



Technical Memorandum

SunGuide[®] Software System



Concept of Operations for Desktop Video

Version 3.0

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Prepared for:

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List of Acronyms and Abbreviations

CCTV	Closed-Circuit Television
FDOT	Florida Department of Transportation
GUI	Graphical User Interface
ITS.....	Intelligent Transportation Systems
PTZ	Pan/Tilt/Zoom
Viewer.....	Desktop Video Viewer
Window.....	Desktop Video Window

1 Scope

1.1 Document Identification

The Florida Department of Transportation (FDOT) has developed a concept of operations and the high-level requirements document for a desktop video window with integration into the SunGuide® software operator map. This document will be provided for stakeholder review and consensus. Additionally, this document clearly defines this enhancement to support the requirements for development and a cost estimate to design and build the enhancement.

1.2 Project Overview

FDOT’s SunGuide Support, Maintenance, and Development Contract, contract number BDQ69, addresses the necessity of supporting, maintaining, and performing enhancement development to the SunGuide software. The SunGuide software was developed by FDOT in a contract from October 2003 through June 2010. The SunGuide software is a set of intelligent transportation systems (ITS) software that allows the control of roadway devices as well as information exchange across a variety of transportation agencies; it is deployed throughout the state of Florida. The SunGuide software is based on ITS software available from the state of Texas with significant customization and development of new software modules to meet FDOT’s needs. Figure 1 provides a graphical view of the SunGuide software.

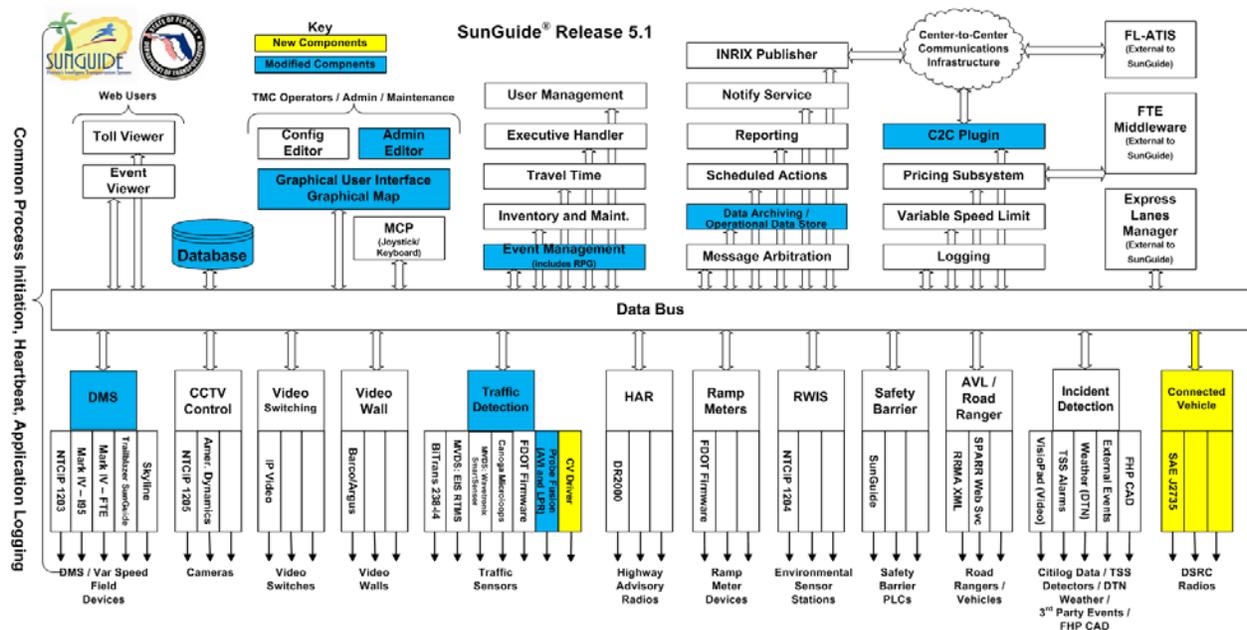


Figure 1: High-Level Architectural Concept

The SunGuide software development effort began in October 2003; several major releases have been developed and this document addresses an incremental update of the most recent release. After

development, the software will be deployed to a number of regional and local transportation management centers throughout Florida and support activities will be performed.

1.3 Related Documents

The following documents form a part of this concept of operations to the extent specified herein. In the event of a conflict between the documents referenced herein and the contents of this document, this document shall be considered the superseding requirement.

- FDOT Scope of Services: *BDQ69, Standard Written Agreement for SunGuide Software Support, Maintenance, and Development, Exhibit A: Scope of Services*. July 1, 2010.
- Letter of Authorization 003: Letter to SwRI for BDQ69, August 19, 2010.
- SunGuide project web site: <http://sunguidesoftware.com>.

1.4 Contacts

The following is a list of contacts for the SunGuide software project:

- Elizabeth Birriel, ITS Section, Traffic Engineering and Operations Office, elizabeth.birriel@dot.state.fl.us, 850-410-5606
- Arun Krishnamurthy, FDOT SunGuide Project Manager, arun.krishnamurthy@dot.state.fl.us, 850-410-5615
- Clay Packard, Atkins Project Manager, clay.packard@dot.state.fl.us, 850-410-5623.
- David Chang, Atkins Project Advisor, David.Chang@dot.state.fl.us, 850-410-5622
- Robert Heller, SwRI Project Manager, rheller@swri.org, 210-522-3824
- Tucker Brown, SwRI Software Project Manager, tbrown@swri.com, 210-522-3035

2 Existing Operation

The SunGuide software system currently uses shared displays to show video. The closed-circuit television (CCTV) camera, video switching, and video wall subsystems work together, allowing operators to control CCTV cameras and switch and view video on the video wall with built-in and integrated video decoders, or on monitors connected to external video decoding appliances. This configuration is missing the video viewing capability to allow the video to be shown right on the operator's desktop workstation from a fully integrated SunGuide software user-interface.

Currently, an off-the-shelf software decoder could be installed on the workstation as shown in Figure 1. However, without this proposed integration into the operator map, a separate list of camera names and multicast addresses must be maintained in a separate software application database, in a look-up table, or memorized. Additionally, the decoder must be launched and controlled independently from the SunGuide software. Integration of this component into the SunGuide software graphical user interface (GUI) will reduce the configuration, maintenance, and run-time operational effort required for this capability.



Figure 2: Off-the-shelf Software Video Decoder

3 Desktop Video Operations

3.1 Operator Map Integration

The desired usage of the operator map enhancement would allow the operator, while using the operator map or the CCTV status dialog, to be able to easily launch a desktop video window (Window) on their desktop monitors. This Window would allow the operator to use the mouse to send the cameras from the operator map to the Window for display in individual, dynamic desktop video viewers (Viewers) containing a video stream. The enhancement would also allow several other value-added features, including dynamic tours and context sensitive controls.

3.2 Virtual Video Wall Operation

The Window will automatically position and resize the Viewer close to where it was dropped and will automatically position and resize all Viewers within the Window to accommodate the number of Viewers in that Window. The Window will accommodate new Viewers by moving and resizing the other Viewers in a similar fashion as if the new video source was placed near the bottom right of the Window with available space. The user can drag Viewers around to further customize the Viewer positions and resize them by dragging the Viewer within the Window. The Viewer's aspect ratio will be preserved during resizing.

The current display configuration of the Viewer's set of displayed video streams, along with their size and position, can be saved as a user-specific preference within the SunGuide software database; it can be recalled by the user as a faster alternative to setting up a Window one Viewer at a time. Each individual Window can be saved and recalled with a label. SunGuide software shall have a list of Window presets to launch from the appropriate context menu and the operator map GUI.

The Window will initially open in a new, resizable Window that can be maximized. Another Window can be opened to accommodate additional Viewers and space for Viewers by the user. If all Viewers are removed from a Window, the Window will close itself. Viewers can be dragged from one Window to another.

3.3 Video Viewer with Embedded Camera Controls

The name of the camera or video stream, and the location description from within SunGuide software, would appear in bold text near the bottom or top of the Viewer.

If the encoder is attached to a camera within SunGuide software, the Viewer will be overlaid with translucent controls allowing the user to pan, tilt, and zoom (PTZ) the camera. There will be a range of speeds that the camera is commanded to move. The mouse can then be moved during the use of the control to change the direction and speed of the PTZ command dynamically. The Viewer will also provide buttons to move the camera to previously saved, preset PTZ locations. There will also be a translucent button near one of the corners of the Viewer to launch the SunGuide software CCTV control/status dialog.

3.4 *Maximum Video Streams*

SunGuide software will allow for a system-wide configurable maximum number of simultaneous open video viewers per operator.

SunGuide software will display the most recent snapshot of the CCTV camera when the operator hovers over a CCTV icon.

3.5 *Video Tours*

A Viewer can be dragged and dropped onto another existing Viewer in any Window creating a dynamic tour. Additional sources and camera icons can be dragged onto that Viewer to be added into the tour. This tour will be edited and saved via a dialog and also saved along with the layout of the Window in the user preferences when the user saves the layout.