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# Multi-Modal Traveler Information System

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## *Current and Proposed ITS Initiatives Working Paper # 18400.01*

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in association with:  
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SUMMARY OF REGIONAL STRATEGIC PLANS

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**0.0 ACTION ITEM LIST**

This is a working document, subject to change as the Multi-Modal Traveler Information System Project (MMTIS) proceeds. The following are some of the changes known at this time which will need to be made as information becomes available.

Follow up on status of:

Indiana

- Indiana Regional Strategic Plan
  - Implementation Priorities
  - Functional Requirements
  
- Descriptions of proposed projects (awaiting list from Indiana Regional Strategic Plan).

Illinois

- Northeastern Illinois Strategic ITS Early Deployment Plan (SEDP)
  - Implementation Priorities
  - Functional Requirements
  
- Additional detail to the descriptions of various Illinois projects:
  - DuCom (when their CAD system is implemented)
  - Illinois Commercial Vehicle Operations.

Wisconsin

- Wisconsin Regional Strategic Plan (began early 1997)
  - Implementation Priorities
  - Functional Requirements
  
- Descriptions of various Wisconsin projects:
  - Milwaukee County Transit
    - \*Electronic Schedules for Transit Systems
    - \*System Global Positioning Satellites (GPS) Radio / Automated Vehicle Location (AVL) Project
  - WisDOT
    - \*MONITOR and Traffic Management Enhancements.
    - \*WisDOT Communication and Data System Infrastructure (CDSI) Project.

GCM Corridor Program Plan (CPP)

- Update CPP section once CPP is updated.

NOTE: An estimate has been made as to the ability of agencies to provide data to the Gateway. This will be confirmed as the project proceeds.

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## **1.0 INTRODUCTION**

### **1.1 PURPOSE**

The purpose of this working paper is to provide an information base of Intelligent Transportation System (ITS) activities or projects that are in progress or have been identified through Early Deployment Plans or Regional Strategic Plans and local ITS studies. It is important that these activities and projects are fully understood before design of the corridor architecture to help ensure compatibility.

This working paper will then be used as an input in the development and design of the Corridor architecture and the Gateway Traveler Information System (TIS).

#### **1.1.1 Intended Audience**

This working paper is intended to serve as a resource and a guide to the members of the Gary-Chicago-Milwaukee (GCM) Deployment Committee, Architecture, Communications and Information (ACI) Work Group, project managers, system designers, system developers, and system integrators.

#### **1.1.2 Working Paper Organization**

This working paper is organized to give a description of the GCM Corridor Program Plan followed by a summary of each state's Regional Strategic Plans and other ITS related plans and projects (Sections 2.1 through 2.4). Section 3 provides a summary of this working paper.

## **1.2 PROJECT OVERVIEW**

### **1.2.1 MMTIS Project Overview**

The MMTIS project revolves around the concept of a GCM Corridor traveler information system. It involves research of the ITS initiatives in the corridor which are currently deployed and proposed ITS systems identified in regional strategic plans or early deployment studies. This information is used in recommending a corridor architecture which best suits the characteristics of the diverse resources within the corridor. Along with the corridor architecture, a corridor strategic plan will be developed. Another key component of the MMTIS project is the design of the Gateway Traveler Information System. The Gateway will be the traveler information collection and distribution hub for the GCM Corridor. Requirements Specifications and Interface Control Specifications will be developed for the Gateway.

#### **1.2.2 Role of Regional Strategic Plans in MMTIS**

The goal of the MMTIS project is to detail the requirements for the Corridor system architecture through thorough analysis of corridor, regional, and agency specific needs. The regional strategic plans lay the groundwork for specifying the future direction of ITS related activities within each of the three states and, more specifically, the regions of each state which comprise the GCM Corridor.

1.3 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

Document #17100-1, MMTIS Project Glossary, contains all definitions, acronyms, and abbreviations associated with this project, as well as ITS, communications, computer programming and other related standards.

1.4 RELATED DOCUMENTS

This working paper is part of a series of documents and working papers produced to support the design of the GCM Corridor Multi-Modal Traveler Information System.

Related documents and working papers include:

- Document #17100-1 - MMTIS Project Glossary
- Document #17150 - Gateway TIS System Definition Document
- Document #17200 - GCM Corridor Architecture Functional Requirements
- Document #17250 - Gateway TIS Functional Requirements
- Document #17300 - GCM Corridor Architecture Interface Control Requirements
- Document #17350 - Gateway TIS Interface Control Requirements
- Working Paper #18250 - Cellular 911 - State of the Practice
- Working Paper #18380 - GCM Corridor User Needs and Data Exchange Requirements
- Working Paper #18500 - GCM Corridor Strategic Plan
- Working Paper #18520 - Performance Criteria for Evaluating GCM Corridor Strategies and Technologies
- Working Paper #18550 - Alternative GCM Corridor Technologies and Strategies
- Working Paper #18600 - System Interfaces and Information Exchange
- Working Paper #18700 - Information Clearinghouse - Initial Administrative Network
- Working Paper #18790 - Information Clearinghouse - Final Network
- Working Paper #18830 - Weather Detection System Standard Message Sets
- Working Paper #19140 - Gateway TIS Phased Implementation Plan
- Working Paper #19210 - Lessons Learned
- Working Paper #19220 - Gateway TIS Design Options
- Working Paper #19840 - Variable Message Signs (VMS)/Highway Advisory Radio (HAR) State of the Practice
- Working Paper #19845 - VMS/HAR Suggested Guidelines.

**2.0 REGIONAL STRATEGIC PLAN SUMMARIES**

**2.1 GCM CORRIDOR PROGRAM PLAN**

The Gary-Chicago-Milwaukee Corridor is one of four ITS priority corridors in the nation. ITS Priority corridors are being used as national test beds and demonstration sites for ITS. The GCM presents the integrated plan of ITS projects which will address the surface transportation needs and problems of the Corridor. Demonstration projects and other test projects are defined in the CPP that may enhance transportation system efficiency, reduce emissions, and improve safety.

The CPP was developed in a cooperative effort by the three states (Indiana, Illinois and Wisconsin) and the Federal Highway Administration (FHWA) in conjunction with transportation system providers and users in the Corridor. A public outreach effort was used to obtain input from the transportation agencies in the corridor on their problems and needs. ITS projects were defined and coordinated such that they complement existing systems and help fulfill the corridor's needs. The original CPP was developed in June 1995 and is being updated with a completion date of late spring 1997.

**2.1.1 Corridor Needs**

One of the first steps in developing the CPP was to identify travel related problems in the corridor. The problems identified in the CPP can be categorized into three major areas:

- Congestion on Freeways and Arterials,
- Air Pollution from Mobile Sources, and
- Lack of Travel Safety (both real and perceived).

The CPP identified specific causes for these problems as listed below (in priority order).

- Incidents - Incidents on freeways and arterials cause congestion which results in increased air pollution, greater travel times, and decreased travel safety.
- Real-time Accurate Travel Information - A lack of accurate, real-time information concerning travel conditions contributes to inefficiencies in travel by individual travelers, commercial operators and transit users.
- Coordinated Planning and Operations - Transportation operating and planning agencies need to improve their coordination of both planning and operating issues.
- Freeway and Surface Street Traffic Flow - Traffic in major travel corridors is not operating as efficiently as possible.
- Toll, Fare and Fee Collection - Collection systems for tolls, fares and fees are perceived as cumbersome, inefficient and the cause of undue delay.
- Transit Status Information - Transit travelers and operators are not able to obtain uniform information concerning the status, schedules, routes and overall use of transit systems throughout the corridor.

- Accidents and Personal Security - Although accident rates are not extraordinarily high, there are a significant number of accidents that occur within the corridor.
- Public Travel Safety - Some members of the traveling public perceive that transit travel is not safe or not as safe as private automobiles.
- Commercial Vehicle Operators (CVO) Pre-clearance - Commercial carriers are hindered in their ability to operate efficiently by the complexity of complying with a multitude of regulations which may vary by state.

The CPP presented candidate solutions which were then expanded into specific projects. These candidate solutions are listed in Table 2.1-1 below.

Table 2.1-1 ITS Project/Program Ideas<sup>1</sup>

GENERAL PROBLEM	GENERAL PROPOSED SOLUTION
Non-Recurring Congestion	Real-time Traffic & Transit Monitoring Traffic Signal Prioritization for Emergency & Transit Vehicles Improved HAZMAT Computer Models to Aid Response
Planned Events (Construction Congestion)	Improved Agency Coordination Incentives for Off-Hours Construction and Overtime
System Congestion	HOV Facilities Automated Toll Collection Dynamic Traffic Signal Adjustment
Trip Planning	Real-time Transit Information Expansion/Acceleration of the ADVANCE Project Centralized, Coordinated Transit Information Provision
Air Quality	Active, On-road Monitoring to Identify High Polluting Vehicles
Safety	Collision Avoidance Active Monitoring/Policing In-Vehicle "Panic Buttons"

<sup>1</sup> Source: GCM Corridor Initial Program Plan, June 1995.

### 2.1.2 Program Areas

The CPP considered the FHWA's core infrastructure components when they progressed the ITS Program Ideas (shown in Table 2.1-1) into projects and grouped the projects together into Program Areas. The nine FHWA infrastructure components comprise the core of the Intelligent Transportation Infrastructure (ITI). The nine ITI components are:

1. Traffic Signal Control
2. Transit Management
3. Freeway Management

4. Electronic Toll Collection
5. Regional Multimodal Traveler Information
6. Electronic Fare Payment
7. Railroad Grade Crossing
8. Emergency Management Services
9. Incident Management.

Each of the nine ITI components as defined by the FHWA are summarized below:

- Traffic Signal Control - Advanced signal systems automate the use of real-time traffic flow information to change the signal timing to efficiently accommodate traffic demands on all streets. To be most effective, advanced signal control systems require an accurate reflection of traffic flow status on the roadway network.
- Transit Management - Advanced fleet management systems include hardware / software components on buses and in dispatching centers, radio communications systems and operations and maintenance facilities and personnel. Transit Management Systems can be used to provide real-time information to travelers as well as enable optimal operations.
- Freeway Management - Real-time information on traffic flow and roadway conditions is key to managing the roadway network in a proactive manner. Incident management and congestion mitigation activities are key components of a Freeway Traffic Management System (FTMS) as well as coordination of these actions with adjacent traffic signal control systems.
- Electronic Toll Collection (ETC) - ETC allows electronic payment of toll as the vehicle passes the toll station at a safe speed, thereby decreasing delays and improving system productivity.
- Regional Multi-modal Traveler Information - There is a need for an integrated source of roadway and transit information to provide a comprehensive and integrated view of the roadway and transit conditions throughout a metropolitan area or region. Traveler information is fused from the various ITI components into a comprehensive regional information system, thereby facilitating the timely distribution of critical travel-related information to the traveler and transportation related commercial user.
- Electronic Fare Payment - Electronic fare collection eliminates the need for travelers to carry exact change amounts and allows for the implementation of a single fare payment medium for all transportation services (tolls transit fares, parking charges) as well as non-transportation purposes.
- Railroad Grade Crossing - Due to the fact that trains travel at high speeds and can take up to a mile or more to stop, special challenges exist at railroad grade crossings. As a result, automated systems are now becoming available which will allow the deployment of safety systems that provide additional warning of crossing hazards to drivers.
- Emergency Management Services - By equipping emergency response vehicles with automated vehicle location capabilities, and two-way data communications, response times can be improved, and emergencies can be handled more effectively.
- Incident Management - The objectives are to rapidly respond to incidents with the proper

personnel and equipment, to aid crash victims, and to facilitate the rapid clearance of the incident from the roadway to reduce traveler delays due to incidents.

The following ten GCM Corridor Program Areas address the FHWA Core Infrastructure categories as well as the specific problem areas identified in Section 2.1.1:

1. Multi-Modal Traveler Information System
2. Integrated Transit System
3. Incident Management Programs
4. GCM Technical and Planning Support
5. Traffic Management Systems
6. Commercial Vehicle Operations
7. Traffic Signal Integration
8. Vehicle Transponder Systems
9. Incident Reporting and Mayday Security
10. Private/Public Partnerships.

A brief description of each of these program areas is provided below:

- Multi-Modal Traveler Information System - This program area develops a comprehensive, integrated and multi-modal information system to serve the needs of travelers and operators within the GCM Corridor.
- Integrated Transit System - This program area integrates the status and schedule systems of the transit operating agencies for use by the transit operators and the public within the GCM Corridor. It also provides dynamic capabilities to manage and ensure connections between routes and modes and will enhance individual capabilities of the transit management systems within the GCM Corridor.
- Incident Management Programs - This program area establishes a consistent level of detection, response and operational capabilities for incident management programs within the GCM Corridor.
- GCM Technical and Planning Support - This program area provides support services to the GCM program, its various committees and outreach efforts. The ITS Deployment Committee coordinates and facilitates the implementation of the GCM CPP. Technical support is coordinated with ITS Midwest. Outreach and public education will be provided through workshops, meetings, public forums and newsletters.
- Traffic Management Systems - This program area develops procedures and capabilities to allow traffic and transit management centers to operate interactively.
- Commercial Vehicle Operations - This program area establishes a forum to develop strategies for the development of integrated CVO in the GCM Corridor.
- Traffic Signal Integration - This program area develops integrated signal control systems to improve the flow of traffic in major regional corridors within the larger GCM Corridor.

- Vehicle Transponder Systems - Commercial and transit operators use transponders to track and manage vehicle status and cargo locations. Automated toll collection systems also utilize transponders. This program area facilitates and coordinates an evolutionary development of transponder systems within the GCM Corridor.
- Advanced Incident Reporting and Mayday Security - This program area develops the ability for travelers to communicate rapidly and directly to report an accident, incident, or disablement and request assistance.
- Private/Public Partnerships - This program area provides a means for actively involving the private sector in GCM Corridor ITS service initiatives.

It should be noted, however, that the CPP only identifies proposed projects that will be applying for Intermodal Surface Transportation Efficiency Act (ISTEA) funds. It does not list completed ITS projects or projects funded outside of ISTEA. The following sections, however, identify both projects in the CPP as well as those identified in other programs, those already in existence and those funded outside of ISTEA. Ultimately, all projects will need to be accommodated in the GCM Corridor Architecture.

### 2.1.3 Corridorwide Projects

Many of the projects within the GCM Corridor that were developed in the 1970's, 80's and early 90's are local in nature in that they were designed with a scope that fit the needs of the funding agency. These systems operate and maintain local transit systems, or control traffic systems within a smaller area. These local projects contribute to corridorwide projects that focus on the sharing of information within the GCM Corridor. Many corridorwide projects use the information gathered by the localized systems and make it available to a variety of users. Corridorwide projects also involve the efforts to standardize the manner in which agencies throughout the GCM Corridor describe locations, define congestion levels, post VMS messages and develop HAR messages. There are currently four corridorwide efforts: the Corridor Transportation Information Center (C-TIC), the MMTIS, the GCM Data Pipe and the Gateway Implementation Project. Descriptions for these principal corridorwide efforts follow:

2.1.3.1 Existing Projects (Corridorwide)

**NAME:** Corridor Transportation Information Center (C-TIC)  
**TIME FRAME:** November 1995 - Present  
**PARTICIPANTS:** Illinois Department of Transportation (IDOT), Indiana Department of Transportation (INDOT), Wisconsin Department of Transportation (WisDOT), University of Illinois, Chicago - Electrical Engineering and Computer Science Department (UIC-EECS) (IDOT is the lead agency)  
**PROJECT MANAGER:** Joe Ligas, IDOT, (847)705-4800  
Peter Nelson, UIC-EECS, (312)996-3259

**DESCRIPTION:** The C-TIC is the continuation and expansion of the Traffic Information Center (TIC) which was used in the *ADVANCE* Project. The C-TIC is the prototype for the Gateway Traveler Information System being designed as part of the Multi-Modal Traveler Information System Project. The C-TIC will provide real-time transportation information to the traveling public in the GCM Corridor. The C-TIC is designed to be a pass-through between various information sources in the sixteen counties which comprise the GCM Corridor in Illinois, Indiana and Wisconsin. It is not designed to control and/or monitor traffic control devices but rather to facilitate sharing of information between various agencies, control centers and private firms. This information includes travel times on selected routes, incident locations, construction and maintenance information, VMS messages and weather information.

Minimal processing of data occurs at the C-TIC. The only processing that occurs is to convert incoming location information to a common referencing system which is being developed to be in conformance with the upcoming national standard.

The current information sources to the C-TIC are:

- IDOT Traffic System Center
- MONITOR FTMS
- Northwest Central Dispatch (NWCD)
- \*999 Cellular Express Line
- Surface Systems Inc. (weather data)
- Illinois State Toll Highway Authority (ISTHA) (a prototype toll tag based travel time demonstration)
- IDOT, WisDOT, INDOT, ISTHA for Construction/Maintenance.

The IDOT Traffic System Center (TSC) is responsible for obtaining the raw traffic data (i.e. volumes, speeds, occupancy, etc.) for the Chicago area expressways. This data is collected with loop detectors and is sent to the C-TIC by way of T-1 dedicated lines. MONITOR, which runs the FTMS for the Milwaukee Area, currently has a leased line data connection to the C-TIC. Every minute, MONITOR automatically sends incident data, VMS messages, and detector data to the C-TIC. The detector data from both sources is used to develop travel times on roadway links as well as between

2.1.3.1 Existing Projects (Corridorwide) - continued

specific origins and destinations. The detector data is also processed to determine congestion levels. These congestion levels are calculated every minute and the previous five minute averages are displayed both as text and as color coded congestion maps used by the C-TIC operators and on the GCM Internet maps.

NWCD provides the C-TIC with incident data. At the C-TIC, the NWCD incidents are automatically entered into the C-TIC database without the need to have an operator intervene. The C-TIC automatically filters out NWCD incidents which are not on expressways, tollways or major arterial routes. Once NWCD incident information is entered into the C-TIC database, it is available for C-TIC operator use and will also be available on the GCM Internet series of maps in the future.

For the C-TIC, the critical element of the \*999 Incident Processing System is the electronic connection which provides the real-time incident information to the C-TIC database. Through this connection, up to the minute incident information (incident type, street, cross street, address, time, details) is sent to the C-TIC. The transfer of incident information to the C-TIC is transparent to the operation at the \*999 facility and is accomplished with a standard modem connection via a telephone line. Incidents from \*999 are filtered and may be displayed in the future similar to those incidents from NWCD.

Surface Systems Inc. (SSI) provides weather information to the C-TIC via leased line. The system provides surface temperature, subsurface temperature and other weather and roadway condition information. This information is collected by 8 detector stations throughout IDOT's District 1. SSI is soon to provide data for parts of Wisconsin. The C-TIC does not currently post this data to the GCM Home Page.

The ISTHA provides the C-TIC with travel time information for a demonstration section of I-355 via an X.25 communications link. So far the communications link has not been reliable and, hence, the travel time data has been sporadic. Therefore, the system design and travel time algorithm are being reviewed prior to systemwide implementation.

Construction and Maintenance information is provided to the C-TIC from IDOT, WisDOT, INDOT and ISTHA. IDOT, ISTHA and INDOT fax their information and WisDOT e-mails their data. All construction and maintenance information is manually input to the database for display on the Internet maps.

Additional connections will be added in the future to include transit information and real-time traffic information from Indiana DOT and the toll authorities within the Corridor.

The primary means of distributing the information from the C-TIC is over

2.1.3.1 Existing Projects (Corridorwide) - continued

the Internet, through the GCM Corridor Home Page. A series of maps covering the GCM Corridor display congestion and construction/maintenance information along with displaying travel times on specific routes. Incident data will be available at some time in the future for ongoing use. These maps are updated approximately every minute.

2.1.3.1 Existing Projects (Corridorwide) - continued

**NAME:** Multi-Modal Traveler Information System (MMTIS)  
**TIME FRAME:** Began November, 1996 - Completion expected by March 31, 1998  
**PARTICIPANTS:** IDOT, INDOT, WisDOT (IDOT is the contracting agency)  
**PROJECT MANAGER:** Joe Ligas, IDOT, (847)705-4800  
Syd Bowcott, De Leuw, Cather & Company, (312)930-5147

**DESCRIPTION:** The MMTIS project revolves around the concept of a GCM Corridor system architecture and design of a traveler information system. It involves research of the ITS systems in the corridor as well as on a national level which are currently deployed and proposed ITS systems identified in regional strategic plans or early deployment studies. This information is used in recommending a corridor system architecture which best suits the characteristics of the diverse resources within the corridor. Along with the corridor architecture, a corridor strategic plan will be developed. Another key component of the MMTIS project is the design of the Gateway Traveler Information System. The Gateway will be the traveler information collection and distribution hub for the GCM Corridor. The following documents will be developed for the Gateway: System Definition Document, Requirements Specification, and Interface Control Specification. The C-TIC is the prototype of the Gateway. Gateway final design and implementation will be performed under the Gateway Implementation Project.

The MMTIS Project also includes development of an Information Clearinghouse to allow both secure and general access methods to exchange memos, letters, documents, etc., between GCM participants.

Another aspect of the MMTIS Project involves the initiation of the process to standardize VMS and HAR messages by the operating agencies in the GCM Corridor. As well, the MMTIS Project is charged with coordinating the development of standard message sets for weather detection systems which are deployed throughout the Corridor.

2.1.3.2 Committed Projects (Corridorwide)

**NAME:** GCM Data Pipe  
**TIME FRAME:** To be initiated in 1997  
**PARTICIPANTS:** GCM Corridor  
**PROJECT MANAGER:** Efforts divided among several projects.

**DESCRIPTION:** The GCM Data Pipe concept will provide a backbone communication system for transportation agencies in the GCM Corridor. This will be accomplished through the connection of existing transportation systems and integration with other GCM program areas. Additionally, the Data Pipe has potential to link police departments, state highway patrols, emergency medical services, fire departments, and other support agencies throughout the GCM Corridor.

The GCM Data Pipe project is scheduled to utilize fiscal year 1997 funds to initiate efforts on the Initial Data Pipe. The Initial Data Pipe will consist of a prototype network that will connect the Traffic and Transit Control Centers from each state along the corridor and may later include weather and other control or management systems. Three additional phases for the Data Pipe are as follows:

Phase I GCM Data Pipe is scheduled to begin in fiscal year 1999 and will provide a backbone network that supports all of the planned interfaces specified in the GCM Corridor architecture. It will provide a network for the collection and distribution of real-time information. The network will utilize existing infrastructure where possible and eliminate duplication of functions and facilities.

Phase II GCM Data Pipe will follow Phase I Data Pipe and is scheduled to begin in 2002. This phase will allow for extensions to the network as needed to support new users and applications.

Phase III is the Joint Communications Backbone. This phase will be initiated in conjunction with the Initial Data Pipe activities in fiscal year 1997 and will be completed some time after 2002. The Joint Communications Backbone will consist of a feasibility study to determine which communication method or methods would be most applicable to link the transportation systems within the GCM Corridor.

2.1.3.2 Committed Projects (Corridorwide) - continued

**NAME:** Gateway Implementation Project  
**TIME FRAME:** Expected RFP out by Fall 1997  
**PARTICIPANTS:** IDOT, INDOT, WisDOT (IDOT is the contracting agency)  
**PROJECT MANAGER:** Joe Ligas, IDOT, (847)705-4800

**DESCRIPTION:** This project builds upon the Gateway System Definition Document, Requirements Specification, and Interface Control Specification developed under the MMTIS Project. Based on these documents, the final design will be approved and the complete system developed, integrated, staffed and operated.

The Gateway will serve as the information collection and distribution point for traveler information in the GCM Corridor. The overall concept of the Gateway is to collect traveler and transportation related information (congestion, travel times, incidents, construction, maintenance, transit schedules, weather, signal malfunctions, etc.) from the systems outlined throughout this working paper. These data sources will have a minimal level of interfacing prior to Gateway development. The goal is to have regional centers in the three states to be the focal point for data gathering in each state.

Data received at the Gateway will be processed and distributed to various agencies throughout the GCM Corridor and to the traveling public. Distribution to the agencies via direct communications will be through the regional centers. Public information will be available through a variety of sources: Internet, Personal Data Assistants (PDAs), Kiosks, and other enhanced methods supported by Independent Service Providers.

### 2.1.3.3 Proposed Projects (Corridorwide)

At this time, there are no additional projects proposed specifically for the Corridor. Descriptions for existing, committed and proposed projects for each of the three regions within the corridor are provided in the following sections.

## 2.2 INDIANA

### 2.2.1 Regional Needs

The regional needs for Indiana are to be addressed in the "Indiana Regional Strategic Plan." The work order for this plan was approved by FHWA on August 14, 1996 and a Request for Proposal (RFP) for consulting services was issued in December, 1996. Negotiations are currently underway with a consultant.

### 2.2.2 Implementation Priorities

The "Indiana Regional Strategic Plan" will present implementation priorities for the Indiana region of the GCM Corridor.

### 2.2.3 Functional Requirements

Functional requirements for each of the recommended projects will be discussed in the "Indiana Regional Strategic Plan."

### 2.2.4 System Architecture

While efforts are underway to implement an Advanced Traffic Management Systems (ATMS) on the Borman, several ITS type systems are currently in place, controlled by INDOT or other local agencies. To date, the interconnection of the systems and the exchange of data has been minimal. Hence the existing architecture can be thought of as distributed.

### 2.2.5 Implementation Plan

ITS implementation in the Indiana region consists of several separate INDOT, Gary Public Transportation Corporation and Indiana Department of Environmental Management projects. There are existing, committed, and proposed ITS projects. Each project is described on the following pages.

2.2.5.1 Existing Projects (Indiana)

**NAME:** Indiana Incident Management (Hoosier Helpers)  
**TIME FRAME:** In Place (as of July 14, 1996), Ongoing Upgrades  
**PARTICIPANTS:** INDOT  
**PROJECT MANAGER:** Dan Shamo, INDOT, (317) 232-5523

**DESCRIPTION:** Hoosier Helpers is the motorist aid system for the Frank Borman Expressway and uses roving vehicles equipped to assist disabled vehicles. The Hoosier Helpers provide the necessary help needed to relocate disabled vehicles. This help includes: tire repair, gasoline, vehicle removal (roadway clearance), and other quick auto repairs to get cars moving again (i.e., wiring up a dragging muffler). The Hoosier Helpers also call for emergency assistance when necessary and establish detours to help prevent secondary accidents. The Hoosier Helpers patrol all 16 miles of the Borman Expressway.

Currently a total of 9 staff operate the Hoosier Helper vehicles while 3 staff operate the Traffic Management Center (TMC). The TMC is located at I-65 and 15th Avenue. The Hoosier Helpers provide for 2 Hoosier Helper vehicles to be on the road at all times with one driver in each vehicle. Meanwhile, the TMC is staffed during regular business hours with a mechanic, a secretary, and the operations manager.

Currently, the Hoosier Helper drivers are contacted on two-way radios, by various agencies, about disabled vehicles on the Borman Expressway. The Hoosier Helpers manually change all VMS while the Highway Advisory Radio Messages are controlled by the Traffic Management Center.

Operations capabilities have been expanded by the purchase of two new vehicles and addition of staff to provide 24 hour coverage of the Expressway. Each vehicle will be equipped with a laptop computer as part of the expert system. (Related to Indiana Incident Management Expert System Operational Test Project under Committed Projects.)

**GCM IMPACT:** Connection to other GCM systems is critical in order to provide information on incidents and status of VMS/HAR messages. This connection should be in real-time and can be direct or through the INDOT Traffic Management Center.

2.2.5.1 Existing Projects (Indiana) - continued

**NAME:** Borman ATMS Phase I  
**TIME FRAME:** Completed  
**PARTICIPANTS:** INDOT  
**PROJECT MANAGER:** Dan Shamo, INDOT, (317) 232-5523

**DESCRIPTION:** Phase I of the Borman ATMS was a field operational test to develop and prove the viability of an ATMS for the Borman Expressway in northwest Indiana. Field trials took place on a targeted section of the Expressway under "real world" conditions.

The targeted deployment was installed for 3 miles along the westbound lanes of the Borman Expressway between the Kennedy and Burr interchanges. Closed Circuit Television (CCTV) was installed at three interchanges: Kennedy, Cline and Burr and spread spectrum radio was used to transmit the video images from the interchanges to the TMC using compression techniques. Additionally several technologies were evaluated for vehicle detection. The data from the detectors was also sent to the TMC via spread spectrum. The types of detectors tested were: active microwave, passive infrared, active ultrasonic, and active infrared.

In addition to the field trials, a preliminary design study was performed to prepare for full deployment of the ATMS system in Phase II. This design study included recommendations for technologies such as pavement condition monitoring, vehicle classification, automatic vehicle identification (AVI), changeable message signs (CMS), and highway advisory radio (HAR).

The TMC will act as the focal point for all Borman ATMS communications; it is envisioned that 60' communication towers will be installed for mounting the video and communications equipment. These towers will enable line-of-sight between the fixed roadside equipment and the TMC as well as coverage for mobile communications.

Following successful completion of the Borman ATMS Phase I, efforts are now under way to implement Phase II which will be the "permanent" version of the ATMS on the Borman Expressway.

**GCM IMPACT:** As this is a temporary system expected to be replaced over the next 1-2 years, little interconnection with other GCM projects is planned. Work is proceeding however with C-TIC ties to the paging service operated by the Hoosier Helpers. When Phase II of the ATMS is implemented, real-time ties to other GCM systems will be critical. These ties will include data exchange as well as interfacing of common field devices.

2.2.5.1 Existing Projects (Indiana) - continued

**NAME:** Partners for Clean Air/Ozone Action Days  
**TIME FRAME:** In Place (as of 1994)  
**PARTICIPANTS:** Indiana Department of Environmental Management (IDEM) - Office of Air Management  
**PROJECT MANAGER:** Joyce Newland, IDEM, (317) 233-5684

**DESCRIPTION:** IDEM, working with INDOT, has developed a system that notifies the motorists on I-65 and I-80/94 of an impending ozone action day. This notification system is utilized between May and September of each year, when ozone reaches dangerous levels.

This program utilizes existing VMS and HAR (both INDOT operated) to notify motorists that "Tomorrow will be an Ozone Action Day" (motorists are also notified that "Today is an Ozone Action Day"). Along with the Ozone Action Day announcements, ways to limit ozone pollution, such as car pooling, public transportation, and telecommuting are suggested.

The VMSs can be changed by several means: the Hoosier Helpers (by hand or by modem in the future); the INDOT central office (in Indianapolis); or the INDOT LaPorte District office in response to a request by the IDEM. The HAR messages are changed by the INDOT Central Office in response to a request by the IDEM. In the future the Hoosier Helpers will also be able to change the HAR messages via modem.

**GCM IMPACT:** Connection to other GCM systems would better coordinate ozone action days' notifications. Real-time connections to the C-TIC would probably be through the Borman ATMS Phase II Traffic Management Center.

2.2.5.2 Committed Projects (Indiana)

**NAME:** Indiana Incident Management Expert System Operational Test (Hoosier Helpers)  
**TIME FRAME:** Field Operational Tests will be complete by Jan. 1998  
**PARTICIPANTS:** INDOT  
**PROJECT MANAGER:** Dan Shamo, INDOT, (317) 232-5523

**DESCRIPTION:** As part of this project an expert system is being developed that includes 2-way data communication between the Hoosier Helper vehicles and the TMC. The expert system is undergoing field tests until January 1998. Once approved, the Hoosier Helper drivers will be able to communicate over a laptop computer to the TMC which, in turn, will communicate to various field equipment such as HAR and VMS. The expert system will automatically generate the messages displayed on the VMS and broadcast on the HAR. The technology includes a laptop personal computer, a Radio Frequency (RF) modem and a GPS Receiver. The Traffic Management Center (TMC) for the Borman will also be fully automated and operated by the Hoosier Helper operators 24 hours per day.

This project includes the deployment of a news pager service that will provide news agencies with up to the minute reports of lane restricting incidents. The pager information will be sent out from the Hoosier Helper vehicles as the Hoosier Helpers update the VMS and HAR information. This paging service will require the news agencies to subscribe to the service. [Related to the Indiana Incident Management (Hoosier Helpers) Project under Existing Projects.]

**GCM IMPACT:** Connection to other GCM systems is critical in order to provide information on incidents and status of VMS/HAR messages. This connection should be in real-time and can be direct or through the INDOT TMC.

2.2.5.2 Committed Projects (Indiana) - continued

**NAME:** Borman ATMS Phase II  
**TIME FRAME:** The RFP (for Phase II) was released in early March 1997 and is due to INDOT by April 24, 1997  
**PARTICIPANTS:** INDOT  
**PROJECT MANAGER:** Delmae Heinlein, INDOT, (219) 362-6125

**DESCRIPTION:** Phase II of the Borman ATMS will include the design and deployment for a completed 16 mile ATMS on the Borman. Under Phase II new equipment will be procured and installed for vehicle detection, video surveillance, communications, data processing and variable message signs and the TMC facility will be redesigned during this time. The ATMS also includes the Hoosier Helpers and a Highway Advisory Radio system.

There will be a 30-day testing period at the beginning of Phase II for non-intrusive vehicle detector stations. During this period a manufacturer can have their product tested on the Borman Expressway. Once the testing is complete, INDOT will select the detector that best meets their needs.

Later, Phase III of the system will expand the ATMS to the Michigan state line and include a portion of I-65 to the south. Phase III also includes a joint system for traffic management operations with the Toll Road Division and additional operational tests for advanced system technologies.

**GCM IMPACT:** Connection to other GCM systems is critical as the TMC will serve as the data collection point for northwest Indiana. Data to be provided is expected to include detector information to allow development of travel times, incident messages, transit status, VMS displays, etc. This connection will need to be in real-time and will probably be direct to the C-TIC/Gateway.

2.2.5.2 Committed Projects (Indiana) - continued

**NAME:** Gary Public Transportation Corporation (GPTC) - Intelligent Hi-Way Vehicle Locator System  
**TIME FRAME:** To Be Determined  
**PARTICIPANTS:** GPTC, East Chicago, and Tradewinds  
**PROJECT MANAGER:** Jim Holand, GPTC, (219) 884-6100

**DESCRIPTION:** GPTC is planning to join with the City of East Chicago, Indiana and Tradewinds (a private corporation dealing in demand response busing systems) to develop a unified electronic vehicle locator/communication system for Northern Indiana.

The bus locator/communication system will be used to collect and transmit various pieces of information; to provide immediate communication to bus operators to help detour buses from accidents and congestion; monitor on-time route performance; provide automated tracking of fleet; provide transfer connection protection; and improve productivity of transit operations.

Both GPTC and East Chicago have only recently received funding for the project and it is currently in a very early stage. The three participating organizations are planning to get together in early 1997 to determine the specifics about the project such as the type of technologies to be utilized and the geographical extent of the project.

It is anticipated that a request for bids for the project will go out in April 1997.

**GCM IMPACT:** Connection to other GCM projects is important. Transit delays could be provided to the users via the C-TIC. The connection would most likely be in real-time through the Borman ATMS Phase II TMC to the C-TIC.

2.2.5.3 Proposed Projects (Indiana)

**NAME:** Traffic Signal Integration  
**TIME FRAME:** To Be Determined  
**PARTICIPANTS:** INDOT  
**PROJECT MANAGER:** To Be Determined

**DESCRIPTION:** In Indiana (INDOT's LaPorte District) there are approximately 50 closed loop signal systems that cover about 80% of all the signals in the district. Even so, integrated signal control systems, centralized control systems, on-line communications and signal integration with Freeway Traffic Management systems do not exist.

It is envisioned that the Traffic Signal Integration project will develop a program to implement traffic signal control systems that are capable of providing effective traffic management and integration with FTMS. One aspect of this project is the determination of appropriate operational test corridors for northern Indiana as well as subsequent primary and secondary corridors in Indiana.

This project is to be implemented at some point in the future and additional details will be provided as they become available.

**GCM IMPACT:** Some connection to other GCM systems would be useful. Data to be provided could include signal malfunctions.

## 2.3 ILLINOIS

### 2.3.1 Regional Needs

The Illinois region is unique to the GCM Corridor in several ways. With Chicago and its densely populated suburbs, the Illinois region has a majority of the traffic and congestion problems within the corridor. Additionally, Illinois has a long history of installing and operating ITS elements in a fully distributed architecture.

The direction of ITS in northeastern Illinois is being studied in the ITS SEDP. This SEDP is being developed by TransCore under contract to the Chicago Area Transportation Study (CATS). CATS is the Metropolitan Planning Organization (MPO) for the Chicago area. In addition to CATS, other major participants in the study include IDOT, the Regional Transportation Authority (RTA), Chicago Transit Authority (CTA), Pace, the Illinois State Toll Highway Authority (ISTHA) and the City of Chicago Department of Transportation (CDOT).

The SEDP will focus on an action plan to target and to deploy key elements of the core ITS infrastructure including real-time and multi-modal traveler information systems, itinerary planning, arterial management systems and other building blocks. Started in February 1997, the Illinois SEDP will develop the program plan for the northeastern Illinois region building on the Corridor's efforts.

### 2.3.2 Implementation Priorities

The Illinois SEDP will present implementation priorities for the region building on the regional initiatives. As discussed above, this SEDP has not yet determined the implementation priorities.

### 2.3.3 Functional Requirements

Functional Requirements, as presented in the Illinois SEDP, will be summarized here.

### 2.3.4 System Architecture

As described above, the Illinois Region currently has a fully distributed architecture. Each of the region's transportation system providers has at least one independent operations center. Table 2.3-1 lists the region's major transportation system providers and their respective systems.

### 2.3.5 Implementation Plan

There are several ITS elements already in place in the Illinois Region as briefly inferred in Table 2.3-1. Future ITS implementation in the region is planned through the deployment of several separate projects of which some are committed and some are proposed. Existing ITS elements are described on the following pages as well as each of the committed and proposed projects.

Table 2.3-1 Illinois Region Existing Transportation System Providers

AGENCY	OPERATIONS CENTER/LOCATION	OPERATION PERFORMED
IDOT	COM Center - District I, Schaumburg	<ul style="list-style-type: none"> <li>• Highway Advisory Radio (HAR)</li> <li>• Construction &amp; Maintenance Schedules</li> <li>• Emergency Traffic Patrol Dispatch</li> <li>• Kennedy Reversible Lanes Control &amp; Video Surveillance</li> </ul>
	Traffic Systems Center (TSC), Oak Park	<ul style="list-style-type: none"> <li>• Incident Detection</li> <li>• Ramp metering systems</li> <li>• Real-time traffic data (loops) (mainline + ramps)</li> <li>• Variable Message Signs (VMS)</li> <li>• Video surveillance</li> </ul>
ISTHA	Downers Grove	Electronic Toll Collection System (I-PASS) Real-time traffic data (toll tags) Construction & maintenance information
Regional Transit Authority (RTA)	Pace, Arlington Heights	Bus Schedules - Suburbs
	CTA, Chicago	<ul style="list-style-type: none"> <li>• Bus &amp; Light Rail Schedules - Chicago</li> <li>• Output from Bus Services Management System (BSMS)</li> </ul>
	METRA, Chicago	Commuter Rail Schedules
NWCD	Mt. Prospect	Local Emergency 911 Telephone Calls
*999	Chicago	Incident Data for Metropolitan Chicago
911 Chicago	Chicago	Chicago 911 Telephone Calls
Illinois Secretary of State	Chicago	Commercial Vehicle Operator Pre-clearance
Chicago Skyway	Chicago	<ul style="list-style-type: none"> <li>• Electronic Toll Collection System (proposed)</li> <li>• Construction and Maintenance Information</li> </ul>

2.3.5.1 Existing Projects (Illinois)

**NAME:** IDOT Traffic System Center (TSC), Oak Park  
**TIME FRAME:** Existing  
**PARTICIPANTS:** IDOT, District 1  
**PROJECT MANAGER:** Tony Cioffi, IDOT TSC, (708)524-2145

**DESCRIPTION:** The TSC is responsible for managing congestion on IDOT's District 1 expressway system. The congestion management system includes a vehicle detection, ramp metering, closed circuit television, variable message sign subsystems and CB radio monitoring sites. The TSC is also responsible for distributing congestion information to the public and to independent service providers. The TSC operates between 5 AM and 7 PM on weekdays. During off hours, some of the TSC operations can be performed by the IDOT COM Center.

Vehicle Detection Subsystem (VDS) - VDS includes inductive loop detectors located in the center lane every one-half mile of the region's expressways and Lake Shore Drive. The system includes over 136 centerline miles of instrumentation with over 2200 loop detectors. The field data are transmitted in real-time to the TSC (LSD data is transmitted to Chicago Department of Transportation (CDOT) and the TSC). The TSC automatically computes volumes and occupancies and estimates vehicle speed as well as travel times. From this data the TSC computes congestion levels. The TSC utilizes this data to update the Variable Message Signs. If the TSC operators suspect an incident, they could notify the COM Center (phone hot line) to dispatch the Emergency Traffic Patrol. There is a leased phone line data feed from the TSC to the COM Center which provides VDS processed data (congestion limit info) on a 5-minute cycle. The COM Center uses this data to update their Highway Advisory Radio automatically.

Ramp Metering is also achieved via vehicle detectors on the expressway ramps. There are currently 113 ramp metering stations. Each station consists of three loops on the ramps; an upstream loop for maximum queue length, a presence loop at the ramp's traffic signal and a reset loop located downstream of the ramp signal. These loops and the traffic signal are hardwired to the TSC (no field controllers). The ramp signal has a default of red and the presence loop notifies the TSC that a vehicle is present at the ramp traffic signal. This starts a timed countdown to hold the vehicle. After the countdown, the TSC sends a green signal to the ramp signal. For all of the Ramp Metering Stations, the length of the countdown is automatically set by an algorithm with inputs from an upstream expressway detector and a downstream expressway detector. There are 5 countdown rates ranging from 0 to 10 seconds which can be assigned. If the queue detector is activated, then the rate is stepped down with an algorithm until the queue detector is no longer activated. The passage loop resets the ramp signal to red.

2.3.5.1 Existing Projects (Illinois) - continued

There are three (3) Closed Circuit Television (CCTV) cameras located along the Kennedy Expressway that have feeds to the TSC. All three cameras are pan-tilt-zoom (PTZ) cameras. One camera is located on either end of the Kennedy Reversible lanes (Ohio and Edens) and the third camera is located between these two. The TSC has full PTZ control of each of these, but can only view one camera at a time. These black and white cameras are transmitted as compressed video over a T-1 line. The cameras are used for observation but mostly for verification. These 3 cameras also transmit to the COM Center over microwave radio. The COM Center can view these cameras but does not have PTZ control over them.

VMS - There are approximately 20 variable message signs strategically located on IDOT District 1 expressways. The TSC controls these signs through leased line modems. Canned messages can be automatically displayed based upon the VDS data. TSC operators may also create messages as necessary. Messages on these signs typically consist of congestion ahead warnings.

There are 24 CB radio monitoring sites which are used for incident verification. If there is an incident or heavy congestion, the commercial vehicle operators usually relay that information to each other with their CB radios. By listening in, the TSC operators are able to utilize one more tool in incident detection.

Radio and television stations receive TSC computer output of the detectors via direct hookups. In addition to the regular ASCII output, the TSC can key in special messages for all public agencies, including commuter rail transit and suburban bus information.

The TSC's current computer system was installed in 1990 and is currently being examined under the TSC Upgrade Study.

**GCM IMPACT:**

Connections in real-time between the TSC and other GCM systems is critical. A connection currently exists to the C-TIC which provides detector data, one-minute occupancy and volume, which ultimately is processed by UIC to drive the Internet real-time freeway condition maps.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Illinois Traffic Systems Center Upgrade Study  
**TIME FRAME:** Began November, 1996. Completion date is expected for April, 1997.  
**PARTICIPANTS:** IDOT  
**PROJECT MANAGER:** Tony Cioffi, TSC, (708)524-2145  
Gordon Paessani, NET, (847)394-8287

**DESCRIPTION:** This project seeks to improve the management capabilities of the TSC and COM Center by studying the automation of the manual functions of the TSC and the means to improve integration with the COM Center. This project includes the investigation of needs of the Traffic Systems Center and development of the design for new computers, field equipment, central hardware, central software and a communications system.

The center's computers are currently a DEC VAX model 6210 central computer and PDP 11 front-end processors. The new central hardware design will probably be client server based with an open systems architecture. Alternatives being analyzed include data acquisition architecture which uses a real-time VME Bus. The TSC operations will be analyzed and updated system functional requirements written for central software.

The result of this project will be a suite of reports including a design report that IDOT can use to develop an RFP for procurement and installation of the new equipment.

**GCM IMPACT:** Coordination is needed with other efforts such as those in the MMTIS Project to incorporate design compatibility.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** IDOT District 1 Communications Center (COM Center)  
**TIME FRAME:** Existing  
**PARTICIPANTS:** IDOT  
**PROJECT MANAGER:** Larry Bradley, IDOT District 1 Communications Center, (847)705-4441

**DESCRIPTION:** The Communications Center acts as the 24-hour incident management center for the District and has control over the Highway Advisory Radio system and the Kennedy Expressway reversible lane control (RevLac) system. During the TSC off hours, the COM Center may operate the TSC's variable message signs.

HAR - Eleven HAR stations are used to disseminate traveler information on IDOT's District 1 expressways. There are two FCC licenses; 1610 AM and 530 AM. On 1610 AM, the HAR broadcasts the location of areas of the expressway system experiencing delay whereas the 530 AM HAR provides travel times between various locations. A leased line from the TSC to the COM Center provides processed data on a 1 minute cycle. A digitized voice processing system is then used to convert the VDS ASCII readout into an audible message. The COM Center also has the capability to append HAR messages with digitized voice recordings. Additionally, the COM Center has the capability to provide a live message. There is not full HAR coverage of IDOT District 1 expressways and the two channels do not overlap. Coverage includes some on the Kennedy, the Dan Ryan and the Stevenson expressways. The data disseminated over the HAR system can also be accessed through the following public information hotlines: (847)705-4618, (847)705-4620. Additionally, there are two call-in services sponsored by the COM Center which provide travelers with travel information: (312)DOT-INFO, and \*123 (cellular). (312)DOT-INFO provides automated information in a digitized voice recording for all manner of travel questions including construction, travel times, travel directions and a reporting feature for motorists to report travel difficulties and incidents. An operator is available for users who have rotary phones. The \*123 system is not automated, staff answer questions on traffic congestion for any roadway in the District 1 jurisdiction.

The COM Center also has the ability to operate the TSC's variable message signs. Access is via leased line. While the TSC maintains the highest level of control over the signs, the COM Center may choose messages from a message library or can display any immediate message.

The Kennedy reversible lane control (RevLac) system is also operated by the COM Center. Since the completion of the Kennedy Expressway reconstruction in October 1994, a fully automated closure of entry ramps to the expressway's reversible lanes has been in successful operation,

2.3.5.1 Existing Projects (Illinois) - continued

improving safety and operational effectiveness during the twice-daily (occasionally four times) reversal of traffic flow. The system incorporates several types of advance signing, “swing gates” which rotate out of concrete barrier walls to re-direct traffic away from reversible lane entry ramps and “restraining barrier” mechanisms which are deployed across entry ramps to safely stop errant vehicles before a wrong-way incursion into the reversible lanes. In order to achieve the system objectives, extensive telemetry, programming, CCTV, and communications systems were integrated. The 43 cameras are used in the operation of this system. The system is designed to automatically detect and diagnose failures, to maintain operating integrity by working around these failures, and then to automatically return to normal operations following repairs.

As part of RevLac, the COM Center monitors 40 black and white fixed cameras located along the Kennedy Expressway. In addition, there are 3 black and white pan-tilt-zoom (PTZ) cameras located at the beginning, middle and end of the reversible lanes. All 43 cameras are transmitted over microwave radio to the COM Center. The COM Center can view the output of these PTZ cameras they do not have PTZ capabilities.

**GCM IMPACT:**

Currently, the COM Center has connections to other GCM systems via telephone or fax only. Future connections should be with real-time, electronic connections and could range from shared video feeds to exchange of VMS and HAR displays.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Illinois Emergency Traffic Patrol (ETP) Service  
**TIME FRAME:** Existing  
**PARTICIPANTS:** IDOT  
**PROJECT MANAGER:** Arland T. Smith, IDOT ETP, (312)624-0470

**DESCRIPTION:** The Illinois Emergency Traffic Patrol Service is operated by the IDOT and dispatched out of the COM Center. The servicemen or "Minutemen" operate fully equipped vehicles and provide services to stranded motorists. The primary objective of the ETP is to aid in congestion mitigation and incident detection/removal. The ETP responds to any disruptive incident on the Chicago Expressway System and takes immediate action to restore normal traffic flow. The Emergency Patrol Vehicles are equipped for and the Minutemen are trained to handle almost any traffic incident likely to occur. All services are free of charge to motorists.

There are 34 Emergency Patrol vehicles in addition to 9 light duty trucks, 3 heavy duty tow vehicles, one crash crane, one tractor retriever, a sand spreader and a heavy rescue and extraction truck.

Some duties of the Minutemen include:

- Assist at accident scenes
- Remove accident and non-accident debris
- Assist at disaster scenes
- Assist motorists
- Provide travel information
- Warn pedestrians to keep off expressways
- Establish Emergency Traffic Detours
- Provide surveillance of lane closures
- Assist/work at special expressway maintenance
- Report traffic information to IDOT's COM Center
- Report state property damage.

The ETP has been helping Chicago area motorists since the early 1960's. Currently, the ETP is operated 24-hours per day, 7-days per week on the following expressways in Chicago:

- Edens Expressway (I-94)  
-Kennedy Expressway to Lake Ave.
- Eisenhower Expressway (I-290)  
-Wells to US-45
- Bishop Ford Freeway (I-94)  
-95th Street to 147th Street

2.3.5.1 Existing Projects (Illinois) - continued

- Dan Ryan Expressway (I-90/94)  
-Downtown to 95th Street
- Kennedy Expressway (I-90/94/190)  
-Downtown to Mannheim Road
- Stevenson Expressway (I-55)  
-Lake Shore Drive to 1st Avenue.

The Emergency Traffic Patrol - Upgrade Equipment Project will provide the ETP with quick tow and vehicle location capabilities.

**GCM IMPACT:**

Connection to other GCM systems would allow for confirmation of incidents, coordination of responses and additional incident detection capability. Real-time connections will be needed to receive incident data which could be directly from the vehicles or through the COM Center.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Emergency Traffic Patrol - Upgrade Equipment  
**TIME FRAME:** Project completion expected Spring 1997  
**PARTICIPANTS:** IDOT  
**PROJECT MANAGER:** Arland T. Smith, IDOT, (773)624-0470

**DESCRIPTION:** The Illinois Department of Transportation has initiated an effort to retrofit thirty-four (34) vehicles in the existing Emergency Traffic Patrol (ETP) fleet of tow trucks with advanced technology underlift vehicle clearance and relocation equipment. The equipment that is being installed will provide for safer and faster disabled vehicle relocation to clear blocked lanes, regain lost capacity and reduce incident caused congestion and secondary accidents. This design will allow "Minutemen" to pick up most disabled vehicles without leaving the ETP vehicle cab.

The advanced technology underlift equipment project will compliment an effort to develop an ETP vehicle location capability using global positioning, existing infrastructure and computer capabilities. The goals of the location system are to provide for automated dispatch of the closest ETP vehicle; full integration with the IDOT District 1 Communications Center, incident response teams, traffic monitoring and information center; and compatibility with response mechanisms of Indiana and in the future, Wisconsin. The initial system will be useful to aid in the coordination with the Hoosier Helper system to facilitate response in the border areas.

**GCM IMPACT:** This system is resident on the ETP vehicles and no connection is needed to other GCM systems.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Interconnected Traffic Signal Systems (IDOT)  
**TIME FRAME:** Existing  
**PARTICIPANTS:** IDOT  
**PROJECT MANAGER:** Dan Powers, IDOT, District 1 (847)705-4505

**DESCRIPTION:** Throughout District 1, there are more than 180 signals operated as Closed Loop Signal Systems (CLSS) on IDOT maintained roadways. These systems utilize an on-street master controller with actuated intersection controllers and a dial-up modem to a central location. The purpose of a CLSS is to allow real-time traffic monitoring/changes from a remote location and to allow automatic traffic responsive control based on field inputs (detectors).

A majority of the systems are Econolite (over 75%) while the remaining systems are Eagle, Traconex, Transyt, or Multisonics.

Most of the counties in the Illinois region are deploying some level of interconnected traffic signal systems. Dial-up telephone service is the communications media of choice on all of these systems. As well, several suburbs within IDOT District 1 are installing similar CLSS for roadways that they maintain. If any of these roadways intersect with a state maintained route, coordination for signal timing needs to occur. Each of the county systems and major suburban systems are described in the next several pages.

**GCM IMPACT:** Some form of connection with other GCM systems would be desirable. These connections could range from a simple real-time notification of signal malfunctions to exchange of real-time data for area wide traffic management.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Interconnected Traffic Signal Systems (Chicago Department of Transportation (CDOT))  
**TIME FRAME:** Existing  
**PARTICIPANTS:** CDOT  
**PROJECT MANAGER:** Tom Kaeser, CDOT, Bureau of Traffic (312)744-4686  
Chris Krueger, CDOT, Bureau of Traffic (312)744-4685

**DESCRIPTION:** The City of Chicago has several closed loop signal systems (CLSS).  
• Irving Park Road between JFK Expressway and Lake Shore Drive - in operation.  
• Lake Shore Drive and Columbus between Monroe and Balbo - to be completed Summer 1997.  
• Michigan Avenue between Oak Street and 14th Avenue - in operation.  
• Randolph Street (near West Side) in operation.  
• Western Avenue (Future corridor).

The CLSS utilize on-street masters (OSM) and have dial-up access. All Chicago CLSS utilize a proprietary interface by Traffic Control Technologies (TCT) for the interface between the central PC and the OSM and local controllers. Malfunction alarms are provided in real-time to the Bureau of Electricity, while the Traffic receives detector data and signal timing data once per day. All of these CLSS have a fiber optic interconnect between the OSM and the local controllers. The goals of these closed loop systems are to provide optimal signal progression based on real-time field conditions, allow quick timing changes in case of special events, allow monitoring of the systems in real-time and provide transit traffic signal priority.

In addition to the CLSSs, the City has a new downtown Central Business District (CBD) Signal System that utilizes a dedicated fiber optic network between 73 field controllers and the Bureau of Traffic. The CBD Signal System does not utilize on-street masters, rather it utilizes the proprietary Management Information System for Traffic (MIST), by PB Farradyne, to interface with the signals. The goal of the CBD Signal System is to provide coordinated progression within the loop, and allow special event timing and progression as needed.

The remainder of the traffic signals are either non-interconnected or connected to 1 or 2 nearby signals. A planning study has been completed, however, for a Master Signal System for the City of Chicago.

**GCM IMPACT:** Some form of connection with other GCM systems would be desirable. These connections could range from a simple real-time notification of signal malfunctions to exchange of real-time data for area wide traffic

2.3.5.1 Existing Projects (Illinois) - continued

management.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Interconnected Traffic Signal Systems (Naperville)  
**TIME FRAME:** Existing  
**PARTICIPANTS:** City of Naperville, Illinois  
**PROJECT MANAGER:** Fred Ranck, City Engineer, (630)305-5992

**DESCRIPTION:** The City of Naperville extensively utilizes Econolite Closed Loop Signal Systems (CLSS). In fact, all but eleven of their signalized intersections are part of closed loop systems and have dial-up communications between the master controller and the Engineer's office using Zone Monitor IV software by Econolite.

Currently, data communications are limited to receiving malfunction alarms in real-time, setting the clocks once per day and performing an autocomparison of timing plans once per week. Although the City has an extensive system of vehicle detectors in conjunction with the CLSSs, no formal utilization of the data is currently in place.

**GCM IMPACT:** Some form of connection with other GCM systems would be desirable. These connections could range from a simple real-time notification of signal malfunctions to exchange of real-time data for area wide traffic management.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Interconnected Traffic Signal Systems (Cook County)  
**TIME FRAME:** Existing  
**PARTICIPANTS:** Cook County  
**PROJECT MANAGER:** Stan Pawlowicz, County Traffic Engineer, (312)443-7876

**DESCRIPTION:** Cook County currently operates nine Econolite CLSS. Communications between the master controller and the Engineer's office is through dial-up telephone using the Zone Monitor IV software by Econolite. The county receives malfunction alarms in real-time and receives status reports once per week. The county does not collect traffic volumes or occupancies from their vehicle detector stations.

**GCM IMPACT:** Some form of connection with other GCM systems would be desirable. These connections could range from a simple real-time notification of signal malfunctions to exchange of real-time data for area wide traffic management.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Interconnected Traffic Signal Systems (DuPage County)  
**TIME FRAME:** Existing  
**PARTICIPANTS:** DuPage County  
**PROJECT MANAGER:** Greg Johnson, County Traffic Engineer, (630)665-1155

**DESCRIPTION:** DuPage County operates 25 Econolite CLSS. Communications between the master controller and the Engineer's office is with dial-up telephone service through the Econolite Aries software. DuPage County performs an autocomparison of the signal timings every morning and receives malfunction alarms in real-time. At this time, the county does not utilize the volume and occupancy data from their system loops.

**GCM IMPACT:** Some form of connection with other GCM systems would be desirable. These connections could range from a simple real-time notification of signal malfunctions to exchange of real-time data for area wide traffic management.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Interconnected Traffic Signal Systems (Kane County)  
**TIME FRAME:** Existing  
**PARTICIPANTS:** Kane County  
**PROJECT MANAGER:** Paul Holcomb, County Traffic Engineer, (630)584-1170

**DESCRIPTION:** Information is forthcoming from the County with respect to their Traffic Signal System.

**GCM IMPACT:** If it turns out that the County has some form of centralized control over their traffic signal system, then some form of connection with other GCM systems would be desirable. These connections could range from a simple real-time notification of signal malfunctions to exchange of real-time data for area wide traffic management.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Interconnected Traffic Signal Systems (Lake County)  
**TIME FRAME:** Existing  
**PARTICIPANTS:** Lake County  
**PROJECT MANAGER:** John Sauter, County Traffic Engineer, (847)362-3950

**DESCRIPTION:** The county has several Econolite CLSS which utilize dial-up communications to central using Zone Monitor IV software. In addition, every stand alone intersection also has dial-up communications to the Engineer's offices. The county is considering using F/O interconnects between OSM and Local controllers provided by local cable companies.

The county checks the traffic signal timings three times per day and receives signal malfunction alarms in real-time.

Lake County is in the process of developing a WEB page which could be accessed by travelers to inform them of signal malfunctions and construction zone activities. The County is also considering posting congestion data but only if they can coordinate with both the State DOT signal systems and adjacent individual village signal systems.

The county is currently investigating usage of the system detectors for Average Daily Traffic (ADT) count purposes but otherwise does not collect volume or occupancy data.

**GCM IMPACT:** Some form of connection with other GCM systems would be desirable. These connections could range from a simple real-time notification of signal malfunctions to exchange of real-time data for area wide traffic management.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Interconnected Traffic Signal Systems (McHenry County)  
**TIME FRAME:** Existing  
**PARTICIPANTS:** McHenry County  
**PROJECT MANAGER:** Bradley Cousin, County Traffic Engineer, (815)338-3630

**DESCRIPTION:** At this time, McHenry County does not operate any CLSS, but are in the process of installing one Econolite CLSS. They will communicate with this system using a dial-up telephone connection and the Aries Econolite software.

**GCM IMPACT:** In the future, some form of connection with other GCM systems would be desirable. These connections could range from a simple real-time notification of signal malfunctions to exchange of real-time data for area wide traffic management.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Interconnected Traffic Signal Systems (Will County)  
**TIME FRAME:** Existing  
**PARTICIPANTS:** Will County  
**PROJECT MANAGER:** Sheldon Latz, County Traffic Engineer, (815)727-8476

**DESCRIPTION:** At this time Will County does not operate any CLSS.

**GCM IMPACT:** At some time in the future, some form of connection with other GCM systems would be desirable. These connections could range from a simple real-time notification of signal malfunctions to exchange of real-time data for area wide traffic management.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Automated Toll Collection (I-PASS)  
**TIME FRAME:** Existing  
**PARTICIPANTS:** Illinois State Toll Highway Authority (ISTHA)  
**PROJECT MANAGER:** Neal MacDonald, ISTHA, (630)241-6800

**DESCRIPTION:** The ISTHA tollway system includes the North-South Tollway (I-355), the Tri-State (I-294), the Northwest Tollway (I-90) and the East-West Tollway (I-88). I-PASS uses electronic transponders to receive tolls and update users accounts. I-PASS is currently available on I-355 and the central portion of I-294.

Roadside equipment and vehicle transponder tags are AT/COMM. The I-PASS system is being expanded in a project called I-PASS 2000. At that time, vehicle travel times would become available.

**GCM IMPACT:** Pending the I-PASS 2000 system installation, connection to other GCM systems would allow for wider distribution of travel times and incidents.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Automated Toll Collection (I-PASS 2000)  
**TIME FRAME:** Began September 1996; all booths, all plazas constructed by the end of 1998  
**PARTICIPANTS:** ISTHA  
**PROJECT MANAGER:** Neal MacDonald, ISTHA, (630)241-6800

**DESCRIPTION:** Recently, the ISTHA initiated negotiations with Syntonic Technology to replace the existing automatic vehicle identification equipment (AT/COMM) with equipment from Mark IV Industries and Denso International. The tag will have a display to provide information to the user. The new equipment will replace all AT/COMM equipment both at the roadside and in the vehicles.

In addition, Syntonic will install electronic toll collection equipment at all toll lanes in the system. It is scheduled that all 500 lanes will have ETC by the end of 1998. As well, Syntonic is reconstructing 24 of the busiest toll plazas to include express ETC only lanes (non-stop). These flow-through lanes will enhance I-PASS capability to reduce plaza delays. Express lane construction should also be complete by the end of 1998. These updates and system expansion will be the basis for added traffic management capabilities.

A Traffic Management Center (TMC) will be implemented as part of the work on the toll system. In addition, the work will include development of a system to extract travel times from the toll tags.

**GCM IMPACT:** Connections between the ISTHA's TMC and other GCM systems would allow for wider distribution of tollway travel times and incidents.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Chicago Skyway Electronic Toll Collection & Construction Maintenance  
**TIME FRAME:** Began 1995; ongoing  
**PARTICIPANTS:** Chicago Department of Streets and Sanitation  
**PROJECT MANAGER:** James Conlon, Bureau of Streets and Sanitation

**DESCRIPTION:** The existing system includes one toll plaza with exact change automatic coin booths as well as manual booths. The Chicago Skyway has begun the process to upgrade this system to include electronic toll collection and in the Spring of 1996, the Skyway advertised an RFP to design and install an ETC system.

The Skyway ETC system will remain independent of both the ISTHA and INDOT's Tollroad Division in terms of compatible toll tags. No plans have been put forth to include additional toll tag readers to generate travel times for traffic management purposes. Negotiations are still ongoing and at this time specific information regarding the system requirements specifications is proprietary and confidential. Once a contract has been signed, the chosen system design will be described herein.

The construction & maintenance management system for the Skyway will be added as information becomes available.

**GCM IMPACT:** Until the Skyway implements a traffic management system, connections to other GCM systems will be verbal.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** \*999 Cellular Express Line  
**TIME FRAME:** Existing  
**PARTICIPANTS:** ISTHA  
**PROJECT MANAGER:** Ken Glassman, ISTHA (630)241-6800

**DESCRIPTION:** The Chicago Metropolitan area currently uses a private based, dedicated number, cellular emergency system, \*999, to cover the City of Chicago and surrounding six counties. The service has been operational since 1989 and is funded by the Illinois State Toll and Highway Authority. The calls made to the system are free of charge, underwritten by the local area cellular service providers.

There is only one command center for this operation which is staffed 24 hours a day by a private firm which relays calls to appropriate providers. All location referencing is based on the information as given by the motorist and just recently the data entry process has become automated. The automation process is presently being tested and evaluated by the command center operators. The command center handles in excess of 300,000 calls per year.

\*999 operates under a contract let by the ISTHA. The \*999 Cellular Express Line provided *ADVANCE* with anecdotal incident information on expressways and arterials. However, this information was not continuous and required manual entry of the data. In an effort to automate the procedures at the \*999 facility, a computerized database system for entering and recording \*999 incident information has been developed. The operators at \*999 use the computerized system to record incoming call information in real-time.

The \*999 Incident Processing System consists of computerized entry screens for up to four operators to enter incident information simultaneously. The entire system has been designed for easy access and ease of use. At their fingertips, the operators have the ability to verify locations through a detailed map, complete with addresses, built into the system.

The system allows the operator to classify incidents according to their type (i.e., accident, car fire, pedestrian on roadway, etc.) For quicker operator action, most of the input fields contain a limited set of possible entries that can be made. The system also provides a means to determine if a new call is reporting a previously entered incident. If in question, the operator can view a list which provides information on incidents that have been previously entered. This feature eases the operator workload and reduces the number of duplicate calls that the responding agencies need to answer. Data is currently being sent electronically to the C-TIC where it is

2.3.5.1 Existing Projects (Illinois) - continued

automatically placed in the C-TIC database.

Two major benefits are realized through the automation of the \*999 cellular emergency reporting system. First, the \*999 operators are more efficient in their recording of incident information and contacting the proper response agencies. Second, with the baseline connection to the C-TIC, the information is disseminated to a larger number of response agencies which allows more emergency response agencies to remain informed in a timely fashion.

**GCM IMPACT:**

Connections to other GCM systems in real-time is critical. \*999 has the ability to provide notification of incidents, details on incidents and, if data is available, notification on incident removal.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Northwest Central Dispatch (NWCD)  
**TIME FRAME:** Existing  
**PARTICIPANTS:** Arlington Heights, Buffalo Grove, Elk Grove Village, Mount Prospect, Palatine and Prospect Heights  
**PROJECT MANAGER:** Doug Edmonds, NWCD, (847) 398-1130

**DESCRIPTION:** NWCD serves as the Police and Fire dispatch agency for six (6) communities in the northwest suburbs of Chicago. The communities are: Arlington Heights, Buffalo Grove, Palatine, Elk Grove Village, Prospect Heights, and Mount Prospect. Hoffman Estates and Streamwood have recently voted to join NWCD. NWCD handles traffic and non-traffic related emergency incidents. Traffic related incidents are filtered at NWCD and sent to the C-TIC.

When an incident is entered into the NWCD Computer Aided Dispatch (CAD) system, it is automatically printed on a log printer. The feed to the printer goes through a splitter with one connection being to a dedicated PC. This PC receives this information and filters non-traffic related incidents (i.e., burglaries or domestics) prior to forwarding it to the C-TIC. A phone line exists between the PC at NWCD and the C-TIC to carry the information. The typical fields of information received from NWCD at the C-TIC are summarized as follows.

- Date/time of incident
- Incident type
- Street/cross street/address
- Incident details.

The connection to NWCD is a potential prototype of connections to other Emergency 911 systems that may be added to the C-TIC in the future.

**GCM IMPACT:** A real-time connection to other GCM systems would be very desirable. Notification could then be provided of incidents, incident type, incident duration, etc.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** DuCom  
**TIME FRAME:** Existing  
**PARTICIPANTS:** DuPage County Emergency Service Providers  
**PROJECT MANAGER:** Richard Tuma, DuCom, (630) 260-7500

**DESCRIPTION:** DuCom provides emergency dispatch services for 28 police and fire departments in DuPage County. DuCom operates 24 hours per day, seven days a week and handles traffic and non-traffic related emergency incidents. A new CAD system is being installed at DuCom which will fully automate their operations. As the new CAD system is not yet deployed, additional details on the new system will be added as they become available.

**GCM IMPACT:** A real-time connection to DuCom is very desirable to the GCM Corridor. Notification of incidents in DuPage County could then be provided to the C-TIC and ultimately the Gateway TIS. DuPage County contains many highly traveled roadways where incident information would be useful to agencies within the Corridor and also the traveling public.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** 911 Chicago  
**TIME FRAME:** Existing  
**PARTICIPANTS:** Chicago Police Department, Chicago Fire Department  
**PROJECT MANAGER:** Glen Funk, 911 Chicago, (312)746-9111

**DESCRIPTION:** The Chicago 911 Command Center provides emergency dispatch services for the police and fire department in the City of Chicago. The center operates 24 hours per day, seven days a week and handles traffic and non-traffic related emergency incidents. A CAD system is the means by which all information is recorded and caller location is immediately interpreted by the system. The system automatically records the caller phone number and via a database, looks up the address associated with that phone number.

**GCM IMPACT:** A real-time connection to the Chicago 911 Command Center is very desirable to the GCM Corridor. Notification of incidents in Chicago could then be provided to the C-TIC and ultimately the Gateway TIS. Chicago contains many highly traveled roadways where incident information would be useful to agencies within the Corridor and also the traveling public.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Bus Service Management System  
**TIME FRAME:** Began in April 1996 and is expected to be complete by late-1998.  
**PARTICIPANTS:** Chicago Transit Authority (CTA), RTA  
**PROJECT MANAGER:** David Phillips, CTA, (312) 432-8005

**DESCRIPTION:** This project is funded by the Federal Transit Authority (FTA) (80%) and the RTA (20%). The project will provide the CTA with a Transit Management System. Mobile Data Terminals and GPS receivers will be installed on buses. Along with an on-board processor, a new radio, a diskette drive for loading schedule information, a destination-sign control and a connection to the public address system. For communications between the buses and central control center the CTA is installing 4 radio towers from Motorola. This project includes a Bus Emergency Communications System (BECS) and a Bus Service Management System (BSMS) which also allows real-time displays at the control center (spacing of buses, etc.). The BECS will be a comprehensive communications base design to support more effective delivery of bus service. The BECS includes a new 2-way voice and data radio system as well as location capabilities. Data displays for the AVL system include tabular, graphic, schematic and map based information. Computer Aided Dispatch (CAD) from the control center to the buses will be provided. This project also includes the installation of Active Bus Stop Signs, whereby message signs at the stops are updated automatically from the control center via radio. An additional system feature is connection protection. With this feature the control center will notify a bus to wait for a connecting bus for transferring passengers. Finally, a Traffic Signal Priority system will provide for two-way radio messages sent to traffic signal controllers to let an intersection know the arrival time of a bus. The controller will then hold the green or provide an early green to allow bus movement.

**GCM IMPACT:** Connection to other GCM projects could be critical. Transit delays, fare schedules, etc., could be provided to the users via the C-TIC. The GCM Corridor Program Plan provides a small amount of design money to fund project coordination with Pace. This funding will allow integration of transfer connection protection between agencies and shared active bus stop signs. The funding also helps avoid duplication of efforts in the development and implementation of bus service management systems and maximizes possible common elements and synergies associated with such developments.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Pilot Study of Advisory On-Board Vehicle Warning Systems at Railroad Grade Crossings  
**TIME FRAME:** Expected project start April, 1997. Testing Fall 1997 - Fall 1998  
**PARTICIPANTS:** IDOT, Metra, School Bus Companies  
**PROJECT MANAGER:** Chuck Sikaras, IDOT, Office of Planning and Programming (847)705-4800

**DESCRIPTION:** The Illinois Department of Transportation (IDOT) expects to execute a contract within the next two months to design, install, oversee, operate and maintain a demonstration system for a Pilot Study of Advisory On-Board Vehicle Warning Systems at Railroad Grade Crossings. This pilot program seeks to provide vehicles approaching railroad grade crossings with an on-board vehicle warning system to advise them of a train approaching or occupying the crossings.

It is expected that approximately 300 vehicles will be outfitted with the on-board system as part of this pilot study. The vehicle mix will include a variety of ground transportation vehicles including:

- School buses from local school districts serving the study area
- Emergency service vehicles operating in the study area
- Commercial vehicles that operate primarily in the study area.

The proposed system will use low powered communication transmitters located at the crossings which will be triggered by a train approaching or occupying the crossings. This transmitter will send a signal to activate a receiver in any equipped vehicle in the immediate area to alert the driver of a train's presence. The receiver in the vehicle will contain an audible/visual warning. The pilot study area includes five grade crossings along the Metra-Milwaukee North Line equipped with detection and warning systems.

IDOT is also working with an Illinois university to develop a plan to evaluate the on-board vehicle warning system that is being installed as part of this pilot study. The evaluation for the pilot study will emphasize the reaction/perception of drivers to the information provided in their vehicles and the understandability of this information.

The project should begin in April 1997 and equipment will be installed in late Fall 1997. The actual active testing of the system will occur for a period of up to twelve months after installation. Meaningful study results should be available within six to twelve months after completion of active testing.

**GCM IMPACT:** At this point in time, this project is a pilot study and no interface to other

2.3.5.1 Existing Projects (Illinois) - continued

GCM systems is needed.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Expert Driver Model & ITS Simulator  
**TIME FRAME:** Existing  
**PARTICIPANTS:** Argonne National Laboratory (ANL)  
**PROJECT MANAGER:** Adrian Tentner, ANL (630)252-8454

**DESCRIPTION:** The Expert Driver Model models the behavior of a vehicle which is operating on an Automated Highway System (AHS). This model marries a traditional planning model like TranPlan and an operations model. It uses microscopic simulation for the vehicle movement through the model. Inputs include origin-destinations for each vehicle, traffic signal timing, roadway geometrics, intersection geometry, etc. This model could be used to determine whether an AHS is feasible in the region.

The ITS Simulator models the Chicago Metropolitan Area and studies the affects of optimal routing and real-time information. This model is more like the traditional planning models in that it is a larger scale model and looks at the vehicle movement on a much higher level. It models the impacts of information on vehicle behavior.

Neither of these models have been calibrated to the field. A limited data set has been developed to date. At some point in time they could be merged in order to allow a microscopic model of the Corridor and the impacts of travel information to the drivers.

**GCM IMPACT:** No real-time connections will be needed to other GCM systems although use may be made of real-time data inputs to the two models. Additionally, the models may require historical data as inputs.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Metra Consolidated Control Facility (CCF)  
(15th and Canal Street, Chicago)

**TIME FRAME:** Existing

**PARTICIPANTS:** Metra

**PROJECT MANAGER:** Dick Corrin, Metra, Director of Consolidated Control Facility  
(312) 322-2811  
Additional Contact: Barry Resnick, Metra, (312) 322-8994

**DESCRIPTION:** Metra currently owns and operates the Consolidated Control Facility located at 15th and Canal Streets in Chicago. The CCF houses commuter rail dispatching operations for the northeastern Illinois region.

Metra provides commuter rail service throughout the six county (Cook, DuPage, Will, McHenry, Kane, and Lake Counties) northeastern Illinois region, including daily service to/from South Bend, Indiana and Kenosha, Wisconsin. Metra owns four of the 12 rail lines served: Metra Electric, Rock Island, and the Milwaukee North and Milwaukee West lines. The remainder of service is provided (lease agreements) along rail lines owned by freight rail companies.

Metra owned rail facilities are under the direct dispatch control located at the CCF. Metra does not maintain dispatch functions along freight-owned rail facilities; Metra does, however, monitor train movements along segments of these lines. There are three types of systems which control train movements:

- a) Centralized Train Controls (CTC),
- b) Automated Block Systems (ABS) and
- c) Non-signal (manned sight tower).

CTC is operated by a track circuit activation system, superceded by a dispatcher with a computer and monitor that controls signals activation; ABS is controlled with track circuits that activate signals; and non-signal systems rely solely on the manned tower that provides a radio or manual clearance for trains to proceed.

This project is related to the Rail Centralized Control System Assessment Project described under committed projects.

**GCM IMPACT:** Connections in real-time to other GCM systems would be desirable. For example, schedule (static and real-time) could be displayed on the Internet via the C-TIC/Gateway. Since Metra train schedule information is currently already available via the Internet a hot key from the C-TIC/Gateway could be established.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Northeastern Illinois Strategic ITS Early Deployment Plan (SEDP)  
**TIME FRAME:** Project work began in February 1997. Project will be completed by February 1998.  
**PARTICIPANTS:** CATS  
**PROJECT MANAGER:** David Zavattono, CATS, (312)793-0360  
Doug Terry, TransCore (formerly JHK & Associates),  
(770)447-6831 x3007

**DESCRIPTION:** The SEDP will analyze the Regional Transportation System and existing ITS related activities in the region. The project will establish regional goals in terms of user service objectives, priorities and market packages and identify, evaluate and develop potential alternative ITS technologies and systems for northeast Illinois. A list of potential deployment projects is one of the key outputs of the SEDP. Another key component is to establish long-range vision for regional ITS deployment. The primary focus of the northeast Illinois SEDP will be to identify a clear path to continuing the deployment of ITS in the region. The most important tasks will be to provide clear insights to the following issues:

1. Move region forward in ITS deployment.
2. Establish relationships to other non-ITS planning efforts.
3. Provide careful guidance and direction for northeast Illinois within the context of the GCM Corridor Program Plan and other ITS related planning and implementation efforts.
4. Provide added value to the Region's transportation system.

Finally, the SEDP will provide an ongoing evaluation process for those included projects.

In establishing a regional ITS architecture, the relationship between public sector, private sector, and user, including information exchange, pertinent user services, and pertinent functional areas for each entity will be defined. The regional ITS architecture will consider the agencies' interactions and responsibilities in the region, and provide the physical, constructable architecture which meets the functional requirements of the SEDP.

**GCM IMPACT:** The SEDP will develop a regional system architecture which will be used to develop the corridor's system architecture and the Gateway design.

2.3.5.1 Existing Projects (Illinois) - continued

**NAME:** Illinois Statewide CVO Activities  
**TIME FRAME:** Ongoing  
**PARTICIPANTS:** IDOT  
**PROJECT MANAGER:** TBD  
  
**DESCRIPTION:** TBD

2.3.5.2 Committed Projects (Illinois)

**NAME:** Hazardous Material Tracking Project  
**TIME FRAME:** Begin mid 1997. Complete by early 1998.  
**PARTICIPANTS:** Chicago Fire Department  
**PROJECT MANAGER:** Chief Frank Moriarty, Chicago Fire Department, (312)747-7247

**DESCRIPTION:** GCM Corridor funded, this demonstration project aims to show that vehicle transponders can be used to automatically locate a hazardous spill once it occurs.

As background, motor carriers currently use a mitigation contractor to clean up their spills. This mitigation contractor is called whenever a spill occurs. Different shippers contract with different mitigation contractors. Each mitigation contractor is certified by the State of Illinois. The project being put forth by the Chicago Area Transportation Safety Alliance (CATSA), has worked with these mitigation contractors to develop a memorandum of understanding that if ever a mitigation contractor is called and cannot respond, another mitigation contractor will respond so that clean-up can remain timely.

The project is also to develop a transponder that will be hooked up to a truck and provide automatic notification to the Chicago 911 Center of an incident. This means the transponder will have collision sensors, overturning sensors and other sensors that will trigger a message being sent to the Emergency 911 Center. As a motor carrier electronically completes their necessary forms, including the type of cargo they are carrying, a swipe card is encoded with this data. The swipe card is given to the truck driver by the motor carrier. The swipe card will then be installed into the transponder device. If an accident occurs, the transponder will then automatically notify the Chicago Emergency 911 Center of the vehicle's location, accident type and hazardous material type. At the Emergency 911 Center, the truck's location will appear on an AVL map display. The Emergency 911 Center is then responsible for contacting the appropriate dispatcher.

**GCM IMPACT:** As this is a demonstration project, it will involve a limited number of emergency response systems. If however, this project results in a permanent system, this system could provide incident information and Hazardous Materials (HAZMAT) information of use to other operating agencies.

2.3.5.2 Committed Projects (Illinois) - continued

**NAME:** Electronic Itinerary Routing System  
**TIME FRAME:** Design phase to begin in late 1997  
**PARTICIPANTS:** RTA, CTA, Metra and Pace  
**PROJECT MANAGER:** Phil Shayne, RTA, (312)917-0764

**DESCRIPTION:** This project includes the development of requirements and specifications, design, development and testing of an automatic routing algorithm and program. The program will automatically develop a route and itinerary for callers to the regional travel information center at 836-7000. When callers previously used this number, they would talk to an operator who would view various schedules electronically and personally develop the best route for the patron. The process was very labor intensive and required the operators to be very familiar with the entire region as well as each of the transit providers, their schedules and fares. There was a high turnover of operators and constant training of new operators occurred. This project will automate the process of receiving a call and providing a route and itinerary.

In addition to being able to handle digital based telephone calls, interfaces will be designed for future kiosks, hotel cable channels and the Internet

Project Status: An in-house capability study will be conducted. This will determine the interfaces needed between the RTA and CTA, Metra, and Pace. The CTA, Metra and Pace need to transfer their schedule data electronically to the RTA. The capability study has not yet begun (as of February, 1997). Once started, the capability study should take 3 to 4 months to complete. Once the capability study is completed, the RTA can develop the Specifications and an RFP. The design phase is estimated to take an additional 18 months. So by the end of 1998, the project may be installed.

Also, once developed, the software could be used by any transit agency, Milwaukee or Gary, but this would need to be worked out.

**GCM IMPACT:** Although routing and itinerary information to callers can be provided by the RTA, connections from other systems such as the C-TIC/Gateway to the proposed RTA Internet page would be desirable.

2.3.5.2 Committed Projects (Illinois) - continued

**NAME:** Integrated Fare Payment System  
**TIME FRAME:** Expected to begin in late 1997.  
**PARTICIPANTS:** RTA  
**PROJECT MANAGER:** Lynn Otte, RTA, (312)917-0706

**DESCRIPTION:** This project is intended to foster an integrated fare payment system throughout the region. It is just now being scoped out and RTA is not sure what tack they will take. The system could include smart cards or some other media but will also need to have some form of centralized accounting system, allow for showing of transactions, collection of fares, etc.

As more details become available, this description will be expanded.

**GCM IMPACT:** Unknown at this time until project proposal is more fully developed.

2.3.5.2 Committed Projects (Illinois) - continued

**NAME:** Personal Rapid Transit  
**TIME FRAME:** Phase 1 - complete  
Phase 2 - expected to be complete end of 1997  
Phase 3 - to be determined.  
**PARTICIPANTS:** RTA, Rosemont , IDOT, Federal Transit Authority (FTA)  
**PROJECT MANAGER:** John DiLaurentiis, RTA, (312)917-0772

**DESCRIPTION:** This project is not funded by the GCM Corridor.

Personal Rapid Transit (PRT) is envisioned as a system of elevated guideways traveled by programmable transit vehicles that seat 1 to 4 persons. A passenger types a destination into the system and would be provided with the next available PRT vehicle. Some of the expected benefits include environmental improvements as well as congestion reduction.

The PRT project is divided into three phases as described below:

Phase 1 of the project was a feasibility analysis which determined whether the project would be feasible. A solicitation was requested from interested cities and from these, Rosemont was selected as the implementation site.

Phase 2 of the project is currently underway and is the design and field testing of a limited implementation. The test track and cars have been designed and constructed at Raytheon's offices in Marlboro , Massachusetts. Once testing is completed, a decision will be made whether or not to perform Phase 3.

Phase 3 of the project is the construction of the Personal Rapid Transit infrastructure in Rosemont, Illinois.

**GCM IMPACT:** Unknown at this time due to the decision not yet being made with respect to PRT implementation. Once a decision is made on implementation, an analysis of the need/type of connections to the PRT will be needed.

2.3.5.2 Committed Projects (Illinois) - continued

**NAME:** Cermak Road Bus Priority  
**TIME FRAME:** Testing to begin in April/Spring 1997  
**PARTICIPANTS:** IDOT, Pace, CTA  
**PROJECT MANAGER:** Bill Reynolds, Pace, (847-228-4296);  
Kathy Meyerkord, CivilTech, (630) 773-3900;  
Bill Reynolds, CTA, (312)432-8005

**DESCRIPTION:** This demonstration project evaluates the effects of bus preemption on an integrated signal progression corridor and the potential benefits to bus service. Preemption will be provided through a transponder system which communicates with a loop in the pavement to give bus priority. The loop then communicates to the intersection controller to provide either an early green signal or an extended green signal. This technology allows a flexible traffic signal response that is tailored to meet the needs of each intersection and still preserve traffic signal progression.

Currently transponders have been installed on all of the Pace and CTA buses that are to be used in the Cermak Road Corridor. The corridor is 2.5 miles long. Hardware and field equipment is in place although the software is still undergoing testing. Field operations testing should begin in June 1997. The consultant for this project is CivilTech.

The demonstration system is proprietary in that communications between the bus and the loop occurs with a proprietary decoder in the control box. As well, the software, written by Econolite, requires licensing. The choice of technology for communication between the bus and the signal controllers will be reviewed after the demonstration. Once the technology is proven and a full set of functional specifications have been developed, however, it may be possible for other system providers to develop a non-proprietary, off-the-shelf bus preemption product.

Computer modeling for this project demonstrated up to a 44 percent increase in travel speed (included optimal signal retiming) and up to a 33 percent decrease in travel time in the corridor. If these modeling predictions are proven in the field trials, the implications to operating performance by the buses would be very good. The ability of the bus system to attract and maintain ridership would improve as its reliability and service improved.

The intersections are currently equipped with the Opticom emergency vehicle preemption system. In the event that a bus and emergency vehicle arrive at the intersection at the same time, the emergency vehicle would receive priority. As well, if a bus priority call has already been initiated when an emergency vehicle arrives, the controller will provide a safe changeover to emergency vehicle preemption.

2.3.5.2 Committed Projects (Illinois) - continued

**GCM IMPACT:**

It this project proceeds beyond the demonstration phase, an analysis will need to be undertaken of the necessity to provide other systems with real-time data on the priority operation.

2.3.5.2 Committed Projects (Illinois) - continued

**NAME:** Automatic Fare Collection (AFC) System  
**TIME FRAME:** Implementation to begin June 22, 1997  
**PARTICIPANTS:** CTA  
**PROJECT MANAGER:** Joe Simonetti, CTA (312) 255-1818 Ext. 5700

**DESCRIPTION:** The Chicago Transit Authority (CTA) is currently in the process of implementing an Automatic Fare Collection (AFC) System to be utilized at all CTA rail terminals and on the entire bus system.

This AFC System will utilize stored value farecards, eliminating the need for exact fare to ride the CTA system. This will reduce the amount of money which must be accounted for by cashiers at CTA stations on a daily basis. This system will also encode information on a farecard to determine the validity of a patrons transfer and deduct the correct transfer charge.

The utilization of farecards by customers on the CTA will be very simple. First a farecard with a selected amount of money (value) encoded on it will be purchased. Each time a trip is taken the fare card is inserted in the turnstile (at rail stations) or farecard machine (on buses) and the value of the trip is automatically deducted and the farecard is returned within a second. If another CTA vehicle is taken to complete a trip, the collections system recognizes this and only deducts the charge of a transfer (if the trip is within the transfer period).

By automating the fare collection process CTA will be able to collect ridership data allowing them to more effectively implement transit services.

Along with the installation of the new collection system, the CTA is also replacing the aging, maintenance intensive turnstiles with new modernized equipment. This will also allow for the installation of equipment to make turnstiles, at terminals, handicap accessible.

Once the new AFC System is implemented, the old CTA fare collection system will remain in place during a transitional period. Ultimately the CTA would like to eliminate the use of both tokens and cash and rely exclusively on farecards.

**GCM IMPACT:** One of the objectives that CTA has established for this system is "to allow and promote interfaces with other transit entities in the greater Chicago area so that multi-modal and inter-agency travel is not only technically possible but also convenient for the customer. This would provide for a cohesive, area wide transit environment." [From Overview and Description of CTA AFC System: Revision G, Feb 7,1996.] These interfaces can be facilitated through the C-TIC/Gateway.

2.3.5.2 Committed Projects (Illinois) - continued

**NAME:** Cubic Ticket Reader/Writer  
**TIME FRAME:** Implementation to begin in June/Summer 1997  
**PARTICIPANTS:** Pace  
**PROJECT MANAGER:** Mike Bohm/John Braband, Pace, (847) 228-4296

**DESCRIPTION:** The Cubic unit will be comparable to the existing GFI (General Farebox Inc.) farebox. The Cubic unit maintains compatibility but in addition, it provides read/write transfers electronically, accepts smart cards (RF transponders), accepts debit cards, enhances data collection and accuracy, and reduces intersection dwell time.

Currently most of the hardware (ticket reader/writers) have been installed on the Pace buses. Final testing of the equipment is currently being performed and the final step will be the installation of the network. Until the server is installed the hardware installed on the buses is not operational.

The installation of this fare collection system allows Pace to be compatible with CTA's automatic fare collection system enabling transfers between the two.

**GCM IMPACT:** The necessity of connection in real-time to other agencies is unknown at this time. Compatibility with other electronic fare collection systems could be an issue.

2.3.5.2 Committed Projects (Illinois) - continued

**NAME:** Commercial Vehicle Information Systems and Networks (CVISN) Program  
- Commercial Vehicle Information Systems (CVIS) Project

**TIME FRAME:** by mid-1997 equipment is to be installed in the field

**PARTICIPANTS:** Illinois Secretary of State Office, FHWA

**PROJECT MANAGER:** Vince Veseling, Illinois Secretary of State Office, (217)524-8770

**DESCRIPTION:** The CVISN Program is a national program put forth to improve CVO.

The SAFER System is a national database of motor carrier's safety data records.

The International Registration Plan (IRP) Clearinghouse exchanges motor carrier registration and fee information among IRP jurisdictions for the purpose of reconciling registration fee balances between those jurisdictions. The IRP provides one-stop shopping for motor carriers who travel between states and IRP jurisdictions

This project allows the data from the IRP to be available to the SAFER system allowing a vehicle's safety records to be examined along with their registration fees and allows near real-time enforcement.

This CVO Project provides real-time transmission of vehicle information to the SAFER system. Once a vehicle is identified by a license plate reader, the data from the International Registration Plan (IRP) Clearinghouse is to be directed to the roadside for look-up capabilities at inspection stations. Requirements have been set that this data is to be available at the inspection stations within 15 minutes. SAFER facilitates electronic information exchange between users and source systems.

**GCM IMPACT:** Connection in real-time to police agencies informing them of violators may be needed.

2.3.5.2 Committed Projects (Illinois) - continued

**NAME:** Parking Management System  
**TIME FRAME:** FY 1998/1999  
**PARTICIPANTS:** METRA, CTA, IDOT's Department of Public Transportation and RTA  
**PROJECT MANAGER:** To be determined

**DESCRIPTION:** The Parking Management System project is currently listed on the METRA 5-Year Plan, but a funding source is not yet identified. As the project is currently proposed, METRA and CTA would co-manage the project.

This project proposes the design and implementation of a system to manage parking facilities by collecting, processing, and distributing static and real-time capacity information. Parking management systems have a number of important potential benefits including the following:

- Reduced Travel
- Energy Savings and Reduced Emissions
- Reduced Accidents
- Traveler Convenience
- Improved Marketing and Exposure
- Encouragement of Transit and Ridesharing.

By routing travelers directly to facilities with available parking, parking management systems reduce the amount of travel by motorists searching for available parking spaces. This makes parking more convenient for the traveler, reduces fuel consumption and emissions and reduces the potential for accidents. By making parking easier, these systems also improve the marketing and exposure of parking facilities and the businesses served by the facilities.

**GCM IMPACT:** Connection in real-time to other systems would be desirable. Provision of this information to the local TMC could allow use of redirection messages on VMS, HAR, etc. Additionally, this information could be provided on the Internet via the C-TIC/Gateway. This is currently proposed for METRA's consideration.

2.3.5.2 Committed Projects (Illinois) - continued

**NAME:** Rail Centralized Control System Assessment  
**TIME FRAME:** Mid Term (2000+)  
**PARTICIPANTS:** METRA  
**PROJECT MANAGER:** To be determined

**DESCRIPTION:** This project is listed in METRA's 5-Year plan but funding is currently unidentified. This project will evaluate the efficiencies of providing uniform passenger transportation movement from the corridors of South Bend, Indiana, through the Chicago area to Kenosha/Milwaukee, Wisconsin. Efforts would focus upon determining the needs of communications systems and seek to link the GCM Corridor in a manner that could provide unimpeded passenger transportation movements. The study will include a small assessment of corridor-wide links to Indiana and Wisconsin but focus mostly on Metra rail lines (80 percent of the effort would be directed at Metra's system and 20 percent of the effort at corridor-wide links). The study will also address coordination issues and the sharing of information with freight trains along these facilities.

A centralized control system would reduce unnecessary commuting delays as a result of freight tie-ups; increase capacity for passenger and freight systems; improve the system infrastructure; improve/create control system uniformity; provide more flexible train scheduling; and provide a more coherent communications system which could reduce the potential for costly operational inefficiencies to occur. It would also create a real-time database to support connection protection with CTA and Pace buses.

Goals of the assessment study are to: identify and prioritize locations within the corridor that are not currently Centralized Traffic Control (CTC) driven systems; identify the general physical and financial benefits of incorporating CTC systems throughout the Metra system; identify direct and indirect costs of bringing the Metra system to 100 percent CTC; identify schedule and timetable improvements and ridership issues that may improve corridor mobility including intermodalism and connectivity issues; and address corridor-wide linkages to Indiana and Wisconsin.

Future design and implementation of the rail centralized traffic control system would be at the discretion of Metra.

**GCM IMPACT:** Connections in real-time to other GCM systems would be desirable. For example, schedule (static and real-time) could be displayed on the Internet either via the C-TIC/Gateway or accessible by a hot key from the C-TIC/Gateway.

2.3.5.2 Committed Projects (Illinois) - continued

**NAME:** Constant Time Warning Device  
**TIME FRAME:** Mid Term (2000+)  
**PARTICIPANTS:** METRA  
**PROJECT MANAGER:** To be determined

**DESCRIPTION:** METRA has initiated a program to install constant time warning devices at critical railroad grade crossings. This program includes upgrading high profile railroad grade crossings with control signaling to establish a constant length of time that crossing gates are lowered regardless of train speed. With this concept, unnecessary motorist and pedestrian delay will be minimized relative to slow moving trains. During FY 96 Metra has funded and installed 12 constant time warning devices at three separate locations including:

- 80th/Tinley: Rock Island line, 6 units installed (2 @ pedestrian crossings and 4 at depot)
- Belmont: Milwaukee District West line, 4 units installed
- Grayslake: Milwaukee District North line, 2 units installed.

This phase will support the installation of two additional constant time warning devices on Metra commuter rail crossings. Two high profile railroad grade crossings will be selected to be upgraded. Candidate locations along the Milwaukee District line include: Telegraph Crossing, Greenwood Avenue and Hazel Avenue in Deerfield and St. Mary's Road in Libertyville. Further funding has, as of yet, been identified.

**GCM IMPACT:** Connections to other GCM systems would be desirable. For example, the status of railroad crossings could be displayed on the map proposed for the C-TIC/Gateway.

2.3.5.3 Proposed Projects (Illinois)

**NAME:** Pace/Transit Vehicle Management System (TVMS)  
**TIME FRAME:** Pending determination of project's direction  
**PARTICIPANTS:** Pace, RTA  
**PROJECT MANAGER:** John Paquet, Pace

**DESCRIPTION:** TVMS will link major electronic components into an on-board vehicle network to improve performance and increase data capabilities. This system includes: AVL, signal priority, automatic passenger counters, and others based on available funding.

The value of this project is currently being examined for its resulting benefits. Pace is evaluating the overall benefits which could be derived from a TVMS compared to the benefits of upgrading capital equipment.

The GCM corridor has allocated a small amount of design money to fund project coordination with the CTA. This funding allows both CTA and Pace to avoid duplication of efforts in the development and implementation of bus service management systems and maximize possible common elements and synergies associated with such developments.

**GCM IMPACT:** The GCM Corridor Program Plan provides a small amount of money to fund coordination with the CTA on their Transit Management System. This funding will follow both Pace and the CTA to avoid duplication of efforts in the development and implementation of this service management systems and to maximize possible common elements and synergies associated with such developments.

2.3.5.3 Proposed Projects (Illinois) - continued

**NAME:** Chicago ITS Communications Network Plan (ChicagoNet)

**TIME FRAME:** Discussions began September 1995. An implementation study grant has been awarded and work is expected to begin Summer 1997.

**PARTICIPANTS:** Department of Management Information (MIS), Department of General Services (DGS), the 911 System and the Office of Cable Communications, Chicago Public Schools, Libraries and the CTA

**PROJECT MANAGER:** Alan Bugh, CDOT Communications Office (312)744-4061  
Contact: Chris Krueger, CDOT, Bureau of Traffic (312)744-4685

**DESCRIPTION:** The entire ChicagoNet initiative is an effort to coordinate development of high speed/high capacity communications capabilities across the entire City among departments/bureaus. The goal is significant cost savings over uncoordinated, "go-it-alone" efforts. ChicagoNet would serve a variety of needs, not just traffic signals, as is evidenced by the variety of participants involved. Other peripheral agencies are Metra, Illinois Department of Transportation and the Cook County Highway Department.

The apparent technology of choice is fiber, due to high capacity, high resistance to electromagnetic/lightning interference and competitive costs, particularly since video capabilities are required.

Ideally, the system would use an open architecture, accessible to all departments and agencies. Within the ChicagoNet participants, the transportation agencies would use the system to monitor and control the street system, including traffic signals; the transit system, including trains and on-street bus operations; to provide information to travelers (transit as well as automobile); to improve safety and security (e.g. video surveillance); and to facilitate other ITS projects that rely heavily on high speed communications.

**GCM IMPACTS:** This project may provide an opportunity to the GCM Corridor for a communications system.

2.3.5.3 Proposed Projects (Illinois) - continued

**NAME:** Advanced Traffic Management System (ATMS) for the City of Chicago  
**TIME FRAME:** Master Plan completed in 1994, Construction on-going.  
**PARTICIPANTS:** CDOT  
**PROJECT MANAGER:** Thomas Smith, Deputy Commissioner, Chicago Department of Transportation, Bureau of Traffic (312)744-4684  
Contact: Chris Krueger (312)744-4685

**DESCRIPTION:** The Master Signal Plan provided a comprehensive overall strategy to guide the significant investment that will be made in updating the City's traffic control infrastructure.

As of mid-1996, there are two on-street master systems of 30 intersections each plus a new Distributed/Centralized system for 73 downtown intersections. All of these 133 are intersections connected to a central computer control site where operations can be monitored and malfunctions detected. For each of these intersections, traffic flow data can be compiled and used to develop new signal plans, which can be sent to the intersections from the computer. Every year, the City is adding more intersections with these features in the form of on-street master systems. These on-street master architecture systems are used to stage the implementation of the overall plan.

This project would implement the Master Signal Plan to complete the centralized monitoring and control for all of the Cities 2700 signals. Capabilities would include special event timings and improved response to traffic signal malfunctions. Completion of this project is strongly linked to the ChicagoNet ITS Communications Network Plan.

**GCM IMPACT:** The City signal system can both benefit from external information, for instance from the well-known Expressway Surveillance System, as well as provide data or communications channels to other ITS user services. Connections to the Gateway or other ITS user services are important.

2.4 WISCONSIN

2.4.1 Regional Needs

The regional needs for Wisconsin are to be addressed in the "Southeast Wisconsin Traveler Information System Strategic Plan." The work order for this plan was approved by FHWA on January 5, 1996 and an RFP for consulting services was distributed on September 4, 1996 as part of the Communication and Data Infrastructure (CDSI) project. A consultant for the CDSI has been chosen (National Engineering Technology, Inc.) and contract negotiations have begun. The project is anticipated to begin in April of 1997.

2.4.2 Implementation Priorities

The Southeast Wisconsin Traveler Information System Strategic Plan will present implementation priorities for the Wisconsin region of the GCM Corridor.

2.4.3 Functional Requirements

Functional requirements will be discussed in the Southeast Wisconsin Traveler Information System Strategic Plan.

2.4.4 System Architecture

2.4.5 Implementation Plan

ITS implementation in the Wisconsin region consists of several WisDOT and Milwaukee County Transit projects. There are existing, committed and proposed ITS projects. Projects are described in the following pages.

2.4.5.1 Existing Projects (Wisconsin)

**NAME:** MONITOR FTMS  
**TIME FRAME:** Existing  
**PARTICIPANTS:** WisDOT  
**PROJECT MANAGER:** Steve Young, WisDOT, (414)227-2160  
Larry Henson, TransCore (formerly JHK & Associates) (414)774-1771

**DESCRIPTION:** The MONITOR freeway traffic management program was initiated to mitigate the increasing impacts of traffic incidents and recurring congestion along the Interstate and primary highway network within the Milwaukee area (encompassing Milwaukee, Waukesha, Ozaukee, and Washington Counties). Initial activities focused on operational and management improvements like installing ramp meters and establishing closer liaisons with various enforcement agencies within the region rather than increasing capacity. As recommended in the Southeastern Wisconsin Regional Planning Commission (SEWRPC) Planning Report (No. 39), the MONITOR System consists of traffic detectors, closed-circuit television (CCTV), ramp metering, High Occupancy Vehicle (HOV) exclusive on-ramp lanes, VMS, freeway patrols, and related infrastructure such as a communications network and a control center. MONITOR's primary objectives are to reduce congestion, improve safety, enhance freeway operations, and facilitate increased vehicle occupancy rates.

The preliminary engineering and design report for MONITOR established a five stage implementation plan for the system. With each stage, the number of miles implemented increases. The first two of the five stages have been designed and constructed, with the third stage currently under construction. MONITOR is currently operating on approximately 50 centerline miles of freeway in Southeastern Wisconsin. Along these freeways, a subsystem of traffic detectors provide real-time data about traffic conditions through a leased communications network to an operations center. Computer hardware and software at the control center analyzes and presents the freeway traffic information graphically for system operators use. Nearly 60 entrance ramps are equipped with ramp signals, or ramp meters, which can be managed from the control center to maximize traffic flow on the freeways. Fourteen variable message signs, eleven on the freeway system and three on arterials leading to the freeway, are also controlled from the operations center. The signs are used by system operators to provide immediate traffic information to freeway and surface street travelers. In addition to the signs, the operators will be able to utilize Traveler Advisory Radio (TAR) to broadcast traveler information concerning freeway traffic directly to the motorists' AM radios. By the year 2000, MONITOR will manage traffic on 120 centerline miles of freeway in southeastern Wisconsin.

MONITOR currently has a leased line data connection to the C-TIC. Every minute, MONITOR automatically sends incident data, VMS messages, speed data and occupancy data to the C-TIC. The C-TIC is then

2.4.5.1 Existing Projects (Wisconsin) - continued

responsible for posting this data to the C-TIC WEB site. MONITOR is also designing a connection to various local media organizations. The media connections will be similar to the one established for C-TIC.

**GCM IMPACT:**

Real-time connections to the C-TIC have been designed and implemented to provide travel times, incident information and VMS/HAR messaging. In the future, these connections may be through the CDSI. Connections may also be needed either directly or indirectly to the other Traffic Management Centers (TMC) to allow for joint operations.

2.4.5.1 Existing Projects (Wisconsin) - continued

**NAME:** MONITOR-area Traffic Signal Interconnection Phase I - Signal Integration Study

**TIME FRAME:** Began in mid-1994

**PARTICIPANTS:** WisDOT

**PROJECT MANAGER:** John Corbin, WisDOT (414)227-2150  
James Zsebe, Milwaukee County Department of Public Works,  
(414)278-4922

**DESCRIPTION:** The Signal Integration Study was initiated by WisDOT to investigate integrating the operations of local traffic signals and traffic operation within freeway corridors in which the MONITOR FTMS would be implemented during this study.

The primary objective of this study was to better manage traffic within freeway corridors and parallel arterial roadways while establishing or enhancing existing inter-jurisdictional relationships between state and local agencies.

The geographic focus of the first phase of the Signal Integration Study was primarily the southern and western portions of Milwaukee County, plus the eastern end of the I-94 freeway corridor in Waukesha County. Eleven arterial routes were identified as potential incident-based diversion routes for signal system integration.

One of the projects objectives was to select one arterial roadway corridor and conduct a limited test of integration strategies and techniques, the scope of which would be determined during the study, to demonstrate the benefits of integration.

The selected pilot test segment, Layton Avenue, is a four-lane divided, east-west arterial roadway located in the cities of Milwaukee and Greenfield, in Milwaukee County. The pilot test portion of Layton Avenue corridor is approximately 6.1 miles in length and includes 21 traffic signals, six of which are located at nearby freeway ramp terminals which also have 13 entrance ramp meters.

Phase II of this project is the Integrated Corridor Operations Project (ICOP).

**GCM IMPACT:** Real-time connections to other systems such as the CDSI and the C-TIC/ Gateway would be desirable. Information on traffic signal status, diversion routes, etc., could then receive a wider distribution.

2.4.5.1 Existing Projects (Wisconsin) - continued

**NAME:** MONITOR-area Traffic Signal Interconnection Phase II - Integrated Corridor Operations Project (ICOP)

**TIME FRAME:** July 1996 - July 1999 (Design completed, construction scheduled for 1997)

**PARTICIPANTS:** Wisconsin Department of Transportation, City of Milwaukee Public Works, Milwaukee County Public Works, Village of Bayside, Village of Brown Deer, Village of Brown Deer Police Dept., Federal Highway Administration, Village of Fox Point Police Dept., Village of Hales Corners, Village of New Berlin, City of Oak Creek, Ozaukee County Sheriff's Dept., Village of Menomonee Falls Police Dept., Milwaukee County Transit, Milwaukee County Sheriff's Dept., Village of West Milwaukee, Wisconsin State Patrol - District 2, Marquette University

**PROJECT MANAGER:** John Corbin, WisDOT, (414)227-2150  
James Zsebe, Milwaukee County Department of Public Works, (414)278-4922

**DESCRIPTION:** The Integrated Corridor Operations Project will complete strategic planning and operational test deployment activities for integrated operations of highways and other transportation infrastructure within major freeway corridors in Southeastern Wisconsin. The project will identify effective strategies to improve and coordinate traffic management capabilities, support efficient transit operations, and enhance traveler information. The study area includes freeway corridors in Racine, Kenosha, Milwaukee, Waukesha, Washington, Ozaukee, and Walworth Counties, although the primary focus of the project is Milwaukee and Waukesha Counties. This project is synthesizing and supplementing operational needs assessments completed through the Signal Integration Study to define integration opportunities and develop an integrated corridors strategic plan. ICOP will also select, develop, design and implement an integrated corridor test segment (ICTS) by late 1998, and will evaluate the segment after deployment. Remote access to the test segment will be implemented in order to respond to unexpected traffic demands due to incidents and/or freeway diversion. Ultimately, ICOP will use the MONITOR system to aid in integrating signal operations between the freeway and arterial roadways.

Some of the initial tasks for ICOP are:

- Identify arterial routes to be inventoried.
- Prepare base maps to show the routes inventoried.
- Define initial outreach and public involvement tasks.
- Inventory the needs and goals of transportation users in Southeastern Wisconsin.
- Identify existing and proposed traffic management and transit programs.
- Assess institutional obstacles to area-wide coordination.

2.4.5.1 Existing Projects (Wisconsin) - continued

- Develop evaluation criteria to identify and select freeway corridors and arterials to be studied.

**GCM IMPACT:**

Real-time connections to other systems such as the CDSI and the C-TIC/ Gateway would be desirable. Information on traffic signal status, diversion routes, etc., could then receive a wider distribution.

2.4.5.1 Existing Projects (Wisconsin) - continued

**NAME:** Southeastern Wisconsin Incident Management (SWIM)

**TIME FRAME:** Design began August 1995  
Implementation begins summer 1997

**PARTICIPANTS:** WisDOT, Wisconsin Motor Carriers Association, Wisconsin Towing Association, Wisconsin State Patrol, Ozaukee County Sheriff, American Automobile Association, Milwaukee County Sheriff, Milwaukee Police Department, Racine County Sheriff, Milwaukee County Transit System

**PROJECT MANAGER:** John Corbin, WisDOT, (414)227-2150  
Steve Cyra, HNTB, (414)359-2300

**DESCRIPTION:** The Southeastern Wisconsin Incident Management Program was initiated to coordinate freeway incident management activities and to develop a program of incident management enhancement activities in the region. SWIM will develop an initial incident management program plan by early 1997. The program objectives include:

- Establish relationships and cultivate regional consensus on incident management issues.
- Inventory current incident management practices, procedures and activities.
- Identify incident management user needs and opportunities.
- Determine incident management priorities and available resources.
- Develop and coordinate immediate deployment activities (IDEA) for incident management in Southeastern Wisconsin to serve as a catalyst for early successes and enhance visibility of regional incident management initiatives.
- Identify incident management functional areas, framework/architecture and system component options.
- Prepare a "blueprint" for ongoing incident management in Southeastern Wisconsin that addresses implementation and evaluation issues.

SWIM also has program goals which include:

- Improve and enhance freeway incident management in the Southeastern Wisconsin area.
- Improve freeway safety in Southeastern Wisconsin.
- Enhance the quality and efficiency of freeway travel in Southeastern Wisconsin.

SWIM will achieve the program objectives through interagency consensus on needs and opportunities. SWIM incorporates provisions for immediate deployment activities, or early winners, that can be initiated while the project is developing. These activities will facilitate evolving relationships through near-term action to realize project objectives and associated travelers and community benefits.

2.4.5.1 Existing Projects (Wisconsin) - continued

The project is currently moving towards implementation (presentation of final recommended Implementation Plan is scheduled for mid-April) and pilot activities are expected to be underway by this summer.

**GCM IMPACT:**

Connections to other GCM systems in real-time would be critical. Information to be provided could include incident type, incident response, severity/impact and duration.

2.4.5.1 Existing Projects (Wisconsin) - continued

**NAME:** Communication and Data System Infrastructure (CDSI)  
**TIME FRAME:** Begin Spring 1997. To be completed by Spring 1999.  
**PARTICIPANTS:** WisDOT  
**PROJECT MANAGER:** John Corbin, WisDOT, (414)227-2150  
John Zietlow, NET Corporation, (847)394-8287

**DESCRIPTION:** The Communication and Data System Infrastructure project will develop a preliminary design for a comprehensive and integrated communications and data system infrastructure required to support a multi-modal traveler information system for Southeastern Wisconsin. The purpose of this project is to enhance and fully utilize WisDOT's existing MONITOR Freeway Traffic Management System, to develop a separate system for collecting travel data and information and for efficiently and effectively sharing real-time multi-modal transportation information between the various agencies within Southeastern Wisconsin.

The CDSI project will include three key elements listed below:

- Southeastern Wisconsin Traveler Information System Strategic Plan
- Communications system development
- Traveler Information System design.

The Communications system development is to define the architecture and communication protocol needs for Southeastern Wisconsin. The purpose is to provide an efficient and effective means of collecting, fusing, distributing and presenting transit, traffic and other travel information throughout Southeastern Wisconsin.

The preliminary design for the Traveler Information System is to identify required software functions and design for a regional information and communications hub. In addition, the preliminary design will identify software development necessary to provide the functional capabilities to communicate and share information between agencies.

The Southeastern Wisconsin Traveler Information System Strategic Plan is to provide an overall strategy for the use of traveler information within the area. The plan is also to provide justification along with functional and performance requirements to develop a comprehensive system for the travelers and transportation system managers and operators.

The CDSI will serve as the central data collection and distribution hub of transportation related data in Southeastern Wisconsin.

**GCM IMPACT:** Real-time connections between the CDSI and other GCM systems such as the C-TIC/Gateway will be critical as the CDSI will serve as the hub for transportation data gathering in Southeastern Wisconsin.

2.4.5.1 Existing Projects (Wisconsin) - continued

2.4.5.1 Existing Projects (Wisconsin) - continued

**NAME:** Milwaukee County Transit System  
**TIME FRAME:** Operational  
**PARTICIPANTS:** Westinghouse, Milwaukee County Transit (Milwaukee Transport Services),  
Milwaukee County Department of Public Works  
**PROJECT MANAGER:** Ron Rutkowski, Milwaukee County Department of Public Works,  
(414) 278-4888

**DESCRIPTION:** GPS Radio/AVL Project - This project has included the replacement of transit bus radios. The new system that has been installed is a computer aided dispatch dispatched trunked radio system in the 800 MHZ band which includes schedule adherence, silent alarm, and automated vehicle location (AVL) features. The equipment has been installed in 582 buses and 55 supervisor vehicles. Future enhancements will include automated passenger counting, automated annunciators to comply with the Americans with Disabilities Act, automated real-time transmission of mechanical failure alarms, on-board video surveillance, real-time passenger information, smart card fare collection, expanded transit traveler information services, and transit signal pre-emption expansion.

**GCM IMPACT:** Real-time connections to other GCM systems will be critical. For example, connections to the CDSI and the C-TIC/Gateway could provide users with schedule information, both static and real-time.

2.4.5.1 Existing Projects (Wisconsin) - continued

**NAME:** MONARC Traffic Signal Control System  
**TIME FRAME:** Completed June 1996  
**PARTICIPANTS:** City of Racine  
**PROJECT MANAGER:** Tom Eg, City of Racine (414)636-9166

**DESCRIPTION:** This project consisted of replacing Racine's Eagle Signal Corporation Comtrac II computerized signal control system which was initially installed in 1981. The Eagle Comtrac II system was being replaced due to its incomplete compatibility with the newer solid-state traffic signal controllers (installed from late 1980's to present). This project re-used the existing hardwire interconnect system. Additionally 15 traffic signal controllers were installed in the Downtown Business District.

**GCM IMPACT:** Real-time connections to other GCM systems would be desirable. Information on signal malfunctions, etc., could receive wider distribution through the CDSI and the C-TIC/Gateway.

2.4.5.1 Existing Projects (Wisconsin) - continued

**NAME:** Meda-Care Vans  
**TIME FRAME:** Summer 1997  
**PARTICIPANTS:** Meda-Care Vans  
**PROJECT MANAGER:** John Doherty, Meda-Care Vans, (414)264-7433

**DESCRIPTION:** Paratransit Automated Routing System (PARS) - PARS will equip paratransit vans with mobile data terminals to allow Global Positioning System (GPS)-based automatic vehicle locating (AVL) and computer aided dispatch (CAD). In addition, dynamic ride matching and routing capabilities will supplement more conventional CAD/AVL services. Initially, 80 of the 85 vehicles will be included in PARS. The data collected from the vehicles will be used to determine on-time performance, route tolerance, vehicle location, etc.

The paratransit vans in this project are operated by Meda-Care Vans, Incorporated, through a program administered by Milwaukee County. Meda-Care Vans, Incorporated, is also closely affiliated with a van design and conversion company, Caravans, Incorporated, and a suburban paratransit provider that operates in Waukesha County. Meda-Care Vans, Incorporated, also provides commuter transportation services under contracts with Waukesha County as well as Job Ride Transportation to three surrounding counties under a contract with the State of Wisconsin Department of Transportation. Overall Meda-Care Vans provides service to about 1000 square miles (all of Waukesha and Milwaukee Counties and part of Ozaukee County).

**GCM IMPACT:** In developing PARS, Meda-Care Vans is making provisions for future enhancements that could include the following: integration of real-time freeway travel times from MONITOR FTMS into dynamic routing algorithms; utilization of paratransit and commuter vans on freeways as traffic probes; integration of appropriate PARS information with other transit and traffic related CAD/AVL system outputs through MONITOR.

2.4.5.1 Existing Projects (Wisconsin) - continued

**NAME:** Wisconsin Statewide CVO Activities  
**TIME FRAME:** On-going  
**PARTICIPANTS:** WisDOT  
**PROJECT MANAGER:** Phil Decabooter, WisDOT (608)267-0452

**DESCRIPTION: Midwest Electronic One-Stop System**

Midwest electronic one-stop system is a multi-state demonstration and operational test project of an electronic purchase system for motor carrier credentials. The main focus of this project is to demonstrate the electronic capabilities for commercial vehicle registration, fuel tax credentials, and issuance of permits for oversize / overweight carriers. Sponsored by FHWA Office of Motor Carriers Safety (OMCS), the project is currently being led by the Minnesota Department of Transportation and the Iowa Center for Transportation Research. Other participants include the transportation departments of Illinois, Kansas, Missouri, and Wisconsin, in addition to other organizations and companies. This project began in spring of 1994, with completion targeted for the end of 1997.

**CVO Institutional Barriers Study**

The main focus of this study is to identify Wisconsin's institutional implementation barriers to intelligent transportation systems technology as it applies to trucking. The focus of the institutional barriers study effort has been broadened into a multi-state study and is now being conducted by Minnesota and Iowa. The Wisconsin Department of Transportation is currently a non-financial participant.

**ITS CVO Mainstreaming Program**

This new FHWA program aims at creating regional coalitions to develop detailed business plans to serve as a framework to coordinate regional ITS/CVO initiatives. The goal is to develop strategies that are compatible with the Commercial Vehicles Information Systems Network (CVISN) framework to move from the planning mode to the implementation of national technology applications by the year 2005.

WisDOT is currently entering into agreement with FHWA to participate in development of the Great Lakes Regional consortium ITS/CVO business plan. Kentucky will provide the overall leadership for this project. Other likely partners could include Illinois, Missouri, Indiana, Ohio, West Virginia, and Tennessee.

2.4.5.1 Existing Projects (Wisconsin) - continued

**The Motor Carrier Safety Assistance Program (MCSAP) 100/200 Site Project**

The Motor Carrier Safety Assistance Program (MCSAP) 100/200 Site Project is a pilot project to equip 17 permanent enforcement personnel with personal computers as well as five portable laptops and printers in order to provide direct access to the Commercial Driver License Information System and the Inspection Selection System. This pilot project is anticipated to be complete in October of 1997, upon which evaluation will be completed by either FHWA or a hired contractor.

**Heka Brake Tester Pilot Project**

The Heka Brake Tester Pilot Project is an operations test of a device that consists of a set of electronic test plates set flush into the concrete at one of WisDOT's weigh stations which diagnoses a commercial motor vehicle's brakes. Testing takes place as the vehicle rolls onto the test plate between 2-5 mph and applies the brakes. This project began in 1995, and will be completed by the end of 1997.

**Minnesota/Wisconsin Out-of-Service Verification Project**

Minnesota/Wisconsin Out-of-Service Verification Project is an operations test of license plate scanners located at selected weigh stations using an automated, real-time data link system. The system will verify out-of-service orders from any safety-weight enforcement or portable scale facilities operating in Wisconsin. These facilities can then identify vehicles operating after violations have been discovered at other scales in operation along the corridor equipped with the license plate scanners. The data collection for this project is done and review of the final report will be complete by October of 1997.

**Mobile Data Communications System**

This project focuses on equipping the Division of State Patrol enforcement vehicles with mobile data terminals / computers for direct database inquiry for the purpose of checking driver license and vehicle registration information and outstanding warrants. Future refinements may possibly include on-line shift and activity reporting, automated traffic citations, and automated crash reporting. This project is partnered by the Wisconsin Division of State Patrol, Bureau of Communications, Division of Motor Vehicles, and Department of Commerce.

**Weigh-In-Motion (WIM)**

Weigh-in-motion for Wisconsin is a full scale deployment project. Electronic load cells, embedded into the pavement, screen heavy trucks as

2.4.5.1 Existing Projects (Wisconsin) - continued

they enter selected weight enforcement facilities. Trucks found to be within legal weight limits are allowed to proceed. Those outside the limits are directed to stationary scales for more accurate weight checks. This will increase the overall efficiency of the facility and allow for a more effective use of assigned personnel by providing rapid screening of the overall truck traffic stream. This project has been in operation since 1984, and on-going activities include maintenance and program review.

**GCM IMPACT:** To be determined.

2.4.5.2 Committed Projects (Wisconsin)

**NAME:** Incident Management - CAD/AVL Service  
**TIME FRAME:** By September 1997  
**PARTICIPANTS:** Milwaukee County Sheriff /911  
**PROJECT MANAGER:** Don Schell , WisDOT, (414)227-2148

**DESCRIPTION:** The incident management CAD, 911 service, and MONITOR connection project is one of four phases of "Wisconsin Incident Management," identified under the GCM ITS Priority Corridor CPP. (The other three phases are Program Design, Milwaukee Deployment, and Southeastern Wisconsin Deployment.)

Tasks to be performed in this project focus on supporting the Milwaukee County Sheriff's Department in deployment of a computer-aided dispatch service in the Milwaukee area. Specifically, the system will:

- Collect and report calls for service
- Track location and duration of incidents
- Provide statistical analysis of this data
- Upgrade the current 911 system service
- Provide a connection of this system to the MONITOR Freeway Traffic Management System.

These services will support the dispatch of enforcement, towing, and emergency vehicles to incidents along the freeways and will operate in conjunction with a mobile data distribution system. It is anticipated that the current Sheriff's Department mobile data terminals could be upgraded to Mobile Data Computers.

Several benefits will be realized from the development of the CAD and 911 system upgrade. The CAD system will provide better information for freeway incidents and other applicable activities. The CAD system will also be able to automate the distribution of selected information to others, including the MONITOR Traffic Operations Center. The information on CAD can be rapidly distributed to responding emergency units. Finally, CAD and a mobile data distribution network can serve as the backbone for other incident management systems such as automated citation and crash reporting systems, thereby providing a significant benefit to transportation system users.

Three primary objectives should be satisfied with respect to a 911 system upgrade:

- Upgrades should provide better data handling and analysis capabilities.

2.4.5.2 Committed Projects (Wisconsin) - continued

- Data from the 911 systems should be integrated into the CAD incident management database, thereby providing better incident management.
- The system upgrade should allow for the eventual conversion from analog to digital signals, in both the Enhanced 911 and Cellular 911 systems.

**GCM IMPACT:**

Real-time connections to other GCM systems would be highly desirable. The CAD system could be provided with real-time roadway conditions (e.g. congestion, incidents, weather, etc.) from other sources. Conversely, the CAD could provide incident data (e.g. notification, type, removal, etc.) to other GCM systems such as the CDSI and the C-TIC/Gateway for wider distribution.

2.4.5.2 Committed Projects (Wisconsin) - continued

**NAME:** MONITOR/Southeastern Wisconsin Incident Management Deployment  
**TIME FRAME:** On-going  
**PARTICIPANTS:** WisDOT- District 2  
**PROJECT MANAGER:** John Corbin, WisDOT, (414)227-2150  
Jon Ringler, HNTB Corporation, (312)930-9119  
Larry Henson, TransCore, (414)774-1771

**DESCRIPTION:** The MONITOR/ Southeastern Wisconsin Incident Management Deployment includes various projects such as:

- Special Events Management Plan
- Emergency Services Collocation Training
- Miller Park FTMS Infrastructure deployment, and
- Freeway Patrols.

Additional details will be provided as they become available.

**GCM IMPACT:** Real time connections to other GCM systems would be desirable. Until each of these projects is further along, however, impact on the GCM cannot be completely determined.

2.4.5.3 Proposed Projects (Wisconsin)

**NAME:** Voice Response Unit (VRU)  
**TIME FRAME:** Near term future  
**PARTICIPANTS:** Milwaukee County Transit (Milwaukee Transport Services (MTS), Inc.)  
**PROJECT MANAGER:** Thurman Demsky (MTS), (414)937-3287

**DESCRIPTION:** The directive is to assist in trip planning by providing scheduled route information via telephone. A user will call into the system and enter (via the telephone key pad) a route number, stop location, and anticipated trip data/time. The VRU system will respond with the next three scheduled times the bus is to be at the stop for the route selected.

**GCM IMPACT:** Coordination with other electronic fare systems/toll systems in the Corridor would be advantageous to allow use of a common format.

2.4.5.3 Proposed Projects (Wisconsin) - continued

**NAME:** I-90/94 ITS Intercity Corridor Strategic Deployment Plan (Rural ITS)  
**TIME FRAME:** To be completed by December 1997  
**PARTICIPANTS:** WisDOT  
**PROJECT MANAGER:** Phil Decabooter, WisDOT

**DESCRIPTION:** The I-90/94 ITS Intercity Corridor Strategic Deployment Plan is an approach for implementing ITS in the I-90/94 corridors in Wisconsin between Madison and the Mississippi River. This area is currently mainly rural. Deployment of ITS in the I-90/94 corridors is expected to improve the mobility, efficiency, productivity and safety of travelers within these corridors. The plan includes specific projects along with estimated costs and staffing needs. This project encompasses a 20-year planning horizon with an emphasis on the first five.

There are six (6) program areas that contain nineteen (19) ITS projects for the I-90/94 corridors. Projects within each program area are inter-related and address a common set of objectives. The plan identifies a specific operating or planning agency to manage each project along with a schedule, estimated budget and staffing needs, technology, proposed project location and administration.

The six program areas are:

- Commercial Vehicle Operations
- Incident Management
- Emergency Management Services
- Regional Multi-modal Traveler Information
- Public-Private Partnerships
- Technical and Planning Support.

Included in this project, though not inside the corridor, is the section of I-94 corridor that goes from Madison, WI to the Mississippi River (near St. Paul, Minnesota). This segment of the I-94 corridor is classified as Rural ITS.

**GCM IMPACT:** To be determined pending implementation of recommended projects.

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### **3.0 SUMMARY**

This is a preliminary report and future attention needs to be paid to the action item list in Section 0.0 of this report. Whether each project will stand alone or be coordinated within the Architecture will be addressed within the Corridor Architecture Interface Control Specifications and the Gateway TIS Interface Control Specifications documents. The Gateway TIS System Definition Document will address the linkages between projects and the C-TIC that need to be incorporated.

This working paper provides an overview of ITS related projects in the GCM Corridor. Projects have been separated into three categories: existing, committed and proposed. Projects have been included regardless of the funding source. An attempt has also been made to identify projects which will require real-time, near real-time or intermittent connection to other GCM systems. Projects recommended for real-time connection include, for example, the connection of MONITOR to the CDSI and thence to the C-TIC/Gateway. Other systems with data such as static transit schedules will only need an intermittent connection to the C-TIC/Gateway to allow for updates. As the GCM System architecture and the Gateway design evolves, the systems noted in this Working Paper will undergo further scrutiny in order to finalize recommendations or interconnectivity.

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