



DuPage TCI

Newsletter for the Transportation Coordination Initiative (TCI)

Number 2

February 2007

Goals of the TCI are to:

- Improve traffic system performance and transit services
- Reduce travel times
- Enhance incident management and coordination
- Improve traveler information services throughout the County

The DuPage County Transportation Coordination Initiative represents the efforts of numerous transportation stakeholders over a number of years to improve the operation and management of the transportation system in the County. The TCI builds upon work that began in the late 1990s with the development of the "Multi-Jurisdictional Signal Coordination and Monitoring Demonstration Project" and corresponding "Guidelines for the Implementation of Multi-Jurisdictional Signal Coordination and Monitoring." The TCI is led by a Steering Committee that consists of the following core group of organizations/agencies:

- Chicago Metropolitan Agency for Planning (CMAP)
- DuPage County Division of Transportation (DCDOT)
- DuPage County Office of Homeland Security and Emergency Management
- DuPage Mayors and Managers Conference (DMMC)
- Illinois Department of Transportation (IDOT)
- Illinois State Toll Highway Authority
- Regional Transportation Authority (RTA)
- City of Naperville
- Village of Lombard
- Village of Oak Brook
- Village of Downers Grove

This is the second and final Newsletter for the project and provides a summary of the key elements and recommendations contained in the TCI Strategic Plan.

Major Work Activities

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Since the first newsletter, a great deal of project work has been undertaken and the TCI Strategic Plan has been completed. Major activities have included:

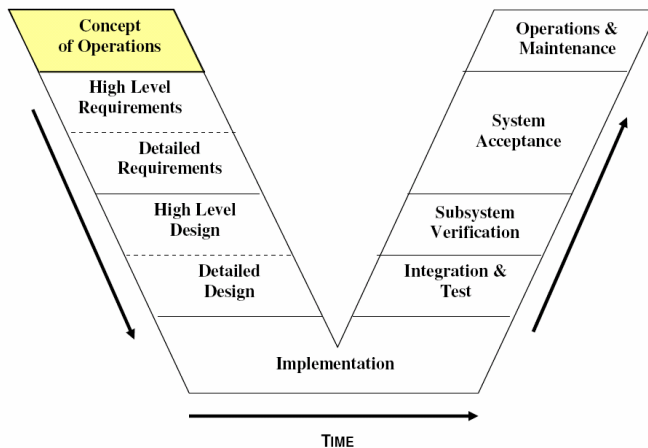
- Development of a **Concept of Operations**; which identified ITS and operational needs for the county and its stakeholders;
- Creation of a **Subregional ITS Architecture** for DuPage County; which will promote the integrated, coordinated deployment of future ITS and related projects, as well as ensure that they are eligible for federal funding;
- Development of a series of **Integration Strategies and Technologies** to meet the needs identified in the Concept of Operations; and
- Structuring an **Implementation Plan** which outlines, at a strategic level, highlighting specific projects with phases and priorities.

The remainder of this newsletter summarizes these key project deliverables.

TCI Concept of Operations

The Concept of Operations document provides a review of existing conditions, a needs assessment, and an operational analysis of the four TCI focus areas: Arterial Operations, Transit Management, Traffic Incident Management, and Traveler Information. Needs identified by TCI stakeholders served as the basis for the technology and strategy assessment, as well as the final TCI recommendations, and can be classified into the following nine needs categories:

- **Arterial Operational Efficiency** – provide methods to reduce the traffic congestion and travel time delay at key intersections
- **Communications Infrastructure** – improve communications links between different agencies, both center-to-center and center-to-field
- **Data Management** – develop resources for effective data collection and storage
- **Integration of Systems** – support interoperability and consolidation of management functions between different agencies
- **Interagency Data Sharing** – create methods and protocols for agencies to exchange pertinent, useful data across jurisdictional boundaries
- **Operational Coordination** – improve coordination between various agencies for effective utilization of resources – especially between transportation agencies, emergency services, and construction and maintenance agencies
- **System Monitoring** – enhance the surveillance capabilities of traffic and incident management agencies to reduce incident response times
- **Transit Operations** – improve the viability of transit use through the application of ITS technologies and arterial traffic management strategies
- **Traveler Information Sources** – increase the prevalence, attractiveness, and awareness of traveler information in DuPage County



Agencies were interviewed as part of stakeholder outreach:

City of Naperville
Transportation,
Engineering &
Development (TED)
Business Group

Du-Comm

DuPage County Division
of Transportation

DuPage County Office of
Homeland Security and
Emergency Management

DuPage County Sheriff

DuPage Mayors and
Managers Conference
(DMMC)

Glen Ellyn and Oak
Brook Fire Departments
(DuPage Fire Chiefs
Association)

IDOT District 1 Bureau
of Traffic

Illinois State Toll
Highway Authority

Naperville Police
Department (DuPage
Police Chiefs
Association)

Pace/Metra

Regional Transportation
Authority (RTA)

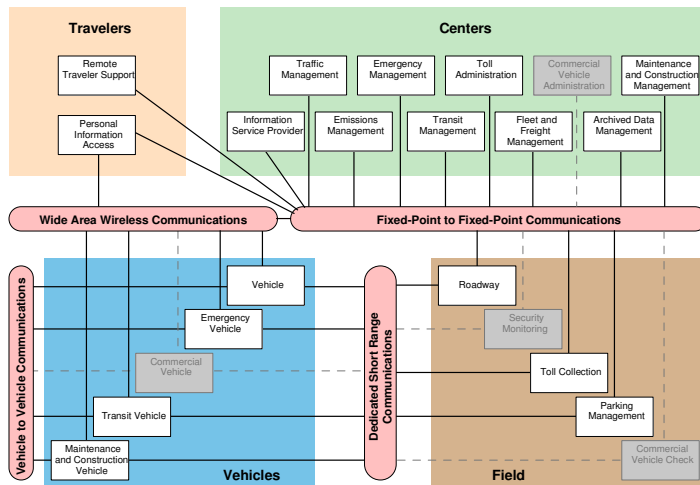
Village of Lombard

Village of Oak Brook

Village of Downers
Grove

DuPage County Subregional ITS Architecture

A regional ITS architecture is a framework for describing, planning, and implementing intelligent transportation systems. It is intended to promote integration between stakeholders by providing a common framework under which stakeholders in a region can build Intelligent Transportation Systems. Once implemented, these systems can, alone and in combination, increase the safety and efficiency of the surface transportation system. The **DuPage County Subregional ITS Architecture** created for this project builds upon elements of the Northeastern Illinois Regional ITS Architecture.



As a further incentive to develop regional ITS architectures, the Federal Highway Administration (FHWA) developed a rule, and the Federal Transit Authority (FTA) developed a parallel policy, to implement Section 5206(e) of the Transportation Equity Act for the 21st Century (TEA-21) in April 2001. This rule/policy states that, in order to receive funding for ITS through the Transportation Trust Fund, any region in the United States that has deployed or will soon deploy ITS projects must develop a regional ITS architecture. As ITS projects are planned and deployed in the region, DuPage will certainly fall under this requirement.

Overall, this DuPage County Subregional ITS Architecture is intended to promote continued improvements in the movement of goods and people throughout the region through the implementation of ITS strategies, technologies, and projects. Most importantly, **the deployment of these ITS strategies, technologies, and infrastructure will help to make the DuPage transportation system safer, better coordinated, and more efficient.** In addition, by taking a cooperative multi-agency approach, DuPage County and partner agencies will be able to better integrate ITS related efforts beyond their boundaries, pool and leverage funding, and deploy ITS technologies and projects that benefit not only travelers in DuPage County, but the entire region.

TCI Integration Strategies And Technologies

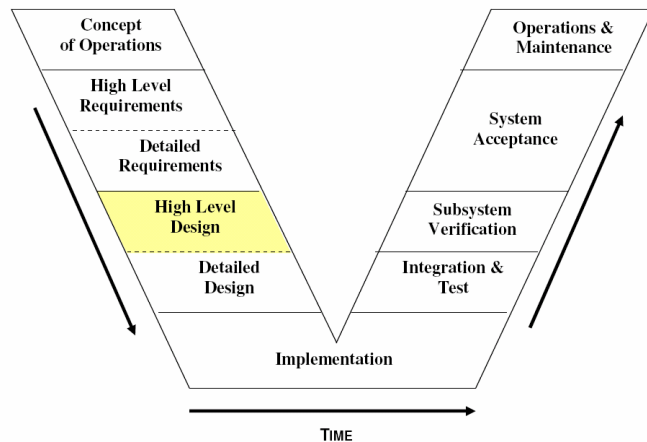
With the TCI needs identified, the next step was to develop and evaluate potential solutions to those needs. Building upon the findings in the Concept of Operations and DuPage County ITS Architecture, 83 operational strategies and transportation technologies, essentially ITS solutions, were identified which might be applied to address the identified stakeholder needs.

For the purposes of this study, TCI "strategies" and "technologies" can be defined as:

- **Strategy** – a plan or method for obtaining a specific goal or result. This may or may not be dependant upon a specific technology.
- **Technology** – electronic or digital products and systems considered as a group which can be employed for obtaining a goal or result.



TCI Integration Strategies And Technologies (continued)



While each of the potential ITS solutions would help to address the transportation needs of DuPage County, limits on available funding, staff, and other considerations require that they be compared to determine deployment priorities. A series of criteria were developed to evaluate and prioritize the potential ITS solutions:

1. How well does the solution address the goals of the Transportation Coordination Initiative?
2. To what extent does the solution provide benefit to more than one agency?
3. To what degree does the solution leverage existing systems?
4. What is the relative level of annualized capital and ongoing operations and maintenance cost?

By applying the criteria described above to all the identified ITS solutions, a list of potential solutions was developed (list below, grouped by TCI focus area). In addition, the TCI Steering Committee provided valuable input in identifying those candidate solutions that might provide the most benefit to DuPage County.

Arterial Operations

- Emergency Vehicle Preemption (EVP) Upgrades
- Traffic Signal Timing Optimization
- Regional Traffic Signal Coordination
- System Detection
- Traffic Management Center Functionality
- Traffic Signal Controller Upgrades
- Queue Detection Systems
- Vehicle Probes
- Traffic Signal Control System Improvements
- Traffic Forecast and Demand Management Algorithms
- Closed Circuit Television (CCTV) Surveillance
- Highway Rail Crossing Notification Systems

Traffic Incident Management

- Interagency Incident Responder Work Group
- Common Essential Information Dispatch Agreements
- Multi-agency Training and Exercises
- Promote Quick Clearance Practices
- Shared CCTV Surveillance Imaging
- Media Agreements for Video Sharing
- Integrated Communications Channels

Transit Management

- Transit Trip Planning Coordination
- Transit Signal Priority
- Coordinated Multimodal Transportation Management Center
- Highway Shoulder Riding for Transit
- Transit Queue Jumping
- Active Transit Station Signs

Traveler Information and Data Management

- Compatible, Shared Base Mapping System
- Gateway Integration
- Shared Access to Atmospheric and Pavement Condition Sensors
- Existing Infrastructure Database
- Construction Information Database
- Shared Database/Map for Planned/Unplanned Events
- Alternate Route Plan Database
- Information Flow Mapping
- Corridor Action Teams
- Traffic Information Database
- Participation in 511 Services
- Traffic Accident Record System
- Dynamic Message Signs (DMS)

TCI Implementation Plan

The final stage for the project was the development of a TCI Implementation Plan. This plan provides the basis for the planning, deployment, operation, and maintenance of an ITS program in DuPage County. The document outlines seventeen actionable TCI projects that are intended to address the goals of the project and identified needs of the stakeholder group. The Implementation Plan also discusses additional implementation considerations, including a project sequencing plan, an operations and maintenance discussion, ITS procurement approaches, potential sources for funding, legal issues, and agreements that may be required to make this plan a reality. Below are summaries of the seventeen proposed TCI projects.

Conceptual Design and Interagency Coordination Projects

- **Traffic Incident Management (TIM) Work Group** - Traffic incident management stakeholders in DuPage County can form an informal work group for identifying needs and opportunities for improvements that relate to highway incident activities.
- **Quick Clearance Program Enhancement** – Building upon current quick clearance practices in the county, this project, to be addressed through the TIM Work Group, would evaluate current quick clearance practices and identify ways to improve, standardize, and promote these programs.
- **Multi-Jurisdictional Communication Channel Integration** - This project would build off existing efforts to provide a common frequency for responders to communicate directly with each other.
- **Countywide ITS Conceptual Design** - This project will consider how to deploy ITS in DuPage County by identifying requirements, roles and responsibilities, and deployment locations for the infrastructure projects described below, as well as a comprehensive transportation communications system.

Infrastructure Projects

- **Countywide Traffic Signal Optimization Plan** - This project would create updated and enhanced procedures and processes for the regular measurement, evaluation, and optimization of traffic signals (and signal systems) across the county.
- **Regional Traffic Signal Coordination** - Building on the signal optimization improvements described above, this project would implement system-wide traffic signal control improvements that will improve intra- and inter-jurisdictional signal coordination.
- **DuPage County Virtual Traffic Management Center** - Providing the functionality associated with a countywide traffic management center (TMC) would greatly enhance the integration and interoperability of the numerous existing deployments, ongoing initiatives and future deployments.
- **Integrated Expressway-Arterial Corridors** - This project would deploy ITS applications that support the coordinated management of traffic across jurisdictional boundaries and modes of transportation.
- **Traffic Data Collection Enhancement** - This project would provide enhanced traffic data collection capabilities through modifications to existing infrastructure and the application of established and emerging technologies to provide real-time data on county arterials.
- **Highway-Rail Information System** - This project will consist of systems to monitor the status of highway-rail crossings and provide real-time highway-rail blockage updates to emergency responders, traffic managers, and the traveling public.
- **Transit Signal Priority Coordination** - This projects centers on coordinating the deployment of TSP, which gives special treatment to transit vehicles at signalized intersections, in DuPage County.
- **Countywide Dynamic Message Sign (DMS) and CCTV Camera Deployment** - This project would include the procurement of Portable Dynamic Message Signs (PDMS), electronic signs that can be programmed to provide traveler information on a variety of topics such as incidents, construction and lane closures, special events and congestion, as well as closed-circuit television (CCTV) cameras for system monitoring.



