GENESIS64
Smart Tiles for HMI SCADA Applications

APPLICATION NOTE

August 2014

Description: Creating modern UI using Smart Tile technology
General Requirement: Basic knowledge of GraphWorX64

Introduction

Smart Tiles are a simple and elegant way of displaying concise, actionable information that is easily identified. It is similar to Live Tile technology found in Microsoft Windows 8, Windows RT, and Windows Phone operating systems. Flexible and customizable, Smart Tiles can be used in GraphWorX64 and MobileHMI for many purposes such as KPI, Alarms & Alerts, Dynamic clickable labels, Navigation buttons.

Figure 1 - Smart Tiles Examples

In this document we will focus on configuration of Smart tiles in GraphWorX64 but the configuration in MobileHMI provider is very similar.

Getting Started with Smart Tiles in GraphWorX64

1. Smart Tiles are controls that can be added to any GraphWorX64 display from the Controls Ribbon Menu.
   a. Select the Smart Tile Control and drag a square or rectangle on screen (using Shift will lock the aspect ratio to a square)
   b. Or double clicking on screen will create a Smart Tile of 150 pixels square.
2. Smart Tiles appear in the Object Explorer and expose a list of properties to the Property Grid, but also include a configuration dialog for simplicity.

Smart Tile Configuration

Each Smart tile is split to three main sections – Top Banner, Bottom Banner and Content. Each banner can contain a dynamic value with a label and unit definition. You can also change the position of all these elements as well as changing the color, font or adding your own image as background.

You can then include a uniform resource identifier (URI) to the "Content" that provides the content for the Smart Tile. The uri can point to an image file (.png, .jpg, etc.) or a configuration file for graphics, trends, or alarms (.gdfx, .twxx, .awxx). Let us have a look at configuration options of Smart tiles.

> **NOTE:** It is more efficient to embed content directly within a Smart Tile, rather than setting a Content Source.

General

The General tab allows users to customize some basic options relating to the size, color and text. First users can choose from a pre-defined size or change the width and height individually. Next a base background color can be chosen. Finally the default text color, font, size and styling can be selected.

Figure 2 - General Configuration Tab

Top Banner

The Top Banner tab is an optional Top Banner for the Smart Tile consisting of a Background, Label, Value and Units. All pieces are optional, but can have customized color, font, size and style for each. The live preview pane on the right will help when judging alignment, color and style. Alignment of text can be done via horizontal alignment buttons that allow for justified (stretch), left, center and right as well as vertical alignment buttons that allow for top, middle and bottom.

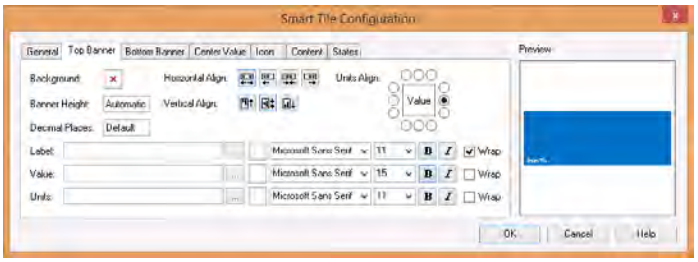

Figure 3 - Top Banner Configuration Tab

Bottom Banner

Similar to the Top Banner tab, the Bottom Banner reflects changes to the optional banner for the bottom of the Smart Tile. This banner can be similar in make up or completely different. Omitting text can allow this area to appear blank. If the spacing of the bottom banner is desired a single space will reserve the Bottom Banner spacing.

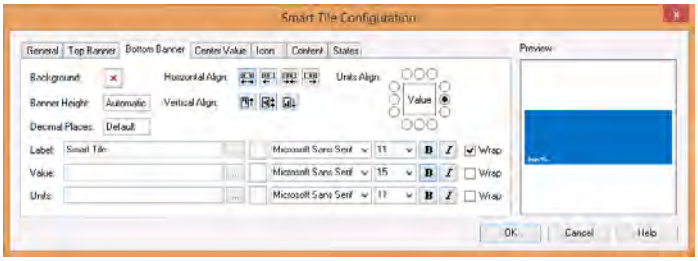

Figure 4 - Bottom Banner Configuration Tab

Center Value

This section became available in version 10.85. It allows you to present a data source value as a central piece of your smart tile. The value can be supplemented by units.

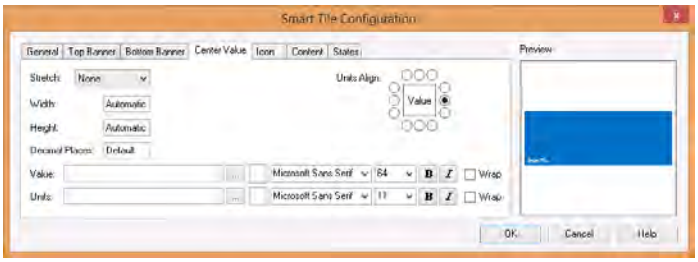

Figure 5 - Center Value Configuration Tab

Icon

Icons can be added to the Smart Tile with the Icon tab allowing for configurable size or stretch (options include Uniform, Fill and None). Icons can come from embedded or referenced sources. Finally icon alignment is governed (and previewed) via the configuration radio buttons and preview pane on the right. The icon inserted will size to the available space. The center option being the largest followed by the left/right spaces and then the banner spaces. To show an icon in the banner and an icon in the center use the Icon tab to configure the banner icon and use the Content tab to configure the icon for the center of the tile.

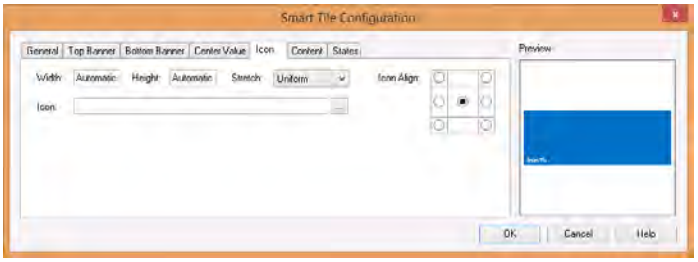

Figure 6 - Icon Configuration Tab

NOTE: It's always best to use referenced images if you plan to use it repeatedly as GraphWorX64 will only have to load it once and it will keep the file size down.

Content

The Content tab refers to the use of GraphWorX64 Objects linked for use within a Smart Tile. For most circumstances it's recommended to use objects from the current display – embedding them based on the "Edit Group" option detailed below under **Advanced Configuration**. Much like the use of an icon, users can specify the size of the object or use a stretch option to have it fill the space. Alignment with either banner or centered vertically is allowed as well. Interactive content sources can be enabled by using the checkbox.

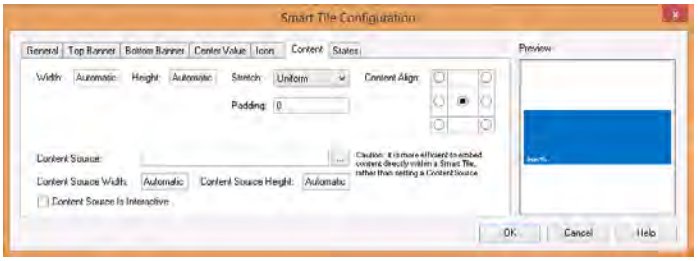

Figure 7 - Content Configuration Tab

States

States can be used to create changes in the background image or color (choosing color here will allow images, global colors, gradients and solid colors). Simulation points can be used to provide a simple timed transition between states. Animation transitions can also be added via the Transition dropdown menu at the bottom of the dialog.

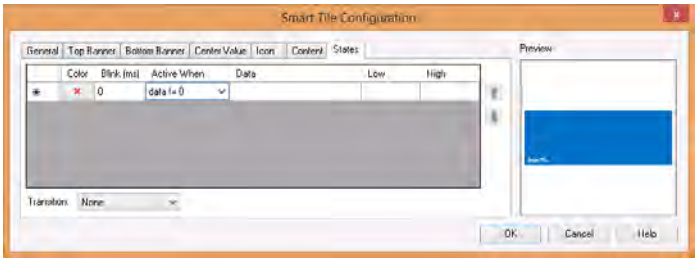

Figure 8 - States Configuration Tab

NOTE: Smart Tiles with transitions based on data have to be viewed in Runtime mode in order to see the dynamic animation.

Advanced Configuration

Embedding Objects

With Smart Tiles users can also embed GraphWorX64 objects into the tile without using the Content or Icon options in the configuration. This is the preferred method when compared to content as it requires less processing. To add GraphWorX64 objects there are a few options:

1. Create an object and then drag it into the Smart Tile via the Object Explorer (drag object above Smart Tile icon, hover until the tile is selected and then release).
2. Right click the Smart Tile and select "Edit Group" – the blue border that indicates you are within the group will appear and you can draw objects normally.

Scrolling Background

To create a simple scrolling background open up a Smart Tile Configuration and add a Background Image on the General tab – this will be your default image. Then navigate to the States tab and follow the steps below:

1. Click on the Color icon in the first row and select the Image tab. Import the chosen image (keep these small and if possible the same size as your Smart Tile to save space – don't try to insert a large resolution image as it will slow performance without benefiting from a crisper image).
2. Change the Active When column to "Data>=Low"
3. Add a local simulation with the desired timing of the entire slideshow (if you want each to show for 5 seconds and you have 4 slides use 20,000 milliseconds). You can use the data browser dialog or copy the tag here: localsim:ramp::::::25000.
   a. The localsim:ramp goes from 0 to 100 in the duration of 25 seconds (as specified).
4. For the first item we want it to activate after a quarter of the time so put the number 25 in the Low column (this will keep the Background image for 5 seconds before triggering the transition).
5. Repeat steps 1-4 for the remaining 2 states (3 rows in addition to the background image already specified in the General tab will give 4 total).
6. Go into Runtime to see the completed scrolling Smart Tile.

Smart Tile Templates

With the MobileHMI Workbench-SL Provider it is possible for users to show GraphWorX64-configured Smart Tiles in the MobileHMI AppHub. These Smart Tiles have a few more features than can be natively configured within the MobileHMI Provider and are truly referenced-objects that can be updated later and changes propagate to all instances. To configure Smart Tile Templates users can create them in GraphWorX64 first. Then follow the steps below.

1. Add a New Symbol Library Category (in the Symbol Library Panel click the book icon in the top right corner to access the menu).
2. Give the Symbol Library a file location with the Browse button and a name. Click OK to create.
3. Add Smart Tiles to the Symbol Library via Copy and Paste or using Ctrl + Dragging the Tile into the Library
4. Right-click in the Library and select Export > Export as Smart Tile Template Library.
5. Save the Library with the default extension **tiles.gdfxp**.

In the MobileHMI Provider in Workbench-SL:

6. Expand the Configuration Node of the MobileHMI Provider and Click on Smart Tile Templates.
7. Upload your **tiles.gdfxp** file.
8. You should see all the tiles available to you in the Available Templates Section. These templates can now be used in the Tile Configuration by selecting the desired template there.