

SunGuide®:

Software Requirements Specification

SunGuide-SRS-8.1



Prepared for:

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July 14, 2021

Document Control Panel			
File Name:	SunGuide SRS 8.1		
File Location:	SunGuide CM Repository		
	Name	Initial	Date
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	Tucker Brown, SwRI	TJB	11/05/2018
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	Tucker Brown, SwRI	TJB	03/10/2020
	Tucker Brown, SwRI	TJB	04/20/2020
	Tucker Brown, SwRI	TJB	07/01/2020
	Tucker Brown, SwRI	TJB	09/22/2020
	Tucker Brown, SwRI	TJB	03/19/2021
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Appendix A: Requirements

List of Acronyms

ATMS	Advanced Traffic Management System
AVL	Automatic Vehicle Location
C2C	Center-to-Center
CCTV	Closed Circuit Television
CVS.....	Connected Vehicle Subsystem
DA.....	Data Archiving
DD.....	Data Distribution
DFS	Data Fusion System
DMS.....	Dynamic Message Sign
DOT	Department of Transportation
EG	Evacuation Guidance
EH.....	Executive Handler
EM.....	Event Management
EM/PM.....	Event Management / Performance Measures
EV	Event Viewer
FDOT	Florida Department of Transportation
FEAT.....	Feature Requirement
GPIO	General Purpose Input/Output
HAR	Highway Advisory Radio
IDS	Incident Detection System
IM.....	Incident Management
IMS	Inventory Maintenance System
ITS.....	Intelligent Transportation Systems
ITN.....	Invitation to Negotiate
MAS.....	Message Arbitration System
ODS.....	Operational Data Store
PS	Pricing System
RMF	Ramp Metering Firmware
RMS	Ramp Metering System
RPG.....	Response Plan Generator
RR	Road Ranger
RS.....	Reporting System
RWIS.....	Road Weather Information System
SB.....	Safety Barrier
SPARR.....	Smart Phone Application for Road Rangers
SRS	Software Requirements Specification

SUB.....Subsystem Requirement
SwRISouthwest Research Institute
TCS.....Traffic Control Subsystem
TMC.....Traffic Management Center
TPS.....Truck Parking Subsystem
TSS.....Transportation Sensor System
TVToll Viewer
TVT.....Travel Times
VSL.....Variable Speed Limit
XML.....Extensible Markup Language

REVISION HISTORY

Revision	Date	Changes
1.0.0-Draft	December 22, 2003	Initial Release
1.0.1-Draft	January 27, 2004	Updated based on SRR input and discussion with ITS Central Office
1.0.2	April 2, 2004	Incorporated FDOT comments.
2.0.0-Draft	August 27, 2004	Added requirements for systems in release 2 (EG, HAR, WS, C2C and RMS)
2.0.0	May 4, 2005	Finalized with FDOT comments, new enhancements (from ECO 1.1)
2.0.1	August 11, 2005	Finalized with ECO 1 changes
2.1.0	April 12, 2006	Updated with Release 2.1 requirements
2.2.0	November 17, 2006	Updated with Release 2.2 requirements
2.2.1	November 27, 2006	Updated architecture based on naming nomenclature changes in the EM PM design and implementation
2.2.2	December 4, 2006	Added Ramp Metering firmware and CCTV Scheduler requirements
3.0.0-Draft	April 25, 2007	Added Release 3.0 requirements
3.0.0	May 29, 2007	Requirements updated based on SWAM #11. Added software release versioning information and requirements traceability.
4.0.0-Draft	December 16, 2007	Added Release 3.1 and 4.0 requirements.
4.0.0	February 22, 2008	Updated Release 3.1 and 4.0 requirements based on SWAM #15.
4.3	January 25, 2010	Updated Release 4.2 and 4.3 requirements based on SWAM#20, SWAM#21, SWAM#22 and referenced white papers
5.0	March 5, 2010	Added Release 5.0 requirements
5.1	February 16, 2012	Added Release 5.0.4, 5.0.5, and 5.1 requirements
6.0	February 15, 2013	Added Release 6.0 requirements
6.1	October 1, 2014	Added Release 6.1 requirements
6.2	August 5, 2015	Added Release 6.2 requirements
7.0	January 3, 2017	Added Release 7.0 requirements
7.1	September 25, 2017	Added Release 7.1 requirements
7.1.2	November 5, 2018	Added Release 7.1.1 and 7.1.2 requirements

7.2	July 3, 2019	Added Release 7.2 requirements
7.2	July 29, 2019	Release 7.2 requirement changes
8.0	March 10, 2020	Release 8.0 Set 1
8.0	April 20, 2020	Release 8.0 Set 2
8.0	July 1, 2020	Release 8.0 Set 3
8.0	September 22, 2020	Release 8.0 Revisions
8.0HF3	March 19, 2021	Release 8.0 HF3 Revisions
8.0HF4	April 19, 2021	Release 8.0 HF4 Revisions
8.1	July 14, 2021	Release 8.1 Revisions

1. Scope

1.1 Document Identification

The Software Requirements Specification (SRS) details the requirements for the Statewide Transportation Management Center Software Library System.

The requirements for the system are maintained in a database using SynapseRT. This document serves as a starting point for the requirements.

1.2 System Overview

The Florida Department of Transportation (FDOT) is conducting a program that is developing SunGuide software. The SunGuide 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 SunGuide software is to have a common software base that can be deployed throughout the state of Florida. The SunGuide software development effort is based on ITS software available from the state of Texas; 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:

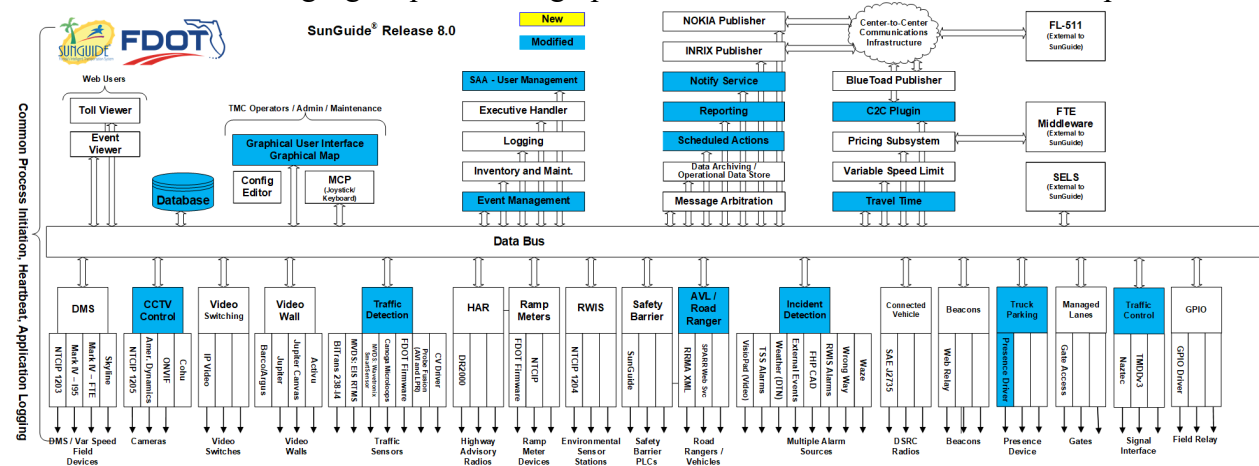


Figure 1-1 - High-Level Architectural Concept

1.3 Related Documents

The following documents were used to develop this document:

- FDOT Scope of Services: *BE492, Standard Written Agreement for SunGuide Software Support, Maintenance, and Development, Exhibit A: Scope of Services*. December 14, 2017.
- Notice to Proceed: Letter to Southwest Research Institute® (SwRI®) for BE492, December 14, 2017
- Letter of Authorization 010: Letter to SwRI for BE492, February 16, 2021.
- SunGuide Project website: <http://sunguide.datasys.swri.edu>.

1.4 Contacts

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For current contact information please refer to this link: <http://sunguidesoftware.com/contact-us>

Appendix A:
REQUIREMENTS

Key	Description	Component/s	Fix Version/s
SRT-684	The software will provide a configuration option to determine which of the users with permission to handle Executive Notifications should be prompted to review and send Executive Notifications.	EM	SG 8.1
SRT-685	The system will allow notifications to be sent to all users, all users excluding the event owner, or only the event owner.	EM	SG 8.1
SRT-686	When the software determines that an Executive Notification should be sent out, the software will automatically present an interface for reviewing and sending that Executive Notification to the list of users specified in the configuration option who are logged into the system at that time.	EM	SG 8.1
SRT-687	When any user sends an Executive Notification, the software will automatically close any other dialogs for all users which were presented for reviewing and sending that same Executive Notification.	EM	SG 8.1
SRT-688	In the interface for reviewing and sending Executive Notifications, the software will provide a control to indicate the condition triggering the Executive Notification was a false alarm.	EM	SG 8.1
SRT-689	If a condition triggering an Executive Notification is marked as a false alarm, the software will not consider that Executive Notification or its related timestamp when performing future checks to determine whether new Executive Notification messages are required.	EM	SG 8.1
SRT-690	If a user has sent an Executive Notification for an event, the user will not be able to set the Executive Notification as a false alarm for that event.	EM	SG 8.1
SRT-691	The system will add a chronology entry to the event for the Executive Notification indicating the user who handled the notification and the action to resolve the Notification was selected as False Alarm.	EM	SG 8.1
SRT-692	The software will calculate a historical average for each TSS link for the last hour's worth of data using the previous 30 days' worth of data.	TVT	SG 8.1
SRT-693	The software will use the historical average to calculate an expected travel time.	TVT	SG 8.1
SRT-694	The software will allow a user to configure a percentage threshold on a travel time that will trigger an alert to appear if the travel time is higher than the historical average and the percentage increase.	TVT	SG 8.1
SRT-695	The software will allow a user to configure a percentage threshold on a travel time that the travel time must recover to before triggering a new travel time alert.	TVT	SG 8.1
SRT-696	For each travel time link, the software will allow the user to disable the generation of travel time alarms for that travel time link.	TVT	SG 8.1
SRT-697	When an alert is triggered, the user will have the option to create a new event, create a secondary event, associate to an existing event, or dismiss the alert.	TVT	SG 8.1

SRT-698	If the current value of the travel time would exceed the configured threshold, the system will color the cell of the current travel time value, even if the travel time alert generation for the travel time link is disabled.	TVT	SG 8.1
SRT-699	When editing an event's response plan, if a previous version of the response plan is active and the currently edited plan differs from the active plan, the software will visually indicate the added, modified, or deleted items in the current response plan view.	EM	SG 8.1
SRT-700	When all travel lanes are blocked and the operator chooses to add a closure start and end point, the system will automatically select all locations between the start and end location to include in the event record.	EM	SG 8.1
SRT-701	The list of locations between the closure start and end location will be shown to the user and allow the user to select all, select none, or manually select the locations they wish to include as part of this event.	EM	SG 8.1
SRT-702	The list of locations will be included in the message published to FLATIS as well as the C2C eventData type.	EM	SG 8.1
SRT-703	For each combination of DMS, HAR, and TAM response plan device types and minor, moderate, and severe event severities, the software will allow an administrator with appropriate permissions to optionally specify a search distance in miles for a configured event type.	EM	SG 8.1
SRT-704	When generating an automated response plan, if the event type has an event type specific value for one of the relevant search distances, the software will use that search distance rather than the default search distance in the configuration file.	EM	SG 8.1
SRT-705	In the Status Log Filtering dialog, the list of process will allow the user to see the full name of each process.	System	SG 8.1
SRT-706	In the Status Log Filtering dialog, the list of process will allow the user to deselect all process names in the list.	System	SG 8.1
SRT-707	In the Status Log Filtering dialog, the message string parameter software will allow the user to add AND and OR conditional logic to the message string parameter.	System	SG 8.1
SRT-708	The software will allow the user to apply the filtering criteria to the Status Logger dialog without closing the filtering dialog.	System	SG 8.1
SRT-709	When a user changes the operational status of a device, the software will log a message indicating the Device Type, Device Name, Device Id, the new status value, and the username of the user or subsystem that made the change.	System	SG 8.1
SRT-710	When a camera is deleted, it will be removed from the running system but remain in the database.	CCTV	SG 8.1
SRT-711	When a user is deleted, it will be removed from the running system but remain in the database.	SAA	SG 8.1

SRT-712	When a DMS is deleted, it will be removed from the running system but remain in the database.	DMS	SG 8.1
SRT-713	When a TSS detector, link, or lane is deleted, it will be removed from the running system but remain in the database.	TSS	SG 8.1
SRT-714	The software will allow the user to retrieve the list of ceased users, cameras, detectors, links, and DMS and use the ceased devices as parameters when running reports.	RS	SG 8.1
SRT-715	The software will allow an administrator with permission to specify a domain for a user account to indicate that user should log in via Active Directory single sign-on authentication.	SAA	SG 8.1
SRT-716	When the Operator Map is launched, the software will attempt to login using single sign on.	SAA	SG 8.1
SRT-717	If the user is unable to authenticate via single sign on, the user will be presented with an option to use a username and password to log into the system.	SAA	SG 8.1
SRT-718	If the user is logged in and chooses to log out, options for logging in via single sign on or with a username and password will be presented to log back into the system.	SAA	SG 8.1
SRT-719	When a user presses the button for Active Directory single sign-on, if a SunGuide user with the same username and domain as the user logged into the Windows workstation exists, the software will authenticate the map session for that SunGuide user.	SAA	SG 8.1
SRT-720	The software will use VLC libraries with version 3.0.7 or later.	CCTV	SG 8.1
SRT-721	The software will support a scheduled action type of Floodgate.	SAS	SG 8.1
SRT-722	When configuring a scheduled Floodgate action, the software will present the user with an interface containing the same controls as the manual Floodgate interface.	SAS	SG 8.1
SRT-723	The software will select the 1st available slot when sending a scheduled floodgate.	SAS	SG 8.1
SRT-724	When a scheduled Floodgate action is activated, the system will send a C2C command to activate the Floodgate.	SAS	SG 8.1
SRT-725	When a scheduled Floodgate action is terminated, the system will send a C2C command to terminate the Floodgate.	SAS	SG 8.1
SRT-726	If no slot is available, the software will present a warning to all users logged in to the SAS subsystem about the failure.	SAS	SG 8.1
SRT-727	Event reports that display Road Ranger vehicle information will include the related vehicles and assigned beats.	RS	SG 8.1
SRT-728	For event reports that include Road Ranger vehicle information, the software will allow the user to filter based on the beat of Road Ranger response vehicles.	RS	SG 8.1
SRT-729	For event reports that include Road Ranger vehicle information, the software will allow the user to filter based on the Road Ranger vehicle.	RS	SG 8.1
SRT-730	The software will support a DMS flag to indicate a DMS is used for arterial operations.	DMS	SG 8.1

SRT-731	DMS with the sign use set as General will show a difference in the icon for arterial and non-arterial DMS.	DMS	SG 8.1
SRT-732	The system will allow users to toggle visibility of arterial DMS icons separately from General sign use icons.	DMS	SG 8.1
SRT-733	The software will allow a user with permission to configure an icon display group.	SAA	SG 8.1
SRT-734	The icon display group will have a list of available icon types and specific devices.	SAA	SG 8.1
SRT-735	The system will allow the user to select specific devices to include in the icon display group.	SAA	SG 8.1
SRT-736	The software will allow a user with permission to retrieve the list of icon display groups.	SAA	SG 8.1
SRT-737	The software will allow a user to select an icon display group.	SAA	SG 8.1
SRT-738	If an icon group is selected by the user, the selected group will be saved as a user preference and loaded on the next user login.	SAA	SG 8.1
SRT-739	When an icon display group is selected, the icons on the map will change their visibility to match the icon display group.	SAA	SG 8.1
SRT-740	The software will support the use of Blank Out Signs.	GPIO	SG 8.1
SRT-741	The software will allow a user with permission to configure the name, location, associated CCTV camera, communication parameters needed to operate the sign, and available states the Blank out signs can activate.	GPIO	SG 8.1
SRT-742	The software will allow a user to view the current status of the Blank Out Sign including the last polled time, current operational state, currently displayed message, and the current snapshot for the camera configured to the blank out sign.	GPIO	SG 8.1
SRT-743	The status dialog will update the displayed snapshot on a configurable interval.	GPIO	SG 8.1
SRT-744	The software will allow the user to set the state of the BOS sign.	GPIO	SG 8.1
SRT-745	The software will allow a user to set an optional snapshot location for a CCTV camera.	GPIO	SG 8.1
SRT-746	The software will support the use of Blank Out signs in response plans.	GPIO	SG 8.1
SRT-747	The software will allow the user to add Blank Out signs to pre-defined response plans.	GPIO	SG 8.1
SRT-748	The software will send the current status of the Blank Out sign in the Center-to-Center feed.	GPIO	SG 8.1
SRT-749	The software will allow a user to configure an event severity level as part of a pre-defined response plan.	GPIO	SG 8.1
SRT-750	If a pre-defined plan has a configured event severity level, the system will only suggest the pre-defined response plan as part of an automatic suggestion if the configured severity level matches the event's current severity level.	GPIO	SG 8.1
SRT-751	The software will support the use of Over Height Vehicle Detection devices.	IDS	SG 8.1
SRT-752	The software will allow a user with permission to configure an Over Height Vehicle Detection device including the name, location, a list of cameras and presets, and communication parameters.	IDS	SG 8.1

SRT-753	The software will allow the user to view the current operational status of the Over Height Vehicle Detection device.	IDS	SG 8.1
SRT-754	The software will have a configurable option to automatically create events from over height vehicle detections.	IDS	SG 8.1
SRT-755	When an over height vehicle detection occurs, the system will create an alert for the user.	IDS	SG 8.1
SRT-756	The over height alert will be sent to the user as an immediate notification with a popup alert dialog.	IDS	SG 8.1
SRT-757	The alert dialog will show the alert, images associated with the alert, and live video from any of the cameras associated to the Over Height Vehicle Detection device.	IDS	SG 8.1
SRT-758	When an alert is received, if a camera associated to the Over Height Vehicle Detection device has an associated preset, a request to move to that preset will be sent to the camera.	IDS	SG 8.1
SRT-759	If the system is configured to automatically create an event for each alert, an event will be created.	IDS	SG 8.1
SRT-760	The system will allow users to take ownership of the event.	IDS	SG 8.1
SRT-761	Users will be given the option to create an event, create a secondary event, associate the alert to an existing event, or dismiss the alarm.	IDS	SG 8.1
SRT-762	If an event was automatically created for an alert, the user will have the option to close the event and dismiss the alarm.	IDS	SG 8.1
SRT-763	The software will provide options in the configuration file for a TPS occupancy alarm duration and a list of email recipients for TPS occupancy alarms.	TPS	SG 8.1
SRT-764	The TPS occupancy alarm duration option will be specified in hours.	TPS	SG 8.1
SRT-765	If the TPS occupancy alarm duration option is set to 0, the software will not generate an occupancy alarm.	TPS	SG 8.1
SRT-766	While polling individual TPS spaces, the software will monitor the duration each space has been occupied.	TPS	SG 8.1
SRT-767	If a sensor related to a space moves to an Error/Failed state, the software will treat the space as unoccupied.	TPS	SG 8.1
SRT-768	If a space is detected as being occupied for longer than the configured TPS occupancy alarm duration, the software will send an email to the recipients configured for TPS occupancy alarms.	TPS	SG 8.1
SRT-769	The software will interface with the Carmanah Wrong Way driving device.	IDS	SG 8.1
SRT-770	The software will poll the device on a configurable interval to check interface connectivity.	IDS	SG 8.1
SRT-771	The software will receive asynchronous alerts from the device and send Wrong Way driving alerts to the SunGuide system.	IDS	SG 8.1

SRT-772	The software will retrieve images for the alerts and include the images as part of the alert presented to the Operator.	IDS	SG 8.1
SRT-773	The software will interface with the TrafficVision Wrong Way driving device.	IDS	SG 8.1
SRT-774	The software will poll the device on a configurable interval to check interface connectivity.	IDS	SG 8.1
SRT-775	The software will receive asynchronous alerts from the device and send Wrong Way driving alerts to the SunGuide system.	IDS	SG 8.1
SRT-776	The software will retrieve images for the alerts and include the images as part of the alert presented to the Operator.	IDS	SG 8.1
SRT-777	The software will interface with the MH Corbin Wrong Way driving device.	IDS	SG 8.1
SRT-778	The software will poll the device on a configurable interval to check interface connectivity.	IDS	SG 8.1
SRT-779	The software will receive asynchronous alerts from the device and send Wrong Way driving alerts to the SunGuide system.	IDS	SG 8.1
SRT-780	The software will retrieve images for the alerts and include the images as part of the alert presented to the Operator.	IDS	SG 8.1