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Minnesota Intelligent Transportation Systems

Statewide Intelligent Transportation Systems As-Is Agency Reports for Minnesota



Volume 7 Minnesota State Patrol

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Statewide ITS As-Is Agency Report for Minnesota

Volume 7

Minnesota State Patrol

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Appendix A As-Is Agency Report for Minnesota Pre-Survey Candidate List

Appendix B As-Is Agency Report for Minnesota Data Collection Guide

1. INTRODUCTION

The purpose of the Polaris Project is to define an Intelligent Transportation Systems (ITS) architecture for the state of Minnesota. An architecture is a framework that defines a complex system, in terms of a set of smaller, more manageable systems which are fully defined in terms of their individual boundaries, functions, physical components, and interfaces. They illustrate how each of the systems interrelate and contribute to the overall ITS objectives and requirements.

A well defined architecture provides many benefits for a complex system. It defines and optimizes the location of system functions. It identifies critical interfaces, and illustrates how associated systems can be integrated to share resources and information. It establishes standards for communications and physical components so that inter-operability can be maintained as the system evolves to incorporate new capabilities and technologies.

The Minnesota Statewide ITS Architecture is a tailored version of the National ITS Architecture. Tailoring incorporates the prioritized wants and needs of the state's transportation users and stakeholders, as well as its existing ITS infrastructure. The functional architecture, physical architecture, system requirements and implementation plan are fully documented in the following project deliverables:

ITS Traveler Wants/ Needs - Information obtained from Minnesota residents in ten end user sessions held across the state. Used to establish and prioritize end-user requirements.

ITS Transportation Wants/ Needs - Information obtained from ITS stakeholder institutions. Used to establish and prioritize ITS service provider requirements.

ITS Wants/ Needs Analysis - Final results and recommendations of the wants and needs research.

Statewide ITS As-Is Agency Reports for Minnesota - Information about existing transportation systems that establish the starting point for the Architecture Implementation Plan.

ITS System Specification - Incorporates the results of the functional and physical architectures into specification format. The specification will clearly identify ITS system level requirements for the identified Minnesota ITS services.

ITS Component Specification - Incorporates the results of the functional to physical allocation in specification format. The specification will clearly identify the Minnesota ITS component systems requirements.

ITS Architecture Implementation Plan - A recommended ITS deployment strategy for future state initiatives.

2. SCOPE

This document, *Statewide ITS As-Is Agency Reports for Minnesota*, consists of a collection of individual system survey reports related to transportation systems. The Polaris Project will use the survey information collected to derive the existing architectural framework. After the existing architectural framework is derived, this information will be used as the baseline for developing the Minnesota Statewide ITS Architecture.

Agencies identified and contributed to this document were:

- Minnesota Department of Transportation Office of Advanced Transportation Systems
- Minnesota Department of Transportation Traffic Management Center
- Minnesota Department of Transportation Metropolitan Division
- Minnesota Department of Transportation Electrical Services Section
- St. Paul Department of Public Works
- Minneapolis Department of Public Works
- Hennepin County Department of Public Works
- Ramsey County Department of Public Works
- Minnesota State Patrol
- Hennepin County Medical Center
- Metropolitan Council Transit Operations
- Metropolitan Airports Commission
- Gopher State One Call
- Minnesota Office of Tourism

2.1 Document Overview

This document presents the methods, assumptions and procedures used to collect the baseline information. The documentation of systems that were inventoried is presented in Section 3.

2.2 Methods, Assumptions, and Procedures

2.2.1 System Identification

Agency and system candidates were based upon several factors prior to survey. Through market research, the highest wants and needs priorities for traveler and transportation related agencies identified the functional areas to be improved (i.e. Travel Conditions). The Polaris Project took the functional wants and needs and associated the wants and needs functions to current Minnesota Agencies. Another factor that contributed to identifying the candidate agencies was the presence of existing Intelligent Transportation Systems infrastructure that has been deployed to support integrating open systems for travelers, inter-agency and intra-agency needs.

One hundred twenty one pre-survey candidate systems identified by the process described previously, are listed in Appendix A. The pre-survey candidate list represents systems that were known by members of the Polaris Architecture working team, Mn/DOT Guidestar, and SRF Consulting Group, Inc. Of the 121 candidate systems, 38 system surveys were performed and

included in this document. The 38 systems were selected as best representatives of the 121 pre-survey candidates and provided a diverse base of information to use for developing the Minnesota Statewide ITS Architecture.

2.2.2 Data Collection Guide

The survey of systems required that a standard data collection approach be applied for the *Statewide ITS As-Is Agency Reports for Minnesota*. A data collection guide was prepared to help this effort.

The data collection guide was developed to provide interviewers with an overview of relevant information that needed to be collected during the survey for each system. The data collection effort focused on the following:

- A block diagram of the system and interfaces to external users and systems.
- All hardware elements that are interconnected to form the bounds of the system.
- All software components used by the hardware elements.
- All system interfaces that connect hardware components together and external systems to the system.
- All personnel using the system.

The Data Collection Guide is presented in Appendix B.

2.2.3 Field Data Collection

The survey collection activities were completed by two teams of interviewers. Prior to an on-site interview, an agency or system contact person was briefed as to the nature of the survey. In some cases, generally where agencies knew little of the Polaris project, a follow-up letter was sent to further outline the desired level of information.

The on-site interview was generally a free format discussion of the specific system elements. The data collection guide was only used to ensure all components were discussed. The interviewers recorded the audio portion of the interview in order to help with the documentation of the system. Where possible, the actual system components were also recorded on videotape, again, to help with the system documentation. In some cases, written documentation from the agency was reviewed to help describe the system.

A report of the surveyed system followed a standard format and consisted of two basic parts: 1) a system block diagram and 2) a data collection template. The block diagram is intended to depict the system components and interfaces while the template thoroughly describes the system configuration. The template is organized to step through the system related personnel, hardware, software and interfaces. All systems documented for the project used this standardized approach. The system documentation was separated by agencies into eight volumes.

The system reports contained in this volume follow in Section 3.

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3. AS-IS BASELINE SYSTEM DOCUMENTATION

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3.7 MINNESOTA STATE PATROL

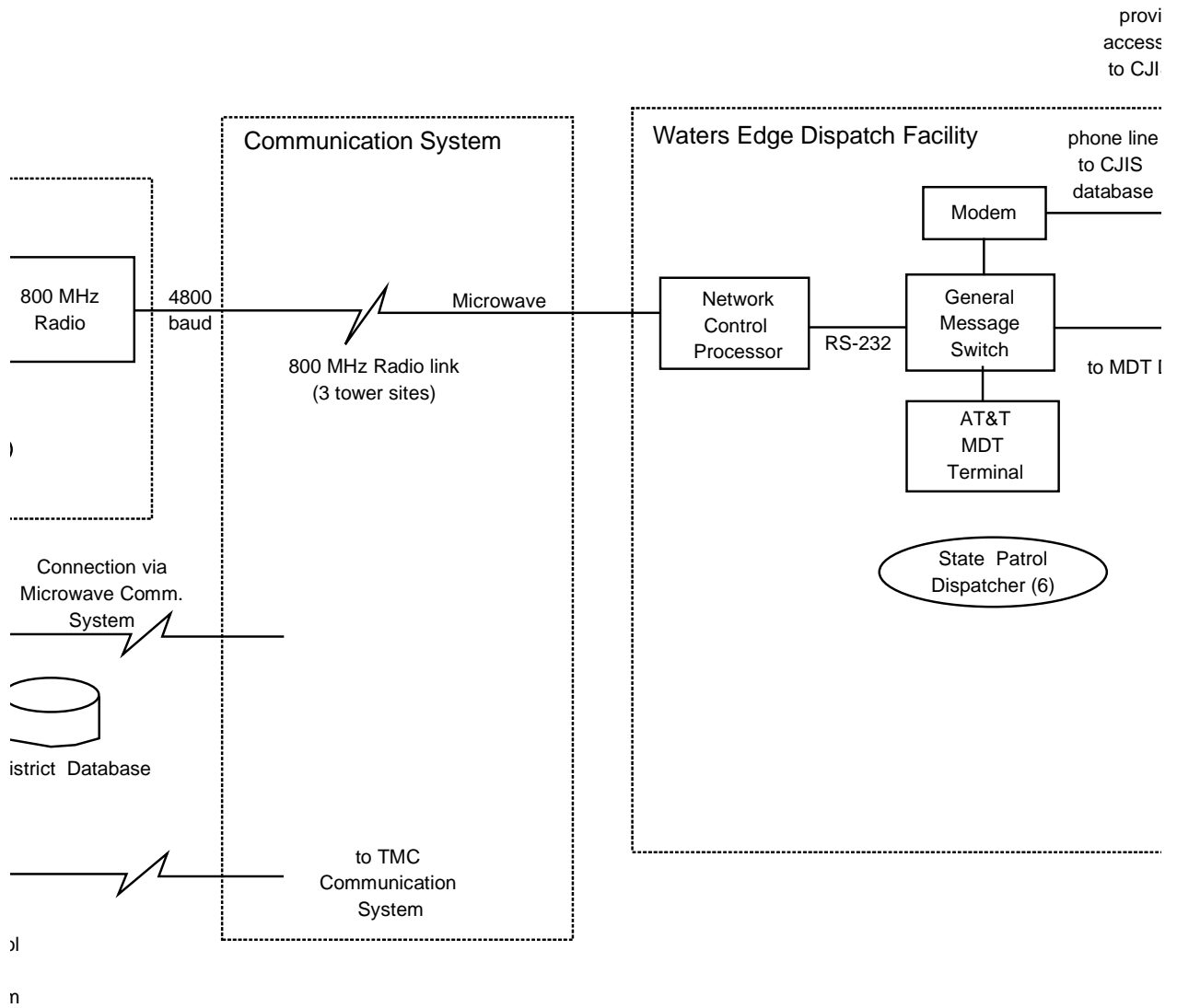
- 3.7.1 Minnesota State Patrol Mobile Data Terminal System
- 3.7.2 Minnesota State Patrol Laptop Mobile Data Terminal System
- 3.7.3 Minnesota State Patrol Emergency 911 Dispatch System

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3.7.1 MINNESOTA STATE PATROL MOBILE DATA TERMINAL SYSTEM

**POLARIS As-Is Data Collection
Minnesota State Patrol Mobile Data Terminal System**

Baseline Data Collection
State Patrol Mobile Data Terminal System



AS-IS DATA COLLECTION TEMPLATE

1.0 AGENCY AMINNESOTA STATE PATROL@

- Agency Type Law Enforcement
- Agency Functions Law enforcement of State trunk highways.
- Agency Location(s) Two metro districts cover 9 counties:
District 2500 (Isanti, Anoka, Hennepin, Carver, Scott)
District 2400 (Ramsey, Dakota, Washington, Chisago)

2.0 SYSTEM ASTATE PATROL MOBILE DATA TERMINAL SYSTEM@

- Date of As-Is Data Collection 3/6/96
- Purpose To provide efficient communication of information between Patrol cars and:
 - 1) Dispatchers
 - 2) State law enforcement databases
 - 3) other Patrol cars.
- Hours of Operation 24 hours/day, 365 days/year
- Geographic Coverage Twin Cities Metropolitan Area
- Contacts Captain Craig Hendrickson
- Status Existing
- Constraints 4800 baud transmission rate.
MDTs have limited functionality - dumb terminal.
- Recommended Improvements State Patrol is working on a pilot project which will place ruggedized laptop PCS in a few cars in lieu of MDTs.
- Block Diagram See attached

2.1 PERSONNEL ADISPATCHER@

- Personnel Function
 - 1) Receive calls
 - 2) Dispatch trooper to respond to calls
 - 3) Notify Public Safety Answering Points of incidents.
 - 4) Coordinate incident management activity with TMC, Mn/DOT Maintenance, Police, Fire, Tow companies, CVO inspection, Hazmat, etc.
- Quantity 16 full time dispatchers, 2 are supervisors.
- Location 1500 West C.R. B2, WatersEdge Room 181, Roseville, MN 55113
- Workload Very high
- Working hours Currently run dispatchers on a fixed schedule, i.e. each dispatcher has a fixed shift that they work such as 3pm - 11pm.
- Status Existing
- Contact Have a minimum of 4 dispatchers on duty during AM and PM peak periods, i.e. 6-9 AM and 3 - 7 PM.

2.2 PERSONNEL ASTATE PATROL TROOPER@

- Personnel Function Law Enforcement
- Quantity 70 - 100 active in Metro Area at all times.
- Location Twin Cities Metro Area, also in rural districts.
- Working hours Shifts cover 24 hours/day.
- Status Existing

3.1 HARDWARE APATROL CAR MDT@

- ware Type Terminal (Mobile Data Terminal-MDT)
- tions
 - 1) Dispatching
 - 2) Initiates data base access to CJIS
 - 3) Provides fleet status monitoring
 - 4) Report entry
 - 5) Dispatcher to vehicle messaging
 Displays driver vehicle and driver license information.
 ADumb-terminal@, provides access to the Criminal Justice information System (CJIS).
- Location In all State Patrol cars in district.
- Data Name/Contents
 - 1) Dispatch information
 - 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry)
 - 3) Fleet status information (traffic stop, break, out, repair)
 - 4) Reports
 - 5) Broadcast messages
- Data Type Data
- Status Existing in all State Patrol cars.
- Constraints Limited functionality.
 6,000 character message storing capacity.
 20 downloadable form storage capacity.
 Transmission data rate = 4800 baud max.
- Recommended Improvements Patrol working on a pilot project using ruggedized laptops to replace MDTs.
- Other Captain Craig Hendrickson 215-1768

3.2 HARDWARE A800 MHZ RADIO@

- Hardware Type Radio
- Functions Provides radio data communication between MDT and Network Control Processor.
- Location In all State Patrol cars.
- Data Name/Contents
 - 1) Driver license information
 - 2) Vehicle information
 - 3) Incident location, type, etc.
- Data Type Data
- Status Existing in all State Patrol cars.

3.3 HARDWARE ANETWORK CONTROL PROCESSOR (NCP)@

- Hardware Type Hub
- Functions Concentrates inbound traffic from all base station receivers and forwards the terminal (MDT) initiated message to the host computer. It selects the optimum state site for messages directed to a particular MDT. This is accomplished by transmitter steering software in the NCP that evaluates the signal strength information.
- Location WatersEdge Dispatch Facility
- Data Name/Contents
 - 1) Dispatch information
 - 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry)
 - 3) Fleet status information
 - 4) Reports
 - 5) E-Mail Messages
- Data Type Data
- Status Existing

3.4 HARDWARE AGENERAL MESSAGE SWITCH@

- Hardware Type Message controller
- Functions Manages data traffic flow between Patrol car MDTs, Patrol dispatcher terminals, and state/NCIC database such as MN's Criminal Justice Information System. The message switch is responsible for controlling inbound messages to the State's host computer (CJIS) and controlling the message traffic from host computers to the Network Control Processor. Provides car-to-car, car-to-terminal messaging. Provides status monitoring of MDTs.
- Location WatersEdge Dispatch Facility
- Data Name/Contents
 - 1) Vehicle information- license #/State, vehicle registration.
 - 2) Driver information - driver license information, driver record.
 - 3) Stolen property information - property description, serialnumber.
- Data Type Data
- Status Existing
- Other AT&T 3B2/500 running UNIX
Capable of handling from 25 - 200+ MDTs.
Capable of interfacing to several host computers including Computer Aided Dispatch systems.

3.5 HARDWARE AAT&T MDT TERMINAL@

- Hardware Type Computer Terminal
- Functions
 - 1) Displays driver vehicle and driver license information. ADumb-terminal@, provides access to the Criminal Justice information System (CJIS).
- Location WatersEdge Dispatch Facility
- Data Name/Contents
 - 1) Dispatch information
 - 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry)
 - 3) Fleet status information
 - 4) Reports
 - 5) E-Mail Messages
- Data Type Data
- Status Existing at each dispatch station

3.6 HARDWARE AMDT IN G.V. & OAKDALE OFFICE@

- Hardware Type Mobile Data Terminal
- Functions
 - 1) Displays driver vehicle and driver license information. ADumb-terminal@, provides access to the Criminal Justice information System (CJIS).
 - 2) Provides E-mail access among dispatch and Patrol cars.
- Location Oakdale and Golden Valley State Patrol offices
- Data Name/Contents
 - 1) Dispatch information
 - 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry)
 - 3) Fleet status information
 - 4) Reports
 - 5) E-Mail Messages
- Data Type Data
- Status Existing

3.7 HARDWARE APC IN TMC W/ MDT SOFTWARE@

- Hardware Type Computer
- Functions Allows TMC Information Officer to view incident data transmitted between Patrol cars and dispatchers. This aids the TMC in knowing what response has been dispatched by the State Patrol, and TMC can use this information to determine how to dispatch Highway Helpers and also can pass on this information to the media.
- Location Traffic Management Center Control Room.
- Data Name/Contents Incident Data
- Data Type Data
- Status Existing - recently installed and working on getting operational.

4.1	INTERFACE	PATROL CAR MDT
- Connects to ...		Network Control Processor
- Interface location		3 Tower sites in Metro Area: 1) Stacy, Mn 2) Arden Hills, MN 3) Heather, MN
- Interface Type		RF/Microwave
- Interface Direction		Both
- Interface Component		800 MHZ RF/Line of sight microwave
- Protocol/Standard		800 MHZ RF communication between tower sites and patrol cars, line of sight microwave communication between towers and State Patrol Dispatch center.
- Information Type/Content		1) Dispatch information 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry) 3) Fleet status information 4) Reports 5) E-Mail Messages
- Information Direction		Both
- Information Frequency		As needed
4.2	INTERFACE	NETWORK CONTROL PROCESSOR
- Connects to ...		General Message Switch
- Interface location		WatersEdge Dispatch Facility
- Interface Type		Data
- Interface Direction		Both
- Interface Component		Wire
- Protocol/Standard		RS-232
- Information Type/Content		1) Dispatch information 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry) 3) Fleet status information 4) Reports 5) E-Mail Messages
- Information Direction		Both
- Information Frequency		As Needed

4.3	INTERFACE	GENERAL MESSAGE SWITCH
- Connects to ...		AT&T MDT Terminal
- Interface location		WatersEdge Dispatch Facility
- Interface Type		Data
- Interface Direction		Both
- Interface Component		Wire
- Protocol/Standard		RS-232
- Information Type/Content		Information content is the same as the MDT: 1) Dispatch information 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry) 3) Fleet status information 4) Reports 5) E-Mail Messages
- Information Direction		Both
- Information Frequency		As Needed

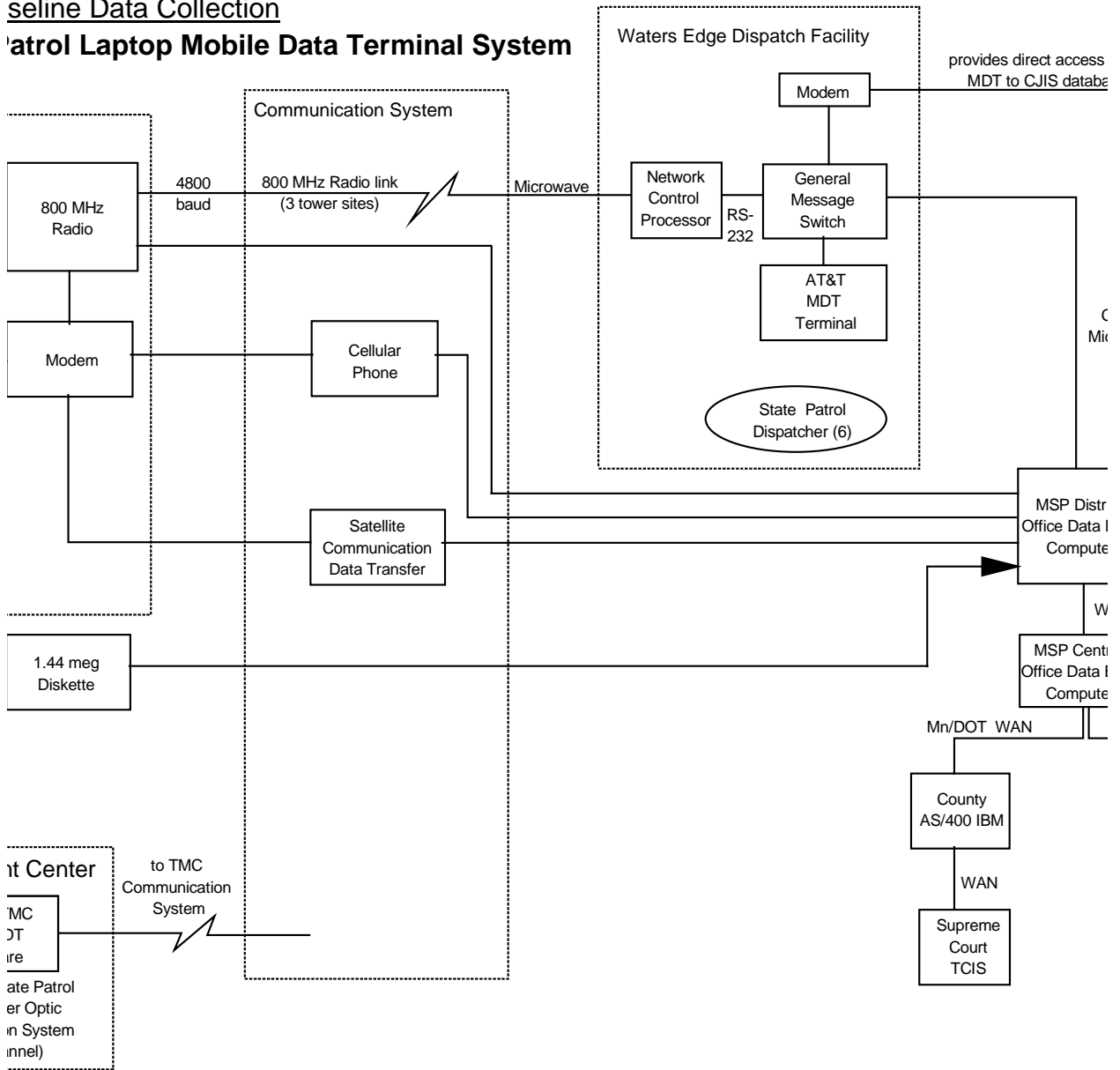
4.4	INTERFACE	GENERAL MESSAGE SWITCH
- Connects to ...		CJIS and other Law Enforcement databases
- Interface location		WatersEdge Dispatch Facility
- Interface Type		Data
- Interface Direction		Both
- Interface Component		Wire
- Protocol/Standard		RS-232 SNA= LU 6.2 with application
- Information Type/Content		Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry)
- Information Direction		Both
- Information Frequency		As Needed

4.5	INTERFACE	GENERAL MESSAGE SWITCH
- Connects to ...		MDT in Golden Valley and Oakdale Offices
- Interface location		WatersEdge Dispatch Facility
- Interface Type		Data
- Interface Direction		Both
- Interface Component		Microwave system
- Information Type/Content		1) Dispatch information 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry) 3) Fleet status information 4) Reports 5) E-Mail Messages
- Information Direction		Both
- Information Frequency		As Needed

4.6	INTERFACE	GENERAL MESSAGE SWITCH
- Connects to ...		PC in TMC with MDT Software
- Interface location		WatersEdge Dispatch Facility
- Interface Type		Data
- Interface Direction		Both
- Interface Component		TMC Communication System
- Information Type/Content		1) Dispatch information
- Information Direction		Output - from General Message Switch to TMC
- Information Frequency		As Patrol vehicles are dispatched.

3.7.2 MINNESOTA STATE PATROL LAPTOP MOBILE DATA TERMINAL SYSTEM

Baseline Data Collection
 Minnesota State Patrol Laptop Mobile Data Terminal System



AS-IS DATA COLLECTION TEMPLATE

1.0 AGENCY AMINNESOTA STATE PATROL@

- Agency Type Law Enforcement
- Agency Functions Law enforcement of State trunk highways.
- Agency Location(s) Two metro districts cover 9 counties:
District 2500 (Isanti, Anoka, Hennepin, Carver, Scott)
District 2400 (Ramsey, Dakota, Washington, Chisago)
- Contact Captain Craig Hendrickson 215-1768

2.0 SYSTEM ASTATE PATROL LAPTOP MOBILE DATA TERMINAL SYSTEM@

- Date of As-Is Data Collection 3/6/96
- Purpose To test the use of ruggedized Laptop PCS as mobile data terminals for State Patrol.
To test 4 different communications methods between Laptop PCS and Network Control Processor at dispatch office.
To provide efficient communication of information between Patrol cars and:
1) Dispatchers
2) State law enforcement databases
3) other Patrol cars.
To increase efficiency of troopers by 20% by saving redundant reporting of accident information via automated field reporting of incidents.
- Hours of Operation 24 hours/day, 365 days/year
- Geographic Coverage Blue Earth County and the ARCTIC Operational test Project Area.
- Contacts Captain Craig Hendrickson
- Status Pilot project - system is under design/procurement.
- Issues This project will test 4 methods for transmitting data to district office. The operations and maintenance cost of the communications method will be a critical factor in determining the which type of communications will be used for expansion of this system.
- Block Diagram See attached
- Typical Operational Scenario As patrol car makes an incident stop, the GPS data would enter the incident's location into the system in latitude and longitude. The latitude and longitude data would be post processed to convert it to roadway, roadway direction and milepoint location data using Mn/DOT's GIS basemap. The trooper would complete the citation and accident report on the PC (rather than on hardcopy forms).
- Other Pilot project being conducted with:
1) Blue Earth County and the City of Mankato

2) Arctic Project (State Patrol, Mn/DOT Maint., Arrowhead Transit). - 6 units.

2.1 PERSONNEL ADISPATCHER@

- Personnel Function
 - 1) Receive calls
 - 2) Dispatch trooper to respond to calls
 - 3) Notify Public Safety Answering Points of incidents.
 - 4) Coordinate incident management activity with TMC, Mn/DOT Maintenance, Police, Fire, Tow companies, CVO inspection, Hazmat, etc.
- Quantity
 - 16 full time dispatchers, 2 are supervisors.
- Location
 - 1500 West C.R. B2, WatersEdge Room 181, Roseville, MN 55113
- Workload
 - Very high
- Working hours
 - Currently run dispatchers on a fixed schedule, i.e. each dispatcher has a fixed shift that they work such as 3pm - 11pm.
- Status
 - Existing
- Contact
 - Have a minimum of 4 dispatchers on duty during AM and PM peak periods, i.e. 6-9 AM and 3 - 7 PM.

2.2 PERSONNEL ASTATE PATROL TROOPER@

- Personnel Function
 - Law Enforcement
- Quantity
 - 70 - 100 active in Metro Area at all times.
- Location
 - Twin Cities Metro Area, also in rural districts.
- Working hours
 - Shifts cover 24 hours/day.
- Status
 - Existing

3.1 HARDWARE APATROL CAR LAPTOP PC - MDT@

- Hardware Type Ruggedized 486 Laptop PC (Mobile Data Terminal-MDT)
- Functions
 - 1) Dispatching patrol officers
 - 2) Provides data base access into CJIS
 - 3) Provides status monitoring for individual patrol vehicles
 - 4) Report entry - Accident Reports and Citations for electronic report management..
 - 5) Messaging
Displays driver vehicle and driver license information.
Provides access to the Criminal Justice information System (CJIS).
- Location In 30 -50 State Patrol cars.
- Data Name/Contents
 - 1) Dispatch information
 - 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry)
 - 3) Fleet status information
 - 4) Reports
 - 5) E-Mail Messages
 - 6) Initial Complaint Report (ICR) form (time of call, ICR #, time assigned to trooper, time of arrival, time cleared)
 - 7) Pencil Log form
- Data Type Data
- Status Future install in pilot project State Patrol cars.
- Other
 - 1) Pilot project will have 30 -50 of these units installed in cars.
 - 2) 486 PC with 8 megabytes of RAM expandable to 16 meg.
 - 3) Software will run on a 386 PC and requires 4 meg RAM.
 - 4) State Patrol will buy a site license for the communications system. The project will cost approximately \$350,000.

3.2 HARDWARE A800 MHZ RADIO@

- Hardware Type Radio
- Functions Provides radio data communication between Laptop PC - MDT and Network Control Processor.
- Location In all State Patrol cars.
- Data Name/Contents
 - 1) Driver license information
 - 2) Vehicle information
 - 3) Incident location, type, etc.
- Data Type Data
- Status Existing in all State Patrol cars.

3.3 HARDWARE ANETWORK CONTROL PROCESSOR (NCP)@

- Hardware Type Hub
- Functions Concentrates inbound traffic from all base station receivers and forwards the terminal (MDT) initiated message to the host computer.
It selects the optimum state site for messages directed to a particular MDT. This is accomplished by transmitter steering software in the NCP that evaluates the signal strength information.
- Location WatersEdge Dispatch Facility
- Data Name/Contents
 - 1) Dispatch information
 - 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry)
 - 3) Fleet status information
 - 4) Reports
 - 5) E-Mail Messages
- Data Type Data
- Status Existing
- Other See Minnesota State Patrol Mobile Data Terminal System documentation.

3.4 HARDWARE AGENERAL MESSAGE SWITCH@

- Hardware Type Router
- Functions Manages data traffic flow between Patrol car MDTs, Patrol dispatcher terminals, and state/NCIC database such as MN's Criminal Justice Information System. The message switch is responsible for routing inbound messages to the State's host computer (CJIS) and controlling the message traffic from host computers to the Network Control Processor. Provides car-to-car, car-to-terminal messaging.
Provides status monitoring of MDTs.
- Location WatersEdge Dispatch Facility
- Data Name/Contents
 - 1) Vehicle information- license #/State, vehicle registration.
 - 2) Driver information - driver license information, driver record.
 - 3) Stolen property information - property description, serial number.
- Data Type Data
- Status Existing
- Issues State Patrol currently has some maintenance issues with the message switch.
- Other AT&T 3B2/500
Capable of handling from 25 - 200+ MDTs.
Capable of interfacing to several host computers including Computer Aided Dispatch systems.
See Minnesota State Patrol Mobile Data Terminal System documentation.

3.5 HARDWARE AAT&T MDT TERMINAL@

- Hardware Type Computer Terminal
- Functions
 - 1) Displays driver vehicle and driver license information. ADumb-terminal@, provides access to the Criminal Justice information System (CJIS).
- Location WatersEdge Dispatch Facility
- Data Name/Contents
 - 1) Dispatch information
 - 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry)
 - 3) Fleet status information
 - 4) Reports
 - 5) E-Mail Messages
- Data Type Data
- Status Existing at each dispatch station
- Other See Minnesota State Patrol Mobile Data Terminal System documentation.

3.6 HARDWARE AMSP DISTRICT OFFICE DATABASE@

- Hardware Type Computer
- Functions
 - 1) Displays driver vehicle and driver license information. Provides access to the Criminal Justice information System (CJIS).
 - 2) Provides E-mail access among dispatch and Patrol cars.
 - 3) Receives accident and citation data from patrol cars.
- Location Oakdale and Golden Valley State Patrol offices
- Data Name/Contents
 - 1) Dispatch information
 - 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry)
 - 3) Fleet status information
 - 4) Reports
 - 5) E-Mail Messages
 - 6) Initial Complaint Report (ICR) form (time of call, ICR #, time assigned to trooper, time of arrival, time cleared)
 - 7) Pencil Log form
- Data Type Data
- Status Future - part of pilot project

3.7 HARDWARE APC IN TMC W/ MDT SOFTWARE@

- Hardware Type Computer
- Functions Allows TMC Information Officer to view incident data transmitted between Patrol cars and dispatchers. This aids the TMC in knowing what response has been dispatched by the State Patrol, and TMC can use this information to determine how to dispatch Highway Helpers and also can pass on this information to the media.
- Location Traffic Management Center Control Room.
- Data Name/Contents Incident Data
- Data Type Data
- Status Existing - recently installed and working on getting operational.

3.8 HARDWARE AGPS ANTENNA AND RECEIVER@

- Hardware Type Global positioning antenna and receiver
- Functions Receive satellite signals and compute vehicle location.
- Location State Patrol car
- Data Name/Contents Vehicle latitude and longitude.
- Data Type Data
- Status Future

4.1	INTERFACE	PATROL CAR LAPTOP MDT
- Connects to ...		MSP District Office Database via 800 MHz Radio link
- Interface location		3 Tower sites in Metro Area: 1) Stacy, Mn 2) Arden Hills, MN 3) Heather, MN
- Interface Type		RF/Microwave
- Interface Direction		Both
- Interface Component		800 MHZ RF/Line of sight microwave
- Protocol/Standard		800 MHZ RF communication between tower sites and patrol cars, line of sight microwave communication between towers and State Patrol Dispatch center. Proprietary Motorola data format.
- Information Type/Content		1) Dispatch information 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry) 3) Fleet status information 4) Reports 5) E-Mail Messages 6) Initial Complaint Report (ICR) form (time of call, ICR #, time assigned to trooper, time of arrival, time cleared) 7) Pencil Log form
- Information Direction		Both
- Information Frequency		As needed

4.2	INTERFACE	PATROL CAR Laptop MDT
- Connects to ...		MSP District Office Database via Cellular phone network
- Interface location		In field
- Interface Type		Data
- Interface Direction		Both
- Interface Component		Existing cellular phone network
- Information Type/Content		1) Dispatch information 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry) 3) Fleet status information 4) Reports 5) E-Mail Messages 6) Initial Complaint Report (ICR) form 7) Pencil Log form
- Information Direction		Both
- Information Frequency		As needed

4.3	INTERFACE	PATROL CAR Laptop MDT
- Connects to ...		MSP District Office Database via Satellite Communication
- Interface location		Field
- Interface Type		Data
- Interface Direction		Both
- Interface Component		Satellite
- Information Type/Content		1) Dispatch information 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry) 3) Fleet status information 4) Reports 5) E-Mail Messages 6) Initial Complaint Report (ICR) form 7) Pencil Log form
- Information Direction		Both
- Information Frequency		As needed

4.4	INTERFACE	PATROL CAR Laptop MDT
- Connects to ...		MSP District Office Database - floppy disk transfer
- Interface location		Field
- Interface Type		Data
- Interface Direction		Both
- Interface Component		Hand carry 1.44 megabyte diskette
- Information Type/Content		1) Dispatch information 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry) 3) Fleet status information 4) Reports 5) E-Mail Messages 6) Initial Complaint Report (ICR) form 7) Pencil Log form
- Information Direction		Both
- Information Frequency		At end of day/shift, or as Patrol car visits district office.

4.5	INTERFACE	NETWORK CONTROL PROCESSOR
- Connects to ...		General Message Switch
- Interface location		WatersEdge Dispatch Facility
- Interface Type		Data
- Interface Direction		Both
- Interface Component		Wire
- Protocol/Standard		RS-232
- Information Type/Content		1) Dispatch information 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry) 3) Fleet status information 4) Reports 5) E-Mail Messages 6) Initial Complaint Report (ICR) form 7) Pencil Log form
- Information Direction		Both
- Information Frequency		As Needed

4.6	INTERFACE	GENERAL MESSAGE SWITCH
- Connects to ...		AT&T MDT Terminal
- Interface location		WatersEdge Dispatch Facility
- Interface Type		Data
- Interface Direction		Both
- Interface Component		Wire
- Protocol/Standard		RS-232
- Information Type/Content		1) Dispatch information 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry) 3) Fleet status information 4) Reports 5) E-Mail Messages 6) Initial Complaint Report (ICR) form 7) Pencil Log form
- Information Direction		Both
- Information Frequency		As Needed

4.7	INTERFACE	GENERAL MESSAGE SWITCH
- Connects to ...		CJIS and other Law Enforcement databases
- Interface location		WatersEdge Dispatch Facility
- Interface Type		Data
- Interface Direction		Both
- Interface Component		Wire
- Protocol/Standard		RS-232
- Information Type/Content		Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry)
- Information Direction		Both
- Information Frequency		As Needed

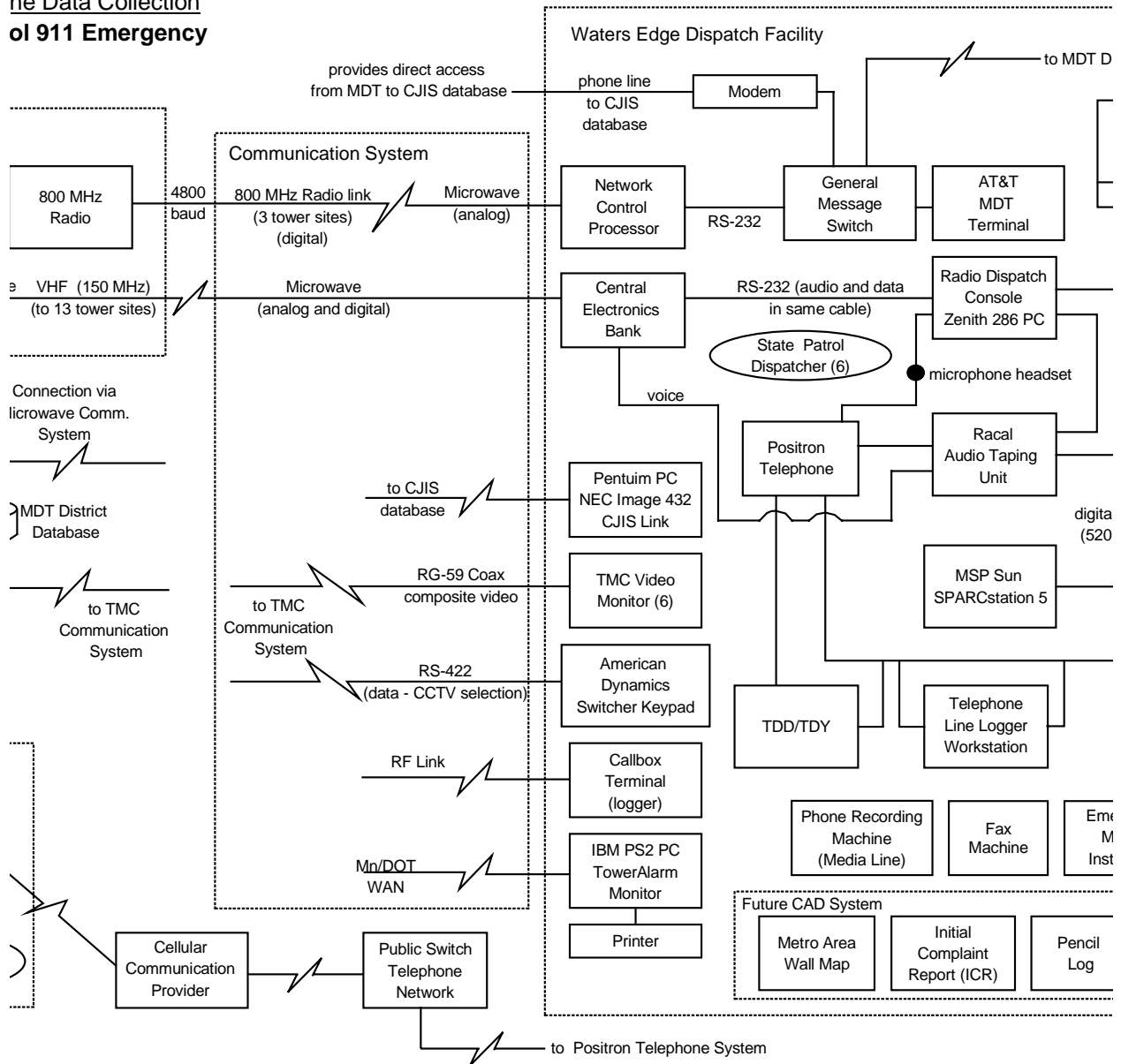
4.8	INTERFACE	GENERAL MESSAGE SWITCH
- Connects to ...		MDT in Golden Valley and Oakdale Offices
- Interface location		WatersEdge Dispatch Facility
- Interface Type		Data
- Interface Direction		Both
- Interface Component		Microwave system
- Information Type/Content		1) Dispatch information 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry) 3) Fleet status information 4) Reports 5) E-Mail Messages 6) Initial Complaint Report (ICR) form 7) Pencil Log form
- Information Direction		Both
- Information Frequency		As Needed

4.9	INTERFACE	GENERAL MESSAGE SWITCH
- Connects to ...		PC in TMC with MDT Software
- Interface location		WatersEdge Dispatch Facility
- Interface Type		Data
- Interface Direction		Both
- Interface Component		TMC Communication System
- Information Type/Content		1) Dispatch information
- Information Direction		Output - from General Message Switch to TMC
- Information Frequency		As Patrol vehicles are dispatched.

3.7.3 MINNESOTA STATE PATROL EMERGENCY 911 DISPATCH SYSTEM

POLARIS As-Is Data Collection
Minnesota State Patrol Emergency 911 Dispatch System

ne Data Collection
ol 911 Emergency



AS-IS DATA COLLECTION TEMPLATE

1.0 AGENCY AMINNESOTA STATE PATROL@

- Agency Type Law Enforcement
- Agency Functions Law enforcement of State trunk highways.
- Agency Location(s) Two metro districts cover 9 counties:
District 2500 (Isanti, Anoka, Hennepin, Carver, Scott)
District 2400 (Ramsey, Dakota, Washington, Chisago)

2.0 SYSTEM ASTATE PATROL EMERGENCY 911 DISPATCH SYSTEM@

- Date of As-Is Data Collection 2/13/96
- Purpose Answer all cellular 911 calls in Metro Area and dispatch appropriate State Patrol troopers to the scene of incident
- Hours of Operation 24 hours/day, 365 days/year
- Geographic Coverage Twin Cities Metropolitan Area
- Contacts Major Ron Bolin
- Status Existing
- Policies All dispatchers have received pre-arrival medical training.
- Recommended Improvements Need a 911 Computer Aided Dispatch system.
- Block Diagram See attached
- Other 1) 70% - 75% of calls received are handled by State Patrol, the rest are transferred to another jurisdiction.
2) Currently do not know where the 911 call is originating from.
- Typical Operational Scenario State Patrol Dispatcher receives cellular 911 calls from the public. Ascertain if the incident is the responsibility of the Patrol, if not, transfers to the appropriate Public Service Answering Point.
Dispatcher collects incident information from caller such as: incident type, location, severity.
Dispatch notifies Patrol car to respond to incident via either the voice radio or mobile data terminal.
Dispatcher records information about the incident on an Initial Complaint Report (ICR).

2.1 PERSONNEL A DISPATCH CENTER ADMINISTRATOR@

- Personnel Function Supervise State Patrol dispatch center operations, design, maintenance.
- Quantity 1
- Location Waters Edge facility
- Working hours Normal work week - M-F.
- Status Existing
- Contact Major Ron Bolin

2.2 PERSONNEL ADISPATCHER@

- Personnel Function
 - 1) Receive calls
 - 2) Dispatch trooper to respond to calls
 - 3) Notify Public Safety Answering Points of incidents.
 - 4) Coordinate incident management activity with TMC, Mn/DOT Maintenance, Police, Fire, Tow companies, CVO inspection, Hazmat, etc.
- Quantity
16 full time dispatchers, 2 are supervisors.
- Location
1500 West C.R. B2, Waters Edge Room 181, Roseville, MN 55113
- Workload
Very high
- Working hours
Currently run dispatchers on a fixed schedule, i.e. each dispatcher has a fixed shift that they work such as 3pm - 11pm.
- Status
Existing
- Policies
Have a minimum of 4 dispatchers on duty during AM and PM peak periods, i.e. 6-9 AM and 3 - 7 PM.
- Issues
AM and PM rush hours are the busiest periods for the dispatchers and troopers.
- Other
Will add 4 dispatchers if proposed Bill passes in the 1996 Legislature.

3.1 HARDWARE APATROL CAR MDT@

- Hardware Type Data terminal (Mobile Data Terminal-MDT)
- Functions
 - 1) Dispatching
 - 2) Data base access
 - 3) Fleet status monitoring
 - 4) Report entry
 - 5) MessagingDisplays driver vehicle and driver license information.
ADumb-terminal@, provides access to the Criminal Justice information System (CJIS).
- Location In all State Patrol cars.
- Data Name/Contents
 - 1) Dispatch information
 - 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry)
 - 3) Fleet status information
 - 4) Reports
 - 5) E-Mail Messages
- Data Type Data
- Status Existing in all State Patrol cars.
- Constraints Limited functionality.
6,000 character message storing capacity.
20 downloadable form storage capacity.
Transmission data rate = 4800 baud max.
- Recommended Improvements Patrol working on a pilot project using Aruggedized@ laptops to replace MDT-s.
- Contact Captain Craig Hendrickson 215-1768
- Other Motorola 9100-11
Hardware is capable of providing up to 64K of RAM, and can support printing and bar code reader interfaces. MDT has a 12 key, user definable single-key status pad along with a complete alpha-numeric keyboard.
Display screen is 5 inch high CRT.
Data radio can operate on 3 frequency bands.
Operates from 806 - 825 MHZ.

3.2 HARDWARE ARADIO@

- Hardware Type VHF Radio - in vehicle
- Functions Provide for voice communications between troopers and dispatch center.
- Location In all State Patrol cars.
- Data Name/Contents
 - 1) Trooper location
 - 2) Trooper status
 - 3) Incident location
 - 4) Incident type
 - 5) Incident details
- Data Type Voice
- Status Existing in all State Patrol cars.
- Other Also have portable VHF radios, within metro area - direct access, outstate - signal relayed through vehicle (vehicle repeater)

3.3 HARDWARE A800 MHZ RADIO@

- Hardware Type Radio
- Functions Provides radio data communication between MDT and Network Control Processor.
- Location In all State Patrol cars.
- Data Name/Contents
 - 1) Driver license information
 - 2) Vehicle information
 - 3) Incident location, type, etc.
- Data Type Data
- Status Existing in all State Patrol cars.

3.4 HARDWARE ANETWORK CONTROL PROCESSOR (NCP)@

- Hardware Type Hub
- Functions Concentrates inbound traffic from all base station receivers and forwards the terminal (MDT) initiated message to the host computer.
It selects the optimum state site for messages directed to a particular MDT. This is accomplished by transmitter steering software in the NCP that evaluates the signal strength information.
- Location Waters Edge Dispatch Facility
- Data Name/Contents
 - 1) Dispatch information
 - 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry)
 - 3) Fleet status information
 - 4) Reports
 - 5) E-Mail Messages
- Data Type Data
- Status Existing

3.5 HARDWARE ACENTRAL ELECTRONICS BANK@

- Hardware Type Computer
- Functions
 - 1) Houses the interface modules, base stations, monitor receivers, dispatcher positions, phone patch lines, and auxiliary inputs/outputs.
 - 2) Performs all audio routing.
 - 3) Monitors radio (voice) channels
 - 4) Performs Avoting@ of signal strength from towers/channels and selects best channel to complete radio link.
 - 5) Displays active channels on dispatcher-s console.
- Location Waters Edge Dispatch Facility
- Data Type Voice
- Status Existing

3.6 HARDWARE AGENERAL MESSAGE SWITCH@

- Hardware Type Router
- Functions

Manages data traffic flow between Patrol car MDT-s, Patrol dispatcher terminals, and state/NCC database such as MN-s Criminal Justice Information System.
The message switch is responsible for routing inbound messages to the State-s host computer (CJIS) and controlling the message traffic from host computers to the Network Control Processor.
Provides car-to-car, car-to-terminal Messaging.
Provides status monitoring of MDT-s.
- Location Waters Edge Dispatch Facility
- Data Name/Contents
 - 1) Vehicle information- license #/State, vehicle registration.
 - 2) Driver information - driver license information, driver record.
 - 3) Stolen property information - property description, serial number.
- Data Type Data
- Status Existing
- Other AT&T 3B2/500

Capable of handling from 25 - 200+ MATS.
Capable of interfacing to several host computers including Computer Aided Dispatch systems.

3.7 HARDWARE AAT&T MDT TERMINAL@

- Hardware Type Computer Terminal
- Functions
 - 1) Displays driver vehicle and driver license information. ADumb-terminal@, provides access to the Criminal Justice information System (CJIS).
- Location Waters Edge Dispatch Facility
- Data Name/Contents
 - 1) Dispatch information
 - 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry)
 - 3) Fleet status information
 - 4) Reports
 - 5) E-Mail Messages
- Data Type Data
- Status Existing at each dispatch station

3.8 HARDWARE ARADIO DISPATCH CONSOLE - ZENITH 286 PC@

- Hardware Type Computer
- Functions
 - 1) Displays voice communication channels
 - 2) Provides voice interface between dispatcher and trooper.
 - 3) Provides immediate recording of voice conversation so that the dispatcher can quickly play back conversation. This is used when caller or voice signal is difficult to hear/understand. Part of console, but not Zenith PC, actually Dictaphone Instant Recall Recorder, mounted in the console
- Location Waters Edge Dispatch Facility
- Data Name/Contents Voice communication between dispatch and troopers. Data - trooper badge number, trooper status code, radio channel. Incident information - location, type of incident, severity, time of notification.
- Data Type Data and Voice
- Status Existing

3.9 HARDWARE APENTIUM PC - NEC IMAGE 432@

- Hardware Type Computer
- Functions Provides dispatcher access to Criminal Justice Information System (CJIS)
- Location Waters Edge Dispatch Facility
- Data Name/Contents Information about individual-s criminal record.
- Data Type Data
- Status Existing

3.10 HARDWARE APOSITRON TELEPHONE@

- Hardware Type Telephone
- Functions Provide voice communication between dispatcher and PSAPs, TMC, Mn/DOT Maintenance, Tow truck providers.
- Location Waters Edge Dispatch Facility
- Data Name/Contents Voice - incident information.
- Data Type Voice
- Status Existing

3.11 HARDWARE ARACAL AUDIO TAPING UNIT@

- Hardware Type Audio Recorder
- Functions Records radio and phone voice communications between the dispatcher and other parties.
- Location Waters Edge Dispatch Facility
- Data Name/Contents Voice conversations
- Data Type Voice
- Status Existing
- Policies Each tape is used to record one week of information
- Constraints Voice conversations are recorded on tape and disk which is capable of storing 520 hours of conversations. .

3.12 HARDWARE ARACAL PC PACKARD BELL FORCE 441 CD@

- Hardware Type Computer
- Functions Used to listen to archived tapes.
- Location Waters Edge Dispatch Facility - Supervisor-s office.
- Status Existing

3.13 HARDWARE ATELEPHONE LINE LOGGER WORKSTATION@

- Hardware Type Computer
- Functions Records and maintains statistical data on incoming 911 and other phone calls.
- Location Waters Edge Dispatch Facility
- Data Name/Contents Statistical data on phone calls such as:
 - 1) Number of calls
 - 2) Number of times phone rings before answered.
 - 3) Duration of calls.
 - 4) Track transfers of calls from Patrol dispatch to other Public Safety Answering Points (PSAPs).
 - 5) Number of calls transferred.16 lines currently come into dispatch center from 911 (4), St. Paul and Minneapolis Tunnels, Call boxes, Accident Investigation Sites, Motorist Aid Cellular Phone call boxes, Governor-s hotline, ring-down lines.
- Data Type Data
- Status Existing

3.14 HARDWARE AMSP SUN SPARCSTATION 5@

- Hardware Type Computer
- Functions Display location of Highway Helper vehicles and one Patrol vehicle on a GIS map.
- Location Mn State Patrol Dispatch Room - Waters Edge
- Data Name/Contents Metro area GIS map with street names and attributes. Map area being viewed.
Vehicle status data such as:
 - 1) Location
 - 2) Speed
 - 3) Location of nearest cross street
 - 4) HH cellular phone number
 - 5) HH hours of work
 - 6) HH route numberHighway Helper status data such as:
 - 1) On scene accident
 - 2) On scene stall
 - 3) On scene debris
 - 4) On scene other
 - 5) Busy
 - 6) En route
 - 7) Available
 - 8) Out of service
 - 9) Transporting a motorist
 - 10)Emergency Distress
 - 11)Last time location was updated.
- Data Type Data
- Status Existing
- Constraints Standalone system, not integrated into the State Patrol's dispatch console so the Patrol dispatcher has to leave dispatch station and walk over to this monitor to use system. Therefore it may not be used too much.
- Recommended Improvements Future design of control room would have this integrated into dispatcher console.
- Other SPARC 5, 70 MHZ
16 MB memory
TGX graphics accelerator
Internal 500 MB disk drive
1 Set Remote Ethernet Equipment

3.14.1 SOFTWARE ASUN SPARCSTATION OPERATING SYSTEM@

- Software Type Operating System
- Software Standards Unix
- Status Existing
- Recommended Improvements This may be upgrade to a Windows NT operating system in the future.

3.14.2 SOFTWARE AMETROVIEW@

- Software Type Application
- Functions Displays the location and status of Highway Helper vehicles and one State Patrol vehicle.
- Status Existing
- Constraints / Restrictions Proprietary software.

3.15 HARDWARE ACALL BOX TERMINAL (LOGGER)@

- Hardware Type Computer Terminal/printer
- Functions Logs and prints CALL BOX activity.
Alarm sounds when a CALL BOX is activated.
Logger prints out CALL BOX number, location, time, and request response (Police, Ambulance, Tow).
- Location Waters Edge Dispatch Facility
- Data Name/Contents CALL BOX number, location, time, and request response (Police, Ambulance, Tow).
- Data Type Data
- Status Existing - Call boxes on I-35W will be removed shortly, then this device will be removed also.

3.16 HARDWARE AIBM PS/2 PC TOWER ALARM MONITOR@

- Hardware Type Computer
- Functions This computer monitors the status of the State-s radio tower safety lights/beacons. An alarm sounds if a tower light/beacon is detected as malfunctioning.
- Location Waters Edge Dispatch Facility
- Data Type Data
- Status Existing

3.17 HARDWARE ATMC VIDEO MONITOR@

- Hardware Type Video monitor
- Functions Displays selected closed circuit television picture from TMC freeway surveillance cameras.
- Location Waters Edge Dispatch Facility
- Data Name/Contents Video picture of freeway surveillance camera.
- Data Type Video
- Status Existing - one monitor per each dispatch station.

3.18 HARDWARE AAMERICAN DYNAMICS SWITCHER KEYPAD@

- Hardware Type Keypad
- Functions
 - 1) Allows the dispatcher to select which CCTV signal to display on each of the 6 monitors in the dispatch center.
 - 2) Allows the dispatcher to pan, tilt, zoom the surveillance cameras during evenings and weekends, when the TMC relinquishes camera control to the Patrol.
- Location Waters Edge Dispatch Facility
- Data Name/Contents Camera control signal
- Data Type Data - camera control signal
- Status Existing - two keypads in Dispatch facility, one is shared by the three East Metro dispatch stations, one is shared by the three West Metro dispatch stations.
- Policies Patrol received the ability to move cameras during evenings (currently from 9 PM to 6 AM M-F) and weekends.
- Constraints Patrol would like to have a keypad for each dispatcher station.

3.19 HARDWARE APHONE RECORDING MACHINE@

- Hardware Type Telephone answering machine
- Functions When a major incidents occurs, the news media call the phone number dedicated to this machine to listen to a recording to receive information about the incident. This eliminates the need for a dispatch to disseminate this information individually to the news media.
- Location Waters Edge Dispatch Facility
- Data Name/Contents N/A
- Data Type Voice
- Status Existing

3.20 HARDWARE AFAX MACHINE@

- Hardware Type Fax machine
- Functions Used to send and receive information.
- Location Waters Edge Dispatch Facility.
- Status Existing

3.21 HARDWARE AMDT IN STATE PATROL GOLDEN VALLY AND OAKDALE OFFICE@

- Hardware Type Mobile Data Terminal
- Functions
 - 1) Displays driver vehicle and driver license information. ADumb-terminal@, provides access to the Criminal Justice information System (CJIS).
 - 2) Provides E-mail access among dispatch and Patrol cars.
- Location Oakdale and Golden Valley State Patrol offices
- Data Name/Contents
 - 1) Dispatch information
 - 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry)
 - 3) Fleet status information
 - 4) Reports
 - 5) E-Mail Messages
- Data Type Data
- Status Existing

3.22 HARDWARE APC IN TMC WITH MDT SOFTWARE@

- Hardware Type Computer
- Functions Allows TMC Information Officer to view incident data transmitted between Patrol cars and dispatchers. This aids the TMC in knowing what response has been dispatched by the State Patrol, and TMC can use this information to determine how to dispatch Highway Helpers and also can pass on this information to the media.
- Location Traffic Management Center Control Room.
- Data Name/Contents Incident Data
- Data Type Data
- Status Existing

4.1	INTERFACE	PATROL CAR MDT
- Connects to ...		Network Control Processor
- Interface location		3 Tower sites in Metro Area: 1) Stacy, Mn 2) Arden Hills, MN 3) Heather, MN
- Interface Type		RF/Microwave
- Interface Direction		Both
- Interface Component		800 MHZ RF/Line of sight microwave
- Protocol/Standard		800 MHZ RF communication between tower sites and patrol cars, line of sight microwave communication between towers and State Patrol Dispatch center.
- Information Type/Content		1) Dispatch information 2) Data base access requests and data (License plate numbers/State, vehicle registration info., outstanding warrant info, stolen articles inquiry, guns inquiry) 3) Fleet status information 4) Reports 5) E-Mail Messages
- Information Direction		Both
- Information Frequency		As needed
- Constraints		4800 baud - MDT constraint

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APPENDIX A

As-Is Agency Reports Pre-Survey Candidate Systems List

PRE-SURVEY CANDIDATE SYSTEMS

Traffic Signal Control Systems

- City of St. Paul Computran traffic signal control system
- City of St. Paul traffic signal intersection hardware (field equipment)
- City of Minneapolis Fortran traffic signal control system
- Mn/DOT Metro Division/District traffic office closed loop traffic signal system(s)
- County closed loop traffic signal systems (Hennepin, Ramsey, etc.)
- City closed loop traffic signal systems
- Video detection/control of signal system (T.H. 65 & 53rd, Lyndale and Franklin Ave)
- Pre-emption of traffic signals for emergency vehicles (EVP)
- Pre-emption of traffic signal at fire stations
- Pre-emption of traffic signals at railroad crossings (20 locations in Metro area)
- Minneapolis AUSCI operational test

Freeway Management System

- Mn/DOT TMC ramp meter system
- Mn/DOT TMC video surveillance system
- Mn/DOT TMC CMS control system
- KBEM radio broadcast system
- Mn/DOT TMC cable TV information system - (Triple Vision system)
- Mn/DOT Metro Division/District portable changeable message signs
- TMC traffic history database (volume and occupancy data)
- TMC incident log database
- U of M Autoscope incident detection system
- Genesis operational test
- Trilogy operational test
- Mn/DOT workzone traffic management system operational test

Transit Management Systems

- MCTO "Trapeze" scheduling/planning system (creates bus/driver schedules)
- MCTO "radio" system (computer assisted radio system, 7 channels)
- MCTO automatic passenger counters (on some buses)
- MCTO electronic fare collection boxes (on all buses)
- MCTO TIC BusLine system (voice responses system, customer service system)
- MCTO customer service system for route/schedule planning (live telephone operators)
- MCTO transportation section (provides construction information to MCTO)
- MCTO bus stop database (contains the attributes of each bus stop)
- MCTO Police crime/incident tracking system
- MCTO Opticom emitters (EVP on 80 buses)
- MCTO speed light system (ramp meter pre-emption on selected ramps)
- MCTO Route-O-Matic system - vectors around incidents and congestion
- Metropolitan Council Rideshare system (Mn dial-a-ride)
- MCTO funded paratransit systems
- Metropolitan Council Metro Mobility passenger registration system
- Metropolitan Council Metro Mobility passenger reservation system
- U of M transit management
- Southwest Transit
- Minnesota Valley Transit
- Plymouth Metrolink
- School bus dispatch systems

Incident Management Program

- Mn/DOT TMC Highway Helper program (including AVL system)
- Private tow contracts
- U of M police incident management
- St. Paul DIVERT operational test

Electronic Fare Payment Systems

- City of Minneapolis Parking fare collection (smart card)
- City of Minneapolis electronic parking meter maid system
- Smart Darts operational test

PRE-SURVEY CANDIDATE SYSTEMS (CONTINUED)

Electronic Toll Collection Systems

- Toll road proposals (5 proposals in MN)
- Congestion Pricing Study
- Mileage based tax study

Multi modal Traveler Information Systems

- Travlink operational test

Administrative Systems

- Mn/DOT Electrical Services maintenance management system
- Mn/DOT Electrical Service gopher state one-call access system
- Mn/DOT TIS
- Mn/DOT automatic traffic recorder system
- Mn/DOT ISTEA management systems
- Mn/DOT CVO administrative systems
- DPS CVO administrative systems
- City of Minneapolis sign database

Other Information Systems

- Airline flight arrival/departure information - NW
- Airport rental car kiosk - Hertz
- MN Office of Tourism travel information center kiosks
- Mn/DOT TMC road weather information system access
- Mn/DOT Metro Division weather information access
- Mn/DOT Aeronautics weather information system
- Mn/DOT statewide road weather information telephone information
- Mn/DOT Pavement Condition and Weather Reporting System - future
- Internal distribution system Distribution of TMC loop data via the Internet
- RWIS - Mn/DOT future Road/Weather Information System

Emergency Response Systems

- Motorist call box system
- Mobile Data Terminals (MDT) in all State Patrol cars
- Laptop PC's in State Patrol cars to replace MDT's - pilot project in 1996
- Emergency 911 log system at State Patrol
- State Patrol information desk
- State Patrol South St. Paul information desk
- State Patrol access to drivers license information. via 911 center
- Mn/DOT Mayday operational test
- Demand response dispatch systems - numerous standalone systems

Parking Management Systems

- Metropolitan airports commission parking management
- City of Minneapolis parking management systems
- U of M parking management
- St. Paul Advanced Parking Information System operational test

Miscellaneous

- Mn/DOT portable traffic management system
- City of Minneapolis police special event management
- City of St. Paul special event management
- U of M special event management
- Mn/DOT pilot differential GPS broadcast base station
- Mn/DOT maintenance vehicle AVL
- Mn/DOT Metro Division/District maintenance dispatch
- Hennepin County Medical Center emergency vehicle dispatch
- MN Pollution Control Agency air quality monitoring sites
- Met. Council Forecasting models - uses data from Mn/DOT TIS database
- U of M traffic management system proposal

Interagency Systems

- ICTM - Integrated Corridor Traffic Management System operational test
(includes Autoscope)
- ARCTIC - operational test in Virginia, MN

PRE-SURVEY CANDIDATE SYSTEMS (CONTINUED)

CVO Systems

- List of systems from MN Guidestar
- CVO call-in number
- State Patrol toll free Information number

Construction Information/Notification Systems

- Gopher State One Call system for utility locations
- Mn/DOT construction information dissemination
- Counties' systems (Hennepin County)
- Counties' systems (Ramsey County)
- City system (Minneapolis)
- City system (St. Paul)
- Utilities' systems

Communications Systems

- Mn/DOT TMC Fiber optic data communications system
- Mn/DOT Microwave Communication System
- Mn/DOT T1 system
- Mn/DOT Wide Area Network
- MNET (STARS)
- Voice radio - State Patrol, Mn/DOT Maintenance, DNR
- 800 MHZ Trunked Radio system (Metro area)
- Internet Communications
- Traffic Signal Interconnect systems
- RBDS - Radio Broadcast Data Systems
- Mn/DOT Video Conferencing

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APPENDIX B

As-Is Agency Reports Data Collection Guide

