Metropolitan Transportation Management Center

A Case Study

Long Island INFORM

Identifying Incidents and Informing Travelers

October 1999

Foreword

Dear Reader,

We have scanned the country and brought together the collective wisdom and expertise of transportation professionals implementing Intelligent Transportation Systems (ITS) projects across the United States. This information will prove helpful as you set out to plan, design, and deploy ITS in your communities.

This document is one in a series of products designed to help you provide ITS solutions that meet your local and regional transportation needs. We have developed a variety of formats to communicate with people at various levels within your organization and among your community stakeholders:

- **Benefits Brochures** let experienced community leaders explain in their own words how specific ITS technologies have benefited their areas;
- **Cross-Cutting Studies** examine various ITS approaches that can be taken to meet your community's goals;
- **Case Studies** provide in-depth coverage of specific approaches taken in real-life communities across the United States; and
- **Implementation Guides** serve as "how to" manuals to assist your project staff in the technical details of implementing ITS.

ITS has matured to the point that you don't have to go it alone. We have gained experience and are committed to providing our state and local partners with the knowledge they need to lead their communities into the next century.

The inside back cover contains details on the documents in this series, as well as sources to obtain additional information. We hope you find these documents useful tools for making important transportation infrastructure decisions.

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Director, ITS Joint Program Office
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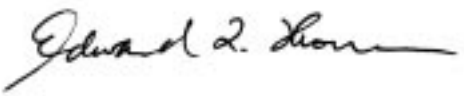

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Preface

The following case study provides a snapshot of Long Island's INFORM transportation management center. It follows the outline provided in the companion document, *Metropolitan Transportation Management Center Concepts of Operation—A Cross Cutting Study,* which describes operations and management successful practices and lessons learned from eight transportation management centers in the United States and Canada.

This case study reflects information gathered from interviews and observations at the INFORM transportation management center. The authors appreciate the cooperation and support of the New York State Department of Transportation and its partners in the development of this document.

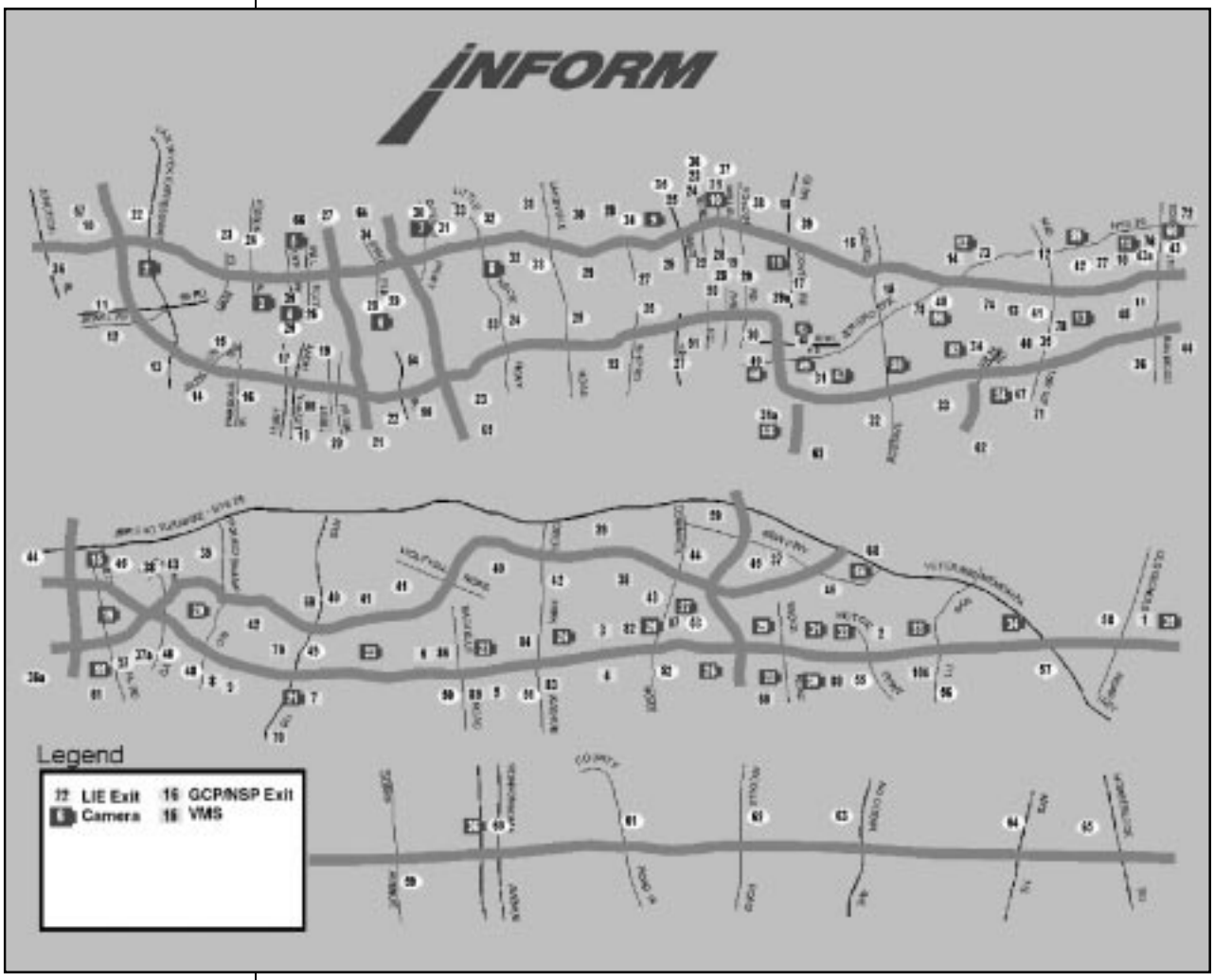
Contents

Background

Initial studies of traffic management on Long Island were done in the 1970s as part of the TOPICS program. Positive findings on the potential for such a system resulted in an initial $30 million demonstration deployment. The system was designed in the late 1970s and built in the early 1980s, containing variable message signs, ramp meters, traffic signals, and loop detectors, but no closed-circuit television. System operations went to 24 hours a day, 7 days a week in late 1987. Communications occurred over coaxial cable. The control center was located in the State office building in Hauppauge.

The objectives of the system are to—

- Identify traffic congestion and incidents or situations likely to cause congestion
- Provide information to motorists and incident management resources to minimize the duration and impact of incidents.



Design and Implementation

General system design parameters of INFORM include the following:

- The control center measures 65 feet by 45 feet, of which 25 feet by 25 feet is the control room. The control room contains:
  - A single row of operator positions with three positions facing three 100-inch LCD video wall units, one of which displays the system congestion map
  - Fifteen 19-inch color monitors are located at either side of the consoles; these are being replaced with multi-image capability on the video walls
  - Operator positions provide multiline standard desk telephones and deskphone style two-way radio units, 19-inch workstation monitors, and separate video controls.
  - The front console contains scanners for the three law enforcement agencies involved in freeway incident management.
  - Separate console positions at the rear of the control room operate the Highway Emergency Local Patrol function and the maintenance work logging computer.
- The system monitors and manages traffic on Long Island's three major east-west limited access routes. Work is under way to instrument north-south arterial connector routes. The original system covered 140 centerline miles of roadway. It is estimated that the completed system will add another 60 centerline miles, plus 40 to 50 centerline miles of arterials.

INFORM pioneered TMC operations contracting and continues to improve on its successful model.

Design and Implementation

The INFORM staff address the challenges of integrating legacy and modern intelligent infrastructure every day.

- Functions performed at INFORM include entry of incidents in the computer system, entry of variable message sign messages based on incident/congestion observations and reports, identification, logging, and requests for repairs of equipment failures, towing dispatch or request, and gathering and distributing information regarding construction and lane closures on the 1-800-ROADWORK telephone system to media and to other agencies. Monitoring of bridge scouring is being added to the INFORM duties. INFORM faxes information on travel delays and accidents every 15 minutes during peak periods to the 26 partner agencies and the media.

Method of Implementation

- The firm that performed the feasibility study later received contracts to design the system, develop and provide the computer system, and integrate the field equipment. A $5 million computer system migration contract was awarded to another firm several years later. Field equipment was installed under conventional low-bid construction contracts.

Testing

- Existing stand-alone test procedures are required for devices in all construction contracts. After installation of devices, the maintenance contractor connects them to the network, and the operations contractor makes software modifications and tests.

Training

- Training is mostly on-the-job. New staff are brought in for 1 to 2 weeks of training before they are formally assigned. First assignments are simpler tasks, then operators progress to more complex tasks, e.g. creating messages for variable message signs, which require a greater knowledge of the road network.

Documentation

- Motorist assistance patrol operators work from a motorist assistance patrol problems and procedures manual and a motorist assistance patrol standard operating procedures manual. Operations staff use an operators reference manual, intersection and diversion plans, and an operations manual.
- The system does not offer an online Help function.

Operations

Workload and Performance

- Contracted operations staff are present in the INFORM TMC 24 hours a day, 7 days a week. Three operators plus two motorist assistance patrol staff are present during peak hours. The operations contractor has a total staff of nine personnel plus three for motorist assistance patrols, including access to additional experienced personnel for absences and special needs. Shift-change procedures include a 15-minute overlap with manual handover and a shift-change checklist review.
- The current operations contract is INFORM's second nonprofessional services contract. Contract duration is 3 years with two 1-year extensions, at a value of $4.8 million for the first 3 years. The current contractor retained most of the first contractor's staff in place after award.

Coordination

- In addition to the six law enforcement agencies responsible for enforcement on roads covered by the system, wrecker services, and the relevant maintenance agencies, INFORM also coordinates with TRANSCOM. Fire and emergency medical services are contacted by telephone through the respective police departments. Motorist assistance patrol and New York State Patrol have "push off" authority. The motorist assistance patrol team contacts wreckers directly, or through police.
- TRANSCOM serves as the focus for sharing of information between INFORM and New York City Metropolitan Transit Authority's bus and rail control centers, and the distribution of this information to the public and to other agencies. New York City Metropolitan Transit Authority is implementing an automatic vehicle location system and a new automated train control system center which will provide real time vehicle location and arrival information. This information will also be provided to TRANSCOM, where it will be widely available through the iTravel metropolitan model deployment initiative's systems, along with extensive traffic condition information. TRANSCOM is also developing a video distribution network which will provide access to INFORM video to New York City Metropolitan Transit Authority control centers.

Operations

Conflict Resolution

- Incident response actions are initiated by a TMC operator. The decision making hierarchy for approval of actions requiring further authorization proceeds from the operator to the on-site contractor operations supervisor, the nearby operations contract manager, and ultimately to the on-site INFORM New York State DOT director.

Nonstandard Operations

- INFORM often becomes a central point for coordination during snow weather emergencies. It also serves as a focal point for the media, which reports from on site during such situations. The State emergency management center typically locates in the same building for snow emergencies.
- INFORM meets with State, county, and local city police to prepare for special events. It has established standard procedures for local agencies to request support from INFORM for smaller events. New York State DOT and INFORM also initiated a "Reach the Beach" traveler information program this past summer. The operations contractor supports some form of special event almost every week.

INFORM integrates traffic management on freeways and arterials across jurisdictional boundaries.

Maintenance

Fault Detection and Correction

- The computer system automatically senses detector, variable message sign, ramp meter, and communications failures and indicates them by a change in icon color on the system map. Device status is also available via equipment status screens and reports that can be printed. Many reports of device failure are taken over the phone from the public, partner agencies, maintenance staff, and other agency and contractor personnel. Failure calls are also received and relayed for devices (such as luminaires) that are not formally part of INFORM. Failures are logged manually in the main computer system, depending on the type of failure. Calls, pages, or faxes are sent to appropriate agency and maintenance contractor personnel.

Configuration Management

- There is no complete configuration management database, but the operations contractor does use an inventory program. Due to the extent and age of the system, the cost to develop a complete configuration database would likely be considerable.

Logistics

- New York State DOT and the operations contractor provided initial spares to the maintenance contractor, who then became responsible for needed spares. Spares are located at a central site. The maintenance contractor was afforded a period of months at the beginning of the maintenance contract during which to identify pre-existing problem conditions in the system.
- Because of the age of the original system, INFORM is encountering problems when attempting to obtain spares for some of the legacy equipment and experiencing long lead times and high costs due to custom fabrication. INFORM is investigating modifications to update and upgrade to more available devices.

Maintenance

- INFORM is experiencing challenges in achieving desired levels of quality and service from maintenance contractors. The maintenance contracts are awarded to the low bidder. Special needs, such as locating and retaining communications technicians and personnel with experience with the older generations of technology existing in the earlier portions of the system have been difficult to fulfill under existing contracting and labor conditions.

For further information, contact:

Federal Highway Administration Resource Centers

Eastern Resource Center
10 S. Howard Street, Suite 4000 – HRA-EA
Baltimore, MD 21201
Telephone 410-962-0093

Southern Resource Center
61 Forsyth Street, SW
Suite 17T26 – HRA-SO
Atlanta, GA 30303-3104
Telephone 404-562-3570

Midwestern Resource Center
19900 Governors Highway
Suite 301 – HRA-MW
Olympia Fields, IL 60461-1021
Telephone 708-283-3510

Western Resource Center
201 Mission Street
Suite 2100 – HRA-WE
San Francisco, CA 94105
Telephone 415-744-3102

Federal Transit Administration Regional Offices

Region 1
Volpe National Transportation Systems Center
Kendall Square
55 Broadway, Suite 920
Cambridge, MA 02142-1093
Telephone 617-494-2055

Region 2
1 Bolling Green
Room 429
New York, NY 10004
Telephone 212-668-2170

Region 3
1760 Market Street, Suite 500
Philadelphia, PA 19103-4124
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Atlanta Federal Center
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Telephone 404-562-3500

Region 5
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6301 Rockhill Road, Suite 303
Kansas City, MO 64131-1117
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Emergency Service Providers • Metropolitan Planning Organizations
Additional Transportation Stakeholders

Products Available in This Series:

—Benefits Brochures quote how ITS technologies have benefited specific areas.

—Cross-Cutting Studies present current data from related ITS applications.

—Case Studies provide in-depth coverage of ITS applications in specific projects.

—Technical Reports include results from various Field Operational Tests.

—Implementation Guides assist project staff in the technical details of implementing ITS.

ITS Topics Addressed in This Series:

- Commercial Vehicle Operations
- Emergency Services
- Enabling Technologies
- Emissions Management
- Freeway and Arterial Management
- Planning and Integration
- Real-Time Traveler Information
- Transit, Toll, and Rail Management
- Weather Information for Travelers and Maintenance

For a current listing of available documents, please visit our Web site at:
www.its.dot.gov

ITS Web Resources

ITS Joint Program Office:

http://www.its.dot.gov

ITS Cooperative Deployment Network (ICDN):

http://www.nawgits.com/jpo/icdn.html

ITS Electronic Document Library (EDL):

http://www.its.fhwa.dot.gov/cyberdocs/welcome.htm

ITS Professional Capacity Building Program Catalogue:

http://www.its.dot.gov/pcb/98catalg.htm

Federal Transit Administration:

http://www.fta.dot.gov

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