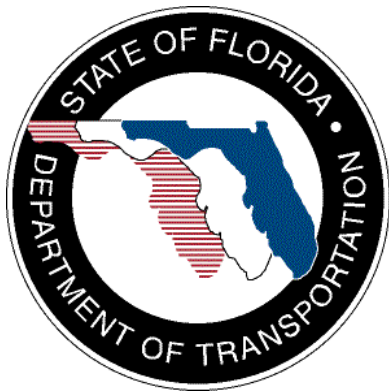


SunGuideSM:

Implementation Plan – District 2

SunGuide-IP-D2-1.0.0



Prepared for:

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List of Acronyms

| | |
|--------------|---|
| CCTV | Closed Circuit Television |
| ConOps | Concept of Operations |
| CSE | Computer Sizing Estimates |
| DMS | Dynamic Message Sign |
| EH | Executive Handler |
| FDOT | Florida Department of Transportation |
| GUI | Graphical User Interface |
| HAR | Highway Advisory Radio |
| IIS..... | Internet Information Server |
| IM..... | Incident Management |
| IP..... | Implementation Plan |
| ITS..... | Intelligent Transportation Systems |
| IV&V | Independent Verification and Validation |
| MAS | Message Arbitration System |
| MCP | Manual Control Panel |
| NTCIP..... | National Transportation Communications for ITS Protocol |
| RWIS..... | Roadway Weather Information System |
| SATP..... | Software Acceptance Test Plan |
| SDD..... | Software Design Document |
| SICP | Software Integration Case Procedures |
| SIP..... | Software Integration Plan |
| SRS | Software Requirements Specification |
| STP..... | Software Test Procedures |
| SUM..... | Software User's Manual |
| SwRI | Southwest Research Institute |
| TCP/IP..... | Transmission Control Protocol/Internet Protocol |
| TMC..... | Transportation Management Center |
| TSS..... | Transportation Sensor Subsystem |
| VDD | Version Description Document |
| VS | Video Switching |
| VW | Video Wall |

REVISION HISTORY

| Revision | Date | Changes |
|-----------------|------------------|------------------|
| 1.0.0 | October 25, 2005 | Initial Release. |

1. Scope

1.1 Document Identification

This document serves as the Implementation Plan (IP) for the SunGuideSM software specific to District 2.

1.2 Project Overview

The Florida Department of Transportation (FDOT) is conducting a program that is developing SunGuideSM software. The SunGuideSM software is a set of Intelligent Transportation System (ITS) software that allows the control of roadway devices as well as information exchange across a variety of transportation agencies. The goal of the SunGuideSM software is to have a common software base that can be deployed throughout the state of Florida. The SunGuideSM software development effort is based on ITS software available from both the states of Texas and Maryland; significant customization of the software is being performed as well as the development of new software modules. The following figure provides a graphical view of the software to be developed:

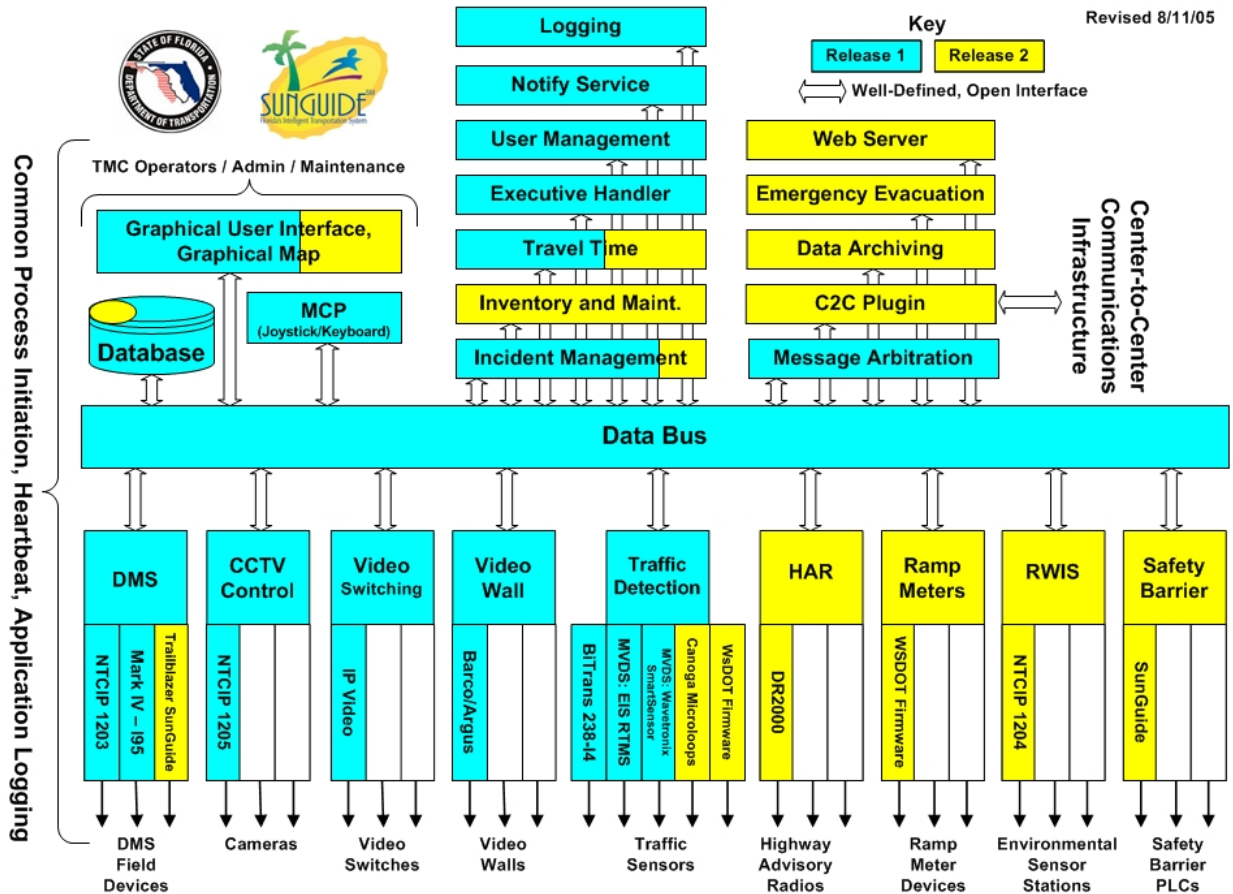


Figure 1.1 - High-Level Architectural Concept

The SunGuideSM development effort spans approximately two years. After the development, the software will be deployed to a number of Districts and Expressway Authorities throughout Florida and support activities will be performed.

1.3 Related Documents

The following documents were used to develop this document:

- SwRI Qualification Response: *Response to the Invitation to Negotiate (ITN): Statewide Transportation Management Center Software Library System, Negotiation Number: ITN-DOT-02/03-9025-RR*, SwRI Proposal No. 10-35924, dated: November 18, 2002.
- SwRI Technical Proposal: *Technical Proposal for Invitation to Negotiate (ITN): Statewide Transportation Management Center Software Library System, Negotiation Number: ITN-DOT-02/03-9025-RR*, SwRI Proposal No. 10-35924, dated: January 31, 2003.
- SwRI Cost Proposal: *Cost Proposal for Invitation to Negotiate (ITN): Statewide Transportation Management Center Software Library System, Negotiation Number: ITN-DOT-02/03-9025-RR*, SwRI Proposal No. 10-35924, dated: January 31, 2003.
- SwRI BAFO letter: *Southwest Research Institute[®] Proposal No. 10-35924, “Invitation to Negotiate (ITN): Statewide Transportation Management Center Software Library System”*, Reference: *Negotiation Number: ITN-DOT-02/03-9025-RR*, dated: May 5, 2003.
- FDOT procurement document: *Invitation To Negotiate (ITN), Negotiation Number: ITN-DOT-02/03-9025-RR, Statewide Transportation Management Center Software Library System*, dated: October 21, 2002.
- FDOT Scope of Services: *Statewide Transportation Management Center Software Library System: Scope of Services*, September 22, 2003.
- FDOT Requirements Document: *Statewide Transportation Management Center Software Library System: Requirements Specification*, June 3, 2003.
- Southwest Research Institute, *TMC Software Study*, November 15, 2001.
- Southwest Research Institute, *Introduction to an Operational Concept For the Florida Statewide Library*, FDOT – OCD – 1.0, March 31, 2002.
- World Wide Web Consortium (W3) website: <http://www.w3.org>.
- SunGuideSM Project website: <http://sunguide.datasys.swri.edu>.

1.4 Contacts

The following are contact persons for the SunGuideSM software project:

- Elizabeth Birriel, ITS Central Office, elizabeth.birriel@dot.state.fl.us, 850-410-5606
- Liang Hsia, FDOT Project Manager, liang.hsia@dot.state.fl.us, 850-410-5615
- John Bonds, Senior ITS Specialist, jbonds@pbsj.com, 408-873-2514
- David Chang, ITS Specialist, David.Chang@dot.state.fl.us, 850-410-5622
- Steve Dellenback, SwRI Project Manager, sdellenback@swri.org, 210-522-3914
- Robert Heller, SwRI Software Project Manager, rheller@swri.org, 210-522-3824

The following are contacts that will be used by the SunGuideSM software project team to assure consistency with other FDOT projects and FDOT procedures:

- Jim Mosser, PB Farradyne, FDOT C2C Project, mosser@pbworld.com, 754-224-6966
- David Lambert, University of North Florida, RWIS, jlambert@unf.edu, 904-620-3881
- Bob Colins, PBS&J, Emergency Evacuation, bobcolins@pbsj.com, 850-575-1800
- John Fain, FDOT, Comptroller, john.fain@dot.state.fl.us, 850-921-7332
- Leslie Jacobson, PB Farradyne, Ramp Metering, jacobsonl@pbworld.com, 206-382-5290

2. Deployment Details

The following documents should be available to FDOT staff as they prepare for a SunGuideSM deployment (the most recent versions are available on the project web site):

- Computer Sizing Estimates (CSE)
- Concept of Operations (ConOps)
- Software Requirements Specification (SRS)
- Software Design Document (SDD)
- Version Description Document (VDD)
- Software User's Manual (SUM)
- Software Integration Plan (SIP)
- Software Acceptance Test Plan (SATP)
- Software Integration Case Procedures (SICP)
- Software Test Plan (STP)

2.1 Subsystems To Be Installed

The following SunGuideSM subsystems will be installed for the initial deployment at District 2:

- Administrative Editor
- Executive Handler
- Status Logger
- Data Bus
- Graphical User Interface/Map (GUI)
- Closed Circuit Television (CCTV)
- Dynamic Message Sign (DMS)
- Message Arbitration Subsystem (MAS)
- Video Switching (VS)
- Video Wall (VW)
- Transportation Sensor Subsystem (TSS)
- Incident Management (IM)
- Manual Control Panel (MCP)

As additional hardware is installed at District 2, additional subsystems will be added to the base deployment.

2.2 FDOT: Before Software Installation

The following sections describe the activities that FDOT staff needs to perform prior to the SunGuideSM software deployment.

2.2.1 Servers

The following table is extracted from the SunGuideSM *Computer Sizing Estimates* document and is used to quantify the number of SunGuideSM application servers required based on the subsystems to be installed.

| SunGuide SM Subsystem | Number of Servers Required | District 2 Deployment |
|---|----------------------------|-----------------------|
| Status Logger | 0.1 | 0.1 |
| Data Bus | | |
| Base system up to 500 ITS devices | 0.5 | 0.5 |
| Over 500 devices | 0.5 | 0 |
| User Interface | | |
| For every 10 users simultaneously logged in | 0.5 | 0.5 |
| DMS (includes MAS) | | |
| Base subsystem | 0.5 | 0.5 |
| For every 100 TCP/IP connected signs | 0.5 | 0.5 |
| For every 50 dialup signs (assumes 5 modems) | 0.5 | 0 |
| CCTV Control (includes MCP) | | |
| Base subsystem | 0.25 | 0.25 |
| For every 10 users simultaneously controlling cameras | 0.25 | 0.25 |
| Video Switching | | |
| Base subsystem | 0.50 | 0.5 |
| For every 10 users simultaneously switching video | 0.1 | 0.1 |
| Video Wall | | |
| Base subsystem | 0.25 | 0.25 |
| For each Barco/Argus Controller | 0.1 | 0.1 |
| TSS | | |
| Base subsystem | 0.25 | 0.25 |
| For every 300 detectors | 0.5 | 0.5 |
| Incident Management | | |
| Base subsystem for up to 20 concurrent incidents | 0.25 | 0.25 |
| For each 20 concurrent incidents over the base amount | 0.25 | 0 |
| Ramp Metering | | |
| Base subsystem | 0.50 | 0 |
| For every 20 ramps | 0.25 | 0 |
| Roadway Weather Information System (RWIS) | | |
| Base subsystem | 0.25 | 0 |
| For every 50 TCP/IP connected sensors | 0.25 | 0 |
| Highway Advisory Radio (HAR) | | |
| Base subsystem | 0.25 | 0 |
| For every 50 HARs | 0.1 | 0 |
| Archive | | |
| Base subsystem | 0.5 | 0 |

| SunGuide SM Subsystem | Number of Servers Required | District 2 Deployment |
|---|----------------------------|-----------------------|
| Web Servers (should be protected with a firewall) | | |
| General Web server | 1.0 | 0 |
| Center-to-Center interface server | 0.5 | 0 |
| Emergency Evacuation | 0.5 | 0 |
| Maintenance Management Systems | 0.5 | 0 |
| Total SunGuideSM Application Servers Needed | | 4.55 |

The above analysis suggests that 4.55 servers would be needed to support the SunGuideSM installation as has been discussed with FDOT. The sizing estimates in the *Computer Sizing Estimates* were based on best engineering judgment since SunGuideSM has only been installed in one location. The numbers in the document will need to be refined after additional installation insight is gathered. Southwest Research Institute[®] (SwRI[®]) believes that given the number of devices and small number of subsystems being initially deployed in District 2 that a four application servers will suffice (this includes the database server that will be required).

The following software needs to be installed on the servers before the software installation team arrives on-site:

- Microsoft Standard Server 2003 (Service Pack 1) with all current updates from Microsoft

The software installation team assumes that FDOT will have licenses and installation media available for the following products:

- Microsoft Standard Server 2003
- Oracle 10g, version 10.1.0.2.0

The SunGuideSM software will be installed and configured on the following machines (the recommendations are based on the current number of devices and the number of devices expected in the future):

- Application Server #1 (MOE):
 - Oracle Database
 - Status Logger
 - Notify Manager
 - User Interface (Internet Information Service [IIS] Web Server)
- Application Server #2 (LARRY):
 - Connection Manager
 - Databus
 - MCP Manager
 - MAS
 - DMS
 - Incident Management

- Application Server #3 (CURLY):
 - Video Wall
 - CCTV
 - Video Switching
- Application Server #4 (SHEMP):
 - TSS

Note that the deployment team may choose to “split device drivers and subsystem” across different servers based on the expected availability of field devices when the software is initially configured.

2.2.2 Workstations

The following software must be installed on each workstation that will access the SunGuideSM software:

- Microsoft Windows XP, Service Pack 2
- Microsoft Internet Explorer 6.01 or greater
- Adobe SVG Viewer 3.0 (can be downloaded at no charge from the Adobe website)

2.2.3 Device Protocol Compliance

For the devices being deployed, FDOT needs to verify that the protocol used by the devices to be controlled by the SunGuideSM software is compliant to the following protocols:

| Subsystem | Protocol Reference |
|-------------------|---|
| DMS | NTCIP 1203, FDOT MIB (Sep 2001) |
| DMS | Mark IV - I95: Document Number A316111-102 REV. A8 (June 26, 2001) |
| CCTV Control | NTCIP 1205 v01.08 Amendment 1 v01.08 (August 2004) |
| Video Switching | MPEG-2 devices: IP Video (VBrick 4200/5200, Teleste IDP301/IDE301, Coretec VCX2400D/VCX2400E, iMpath i1000) |
| Video Wall | Barco/Argus Apollo, version 1.6a of the remote API |
| Traffic Detection | EIS RTMS, Issue 2 (April 2003) |
| Traffic Detection | Wavetronix RTMS: SS105 SmartSensor Data Protocol V2.02 |

2.2.4 Network Infrastructure

The following sections described the network infrastructure that must be in place prior to installation of the SunGuideSM software.

2.2.4.1 Hardware

Due to the client/server nature of the SunGuideSM software, TCP/IP is used to exchange data between application servers. Due to the web based implementation of the SunGuideSM user interface, each SunGuideSM workstation requires TCP/IP access to the SunGuideSM application servers. FDOT needs to verify that TCP/IP connectivity exists between all SunGuideSM application servers and SunGuideSM workstations.

Early in the development of requirements for SunGuideSM, FDOT made the decision that the devices should be connected via TCP/IP to the SunGuideSM application servers. There are a number of techniques to connect traditional serial ITS devices so that they can be accessed via TCP/IP, these techniques include the use of a terminal server (a box that has a TCP/IP connection and has multiple serial ports) or a port server (a box that has a TCP/IP connection and a single serial port). The only exception to the use of TCP/IP access is that DMS devices can be accessed via a modem or directly through a serial port if the connection is made through a Windows “COM” port on the SunGuideSM application server running the DMS device driver.

It is FDOT’s responsibility to provide all necessary network hardware and cables to provide the required connectivity.

2.2.4.2 Software

As the SunGuideSM software is configured, it will need access to various network servers that may be installed as part of the SunGuideSM installation or may be available as part of the greater FDOT network. The following network services need to be available and the details (e.g., host names, addresses) need to be available during the SunGuideSM software configuration:

- SMTP Mail Server: The SunGuideSM notify manager needs to be able to send emails on major system events so SMTP mail server access is required.
- DNS Server (optional): The SunGuideSM applications utilize TCP/IP to exchange data and the applications can use either IP addresses or host names in their configuration files. Note that the use of DNS is preferred because using explicit IP addresses is less flexible than using hostnames.
- Time Server (optional): It is recommended that all SunGuideSM computers be synchronized to a common time source as it is desirable during diagnostics to have the same time on all SunGuideSM systems.

2.2.5 Device Worksheets

The following sections describe the information that must be collected about each device that is to be utilized by the SunGuideSM software.

2.2.5.1 CCTV Worksheet

The following data needs to be collected for each CCTV to be configured:

| | |
|----------------------|--|
| Camera Name | Unique name of camera |
| Center Id | Unique name of center where camera resides |
| Protocol | Specifies the protocol (values: SNMP, SNMP (PMPP)) for camera |
| Poll Process | Name of driver for camera |
| Manufacturer | Manufacturer of camera |
| Location Description | Description of where camera resides |
| Roadway | Roadway of where camera resides |
| Direction | Direction of roadway where camera is installed |
| Latitude | Latitude of where camera resides |
| Longitude | Longitude of where camera resides |
| Op Status | Operational status (values: Active, Error, Failed, OutOfService) of camera |

| | |
|-------------------------|---|
| Address Type1 | Address type (values: pmppAddress, commAddress) for camera, if pmppAddress then camera uses SNMP (PMPP); if commAddress then camera uses SNMP |
| Address Type2 | Specific address type (values: portServerAddress) of Address Type 1 |
| Address | Device address of camera |
| Port Server IP | IP address for the port server where camera resides |
| Port Server Port Number | Port number for the port server where camera resides |
| Community Name | Community name for camera (SNMP) |
| Attach to Video Device | If selected, additional IP video parameters must be supplied. |

The following data need to be provided for IP video:

| | |
|-------------------------|---|
| Video Device IP Address | IP address for encoder |
| Blackout | Determines if camera restricted |
| Video Device Type | Type (IP video device) of video device for encoder |
| IP Streaming Driver ID | Unique IP video switch driver name |
| Card Number | Card number for VBrick encoder |
| Manufacturer | Manufacturer (values: Coretec, iMpath, Teleste, VBrick) of encoder |
| Model | Model of encoder |
| Streaming Type | Streaming type (values: elementary, transport, program) for encoder |
| Secondary Interface | Secondary interface for VBrick encoder which enables users to maximize number of inputs for encoder |
| Snapshot Requested | Determines if snapshots are generated for encoder |

2.2.5.2 DMS Worksheet

The following data needs to be collected for each DMS to be configured:

| | |
|-----------------|--|
| Sign Name | Unique name of DMS |
| Center Id | Unique name of center where DMS resides |
| Protocol | Specifies the protocol (values: SNMP, SNMP(PMPP), MarkIV, SunGuide (for Trailblazers) for DMS |
| Connection Type | Specifies how the DMS is connected to the network (values: Direct, Modem, Long Distance Modem) |
| Poll Process | Name of driver for DMS |
| Packet Timeout | Amount of time the driver will wait on a response from a DMS before timing out (recommended time is 5 seconds) |

| | |
|------------------------|---|
| Packet Retry Limit | How many times a packet is attempted before it errors out, most signs the recommended number is 2, for signs prone to errors, this can be increased |
| Command Retry Limit | How many times a command is attempted before it errors out, a command consists of multiple packets. Recommended number is 1 |
| Op Status | Operational status (values: Active, OutOfService) of DMS |
| Type | Values: Fiber Optic, LED, Flip-Disk, Shutter |
| Manufacturer | Values: FDS, IDI, MarkIV, Telespot, Skyline |
| Number of Lines | Number of displayable lines |
| Beacons | Whether the sign has beacons, if so, specify the beacon address |
| Day Brightness Level | The numeric value for brightness setting in the daytime |
| Night Brightness Level | The numeric value for brightness setting in the nighttime |
| Location Description | A text field describing the location of the DMS |
| Roadway | Roadway on which this DMS resides |
| Direction | The direction of the roadway on which this DMS resides |
| Latitude | Latitude of where this DMS resides |
| Longitude | Longitude of where this DMS resides |
| Number of Columns | Number of characters that can be displayed using a normal font |
| Beacon Address | The address on which the sign receives activate/deactivate beacon requests |
| Address Type 1 | Address type (values: PMPP, SunGuide, MarkIV) for DMS, if PMPP then DMS protocol should be SNMP (PMPP); if SunGuide or MarkIV, then DMS uses same protocol name |
| Address Type 2 | Specific address type (values: Direct, PortServer, Dialup) of Address Type 1 |
| Address | Device address of DMS |
| Community Name | Community name for DMS (SNMP) |

The following data need to be provided for DMSs connected via a TCP/IP connection:

| | |
|-------------|---|
| IP Address | IP address for the port server where DMS resides |
| Port Number | Port number for the port server where DMS resides |

The following data need to be provided for DMSs connected directly via a serial port:

| | |
|---------------------|--|
| Communications port | Communications port to which the DMS is connected |
| Baud Rate | This should match the baud rate of the DMS |
| Data Bits | This should match the data bits the DMS is expecting |
| Stop Bits | This should match the stop bits the DMS is expecting |
| Parity | This should match the parity the DMS is expecting |

The following data need to be provided for DMSs connected via a modem:

| | |
|--------------|--|
| Phone Number | Phone number for the DMS, should include any prefix needed for dialing |
| Baud Rate | This should match the baud rate of the DMS |

2.2.5.3 American Dynamics Keyboard Worksheet

The following data needs to be collected for each American Dynamics keyboard to be configured:

| | |
|---------------|---|
| Identifier | Unique name of the keyboard |
| User ID | Unique user name to be associated with the keyboard |
| Password | Password that is encrypted using MD5 hashing |
| Keyboard Type | Either “AD2088” or “ADCC300” depending on the model to be supported |
| IP Address | IP address of the keyboard |
| Port Number | Port number of the keyboard (this is related to the IP address) |

2.2.5.4 Barco Video Wall Worksheet

The following data needs to be collected for each CCTV to be configured:

| | |
|--------------|--|
| URL for WSDL | The URL where the Apollo API was installed (e.g., http://newton/ApolloAPI if the machine that host the Apollo software is name “Newton”) |
|--------------|--|

2.2.5.5 TSS Worksheet

The following data need to be provided for each Highway (Route) to be in the deployment:

| | |
|----------------------------------|--|
| Roadway Description | Textual description of the roadway (route) |
| Short Name | Short text name that will be seen by the operators |
| Directions | The directions that the roadway runs (can be multiple directions) |
| Cross Streets (multiple entries) | Textual descriptions of cross streets (that intersect the roadway); typically a roadway will have multiple cross streets |
| Lat Lon | Latitude and longitude of the intersection between the roadway and the cross street |

The following data needs to be collected for each TSS detector to be configured:

| | |
|-------------------------|---|
| Detector Name | Unique name of detector |
| Center Id | Unique name of center where detector resides |
| Driver Name | Name of driver for the detector (e.g., BiTrans, RTMS) |
| Poll Cycle | Time in seconds between device polls |
| Type | Type of detector (e.g., Loop or Radar) |
| Protocol | Specifies the protocol (values: EIS, Wavetronix, BiTrans) |
| Op Status | Operational status (values: Available or Offline) |
| Location Description | Description of where detector resides |
| Roadway | Roadway of where detector resides |
| Direction | Direction of roadway where detector is installed |
| Latitude | Latitude of where detector resides |
| Longitude | Longitude of where detector resides |
| Address | Device address of detector |
| Port Server IP | IP address for the port server where detector resides |
| Port Server Port Number | Port number for the port server where detector resides |

The following data needs to be collected for each lane that is to be configured:

| | |
|-----------|---|
| TSS Link | The name of the links that will be defined in the system; links will have an association to detectors. |
| TSS Lanes | For each link, the name of each lane associated with the link; for each lane the zone number and description needs to be identified (e.g., which detection zone is associated with a lane). |

The following data needs to be collected for each link that will have an alarm threshold to be configured:

| | |
|--------------------|--|
| TSS Link | The name of the links that will be defined in the system. |
| Threshold Value(s) | What the speed and occupancy values should be for each threshold (this includes a start and end time) value to be defined. |

2.3 SwRI: Software Installation

The following sections describe the activities that SwRI staff will perform to install the SunGuideSM software. SwRI will need administrative level access to any computer on which SunGuideSM software or Oracle is to be installed. FDOT staff should be available to monitor and observe the software installation process.

2.3.1 Server Preparation

The following software needs to be installed on the servers before the software installation team arrives on-site:

- Database server:
 - Oracle 10g server, version 10.1.0.2.0
- Application servers:
 - Oracle 10g Client, version 10.1.0.2.0
 - IIS (Microsoft installation disk)
 - ASP.NET (this installed as part of Microsoft IIS)
- Barco Video Wall Driver:
 - Apollo API (version 1.6a)

2.3.2 Workstation Preparation

The following software needs to be installed on the workstations before the software installation team arrives on-site:

- Adobe SVG Viewer (must be acquired from Adobe.com)
- Roadgeek font (this is provided on the SunGuideSM install CD)

2.3.3 Software Installation

In order to install the SunGuideSM application software, the following steps will be performed by the software installation team:

- In a common directory with a share point accessible to the SunGuideSM application servers the following files will be installed:
 - Install master configuration file which is named config.xml and edit the contents to match the FDOT network configuration
 - Install XML schemas used by the SunGuideSM applications
- Execute the database creation scripts to prepare the database for installation of the SunGuideSM applications
- Using the installation instructions in the SunGuideSM *Version Description Document* (VDD) install the SunGuideSM applications

Two SunGuideSM system administration applications do not execute in a browser environment. These applications should be installed on workstations that may be used to diagnose the health and status of the system; details of the application are contained in the SUM. SwRI will install the following applications on workstations as directed by FDOT:

- Executive Handler viewer: provides an overview of currently operating SunGuideSM applications
- Status Logger viewer: provides the ability to review the SunGuideSM application log files

2.3.4 Software Configuration

After the SunGuideSM software is installed, various configuration activities need to occur; the software installation team will perform the following configurations:

- Install and configure Status Logger on a single SunGuideSM application server (the SunGuideSM applications will log to this one instance of Status Logger)
- Install and configure Executive Handler server on all SunGuideSM application servers
- Modify the IIS to restrict access to the SunGuideSM Admin utility to users specified by FDOT

The SunGuideSM GUI is designed to load GUI components for the SunGuideSM applications. The loading (and overall performance) of the GUI can be improved if the GUI components associated with subsystems not installed is removed. The software installation team will remove the GUI components for the subsystems that were not installed.

2.4 FDOT: Post Software Installation

The following sections describe the activities that FDOT staff need to perform after the SunGuideSM software deployment. SwRI staff will be available to assist and work with FDOT staff to accomplish these activities.

2.4.1 Populate Tables

The following tables need to be populated using the SunGuideSM Administration tool (the DMS and CCTV data will be needed during this process):

- User Management:
 - Users
 - Groups
 - Workstations
- DMS:
 - Device Tables
 - Approved Words
- CCTV:
 - Device Tables
- TSS:
 - Device Tables
 - Detector Maps
- Video Switching:
 - Device Tables

- Video Wall:
 - Device Tables
- Incident Management:
 - Contacts
- Miscellaneous:
 - Centers

The SunGuideSM *Software User's Manual* (SUM) should be consulted on use of these editors.

2.4.2 Create Map Links

Each implementation of SunGuideSM must have a Map Link layer created; this layer is used by the operator map to display instrumented sections of roadway as well as highway shields. This layer is displayed in conjunction with the GDT shape file data to provide a complete looking map on the operator workstation. The SUM has a section titled “Map Administration with Link Editor” that explains the use of this software; since the initial District 2 deployment contains no traffic detection devices the Map Link Editor should be used to create the shields that should be displayed.

2.5 FDOT/SwRI: Testing

The following sections describe the testing that will be performed once the software is installed. The FDOT staff that will be testing the software should review the SunGuideSM testing documentation.

2.5.1 Test Cases To Be Run

The SunGuideSM *Software Test Procedures* (STP) document contains a set of step-by-step test procedures that are used to test the SunGuideSM software. The STP contains tests for the SunGuideSM subsystems. Note that the STP will be a tailored version of the SICP that were used during the software factory acceptance testing process. Since a limited number of subsystems will be deployed in District 2, only the following tests will be executed during the SunGuideSM deployment:

- IC-1: Core Processes:
 - User Administration (AS-1)
 - Display Software Version / System Health (SL-5)
 - Starting and Stopping SunGuideSM Services (EH-1)
 - SunGuideSM Auto Restart (EH-3)
- IC-2: Dynamic Message Sign:
 - Map Access to DMS (DMS-1)
 - Send DMS Message (DMS-2)
 - Support Message Libraries (DMS-4)
 - High Level DMS Status Support (DMS-5)
 - DMS Sequences. (DMS-8)
 - Message Priority Queue (DMS-10)
 - Alphabetized Message Library Management (DMS-11)
 - Multi Page Message Timing (DMS-13)

- IC-3: Video:
 - Map Access to Cameras (CCTV-1)
 - Barco Wall and IP Video Switching Support (CCTV-2)
 - CCTV GUI High Level Status (CCTV-3)
 - NTCIP Driver Support (CCTV-4)
 - CCTV Auto Lock Request (CCTV-8)
 - AD M300 MCP (CCTV-9)
 - Device Failure and Device Status Reporting (CCTV-10)
- IC-4: Transportation Sensor Subsystem comprised of the following test cases:
 - TSS Data Updates (TSS-2)
 - TSS Generated Alarms (TSS-4)
- IC-5: Incident Management:
 - Event Creation (IM-1)
 - Event Management (IM-2)
 - Response Plan Implementation (IM-5)
 - Response Plan Generation (IM-7)
 - Decreasing IM Message Priority with Distance (IM-10)
 - Incident Closure and Response Plan Cancellation (IM-11)

2.5.2 Test Process

During the testing process FDOT will be the lead tester and SwRI will be an observer. During testing, the following schedule will be followed:

- Short meeting to discuss which tests will be performed
- Testing performed
- Short meeting at the end of the day to discuss the testing results

2.5.3 FDOT Independent Verification and Validation (IV&V) Procedures

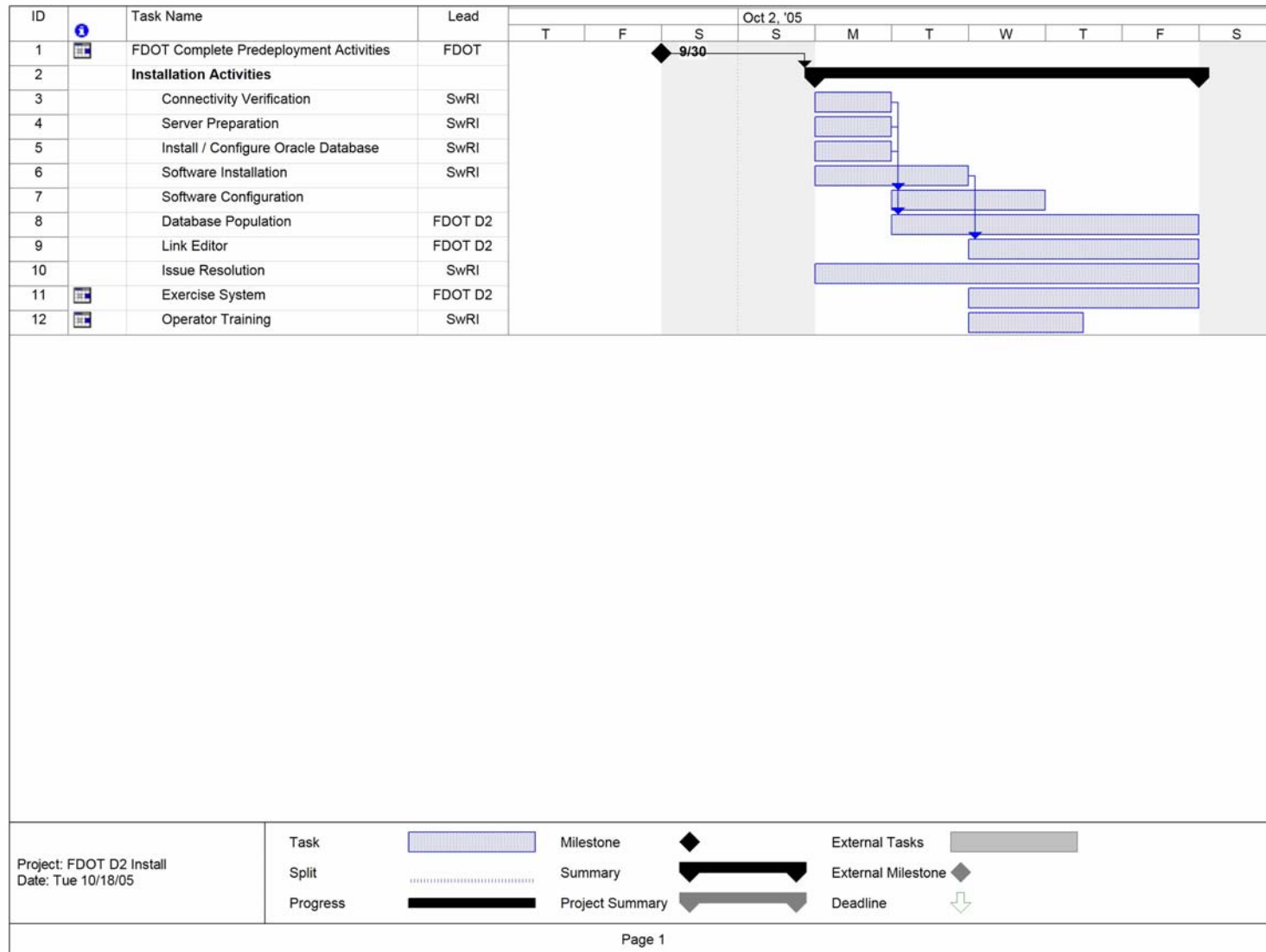
The FDOT plans to have a set of IV&V procedures that will be executed as part of the installation. The purpose of the IV&V procedures is to provide verification of the System Requirements. This test will be run by FDOT personnel (or their designees) and witnessed by SwRI. It is anticipated that this testing will occur during the second week of the installation process.

2.5.4 Issue Resolution and Retesting

If during the testing process issues are identified, the installation team will attempt to resolve them while on-site and if they are resolved, the tests associated with the issue will be re-run at the discretion of FDOT.

2.6 Deployment Schedule

The following schedule is proposed for the deployment. The installation team will need access to hardware devices throughout the implementation process. Note that if activities complete early then if FDOT and SwRI agree the timing for the following events may be modified to shorten the overall deployment schedule.



3. Notes

None.