SICOM DISPLAY MODULE (SDM3.2)
STANDALONE

User’s Manual

October 15, 2001

274 Main Street, Suite 302
Reading, MA 01867

Tel/ 781.942.1655
Fax/ 781.942.2161
Website/ www.riti.com
E-mail:/ riti@riti.com

READING INFORMATION TECHNOLOGY INC.
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I. What is Sicom Display Module (SDM)?

SICOM Display Module (SDM), a component of Spatial Information COMponents (SICOM), can be deployed as a stand-alone independent program (SDM) or as a server (referred to as SDM_Server) that provides GIS services to a client application (referred to as Client). The look and feel of SICOM Display Module can easily be modified by SDM Profiler (SP). To learn about SDM Profiler, please consult user manual, Profiler User's Manual.doc (RITI-SICOM3.2-TECH-005). This document concentrates on the Standalone SDM. SDM_Server is discussed in the SDM Developer Reference Manual (html documents)

The major change in the design of SICOM3.2 from previous versions is to designate SDM as a pure display and visualization spatial component. Two new auxiliary component groups are introduced: SICOM Tool and SICOM Manager. A SICOM Tool consists of modules designed for users to modify look and feel of the displayed spatial data and/or to measure direction and distance measurements. A SICOM Manager is designed to perform a collection of specific GIS functions such as collecting GPS tracks, managing routes, and etc. These Tools and Managers are configurable components to be included as specified by developers.

A new key feature of SDM 3.2 is the ability to display and manipulate ESRI’s shape data. SICOM Data Profiler is an easy to use tool for developer to define a default look and feel of the spatial data for a given application. The output of SICOM Data Profile is a ASCII description file called Spatial Agent File (SAF) with extension .saf. This saf file is the input file for SDM3.2. Currently, SICOM Data Profiler is available only for ESRI’s shape files (Shapedata document). To produce a SAF for CARIS data, one could use CARIS MapSmith.

This document describes the general usage of the standalone SDM3.2. The discussion also includes 6 SICOM tools - Layer Annotator, Layer Classifier, Layer Prioritizer, Feature Selector, Feature Modifier and Surveyor, and one SICOM Manager – Annotator.

II. Using SDM

Upon starting SDM, three possible configurations, shown as Figs, II.1, II.2 and II.3, may be presented. These configurations are preset by the SICOM Profiler. Fig. III.1 is a Microsoft SDI single document view without preloaded map file, while Fig. III.2 is the SDI view with a preloaded map file. Fig. III.3 presents a MDI multiple document view that cannot be preloaded and needs to be loaded by users.

At the lower right corner of each SDM view, a scale box shows the display scale of the map. Each document view consists of a working window and an overview window, if it is so configured by SDM Profiler. In addition, depending on the configured Profile file, the Working window may be moved, resized or minimized; the Overview window may also be moved, resized or minimized, within the working window. Except for File, View and Help1, the availability of the remaining menu items on a given SDM view is optional depending on whether they are configured by SDM Profiler or SICOM Tool or SICOM manager are configured. Fig. III.3 shows all the menu items available on SDM 3.2. In the remaining section that follows, all menu items are discussed

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1 For clarity, bold faced Arial font is used to represent a menu item.
Fig. II.1 SDI view without preloaded file

Fig. II.2 SDI view with a preloaded file
Fig. II.3 MDI view

File

Open to open a SAF.

Close to close a SAF

Redraw to redraw the existing view to clear objects created temporarily.

Copy to copy the current view on the active SDM window to the clipboard so that it can be pasted to another application, which supports “paste” from clipboard.
Write Image

to write the current view on the active SDM window to a jpeg image. It will bring up a standard save dialog box to save this image.

Print

Print the map shown in the active window. Clicking Print, bring up a print dialog box (Fig. II.4). As in most Microsoft window applications, the printer can be chosen and its properties’ settings can be adjusted using the Setup button. In the Options box,

![Fig. II.4 Print](image)

Plot Scale

This window becomes active, when No on the Fit To Paper is checked. Select a scale from the pull-down window. If the desired scale in not shown, select any scale first. A scale refinement dialog box (Fig. II.5) will be presented, after you click ok. Type in the desired print scale.

![Fig. II.5 Scale Refinement](image)

Fill Paper
If Yes is checked, prints the maximal extent of the map beyond the viewing window.

**Fit To Paper**

If Yes is checked, the entire content of the displayed window will be printed, i.e. WYSWYG

**Center on Paper**

If Yes is checked, printed map will be centered.

Use the **Colours** box to choose the default .col or specify a new .col. Set the print quality using **Print Quality**, and select the number of copies to print using **Copies**.

**Print setup**

A standard MS window print setup dialog box

**Exit**

exits the program

**View**

**Toolbar**

check to view the icons tool bar.

**Status**

check to view the status bar

**Zoom**

**By Rectangle**

Zooms to a rectangular area, defined by dragging the mouse on either the **overview** or **working windows**

**Step In**

Zoom in by 50%, i.e. display scale (1: display scale) is divided by 2.

**Step Out**

Zoom out by 50%, a percent, i.e., display scale (1: display scale) is multiplied by 2.

**Set Scale**

Type in a desired scale on the **Scale Refinement** dialog box (Fig. II.6), and click “ok” to zoom the view to the given scale.
Reset

Resets to the default view defined by SICOM Profiler

Pan

Center at a Click

Pans to a new view centered at the position clicked by the user

Step North

If selected, moves the view North by 50% of the extent of the present view

Step South

If selected, moves the view South by 50% of the extent of the present view

Step East

If selected, moves the view East by 50% of the extent of the present view

Step West

If selected, moves the view West by 50% of the extent of the present view.

Reset

Resets to the default view settings as defined by SICOM Profiler

Window

Cascade

Arrange multiple views in the window in the cascade mode.

Tile Horizontally
Arrange multiple views in the window in the horizontal tile mode.

**Tile Vertically**

Arrange multiple views in the window in the vertical tile mode.

**Arrange Icons**

Arrange all minimized view windows in good order.

**Help**

**About SDM**

About SDM version.

**Manual**

Electronic version of this document

**Tool**

**Tool: Layer Annotator**

This tool is designed for annotating a field of the DBF file accompanying the selected layer on the view.

**Select Layer**

**Layer in Active View**

Select a layer for annotation by moving cursor to and pressing the left mouse key (Fig. II.7). click OK to bring up Layer Annotator.

![Select Layer](image)

Fig. II.7 Select Layer

**LayerAnnotator**
Select column to annotate on

Click to select an attribute (a column of the DBF file that is associated with the shape layer) for annotation.

Font

Type face

Click to select font.

Font size

If constant is not checked, the size of the font on the view, $S_v$, is equal to $D \times (\text{Map Scale})/(\text{Display Scale} \times 1000)$ meters, where $D$ (in meter) is the chosen Font size, Map Scale is the value entered in the shapefile Map Parameters dialog box on SICOM Shape Data Profiler (shown on the SAF file, after the key word Map Scale), and (Display Scale) is the view scale (1: Map Scale) on the monitor.
Otherwise, the size of the font, $S$, is equal to $D/1000$, on the monitor throughout all display scales.

**Color**

This allows you to set the text color. Click **Set Color** to bring up the color dialog box, Fig. III.5.3-3. You may choose the color from the **Basic color** palette, or from the extensive color dialog box (Fig. III.3-4) by clicking **Define Custom Color**.

After you’ve chosen your color, click **ok** to return to the **Layer Annotator**.

![Color](Fig II.9 Color) ![extensive color](Fig. II.10 extensive color)

**Alignment**

**Verticle**

Set text at the Center, bottom or top of the reference point or line, where centroid for the polygon and the location of the point.

**Horizontal**

Set text at the Center, left or right of the reference points or line.

**Annotation Display Scale**

Allows you to specify a range of scales in which the annotation will be visible.
**Minimum**

To specify the larger scale (1: scale1), fill in scale1

**Maximum**

To specify the smaller scale (1: scale2), fill in scale2. Fill in a value of “-1” to denote no upper limit, i.e. visible in all scales.

**Line layers only**

**Stretch text**

This only applies to the “line” primitive. If checked, the text will be stretched to the length of the line.

**Fit text to curve**

This only applies to the “line” primitive. If checked, the text will fit the curve of a line.

**Remove Annotation**

Removes the annotation.

**Tool : Layer Classifier**

This tool is designed for user to classify a chosen layer according to an attribute on the accompanying DBF file.

**Select Layer**

![Select Layer](image)

*Fig. II.11 Select Layer*

**Layer in Active View**
Select a layer for annotation by moving cursor to and pressing the left mouse key (Fig. II.11). click OK to bring up Classify Layer (Fig. II.12)

Classify Layer

![Classify Layer window]

Fig. II.12 Classifier Layer

**Column**

Click \(\) to select an attribute (a column of the DBF file that is associated the shape layer) for classification. If the **Unique values** option on the section of the **Classify by** panel is checked, only columns with unique value will be available for selection.

**Classify by**
Unique values

Classifies the primitives for the given layer according to the unique value of the chosen attribute.

Value ranges

Classifies the primitives for the given layer according to classes defined by the chosen classes in the Number of ranges.

Color

scheme

Choose a color scheme: Rainbow, grayscale, custom. If custom is chosen, you may modify the color of each class by clicking Edit Color.

Remove classification

Removes the classification

Classify

Apply classification

Tool: Layer Prioritizer

This tool is designed for user to modify the display priority of layers

Layer Visibility

This window shows the list of geo-registered data (layers) for this application. The layer is visible, if the box next to it is checked.

Highlight the layer and use † to move the layer up and down. The layers are arranged in the order of drawing on the view, i.e. the layer drawn before could be covered by the layer drawn later. Clicking the Apply button to redisplay the view with the new choice. To quit, click Cancel or X at the upper right corner.
Tool: Feature Selector

This tool is designed for user to inquiry information regarding a feature.

Set Selection Color

Bring up the standard color dialog box to choose color to highlight selected feature (fig. II.15).
Set Selection Filter

Set conditions on the type of features to be selected to reduce the scope of search (Fig. 16).

Feature Type

Choose one of five types of geometric features, Image, Polygon, Lines, Symbols, and Labels, or all types for selection.
Attribute

Choose one of 5 feature attributes, CARIS Key, Feature Code, Source ID, Layer Name and Layer Name Attribute (DEF field ame) for selection.

Layer Value

Only become active when Layer Name or Layer Name Attribute of “Attribute” is chosen. Choose a layer or a specific attribute of a layer.

Operator

Only become active when “Layer Name:Attribute” is chosen. One of 5 operators, =, != (not equal), >, <, >=, or <= can be chosen to set Layer Attribute value.

Value

Only become active when “Layer Name:Attribute” is chosen. Set an attribute value.

Type

Only become active when “Layer Name:Attribute” is chosen. Set the value type, string, integer or real.

Choose “Apply” to return to FeatureSelector

Select Feature(s)

You have 15 seconds to click the mouse at a location or drag a square (while you press on the left key) region. All the features satisfying the conditions set by the features will be highlighted and shown on Selection Results

Selection Results

Double Click the specific feature to bring up the dialog regarding the feature. Note that “no key” means there is no unique key for the feature.

Clear Selection

Clear selection

Tool: Feature Modifier

This tool is designed for user to change the position or color of the transient lines and labels (name) created on the current view. It is often that the labels created for contours are not properly placed. The user could use this tool to reposition the label.
If there are no transient features on the view, you will get a warning message dialog box (Fig II.18).

![FeatureModifier](image)

Fig. II.18  No transient features Error

**FeatureModifier**

**Select Feature**

**Type**

Type of graphic primitives, “Name” or “Line”

**Select Feature**

Click this button, you have 30 seconds to select a transient feature on the active view. To select a transient, put the cursor on the line feature or at the upper left corner of the name feature, and press the left mouse key. The mouse symbol changes to . Releasing the let key, the color of the selected feature will change to red.

**Modifying Selected Feature**
**Move Feature by Click**

Click this button, and move your cursor to a new location. Clicking the new location will move the selected feature to this new location.

**Change color**

Click this button to bring up the color dialog box (Fig. II.20) to change the color of selected feature.

![Color dialog box](image)

Fig. II.20  Color dialog box

**Delete Feature**

Delete selected feature

**Clear Selection**

Clear the selected feature.

**Tool: Surveyor**

This tool is designed for user to measure distance between two points and the bearing. Depending on whether map is on geodetic coordinate system or a projected coordinate system, **Surveyor** dialog box is shown on Fig. II21 or II.22, respectively.
Get Points to Measure

Click two locations or click one and drag the line to choose the second point (Fig. II.22). Coordinate values are shown on Starting Position and Ending Position.

Convert

Only become active, if the map is on projected coordinate system. Click on Convert the geodetic coordinates are shown on the blank window below (Fig. II.23)

Calculate Distance

Calculated distance and Bearing are showon on the blank window below (Fig. II.24)
Fig. II.22 Measurement

Fig. II.23 **Surveyor**

Starting Position
X: 303628.045975
Y: 2745222.601570

Ending Position
X: 328903.380777
Y: 2760341.643665

Convert
Calculate Distance

121-31-49.732E
24-48-48.216N
121-46-52.839E
24-56-55.634N

Clear
Exit

Fig. 24 Calculated Distance

Starting Position
X: 303628.045975
Y: 2745222.601570

Ending Position
X: 328903.380777
Y: 2760341.643665

Convert
Calculate Distance

29453.353830 meters
32213.514975 yards
18.297418 miles
15.903539 nautical miles
Bearing: 61.643689 degrees

Clear
Exit