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CREATING WEB MAPS

TOPIC 3: INTERNET MAPPING

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Introduction

In this module, the learner will explore the creation of web maps using Silverlight Viewer and Viewer for Flex. The specific topics will include:

- Consume a service from the map server created in Topic 2 to create a web map:
  - The Silverlight Viewer
  - The Viewer for Flex
  - HTML 5 (optional)
  - Java (optional)
- The designer should compare and contrast the different map viewers, including looking at strengths and weaknesses.
- Create a feature class web map service.
  - Create a map that uses feature services, which will allow the user to add content through a web browser.
  - Describe the difference between a map service and a feature service.

Create Services

- Create at least **three** different services of the same geographic region. For example:
  - State map with county boundaries
  - Historical landmarks
  - Demographic data
  - Roads
  - Rivers and creeks
- There are many shapefiles and geodatabases at the US Census Bureau that can be downloaded and used to create the services.
- Utilize the same services in both the Silverlight and Viewer for Flex applications; these services can be used with AGO in the next topic.

Display the service in ArcGIS Desktop

- Start with a blank map
- Load the services (at least three)
- Create a full screen image which shows both the table of contents and the map

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Creating a Silverlight Map

- Provide the instructor with the URL to the created map. In addition, screen images are required during the procedure that will assist the instructor in understanding how the process was completed.

- On the server, locate the Silverlight Viewer icon. When the icon is launched, it will take the user to a website to download the viewer. Download the 64-bit version. Accept all the defaults during the installation process. If the icon cannot be located, a simple web search for the Silverlight Viewer from Esri can be done.

- When the application is executed, a message may be received to install or update Silverlight. If this prompt is received, it is a required process.

- The version that this lesson is based on is 3.3.

- The application will run in a web browser, it is suggested that Microsoft IE is used since Silverlight is a Microsoft product.
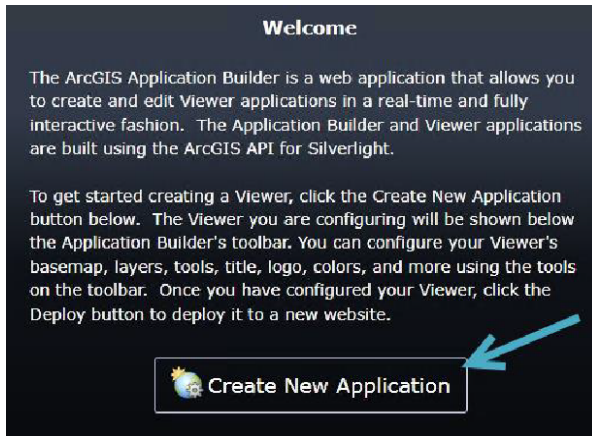

Figure 1: Welcome Message

The first step is to open a blank map, then open a new map, see Figure 1 and Figure 2.

Figure 2: Open Application

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- Note the tabs across the top of the window.

- When a different tab is selected the icons below the tab change.

- A help getting started box related to each tab is available, which can be disabled and reopened as needed.

- There are additional buttons on the upper right that will be discussed later in this lesson.

- Click on the button in the Add Content section, see Figure 3.

Figure 3: Add Content
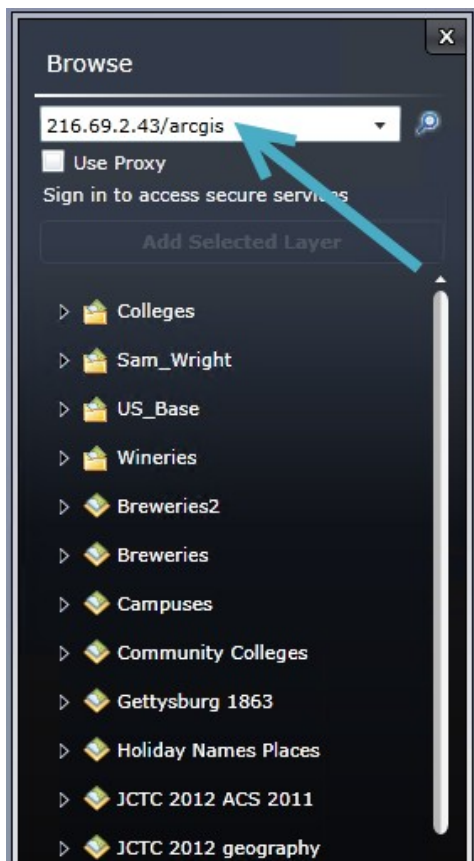
Connecting to a Server

Figure 4: Pathway to Services

1. The IP address to one of the author's servers has been entered with the appropriate location of the service designated, see Figure 4.

2. Place the name or IP address of the server that was created in Topic 2 and the pathway (normally ArcGIS).

3. Select a service.

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Adding a service

1. Add the selected layer to be displayed.
    a) A service called Covered_Bridge was selected.
    b) Click on Add Selected Layer, see Figure 5 and Figure 6.

2. This operation can be repeated to add additional services. Use at least three services.

3. Services can come from multiple GIS Servers.
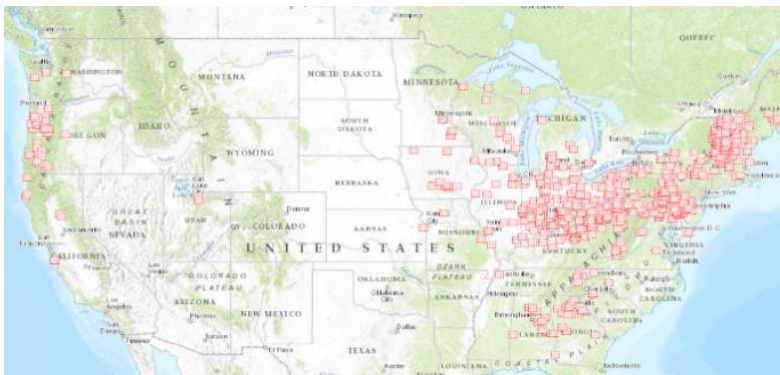
Results of adding a layer

Figure 6: Initial Service Display

Repeat for additional layers

Three services were added but the river service has a dynamic zoom level, thus the rivers are not displayed at this map scale, see Figure 7. The zoom level was set before the service was created in ArcMap. Note the basemap is a default at this time.
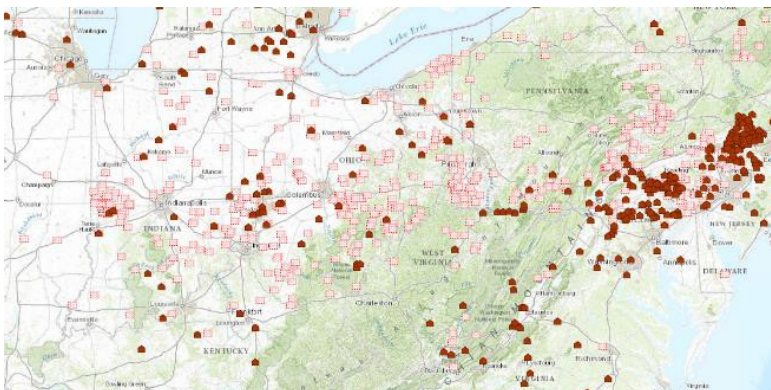

Figure 7: Display of Services

Figure 5: Selecting a Service

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- When a service is right clicked, a set a tools will be displayed. There are also tools at the bottom of the screen.
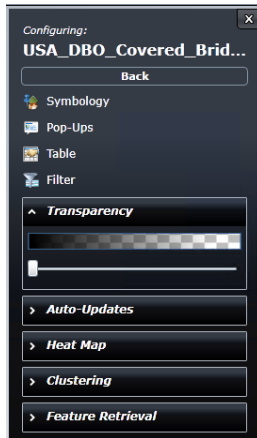
Using Tools

Figure 8: Configuring a Layer

- The first tool to be used is a configuration tool. Click on the tool to gain control.
- Each layer is configured independently, see Figure 8.
- Note the Back button
- The functionality of each tool should be explored.
- Some of the features might not be appropriate for the map.
- Configuring

  - Symbology – is similar to how it works in ArcMap, the symbols set in ArcMap can be overridden.

  - Pop-Ups – items that appear in the pop-up window can be configured. The pop-up can either appear from a click or a hover depending on the settings.

  - Table – allows the display of the an attribute table and can be configured for what is visible to the user.

  - Filter – is the query function, so not the entire data set is visible, this is a query created by the designer not the user.

  - Heat map – is used to create a heat map of the dataset.

  - Clustering – gives a designer the ability to select the number of items and the distance between them. When this is utilized a clustering circle will appear and will display the number of events in the cluster. Sub-clusters map appear at different scale levels.

- Select the basemap layer

  - There are nine default basemap layers (the same as seen in ArcMap).

  - One of the nine basemaps must be selected, a default layer is used when the application is started.

  - OpenStreetMap was selected.

Select the Tools tab at the top of the screen, see Figure 9

- Note the several new items available to configure, click on Add Tool.

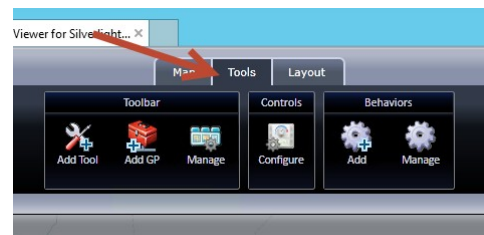- Select the Measure tool and then press Next, see Figure 10
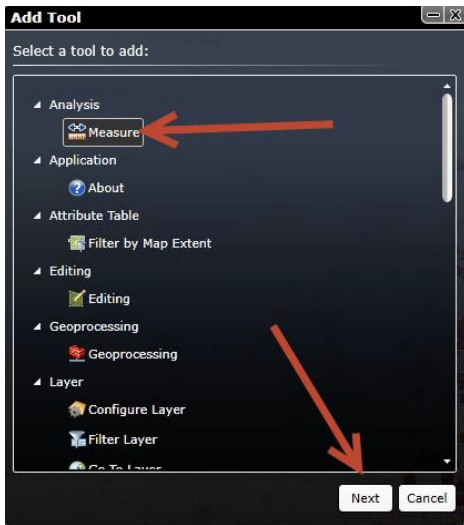

Figure 9: Tools Tab

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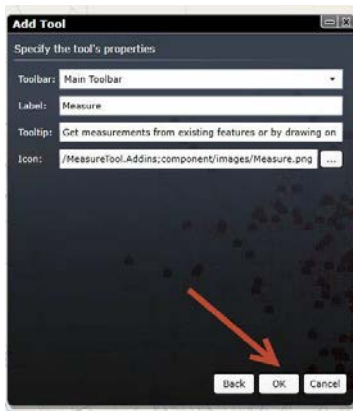
Figure 10: Measure Tool

Figure 11: Tool Configuration

- When a tool is selected a configuration screen will open. The configuration screen allows the designer to customize the tool. Click OK, once the tool has been configured, see Figure 11.

- Select multiple tools to configure and add to the map.

- The Editing tool only works if it is a feature class service.

- Some of the tools have multiple configuration windows.

- The tools will appear as small icons on the far right side of the map.

- Make sure the project is periodically saved, this is done by deploying the application, the first time and saving after that.

- The Add GP Function will not be directly covered in this introduction to Silverlight maps.

- Select the Manage under the Toolbar heading, see Figure 12. In the Manage Tools the order of icon, editing, removal of tools and the adding tools can be controlled.

Figure 12: Manage Tools

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- Click on the Layout tab, see Figure 13.

- **Logo** provides the ability to use institutional or organization logos.

- **Title and links** gives the ability to personalize the map, instead of using the default.

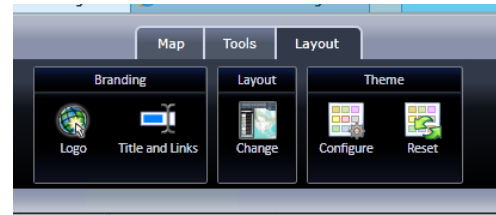- **Layout** provides multiple templates to the designer.

Figure 13: Select Layout Tab

- **Configure** allows the designer the ability to change colors so that they meet the institutional or organizational colors, the templates have default colors.

- **Reset** has no parameters and if pressed gives no warning that everything is going to be changed to the default layout.
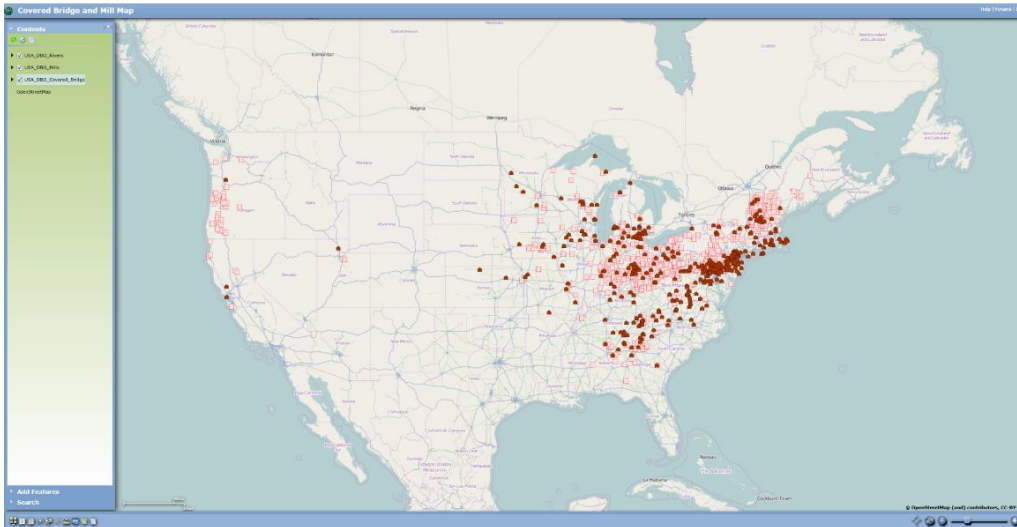
- The final map is displayed in Figure 14.

Figure 14: Final Map

To access this map goto: http://216.69.2.38/Apps/Mills%20and%20Covered%20Bridges/

Assignment: Create a Silverlight Map

- Use Silverlight to create a web map, of the designers choice. Make sure that different commands are used to show the dynamics of this viewer.

- After creating the map, provide the instructor with the URL to it. In addition, provide screen images along the process.

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Creating a Map in Viewer for Flex

- One of the advantages of Viewer for Flex is that it works in a wide range of browsers, Silverlight Viewer is sometimes limited.

- Once a map has been created using Viewer for Flex, provide the instructor with the URL to the map. In addition, provide screen images along the process, when the camera symbol is present.

- When the ArcGIS Viewer for Flex is chosen, the download page will appear. If the download icon cannot be located, go online and search for the Viewer for Flex download from Esri.

- The version used in this module is 3.7. The downloaded file type is AIR, which will require the AdobeAIRInstaller (free); the installer should be loaded before downloading the Viewer for Flex file. There may be a need to create the Viewer for Flex folder (flexviewer) under wwwroot and permissions to the folder should allow everyone to read and write.

- Once installed, run ArcGIS Viewer for Flex, and select a new application see Figure 15.
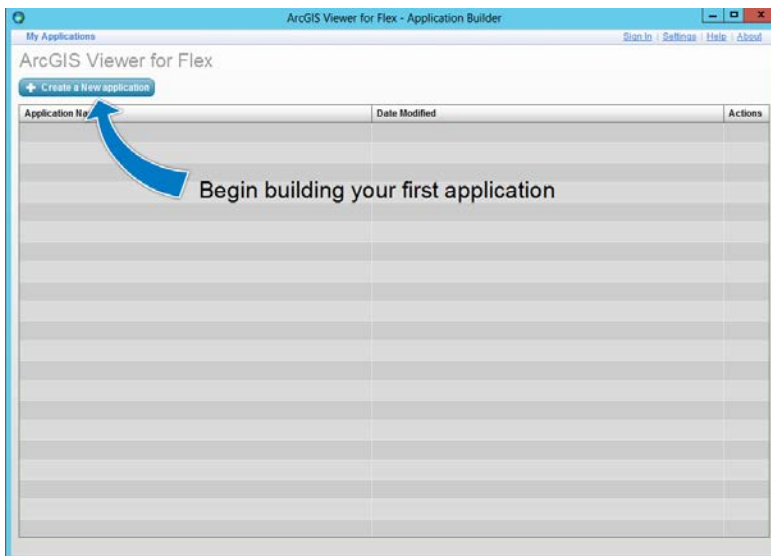

Figure 15: Starting Viewer for Flex

- Name the application, use a descriptive name. Then click Create, see Figure 16.

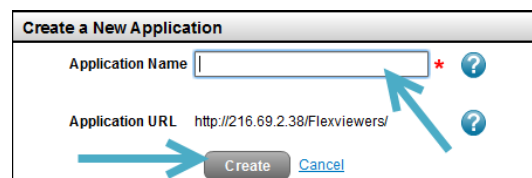- The application which will be created is named historic_sites.

Figure 16: Naming the Application

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Select Basemap and Operational Layers

Figure 17: Initial Tabs

Notice the tabs across the top of the window in Figure 18. Start with the map tab; see Figure 17 tabs have been added to the side and across the top of the selection.
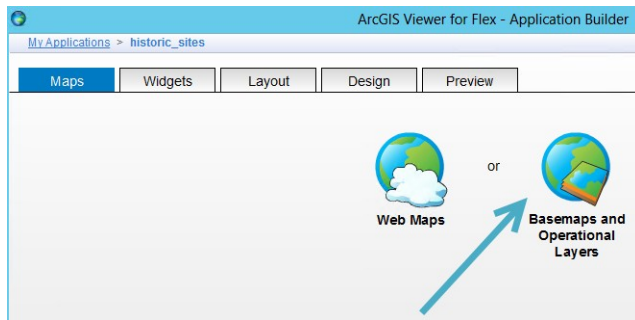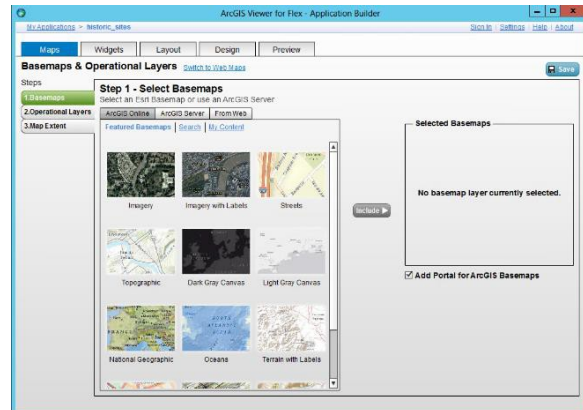

Figure 18: Map Tab

Basemap Tab

- The basemap can come from ArcGIS Online, the learners server or the web thus increasing the flexibility. Note Silverlight only allowed the use of the nine predefined maps. The example will use Open Street Map from ArcGIS Online.

Layers

The Operational Layers have options similar to their source as does the basemap, which includes layers from ArcGIS Online. The layers used in this map will come from the ArcGIS Server, Figure 19.
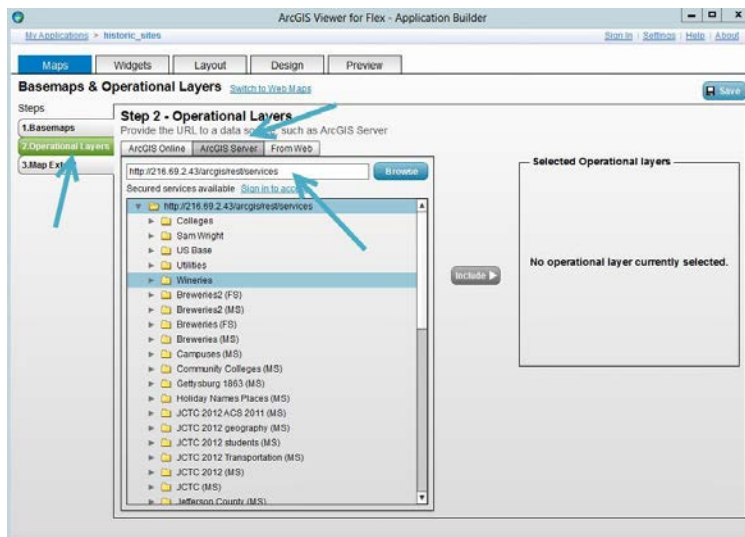

Figure 19: Operational Tab

- The Operational Layers tab has been selected.

- The ArcGIS Server Tab is selected next.

- Finally, the URL of the learner's server is entered.

- Once the URL is entered all of the services available will be displayed. Note a service with a MS is a map service and those with FS are feature services. Many of the services have the same name since both a map and feature service was created at the same time. The difference is that the feature service can be edited. However, a relational database is required.

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- Three services will be added to the map.

- Each service can be added and then they can be arranged in the appropriate order.

- Each modification requires a save before leaving the screen or the changes will be lost. There are no automatic saves done in this software.

- On the same window choose Map Extent and it will bring up a basemap of the world.

- Center and zoom the map to show the data. This is the initial view that users will see when connecting to the created site.

- In Figure 20 the data is visible as well as the basemap using OpenStreetMap.

Widget Tab

- In Figure 21, two widgets are pre-selected.

- Click on a widget and then click include.

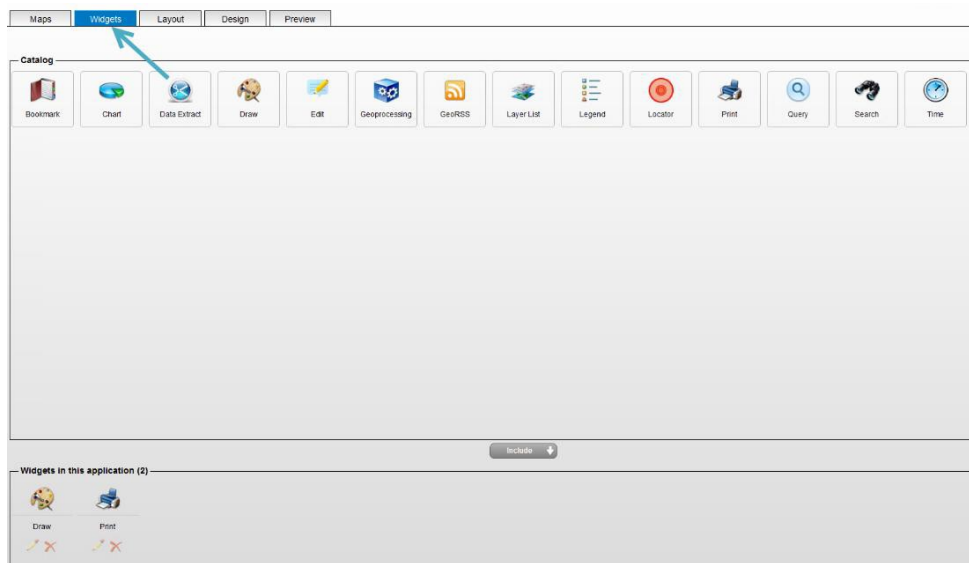 - A configuration window will open for the widget.
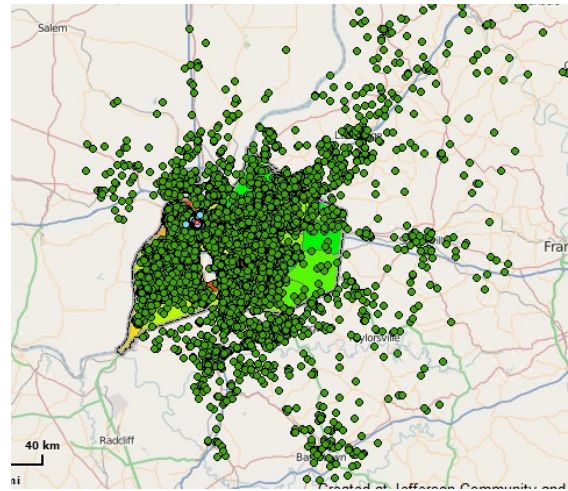
Figure 20: Initial Data View

Figure 21: Widgets

  - Each widget has a different configuration window.

- Add and configure widgets

  - Explore the differences between a Legend and Layer List.

  - Edit only works if the layer is a feature class.

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─   This area is left for the designers creativity.

Layout Tab

The layout tab allows the designer the ability to select the location of different mapping

components.
See Figure 22,
for the layout
window and
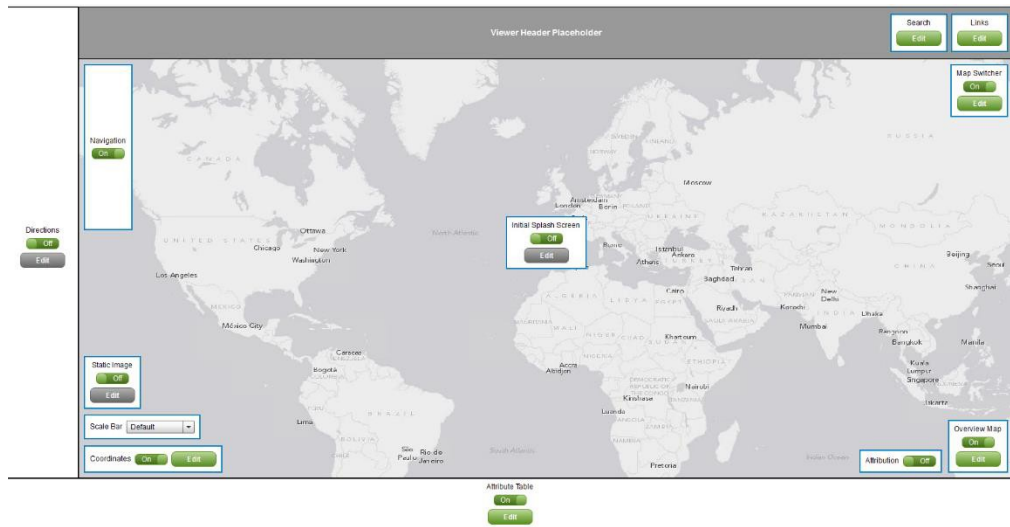experiment with
different
options.

Figure 22: Layout Tab

Design Tab

- See Figure 23, The Design Tab allows for the control of fonts, Logo and Colors.

- The displayed colors scheme was changed from the default.
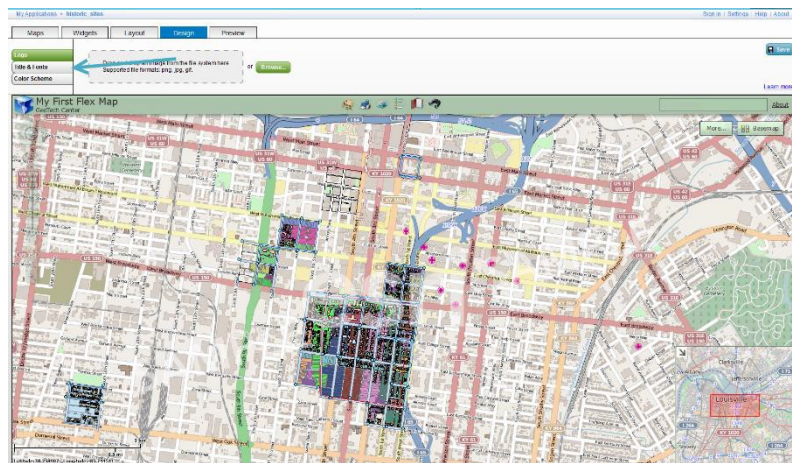
- A title was also inserted.

Preview Tab

- See Figure 24, for the Preview tab, which gives the designer the ability to look at the map before publishing it.

Figure 23: Design Tab

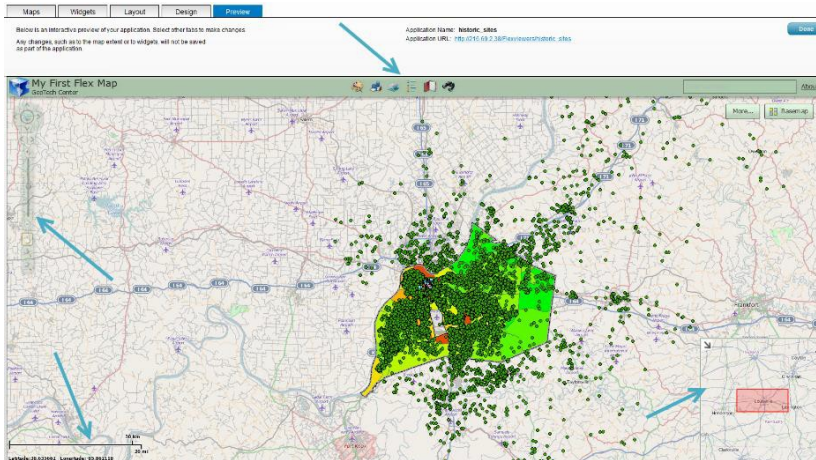- Editing of all of the map features can be done after publishing, to refine the look.

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Figure 24: Preview Tab
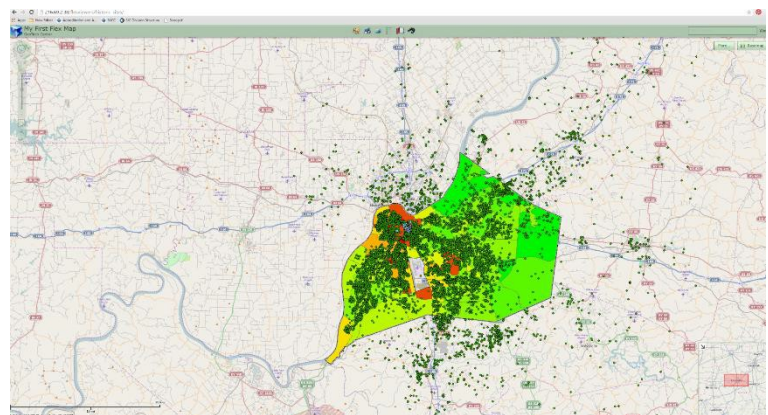
Figure 25: Final Map

- This map is located at:

  http://216.69.2.38/flexviewers/historic_sites

- Figure 25 shows the Flex map in a web browser.

- Experiment with the different buttons on the map.

Assignment: Create a Viewer for Flex Map

- Use Viewer for Flex to create a web map

- After creating this map, provide the instructor with an URL to the map. In addition provide screen images along the process.

- Use the same service as was used in Silverlight Map

Case Study: Create a Feature Web Map

- Silverlight or Viewer for Flex may be used.

- Create a map with a feature service, provide the instructor with the URL to the map location. In addition provide screen images throughout the process that will assist the instructor in understanding how the project was created. The same service may be used as before however, the map service must be

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modified to include a feature service. This will only work if all data in the service was placed in a relational database when the project was started. Only one service should be a feature service.

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