



Change Management Board Meeting

Video Conference
Bridgeline # 888-808-6959
Code: 524736



Welcome and Introductions

Steve Corbin, CMB Chairman



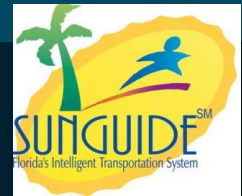
Change Management Board



Time	Item		Lead	Supporting Materials
8:30 – 8:45	Welcome and Introductions		Corbin	
8:45 – 9:00	Previous Meeting Recap and Action Item Review		Corbin	January 12, 2007 Meeting Minutes
9:00 – 9:30	CMB Process Update		Corbin	CMB Process
9:30 – 10:00	SunGuide SM Footprints Issues Review		Heller	CMB .ppt
10:00 – 10:15	BREAK			
10:15 – 10:30	SunGuide SM Software Release 2.2.2	CCTV Preset Scheduling Enhancement	Dellenback	White Paper, Requirements, Design Review .ppt, Responses to Comments on Design
		GUI Performance Enhancement		
10:30 – 11:45	SunGuide SM Software Release 3.0	Responder Audit Requirements <i>(Vote)</i>	Bonds	Requirements List
		FHP CAD Interface	Tillander	Concept of Operations
		AMBER Alert	Glotzbach	Concept of Operations



CHANGE MANAGEMENT BOARD



Time	Item	Lead	Supporting Materials
11:45 – 1:15	LUNCH		
1:15 – 2:45	SunGuide SM Software Release 3.1	Probe Travel Time Subsystem Requirements <i>(Vote)</i>	Using SunGuide SM Travel Times White Paper, Requirements Specification
		Probe Travel Time Component Requirements <i>(Vote)</i>	
		AVI Reader Component Requirements <i>(Vote)</i>	
		LPR Component Requirements <i>(Vote)</i>	
2:45 – 3:00	BREAK		
3:00 – 3:45	SunGuide SM Software Map	Tillander	Alternative Map Approaches White Paper, 1/11/07 .ppt, Map Requirements .doc
3:45 – 4:00	Closing and Action Item Review	Corbin	



Change Management Board



Previous Meeting Recap and Action Item Review

Steve Corbin



Change Management Board



ACTION ITEMS

1. CMB Slide 18, Comment 9: District 2 will enter this issue of supporting Group Camera into the Footprint Database.
2. AV009T1: After a configurable number of days, the oldest vehicle position data will be overwritten as new position reports are received. John Bonds will delete this requirement.
3. The Central Office will talk to Legal Office regarding the “required duration” for maintaining data in an archive.



Change Management Board



4. CMB Slide 42, Requirement EM003R, the Board agreed to delete the wording “within the Performance Measures data fields only”. John will update the requirement.
5. CMB slide 44, Requirement EM002T: The EM tracking component shall automatically track the billable/non-billable and available/unavailable for dispatch status of a truck based on its current status. John will add a sub-requirement of it.
6. EM001R1: John will rephrase the requirement to remove the “Cambridge Systematics” reference.
7. TM006D: David Chang will update the ballot to reflect the change of adding “document”.
8. EM002G1: John will change the wording “verification time” to “notification time”.
9. EM017G and EM017G1: John will replace the wording “video switch” with “video switch subsystem”.
10. EM001E: John will delete the wording “additional event attributes (Hazmat, Fire, Rollover, Dump Truck, and Fatality)”.
11. District 4 will ask Citilog for the driver cost of the “Incident Vehicle Detection System”.
12. District 4 will refine the Amber Alerts requirements to be discussed at the next CMB meeting.



Change Management Board



CMB Process Update

Steve Corbin



Change Management Board



SunGuideSM Software Footprints Issues Review

Steve Dellenback



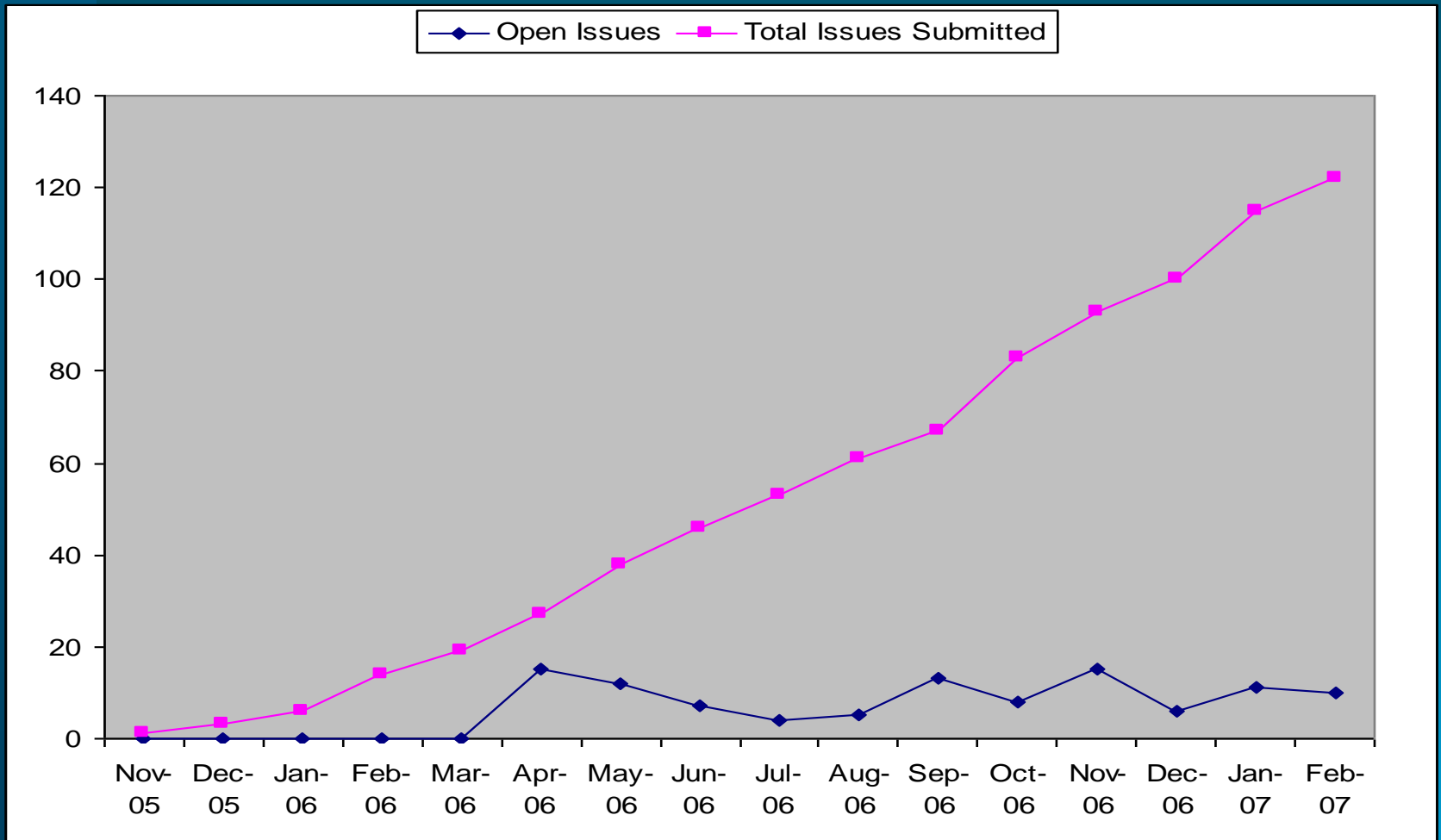
Footprints Issues Status



	New	Open	Closed	Public Solution	Total
Feb 28, 07	19	16	106	2	124
Jan 9, 07	11	15	89	1	105
Dec 1, 06		14	79	1	94



Open / Total Issues





All Open Issues



Issue Number	Date Submitted	Last Edit Date	Status	Title
<u>51</u>	6/6/06	11/27/06	Needs FDOT Approval	TVT messages with multiple destinations but missing data
<u>62</u>	8/9/06	1/12/07	SwRI Addressing	System startup time too slow
<u>65</u>	8/22/06	11/27/06	SwRI Reviewing	CCTV Gui not correctly showing status of camera lock
<u>97</u>	11/16/06	1/23/07	SwRI Reviewing	Preferences lost
<u>101</u>	11/30/06	12/12/06	More Information Requested	Detectors reporting 0-0-0 for both no vehicles (empty roadway), and stopped vehicles (congestion)
<u>102</u>	11/30/06	12/11/06	SwRI Reviewing	Allow 'failed' devices to still periodically poll
<u>107</u>	12/22/06	1/31/07	SwRI Reviewing	MCP / Joystick issue
<u>110</u>	1/3/07	2/2/07	SwRI Reviewing	MAS subsystem locks up
<u>114</u>	1/12/07	2/23/07	SwRI Addressing	Multiple Camera Locks
<u>116</u>	1/18/07	1/22/07	SwRI Reviewing	Improvement to Admin Editor device pages
<u>120</u>	1/26/07	2/19/07	More Information Requested	TSS Status Incorrect
<u>125</u>	2/6/07	2/19/07	More Information Requested	Average Travel Speeds (ATS) not being recorded
<u>129</u>	2/21/07	2/26/07	SwRI Reviewing	MAS subsystem fails to retrieve data
<u>130</u>	2/21/07	2/26/07	SwRI Addressing	NOT receiving data from 2 lane in Westbound or Southbound from Wavetronix
<u>131</u>	2/21/07	2/26/07	More Information Requested	Travel times dropping off signs
<u>132</u>	2/21/07	2/26/07	SwRI Addressing	Detector speeds are inaccurate



Footprints #102 Communications Failures



- District 5 detectors will typically work all day, but fail during the night. When operations resume in AM, operators set all detectors to “Active State.” (D2 has reported same problem.)
- Communications failures
 - First failure device set to “Error State” – continue trying to communicate
 - After “commTolerance” errors device set to “Failed State” – no longer try until operator resets device state
- D5 Request: Try on periodic basis to restore communications
- SwRI Recommendation: Implement the D5 Request



Footprints #116 Admin Editor: Change Name Fields



- Admin editor does not allow editing of name fields
 - Name (camera, dms, har, etc.) utilized to identify equipment within SunGuideSM
 - Requires creation of new record and reentry of other data
- Name editing
 - Costly: schemas, database mods, testing, editor changes
 - Risky: involves generic (affects all C# code)
- Create Duplicate
 - Create duplicate & allow editing for all equipment types
 - Less risk, lower cost
- TERL Request: Allow duplication of record and editing of name field.
- SwRI Recommendation: Add duplicate button with full editing.



Footprints #136 Daylight Savings Time



- Daylight savings Time
 - Past: first Sunday in April – last Sunday in Oct
 - 2007: March 12 – Nov 4
- No SunGuide patch
- Microsoft Windows patches: XP and Server 2003 patches
 - <http://support.microsoft.com/dst2007/>
- Java Virtual Machine patch
 - <http://java.sun.com/javase/downloads/index.jsp>
- Oracle patch
 - <http://www.oracle.com/technology/pub/notes/daylight-saving-time-update-guide.html#2>



Questions?



SunGuideSM Software Release 2.2.2:

- **Scheduled Actions**
(formerly known as “CCTV Preset Scheduling”)
- **GUI Enhancement**

Status

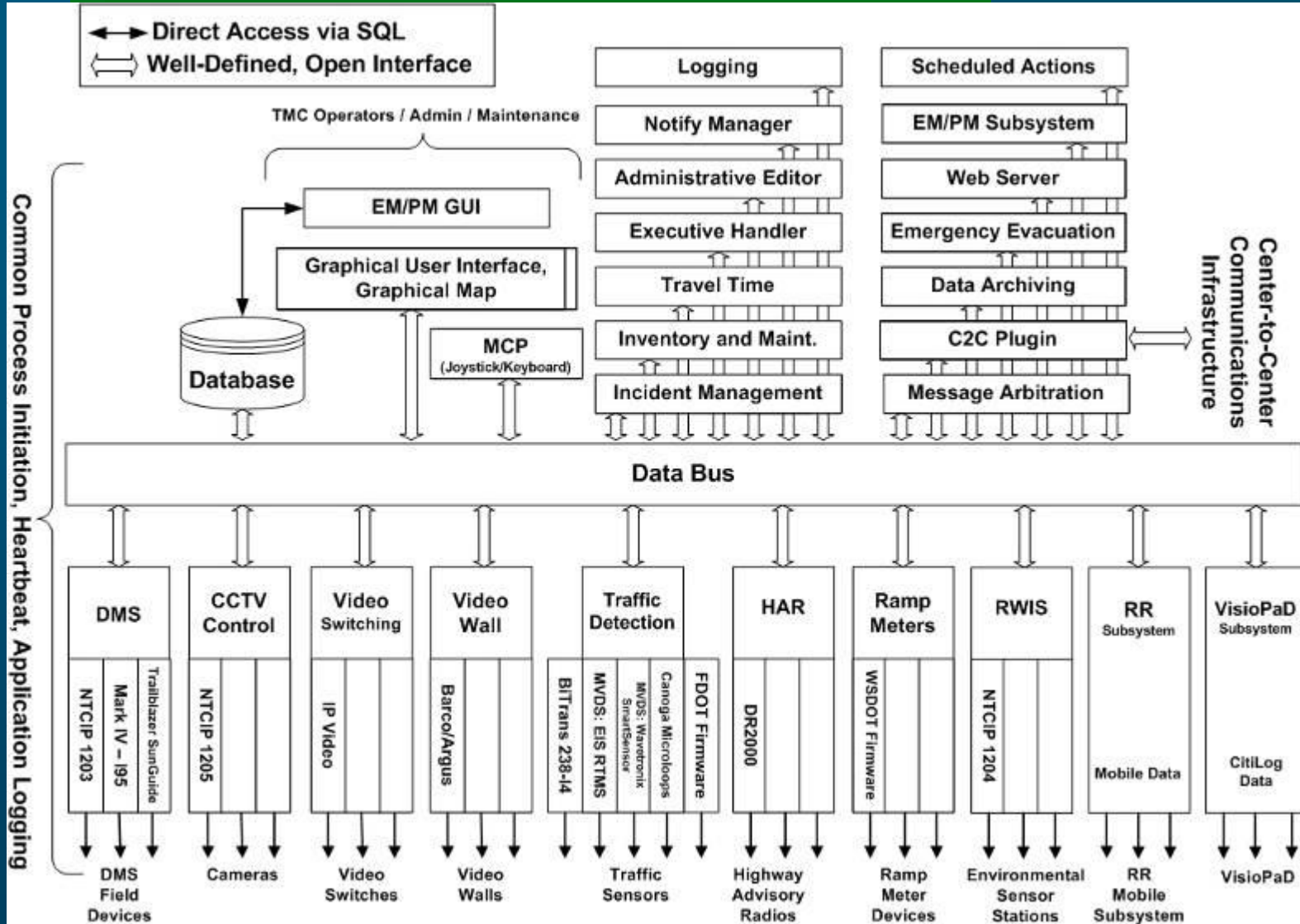


Purpose of Scheduled Actions

- Provide a mechanism to “schedule” CCTV “preset” operations
- Example usage include:
 - System-wide Presets
 - Allow one or more cameras to be moved to predefined presets
 - Accessible as a “perform now” type of action or could be scheduled to occur at certain times of day
 - Preset Homing
 - Allow one or more cameras to be periodically returned to a preset position
 - Preset Tours
 - A feature to cycle cameras between various presets



Scheduled Actions: Integrating with SunGuideSM





SAS: High-Level Summary



- Being implemented as a “traditional” SunGuideSM “subsystem”
- Subsystem will manage / store schedules
- Administrative editor will be used to create schedules
- GUI will be used to “control” (start / stop / suspend) schedules



SAS Admin Editor: Schedules



SunGuide Software Administration Application - Microsoft Internet Explorer

SunGuideSM Administrative Editor

Add Schedule:

Add device to schedule: **cctv** | **1-CCTV** |

Device Schedules

Duration & repeat count settings:

Autofill when empty
 Always autofill
 Never autofill

Scheduling

Start Date:
End Date:

[View Schedule Summary](#)

SunGuide Software Administration Application - Microsoft Internet Explorer

SunGuideSM Administrative Editor

Edit Schedule: sched1

Add device to schedule: **cctv** | **1-CCTV** |

Device Schedules

Scheduled devices: **CCTV-NTCIP2(cctv)**

Schedule for device:

#	Start Time	End Time	Sequence	Duration	Repeat Count	Days of Week	
1	08:34:00 AM	08:40:00 PM	Presets 1 - 5	00:00:25	10	M T W R F Sa Su	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Add sequences: **1** |

Duration & repeat count settings:

Autofill when empty
 Always autofill
 Never autofill

Scheduling

Start Date:
End Date:

[View Schedule Summary](#)



SAS Admin Editor: Sequences



SunGuide Software Administration Application - Microsoft Internet Explorer

File Edit View Favorites Tools Help

SunGuideSM Administrative Editor

Device type:

Item	Item Type	Duration	Item Configuration
1	Preset	00:00:00	Preset Number: 1

Add camera action:

- CCTV / VS
- Data Archive
- DMS
- HAR
- Incident Management
- Inventory/Maintenance
- RMS
- RMS
- Safety Barrier
- Scheduled Actions
 - Schedules
 - Sequences
- TSS
- TVT
- Miscellaneous
- User Management

SunGuide Software Administration Application - Microsoft Internet Explorer

File Edit View Favorites Tools Help

SunGuideSM Administrative Editor

Device type:

Edit Sequence: Presets 1 - 5

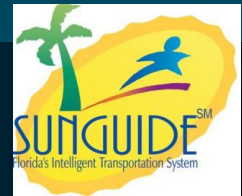
Item	Item Type	Duration	Item Configuration	Edit	Delete
1	Preset	00:00:05	Preset Number: 1	Edit	Delete
2	Preset	00:00:05	Preset Number: 2	Edit	Delete
3	Preset	00:00:05	Preset Number: 3	Edit	Delete
4	Preset	00:00:05	Preset Number: 4	Edit	Delete
5	Preset	00:00:05	Preset Number: 5	Edit	Delete

Add camera action:

- CCTV / VS
- Data Archive
- DMS
- HAR
- Incident Management
- Inventory/Maintenance
- RMS
- RMS
- Safety Barrier
- Scheduled Actions
 - Schedules
 - Sequences
- TSS
- TVT
- Miscellaneous
- User Management



SAS GUI: View Schedule/Sequences



Device Scheduling Details - Windows Internet Explorer

Devices
1-CCTV
CCTV-NTCIP2

Remind me about the suspension in minutes

Active Schedules:

Remind me about the suspension in minutes

Active Sequences:

Remind me about the suspension in minutes

Schedule Details - Windows Internet Explorer

Schedules
sched1

Name: sched1
Start Date: 2007-02-21
End Date: 2007-02-21
Inactive

Filter
All Schedules

Schedule Items:

```
(8:34:00)-(20:40:00) . . . . W . . . .  
Presets 1 - 5: CCTV-NTCIP2 (camera)  
(8:34:00)-(20:40:00) . . . . W . . . .  
All movements: 1-CCTV (camera)
```

Sequence Details - Microsoft Internet Explorer

Sequences
All movements
Presets 1 - 5

Name: Presets 1 - 5
Resource Type: cctv
Actions:

```
(0:00:00)-(0:00:05) Preset 1  
(0:00:05)-(0:00:10) Preset 2  
(0:00:10)-(0:00:15) Preset 3  
(0:00:15)-(0:00:20) Preset 4  
(0:00:20)-(0:00:25) Preset 5
```

Filter
All Sequences

Manually Activated On:

116-CCTV
117-CCTV



SAS GUI: Activation/Suspension



Sequence Activation - Windows Internet Explorer

Devices

- 1-CCTV (cctv)
- 2-CCTV (cctv)
- 3-CCTV (cctv)
- 4-CCTV (cctv)
- 5-CCTV (cctv)
- 6-CCTV (cctv)

Sequence: Presets 1 - 5

Timing:

Run 1 time(s)

Run until 00 (Midnight) : 00

Repeat frequency:

Restart the sequence immediately when it finishes

Restart the sequence every seconds

Activate

Active DMS Sequences - Windows Internet Explorer

Active Sequences

test

Edit Sequence

Terminate

Resource Suspension Reminder - Windows Internet Explorer

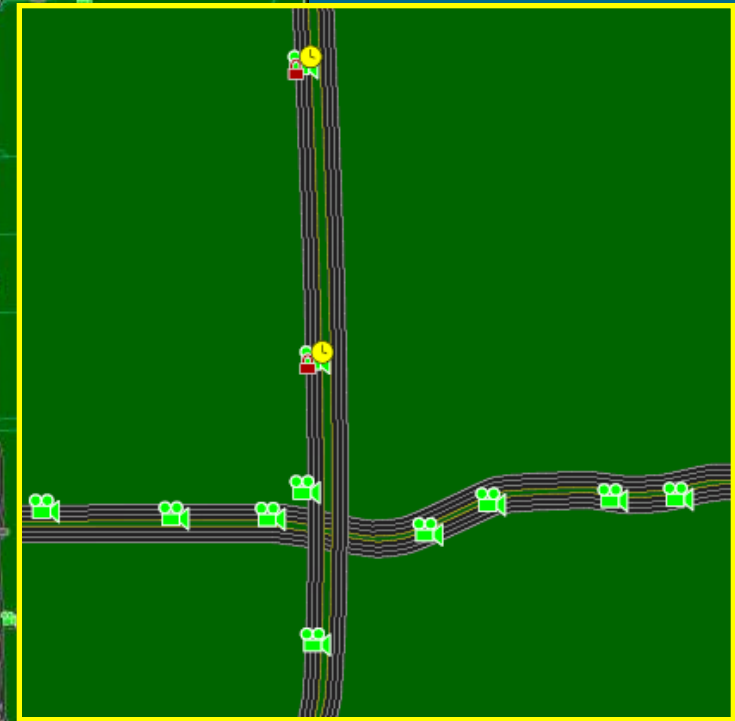
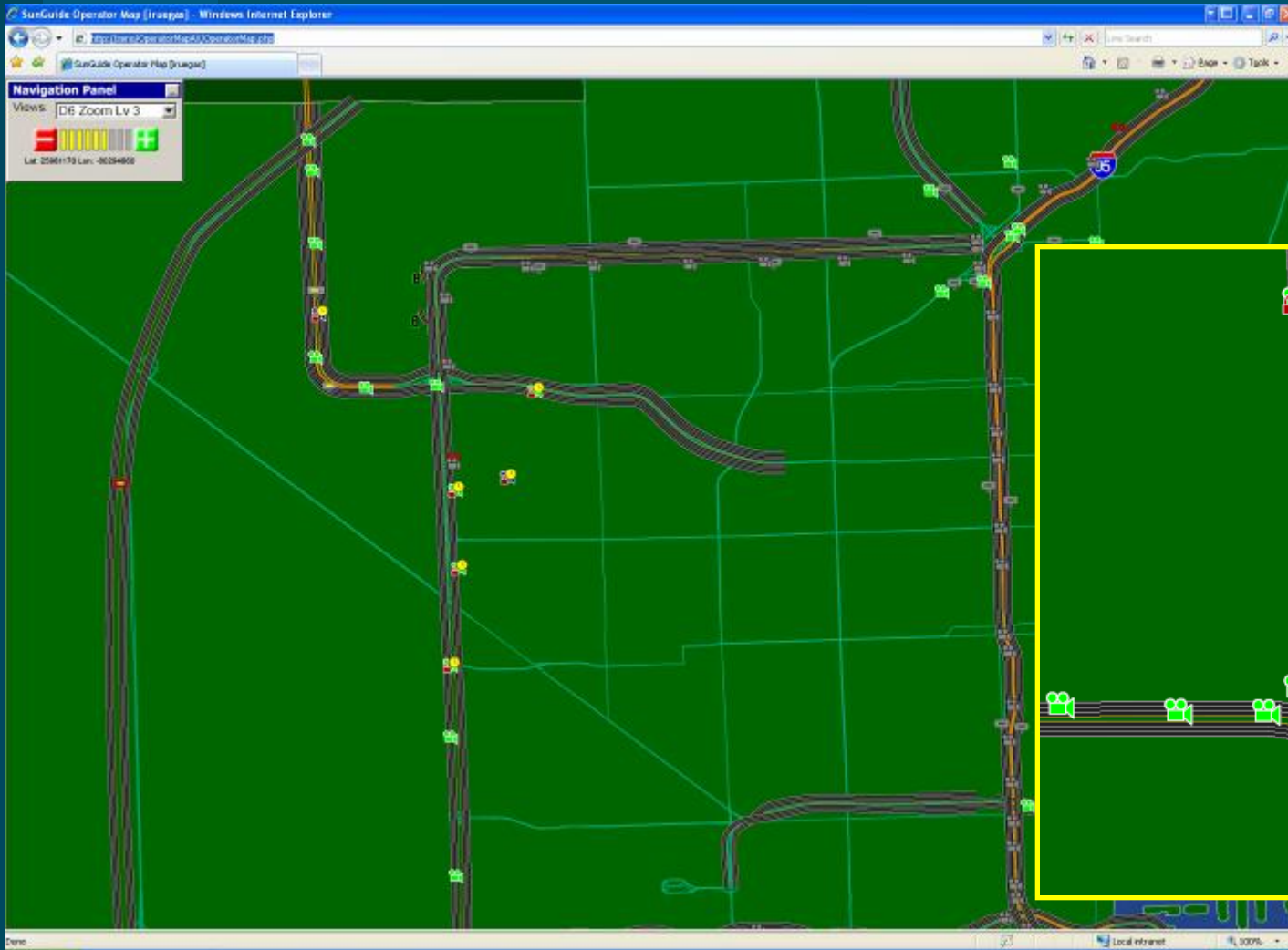
Recently the device **1-CCTV(camera)** was suspended from all active schedules. Would you like to allow it to resume being used by the Scheduling System, or should it remain suspended until further notice?

Resume Scheduled Actions

Continue Suspension



SAS: Showing CCTVs in a Schedule

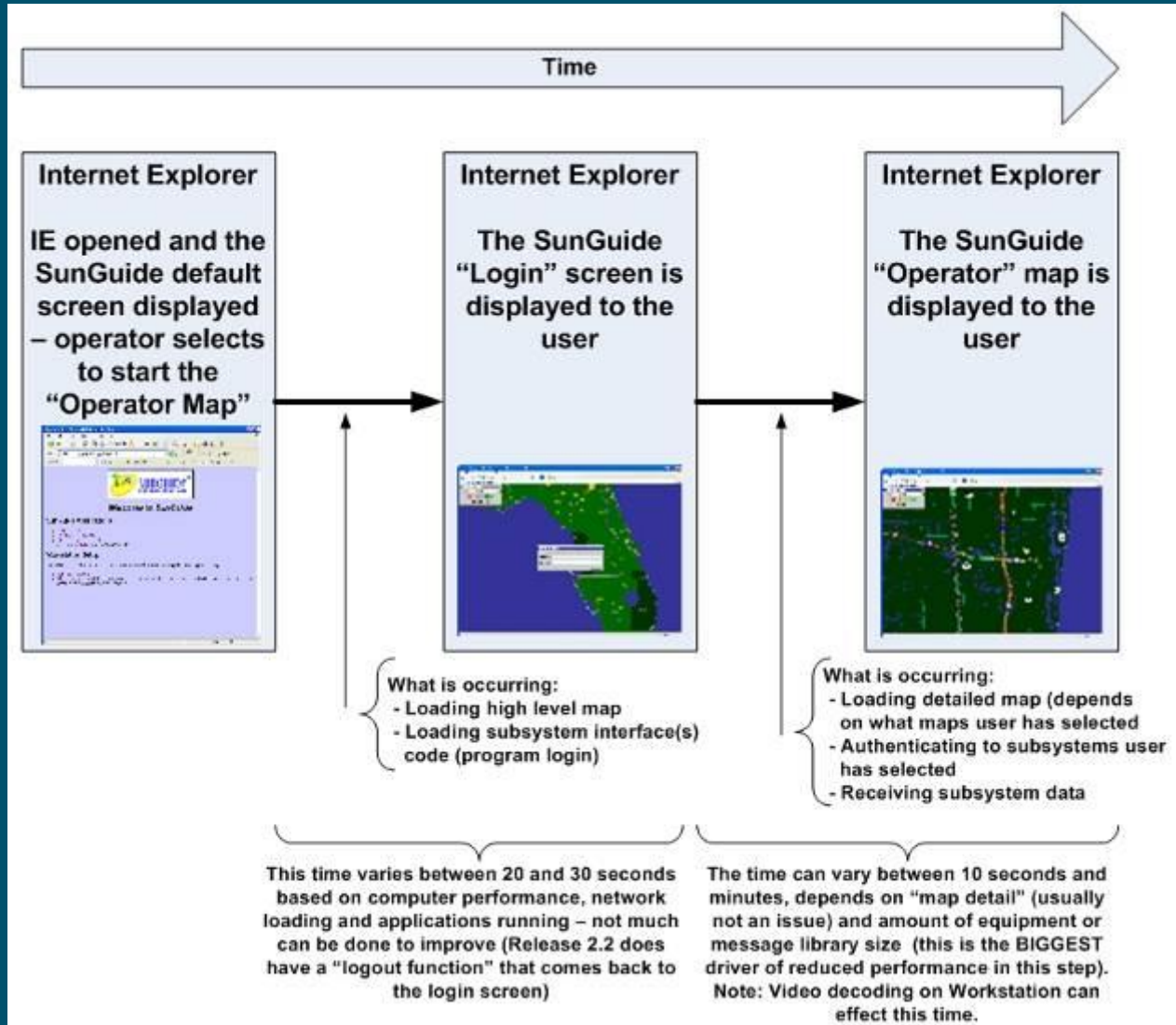
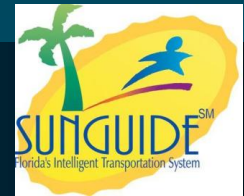




GUI Enhancement

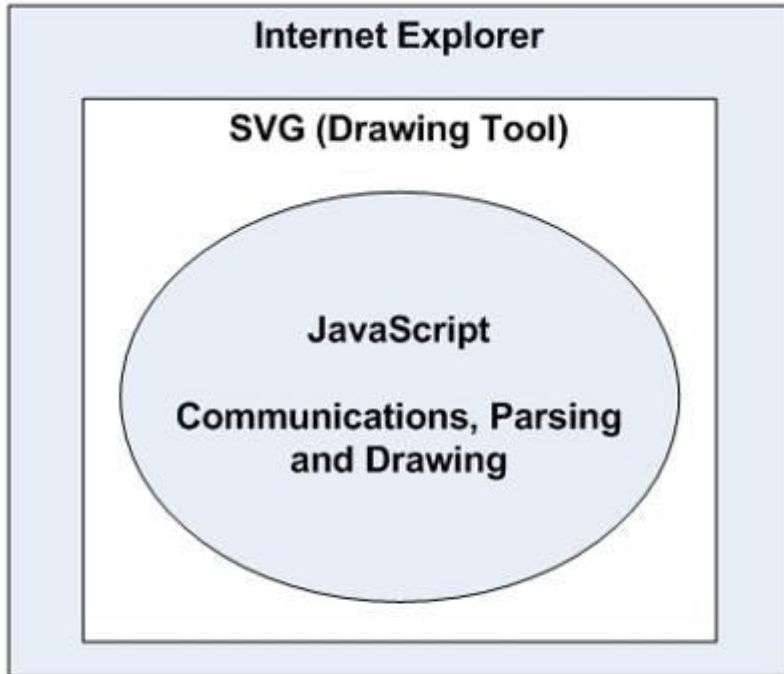


Logging Into SunGuideSM



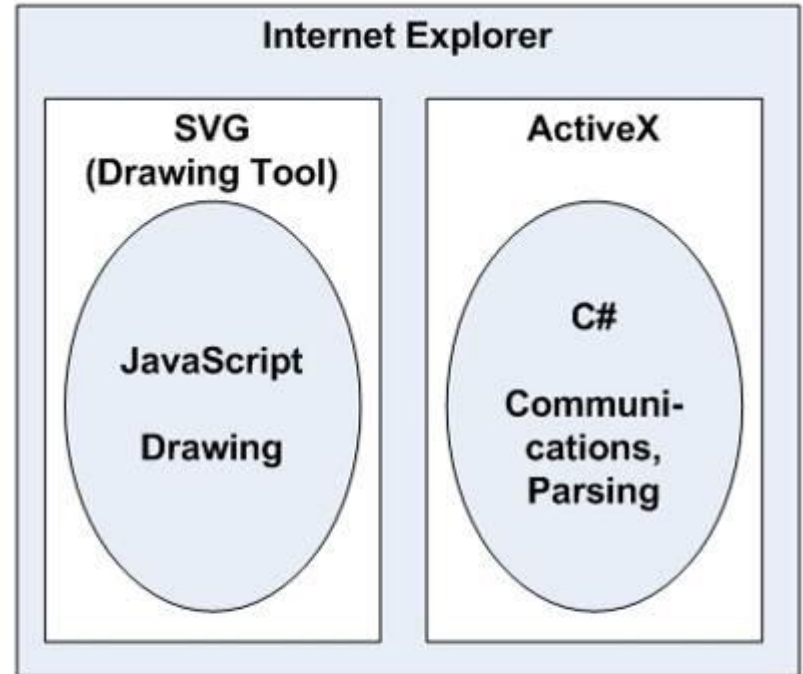


IE – The “Root” of the Problem



SunGuide exchanges MANY XML messages to exchange data – this is most significant processing component in the GUI. The map is not the processing “hog” - the processing “hog” is the parsing of XML messages.

The current implementation is single threaded using an “interpreted” language (JavaScript)



By utilizing ActiveX, a C# application (which would reuse a significant amount of code from existing systems) could be implemented to allow a multi-threaded environment that would significantly enhance the XML parsing.

C# is a byte coded language that is significantly more efficient than JavaScript. Note that ActiveX would need to be enabled to use this approach.



GUI: New or Improved Features

- **Change password**
- **Log out/relogin without reloading map**
- **Indication of bad username/password, retry login without reloading**
- **Select subsystems to log into before logging in**
- **Change subsystems logged into while running (dynamically add/remove subsystem connections)**
- **Handle disconnection from Data Bus without reloading**



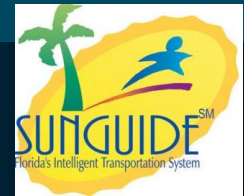
GUI: New or Improved Features – continued



- Operator map logs to Status Logger
- Connection Manager link no longer needed for Operator Map (still used for editors); map connects directly to Data Bus
- District views in Navigation Panel now customizable by District
- Implementation issues:
 - More modular code base, much of which could be ported to other environments if necessary
 - Javascript errors no longer popup to the user. They are caught and details sent to status logger. User will receive a notification in System Messages that an error occurred.



GUI: Screen Snapshots



This screenshot shows the SunGuide Operator Map interface in Microsoft Internet Explorer. The main window displays a map of Florida with county boundaries. A 'Navigation Panel' is visible in the top-left corner, showing a 'Views' dropdown and a 'Lat: 28.060300 Lon: -81.173330' display. A 'Please Log In' dialog box is overlaid on the map, featuring the SunGuide logo and the text 'Welcome to SunGuide Please log in'. The dialog includes input fields for 'Username:' and 'Password:', a 'Login' button, and a 'Show Advanced >>' button.

This screenshot shows the SunGuide Operator Map interface in Microsoft Internet Explorer, displaying a 'Please Log In' dialog box with a 'Subsystem Status' table. The dialog box includes the SunGuide logo, the text 'Welcome to SunGuide Please log in', and input fields for 'Username:' and 'Password:'. Below the login fields is a 'Login' button and a 'Hide Advanced' button. The 'Subsystem Status' section includes a checkbox for 'Use Saved Settings' and a table of subsystems with their connection status.

Subsystem Status	
<input checked="" type="checkbox"/> Use Saved Settings	
CCTV Connected	DMS Connected
GUI Prefs Connected	HAR Connected
IM Connected	MAS Connected
RM Connected	SAS Connected
TSS Connected	TVT Connected
URL Not Connected	VS Connected
VW Connected	

At the bottom of the dialog box, there are three buttons: 'Undo Changes', 'Apply Changes', and 'Save Changes'.



GUI: Screen Snapshots – con't



SunGuide Subsystem Status - Microsoft Internet Explorer

Welcome to SunGuide

Subsystem Status
 Use Saved Settings

CCTV <i>Connected</i> Subscribing...	DMS <i>Connected</i> Retrieving data...
GUI Prefs <i>Connected</i> Applying preferences...	HAR <i>Connected</i> Subscribing...
IM <i>Connected</i> Subscribing...	MAS <i>Connected</i> Subscribing...
RM <i>Connected</i> Retrieving data...	SAS <i>Not Connected</i>
TSS <i>Connected</i> Subscribing...	TVT <i>Connected</i> Subscribing...
URL <i>Not Connected</i>	VS <i>Connected</i> Subscribing...
VW <i>Connected</i> Retrieving data...	

SunGuide Subsystem Status - Windows Internet Explorer

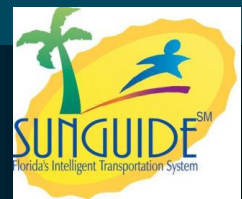
Welcome to SunGuide

Subsystem Status
 Use Saved Settings

CCTV <input checked="" type="checkbox"/> Log in <i>Connected</i> Loading complete.	DMS <input checked="" type="checkbox"/> Log in <i>Connected</i> Loading complete.
GUI Prefs <input checked="" type="checkbox"/> Log in <i>Connected</i> Loading complete.	HAR <input type="checkbox"/> Log in <i>Connected</i> Not attempting to log in.
IM <input type="checkbox"/> Log in <i>Connected</i> Not attempting to log in.	MAS <input checked="" type="checkbox"/> Log in <i>Connected</i> Loading complete.
RM <input checked="" type="checkbox"/> Log in <i>Connected</i> Loading complete.	SAS <input checked="" type="checkbox"/> Log in <i>Not Connected</i>
TSS <input type="checkbox"/> Log in <i>Connected</i> Not attempting to log in.	TVT <input type="checkbox"/> Log in <i>Connected</i> Not attempting to log in.
URL <input type="checkbox"/> Log in <i>Not Connected</i> Not attempting to log in.	VS <input checked="" type="checkbox"/> Log in <i>Connected</i> Loading complete.
VW <input type="checkbox"/> Log in <i>Connected</i> Not attempting to log in.	



GUI: Screen Snapshots – con't



- CCTV ▶
- DMS ▶
- HAR ▶
- Incident Mgmt ▶
- MAS ▶
- Preferences ▶
- Ramp Meter ▶
- System ▶**
 - Logout ▶
 - Set log level ▶
 - Change Password...
 - Map Views...
 - System Settings...
- TSS ▶
- TVT ▶
- Video Wall ▶
- VS ▶
- About SVG Viewer...

- Logout ▶
- Set log level ▶**
 - Basic info
 - Debugging data
 - ✓ Highly detailed
- Change Password...
- Map Views...
- System Settings...

- Logout ▶
- Set log level ▶
- Change Password...
- Map Views...
- System Settings...

Change Password - Microsoft Intern...

Current Password:

New Password:

Reenter New Password:

Saved Map Views - Microsoft Internet Explorer

D6 Zoom Lv 3	<input type="button" value="Move Up"/>	<input type="button" value="Move Down"/>	<input type="button" value="Delete"/>
Camera NTCIP-2	<input type="button" value="Move Up"/>	<input type="button" value="Move Down"/>	<input type="button" value="Delete"/>
<input type="text"/>	<input type="button" value="Store Current View"/>		
<input type="button" value="Save Views"/>			

System Settings - Microsoft Internet Explorer

Seconds between unowned event audible alarms:

Seconds between unacknowledged TSS audible alarms:

Seconds between TSS link updates:

Default all DMS messages to uppercase?

(Note: Current Operator Map sessions will not receive these updates until they are restarted.)



Release 2.2.2 Installation



Questions?



Change Management Board



SunGuideSM Software Release 3.0 Requirements Discussion and Vote

John Bonds



Change Management Board



- **SunGuide Release 3.0: (Voting Ballot)**
 - Responder Audit requirements
 - TVT Enhancement and Probe Travel Time Data Collection requirements



Responder Audit Requirements

Also known as SIRV requirements
Vote Required



Responder Audit requirements p 1/4

CMB Vote

- EM011** The responder audit function shall provide the capability to add, delete, or edit responder agency timeline, vehicle response timeline, and responder activity data in the SunGuide database.
- EM001U** All operator changes shall be logged in the database for traceability, including the new value, previous value, the user who made the change, and the time the change was made.
- EM002U** All operator changes shall be displayed in the chronology report with an indication that specific information has been changed.
- EM003U** The operator shall be able to run a report using the SunGuide report function to review changes made and logged by the audit function.
- EM004U** The operator shall have at least three ways to select an event: (1) by typing in the event number directly; or (2) selecting from the list of active events, or (3) selecting from a filtered list of all events.
- EM004U1** The operator shall be able to filter events by month, location, type, blockage, or responding agency involved.

Y / N
Y / N
Y / N
Y / N
Y / N
Y / N



Responder Audit requirements p 2/4



CMB Vote

EM020G A Responder Audit screen shall be incorporated into the existing audit feature of the SunGuide GUI, using the existing permissions scheme and user authentication methods of the SunGuide GUI.

Y / N

EM020G1 The operator shall be able to add, delete, or edit agency notification, on-scene, and departure times.

Y / N

EM020G2 The operator shall be able to leave any of the fields blank in case that information is not available, except that a record must have at least one timestamp entered.

Y / N

EM020G3 The operator shall be able to add, delete, or edit vehicle response records for agencies with responding vehicles (Road Ranger, SIRV, etc.).

Y / N

EM020G4 The operator shall be required to provide the notification time and either the arrival and departure times or the cancellation time.

Y / N

EM020G5 The operator shall be able to add, edit, and delete activity records associated with vehicle response records.

Y / N



Responder Audit requirements p 3/4



CMB Vote

- EM020G6** The software shall require the operator to enter the time that an activity was performed, however the software shall also require the timestamp to fall within the arrival and departure timestamps for the vehicle record.
- EM020G7** The GUI shall warn the user when a timestamp is entered which is earlier than the event start time or later than the event closed time.
- EM020G8** The operator shall have the option to enter a quantity associated with an activity, such as gas, when the activity is configured as "quantifiable".
- EM020G9** The GUI shall display a summary of all the agency response times, the detailed vehicle response time records, and all the activities performed.
- EM020G10** The GUI shall display the event location, event number, and blockage history for an event.
- EM020G11** The GUI shall provide an event chronology summary window with the ability to generate a report.

Y / N
Y / N
Y / N
Y / N
Y / N
Y / N



Responder Audit requirements p 4/4



CMB Vote

EM021G A comments field shall be provided for the operator to enter free-text data.

Y / N

EM012 Activities shall be classified in the software as quantifiable or not.

Y / N

- **Responder Audit Subsystem: \$37,280.80**
- **Responder Audit GUI: \$11,708.12**

SwRI Total Cost: \$48,988.92



Change Management Board



FHP CAD Interface

Trey Tillander



Change Management Board



AMBER Alert

Gene Glotzbach



TVT Enhancement and Probe Travel Time Data Collection Requirements

Referred to collectively as Probe Travel Time
Data Collection Requirements
Vote



TVT Enhancement requirements



Referenced documents

- **Using SunGuide Travel Times White Paper**
- **070216 SunGuide Probe Travel Time Req draft.doc**
- **There are 81 requirements to be voted on.**



Probe TT Data Collection Requirements p 1/13



- TM018** SunGuide shall accept data from toll tag readers and use that data to calculate the elapsed time of travel between the geographic location where the tag was initially read and the geographic location where the tag was read again.
- TM024** SunGuide shall provide vehicle travel times and delays using probe vehicle technologies.
- UT013** The Admin Editor shall be able to set and display probe reader configuration parameters such as the reader station IP address, status, and the data polling rate.
- UT014** LPR health monitoring shall be configurable via a systems administration page within the Admin GUI.
- TM001G** Travel times shall be displayed on the SunGuide Graphical User Interface.
- TM001G1** SunGuide shall enable viewing of current travel times for different segments in a tabular format DMS module.
- TM001G2** Data shall be updated on the GUI at the same rate that it is generated by travel time function and available for display by a DMS.

CMB Vote

Y / N
Y / N
Y / N
Y / N
Y / N
Y / N
Y / N



Probe TT Data Collection Requirements p 2/13



CMB Vote

TM001S Processing associated with collection, fusion, and dissemination of real-time toll tag data feeds shall introduce a latency of no more than two (2) minutes from the time the data was acquired by SunGuide to when the data is presented to the travel time module for use in calculating travel time.

Y / N

TM001X The SunGuide Software shall collect the following data from License Plate readers (LPR):

Y / N

- * Individual license plate numbers (plate numbers will be encrypted and/or truncated to ensure driver privacy)
- * A timestamp for when each license plate number was collected
- * Data Collection Station id
- * Lane of travel from which data was collected
- * Quality/likely accuracy of each plate read (as assessed by LPR system)
- * Information concerning system health – license plate readers, power, communications, etc.

TM002G The SunGuide operator shall have the ability to turn off the travel time messages to the DMS.

Y / N

TM002P SunGuide shall have an algorithm to compute probe vehicle-based travel times based on data received from probe vehicles or by road based sensors that track a probe vehicle.

Y / N



Probe TT Data Collection Requirements p 3/13



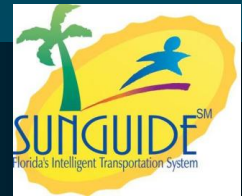
- TM002S** SunGuide shall allow users to perform system configuration activities without introducing latency greater than 2 minutes in the real-time processing of the toll tag with the exception of the addition, removal, or modifications to AVI collection (The system can be reconfigured while it is running without increasing the current latency.)
- TM002X** SunGuide shall monitor system health of the LPRs to include as a minimum: power, and communication (i.e., system health) status.
- TM003G** The SunGuide operator shall be able to specify up to 5 alternate routes called diversion routes for each main route defined.
- TM003G1** The SunGuide operator shall be able to identify which DMS are associated with which routes or segments for which travel time is calculated for.
- TM003P** SunGuide shall interface with Toll Tag Reader (AVI) equipment and License Plate Reader (LPR) equipment to obtain data on Probe Vehicles.
- TM003S** The SunGuide Toll Tag reader function shall be operational 99.9% the time, measured annually over a 24 hour period.
- TM003S1** Operational shall be defined as that the system is running and that no internal errors have occurred.

CMB Vote

Y / N
Y / N
Y / N
Y / N
Y / N
Y / N
Y / N



Probe TT Data Collection Requirements p 4/13



- TM003X** SunGuide shall synchronize the LPR's internal clock if supported by the reader station equipment with the SunGuide system time clock that is used by SunGuide to time stamp reader data.
- TM004G** The SunGuide GUI shall allow an operator to specify an optimum travel time in whole minutes for each segment used for travel time calculations.
- TM004P** SunGuide shall poll all LPR and AVI reader stations not marked as inactive at a SunGuide operator with appropriate permissions configurable rate.
- TM004P1** SunGuide shall use an interface compatible with the LPR and AVI reader stations.
- TM004S** The Toll Tag reader function shall report and archive average speed and travel time calculations (not raw data) to three decimal places of precision .
- TM004T** SunGuide shall ensure that travel time links shall be greater than zero.
- TM004T1** Different Travel Time link lengths shall be able to be associated with one or more TSS links
- TM004T2** Travel time computations shall use speed values greater than zero (0).

CMB Vote

Y / N
Y / N
Y / N
Y / N
Y / N
Y / N
Y / N
Y / N



Probe TT Data Collection Requirements p 5/13



CMB Vote

- TM004X** The SunGuide LPR data collection function shall communicate with the existing LPR protocols used for travel time data collection applications in the State of Florida: PIPS and I-10 in Tallahassee (TBD).
- TM004X1** The SunGuide LPR data collection function shall be able to process data from the existing LPR readers used for travel time data collection applications in the State of Florida: PIPS P357 Video Processor and I-10 in Tallahassee (TBD).
- TM005G** The SunGuide GUI shall enable viewing of current travel times and speeds for different segments in a tabular format.
- TM005G1** Data shall be updated on the GUI at the same rate that it is generated by the travel time module/posted to the DMS Module.
- TM005P** SunGuide shall synchronize the reader stations' internal clock if supported by the reader station equipment with the SunGuide system time clock that is used by SunGuide to time stamp reader data.

Y / N
Y / N
Y / N
Y / N
Y / N



Probe TT Data Collection Requirements p 6/13



CMB Vote

- TM005S** The Toll Tag reader function shall include an interface with AVI data collection equipment to collect data to be used for probe travel time calculations.
- TM005S1** The AVI data collection system shall communicate with the existing AVI protocols used for travel time data collection applications in the State of Florida: TransCore Allegro and Caltrans Title 21
- TM005S2** The AVI data collection system shall receive AVI Tag data from the toll collection agency AVI Data Collection Sensors, or alternatively poll the Data Collection Sensors within a configurable amount of time of when the data is polled by SunGuide.
- TM005S3** Users shall be able to add AVI Data Collection Sensors to the SunGuide system and changes will take effect when the system is restarted.
- TM005S4** Users shall be able to modify AVI Data Collection Sensors that have already been added to the SunGuide system. Changes will take effect when the system is restarted.
- TM005S5** The SunGuide system shall interface with Data Collection modules using a standardized interface that is documented and approved by FDOT.
- TM005S6** Raw AVI data collected by SunGuide shall include the following: Transponder ID - unique AVI tag identifier, Reader ID - Data collection sensor that made, the tag read, Lane ID - lane in which the tag was read, Time stamp - time when the tag was read, Fault Information - fault information from the data source.

Y / N

Y / N

Y / N

Y / N

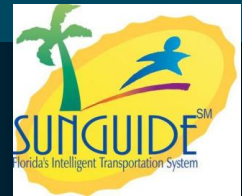
Y / N

Y / N

Y / N



Probe TT Data Collection Requirements p 7/13



- TM005S7** The AVI data collection function shall be able to process AVI tag data from the existing AVI readers used for travel time data collection applications in the State of Florida: TransCore IT2020 and Sirit Identity Flex.
- TM007G** An alert shall be generated to the SunGuide operator if no data is received after the poll of an AVI device for a configurable amount of time set by the SunGuide operator.
- TM005T** SunGuide shall provide the ability to group the travel time tags in such a way that portions of the travel time message can be automatically removed if data is not available.
- TM005T1** If insufficient data is available to calculate travel time then no travel time shall be provided to the DMS and the operator shall be alerted.
- TM005T2** When there are two or more travel links (a two phase TVT message) and there is insufficient data available to calculate one of the travel times, then the message reverts to a single phase message exhibiting only one of the travel times.
- TM006G** The SunGuide GUI shall allow the operator to display the number of vehicles used to calculate the current probe travel time for a segment.
- TM006P** SunGuide shall calculate average speeds for segments based on the measured travel time of individual probe vehicles.

CMB Vote

Y / N
Y / N
Y / N
Y / N
Y / N
Y / N
Y / N



Probe TT Data Collection Requirements p 8/13



CMB Vote

- TM006S2** The AVI data collection system shall report errors in AVI Data Collection devices.
- TM006T** The Travel Time function shall have the ability to dynamically resolve missing travel speed reports (when they are single individual links but not for multiple contiguous links, along a given segment) based on data that can logically be used to determine roadway link travel speeds.]
- TM006T1** The Travel Time function shall have the ability to initiate dynamic link re-definition to compensate for loss of data collection stations that would otherwise result in the loss of segment travel times.
- TM006T2** SunGuide shall utilize the following meta-rules and apply them in sequence to dynamically resolve missing link data: (1) If only partial link data is available, then use existing link data to extract a travel time; (2) If all link data is not available, then utilize dynamic linking to determine a travel time; (3) If dynamic linking is not available, then utilize the results of a least squares trending analysis; and (4) If trending analysis data does not prove adequate or reliable, then use (as a last resort) a "no data available" condition.

Y / N

Y / N

Y / N

Y / N



Probe TT Data Collection Requirements p 9/13



CMB Vote

- TM007G** SunGuide shall notify SunGuide operators of reported failures by the LPR equipment or failure to get a response from an LPR using e-mail, a pop-up window, or other means of alerting a SunGuide Operator.
- TM007P** SunGuide shall have the ability to filter out travel times that are outside a normal distribution for the travel time for the segment. e.g., travel times/speeds that don't make sense given current conditions or are way in excess of the speed limit – e.g., 120 mph).
- TM007S** SunGuide shall ensure that toll tag customers remain anonymous in the system.
- TM007S1** The SunGuide system shall encrypt AVI transponder IDs. The SunGuide system shall encrypt AVI transponder IDs.
- TM007T** Travel time report updating shall be fully automatic, without operator validation, unless a supervisor decides to suspend an event detection link travel time segment.
- TM008G** The SunGuide Operator shall have the ability to specify an upper bound for the travel time and a lower bound for the travel time for each segment defined to have a travel time calculation.

Y / N
Y / N
Y / N
Y / N
Y / N
Y / N



Probe TT Data Collection Requirements p 10/13



CMB Vote

- TM008P** The SunGuide GUI shall monitor number of vehicles being used to compute travel times for each segment during the current and past 4 hour time periods and associate the number of vehicles with the segment.
- TM008S** The Data Server shall filter out duplicate tag reads (i.e. reads of the same AVI transponder, at the same data collection site, in a given time.)
- TM008T** The SunGuide travel time process shall include the capability of computing travel times for alternate routes and conditionally presenting the alternatives on DMSs.
- TM008T1** SunGuide Travel Time function shall allow more than one route for an origin/destination pair to be configured by an operator that Travel Time will be computed for.
- TM008T2** Display of alternate route travel time messages shall be based on the calculated travel times and current traffic conditions.

Y / N

Y / N

Y / N

Y / N

Y / N



Probe TT Data Collection Requirements p 11/13



CMB Vote

- TM009P** SunGuide shall keep track of the time travel time probe data is received by SunGuide and record the time that a travel time calculation is complete and a travel time is available for posting to a DMS and associate the time difference between the two as the data latency for the segment. This is defined as the probe travel time data latency.
- TM009S** SunGuide shall archive encrypted AVI Tag read data.
- TM009S1** AVI Tag read data shall be archived with encrypted transponder IDs.
- TM009S2** Raw AVI Tag read data shall be archived in the same format in which it was received, except that the transponder ID shall be encrypted.
- TM009S3** Toll tag data shall be retained on line for one month and be able to be exported for long term storage.
- TM009T** SunGuide shall calculate travel times using data obtained from a combination of data from point-based and probe-based detection technologies.
- TM009T1** Travel times shall be computed on an interval specified by a system configuration parameter (e.g., 1 minute, 2 minutes, 5 minutes, etc.).
- TM009T2** The Travel Time calculations shall not add more than 1 minute of data latency prior to data being queued for display

Y / N
Y / N
Y / N
Y / N
Y / N
Y / N
Y / N
Y / N



Probe TT Data Collection Requirements p 12/13



CMB Vote

TM010T The SunGuide Travel Time function shall require that for each segment defined that will have travel times calculated for it that there be a minimum travel time defined called a lower bound and a maximum travel time defined called an upper bound.

Y / N

TM010T4 If a DMS does not provide the ability to present a 3 line (row) message, the message will be displayed sequentially on the available rows.

Y / N

TM010T5 The “lower bound,” and “travel time upper bound” values shall be able to be defined separately for each reporting segment by each DMS.

Y / N



Probe TT Data Collection Requirements p 13/13



CMB Vote

TM011T SunGuide shall automatically post diversion messages to operator specified signs when the travel time savings on the alternative route exceeds an operator specified time in minutes with the default being 10 minutes over the main route.

Y / N

TM011T1 Diversion messages shall be formatted into the following template: Line 1: To Destination Route Name 1; Line 2: VIA Alt Route Name X MIN; Line 3: VIA Main Route Name Y MIN

Y / N

TM012T SunGuide shall calculate a delay time for each travel time segment based on an operator entered optimum time for the segment if the delay time exceeds a SunGuide operator configured time that has a default of 5 minutes.

Y / N

TM012T1 Delay time shall be calculated by subtracting the actual travel time from the optimum travel time and reported in whole minutes if the delay time is greater than the default time for the segment.

Y / N

TM013D SunGuide shall have the ability to archive all travel time and speed data for later use.

Y / N



Probe TT Data Collection Requirements p 13/13

- **General Subsystem Tasks: \$140,245.40**
- **Probe Fusion (Driver to TSS): \$122,621.10**
- **Probe Fusion Input Drivers: \$81,986.36**
- **TSS Modifications: \$ 42,974.07**

SwRI Total Cost \$ 387,827



Change Management Board



SunGuideSM Software Map

Trey Tillander



Change Management Board



Closing and Action Item Review

Steve Corbin, CMB Chairman