and other ITS services that are administered from a single statewide agency, such as the Department of Motor Vehicles, the Environmental Protection Agency, and the Department of Revenue.

### Stakeholders

The project outreach process resulted in a stakeholder group comprised of a comprehensive list of surface transportation agencies and organizations. Stakeholders (Section 1.4) is a listing of these stakeholders with descriptions as designated in the Turbo Architecture® database. These agencies include municipal departments of public works, transit agencies, and emergency services. The appendices contain further information about project outreach activities, project stakeholders, and stakeholder participation.

### Inventory

To build a foundation for the DeKalb-Sycamore Area Regional ITS Architecture, a research effort was undertaken to collect and analyze the numerous ITS-related documents that have been created to-date. These documents, along with the results of the stakeholder outreach process, provide the ITS inventory that serves as the starting point for this ITS architecture. Inventory Systems (Section 2.1) provides a listing of the systems identified in the DeKalb region, along with the associated stakeholder, National ITS Architecture entity, status, and a brief description.

### Needs and Services

In order to determine how the systems in Needs and Services (Section 2.2) can best be applied, a stakeholder workshop held on July 17, 2006, included an ITS needs analysis. The attendees considered a number of critical transportation issues. Each transportation issue was defined, discussed, and compared. After discussion, the identified issues were as follows (in no particular order):

- Work zone safety
- Detour route information
- Improved efficiency and operations
- More user-friendly system
- Improved communications between dispatch center and emergency vehicles
- Transit security
- Improved communications to traveling public
- Increased accessibility
- Equity for pedestrians/cyclists
- Emergency services' visibility
- Fuel efficiency
- Increased traffic data collection and availability

- Coordination of NIU activities (special events) with traffic operations
- Fragmented media market

These issues serve as the basis for the development of ITS goals and objectives for the region, as well as the identification of ITS services, or, in terms of the National ITS Architecture, “market packages. Table 4 DeKalb-Sycamore Region Market Packages (Transportation Services) Inventory (Section 2.2) provides a listing of the refined list of market packages (40) for the DeKalb-Sycamore region, along with the associated element(s) and status.

### Concept of Operations

Before intelligent transportation systems can be effectively deployed, ITS stakeholders should come together to identify goals for ITS deployment. A key component in this process is a Concept of Operations that defines the roles and responsibilities of those agencies that will gather, process, and act upon the information that is collected by the system.

During the stakeholder workshop, the attendees brainstormed about issues that they face on a regular basis, and how ITS might help them in tackling these issues:

*To use ITS to improve coordination, communication, efficiency, safety,  
and the distribution of traveler information for all transportation  
providers and users*

To demonstrate how the various regional ITS stakeholders will work together to realize this vision, nine ‘role and responsibility’ areas were developed:

- Archived Data Management
- Emergency Management
- Freeway Management
- Incident Management
- Maintenance and Construction
- Parking Management
- Service Street Management
- Transit Services
- Traveler Information

Each of these areas is described in Section 3.0 in detail using tables that summarize the individual stakeholder roles and responsibilities by area.

### Functional Requirements

After identifying the systems and services of an intelligent transportation system, functional requirements, or “equipment packages,” are used to define what the systems must do to perform their services. Functional Requirements (Section 4.0) provides a listing of the applicable equipment packages for the DeKalb-Sycamore region, along with the associated element and architecture entity (subsystem) for each.

### Interfaces and Information Flows

The National ITS Architecture identifies the interactions that occur between ITS systems to perform services to the traveling public. The Turbo Architecture® software tool provides the functionality to display these interactions between individual ITS systems in a graphical format.

Appendix D contains the resulting ‘interconnect diagrams’ for each DeKalb-Sycamore ITS system.

### Project Sequencing

Within the timeframe of this report as outlined above, a variety of ITS projects should be considered for deployment and/or implementation in the DeKalb-Sycamore region. These projects involve many agencies and potential funding sources. Section 6.0 provides information regarding sequencing and coordination of projects to ensure current/future ITS projects are deployed and implemented in the most effective manner in terms of cost, constructability, and functionality. For these projects, details such as in-depth project descriptions and construction cost estimates will need to be developed further in other transportation planning documents.

Four current/planned/potential ITS projects in the DeKalb-Sycamore region are described in Section 6. These ‘project concepts’ include a description, lead stakeholder, list of participating agencies, identified needs addressed by the project, and the project priority. The four project concepts are:

- Construction Information Database
- DeKalb-Sycamore Region Geographic Information System
- Improved Rail Operations Coordination
- Transit Automatic Vehicle Location (AVL)

### Agreements

In the DeKalb-Sycamore region, a substantial amount of coordination is required between the various ITS stakeholders to ensure that ITS resources are being utilized in the most efficient possible manner. In many cases, the coordination is governed via an agreement between stakeholders. Agreements (Section 7.0) provides a listing of current/planned ITS stakeholder agreements in the DeKalb-Sycamore region. Included in the table are the agreement title, type, and description, as well as the stakeholders involved and the status of each regional ITS stakeholder agreement.

### Standards

In order to support regional and national interoperability, a system of nationwide ITS standards has been developed. The goal of ITS standards is to ensure that the consistency of ITS system implementation resulting from adherence to ITS standards will allow for more efficient data exchange, and will allow for equipment replacement, system upgrades, and system expansion to be more readily accommodated. ITS standards are mapped to the architecture flows between ITS architecture subsystems. A listing of the ITS standards mapped to the architecture flows within the DeKalb-Sycamore Area Regional ITS Architecture is provided in ITS Standards (Section 8.0).

### Using the Architecture

As shown in Using the Architecture, step five of the architecture process is use of the regional architecture. Section 9 shows how a regional ITS architecture can be used as a tool for region-wide transportation planning, ITS project development, and ITS project implementation.

### Architecture Maintenance Plan

The sixth and final step in developing a regional architecture is the maintenance of the architecture. The DeKalb-Sycamore Area Regional ITS Architecture is a dynamic framework for the planning, development, and deployment of ITS in the region. Section 10, Architecture Maintenance Plan, identifies 1) who will maintain the architecture; 2) what will be maintained; and 3) how it will be maintained.