The NO-CODING Option for Making Your First Impressive Flex API Map

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What is Flex API

✓Flex (or Flash) is a web-based application programming interface developed by Adobe.

✓Esri has developed an API for many of these interfaces, including Flex.

✓The ArcGIS API for Flex allows you to use maps and tasks from ArcGIS Server in your web applications.

Flex API Based ArcGIS Viewer

Esri has developed a pre-compiled viewer that anyone can download and use for free. It can be configured for your particular use through an editable XML file that feeds variable information into the pre-compiled viewer.

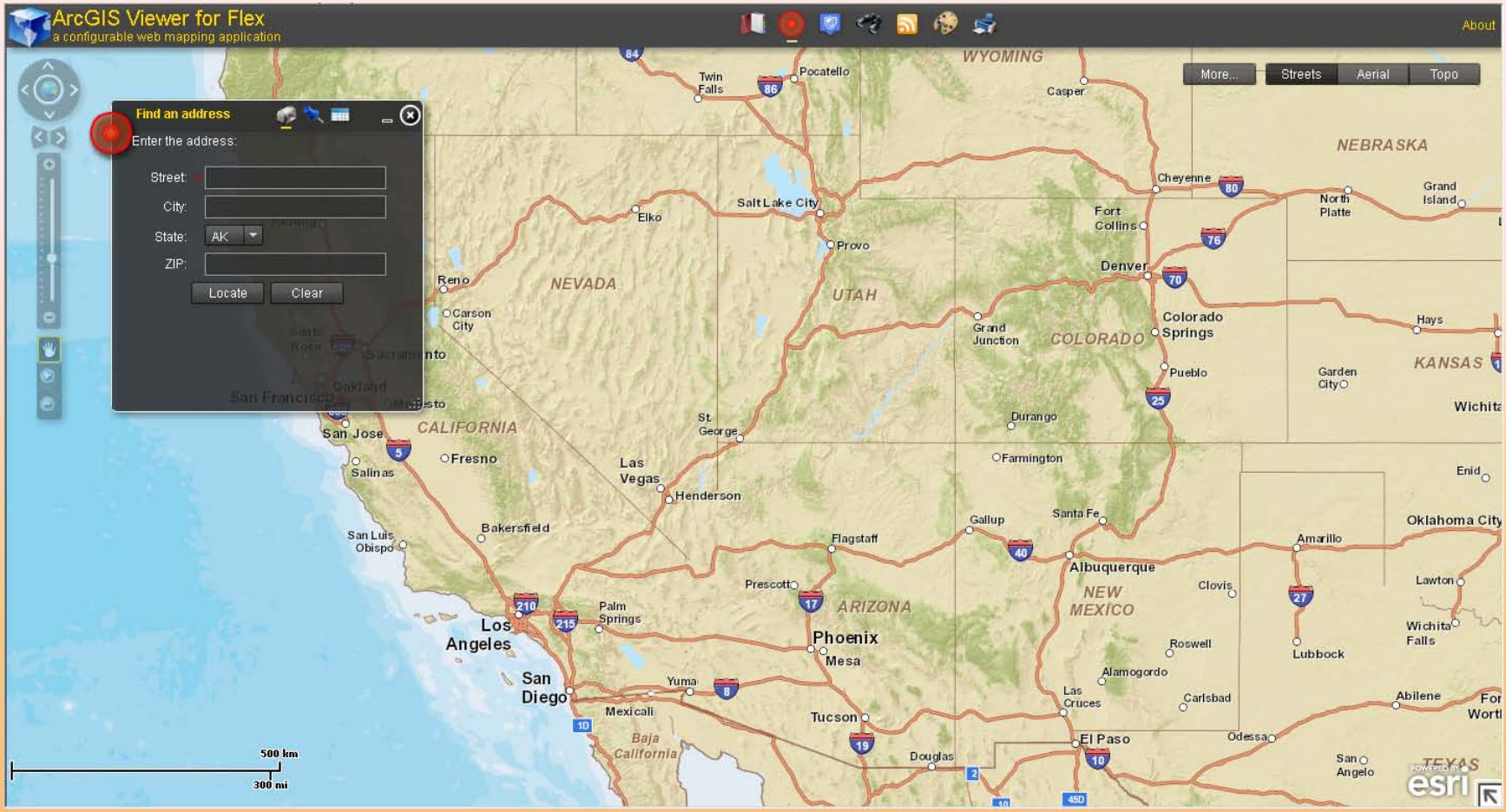
No programming skills required!

No programming software required!

You can do this with Notepad!

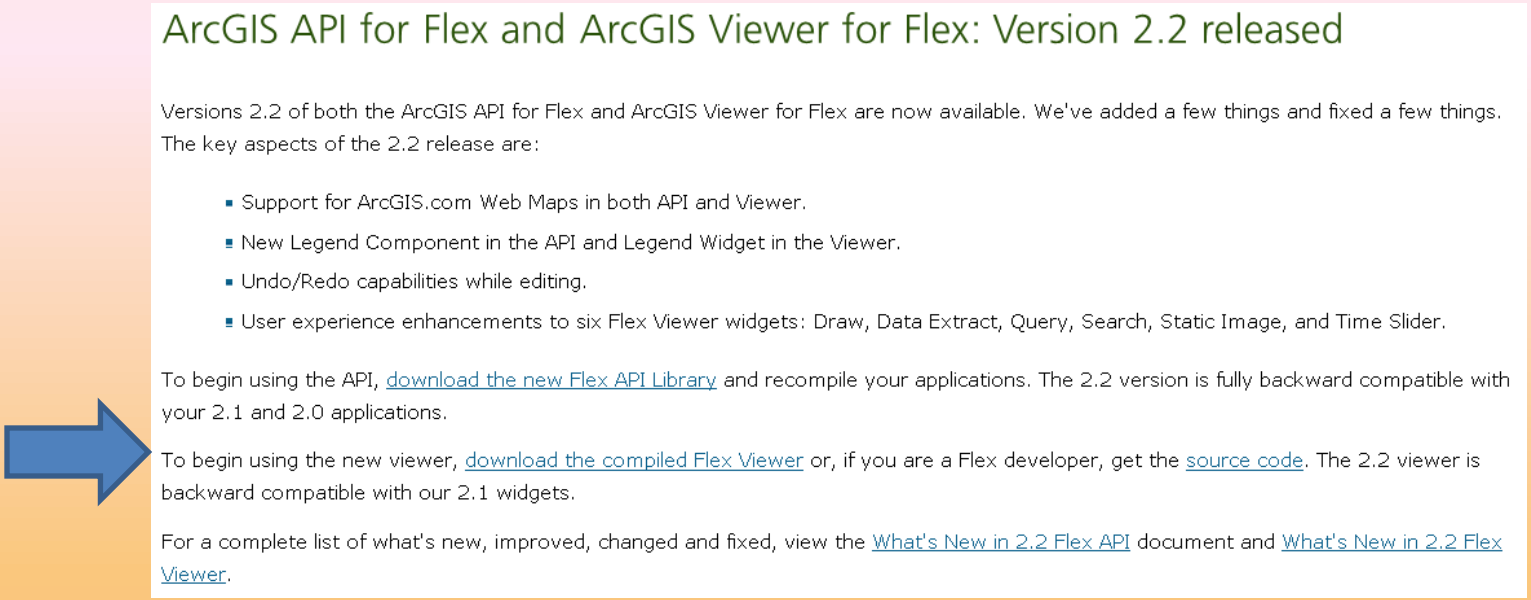
The ArcGIS Viewer's functionality is define by widgets. These are precompiled functions that are also customizable through an XML file. The viewer comes with a set of these, but many more are available through the ArcGIS Resource Center.

ArcGIS Viewer



How do I get the ArcGIS Viewer

Go to the ArcGIS Resource Center at resources.esri.com and search for Compiled Flex Viewer.



ArcGIS API for Flex and ArcGIS Viewer for Flex: Version 2.2 released

Versions 2.2 of both the ArcGIS API for Flex and ArcGIS Viewer for Flex are now available. We've added a few things and fixed a few things. The key aspects of the 2.2 release are:

- Support for ArcGIS.com Web Maps in both API and Viewer.
- New Legend Component in the API and Legend Widget in the Viewer.
- Undo/Redo capabilities while editing.
- User experience enhancements to six Flex Viewer widgets: Draw, Data Extract, Query, Search, Static Image, and Time Slider.

To begin using the API, download the new Flex API Library and recompile your applications. The 2.2 version is fully backward compatible with your 2.1 and 2.0 applications.

To begin using the new viewer, download the compiled Flex Viewer or, if you are a Flex developer, get the source code. The 2.2 viewer is backward compatible with our 2.1 widgets.

For a complete list of what's new, improved, changed and fixed, view the What's New in 2.2 Flex API document and What's New in 2.2 Flex Viewer.

This downloads a zip file. Create a folder on your map server under Inetpub/wwwroot/ with a name representing the data you will show. (ie. water_utility or property_ownership)

Open the ArcGIS Viewer

In a web browser, type in

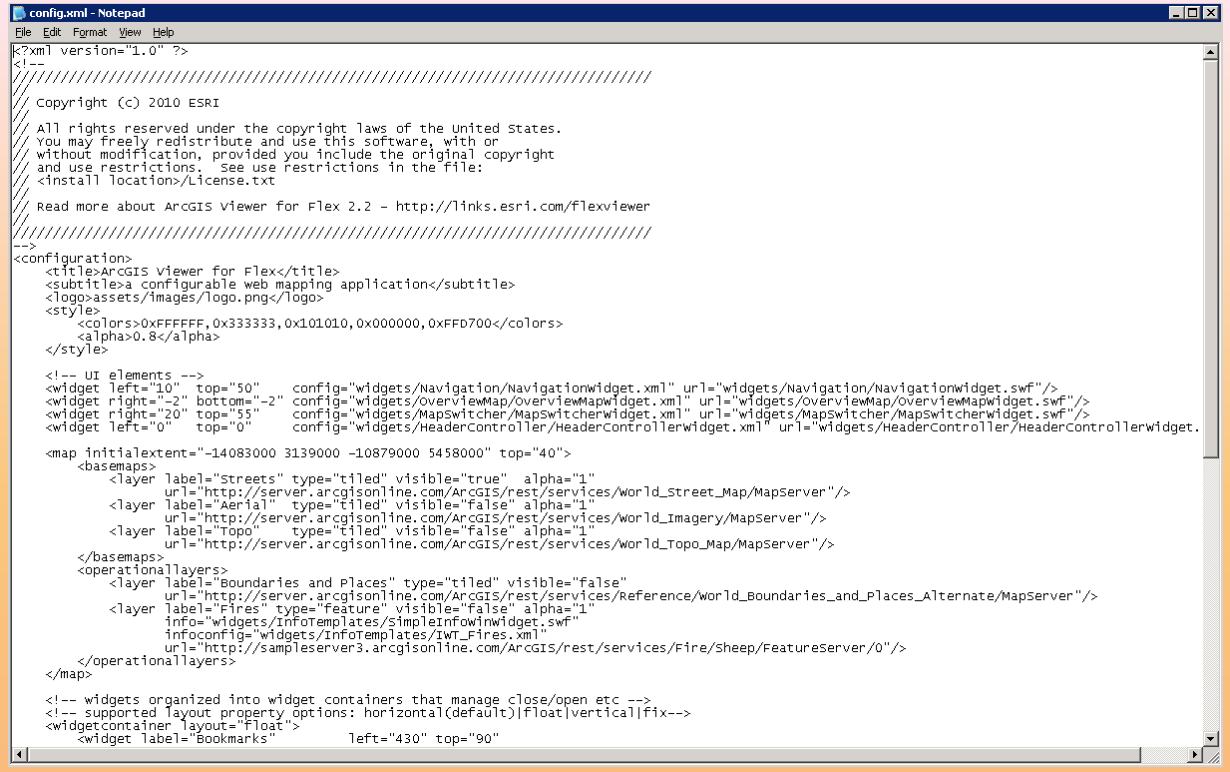
http://<server name>/<foldername>/index.html

This opens the stock, precompiled map. It's that easy!

Next you'll want to start customizing it.

Modify the ArcGIS Viewer

Go to the folder where you unzipped the viewer and open the file config.xml with notepad. It contains the code that the viewer uses to determine what to show in the map. Let's look at that in detail …



Modify the ArcGIS Viewer

The first part of the file has the title, subtitle, logo, and color scheme …

```
<configuration>
    <title>ArcGIS Viewer for Flex</title>
    <subtitle>a configurable web mapping application</subtitle>
    <logo>assets/images/logo.png</logo>
    <style>
        <colors>0xFFFFFF,0x333333,0x101010,0x000000,0xFFD700</colors>
        <alpha>0.8</alpha>
    </style>
```

Simply type in new information. The ArcGIS Viewer help has different color schemes you can choose from.

```
<configuration>
    <title>Sample Viewer for GITA</title>
    <subtitle>... make your title say anything you like ...</subtitle>
    <logo>assets/images/logo.png</logo>
    <style>
        <colors>0xFFFFFF,0x333333,0x101010,0x000000,0xFFD700</colors>
        <alpha>0.8</alpha>
    </style>
```

Modify the ArcGIS Viewer

The next part has the navigational tools (leave those in there) and the coordinates for the initial map extent. Change the extent to your area.

The coordinates you use must match your data.

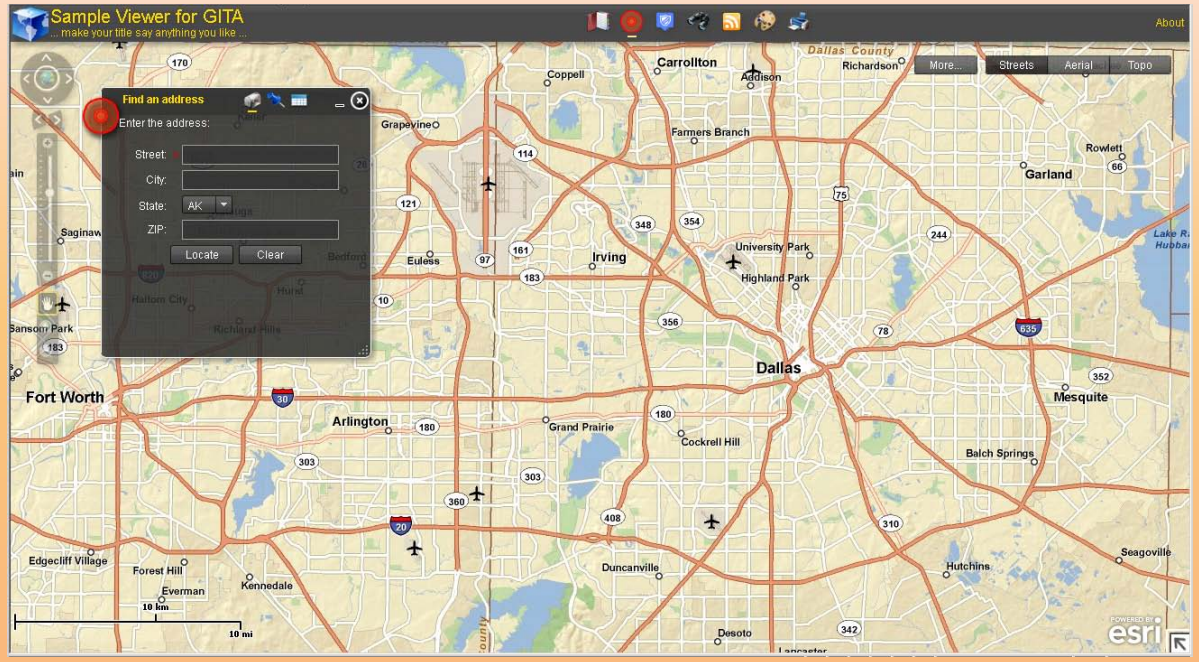
```
<!-- UI elements -->
<widget left="10"  top="50"    config="widgets/Navigation/NavigationWidget.xml" url="widgets/Navigation/NavigationWidget.swf"/>
<widget right="-2" bottom="-2" config="widgets/OverviewMap/OverviewMapWidget.xml" url="widgets/OverviewMap/OverviewMapWidget.swf"/>
<widget right="20" top="55"    config="widgets/MapSwitcher/MapSwitcherWidget.xml" url="widgets/MapSwitcher/MapSwitcherWidget.swf"/>
<widget left="0"   top="0"     config="widgets/HeaderController/HeaderControllerWidget.xml" url="widgets/HeaderController/HeaderControllerWidget.swf"/>

<map initialextent="-14083000 3139000 -10879000 5458000" top="40">
```

```
<map initialextent="-10850369 3832509 -10735171 3900000" top="40">
```

These new coordinates move the map area to D/FW.

It's a fully interactive map using services from Esri. Map projection is web Mercator sphere.



What tools does the ArcGIS Viewer have?

You get a default set of tools to use with the map, including

- Address locator
- Zoom/pan tools
- Bookmarks
- Graphic drawing tools
- Print tools
- Layer controls

Demo

You also get some tools and layers that are specific for the demo version that you'll want to take out.

More config.xml set-up

The next two sections of the config file determine what layers will be shown in the viewer, and where. The 'Basemaps' area shows the main map layers, and are controlled with the tabs across the top of the map. For now, we're going to stay with the Esri services.

```
<basemaps>
    <layer label="Streets" type="tiled" visible="true"  alpha="1"
           url="http://server.arcgisonline.com/ArcGIS/rest/services/World_Street_Map/MapServer"/>
    <layer label="Aerial"  type="tiled" visible="false" alpha="1"
           url="http://server.arcgisonline.com/ArcGIS/rest/services/World_Imagery/MapServer"/>
    <layer label="Topo"    type="tiled" visible="false" alpha="1"
           url="http://server.arcgisonline.com/ArcGIS/rest/services/World_Topo_Map/MapServer"/>
</basemaps>
```

Below that are the layers that will appear in the 'More…' tab, called 'Operational Layers'. For now, I'll just comment those out, but later we'll add our own data there.

```
        <operationallayers>
<! --           <layer label="Boundaries and Places" type="tiled" visible="false"
                  url="http://server.arcgisonline.com/ArcGIS/rest/services/Reference/World_Boundaries_and_Places_Alternate/MapServer"/>
            <layer label="Fires" type="feature" visible="false" alpha="1"
                  info="widgets/InfoTemplates/SimpleInfoWinWidget.swf"
                  infoconfig="widgets/InfoTemplates/IWT_Fires.xml"
                  url="http://sampleserver3.arcgisonline.com/ArcGIS/rest/services/Fire/Sheep/FeatureServer/0"/>
-->
        </operationallayers>
```

The ' <!-- --> ' are used to comment out lines in the code.

More config.xml set-up

Finally we'll look at the individual tools, or widgets. Each set of code starting with 'widget' represents one tool on the toolbar. The ones highlighted are specific to the demo, so we'll take them out.

```
<!-- widgets organized into widget containers that manage close/open etc -->
<!-- supported layout property options: horizontal(default)|float|vertical|fix-->
<widgetcontainer layout="float">
    <widget label="Bookmarks"          left="430" top="90"
            icon="assets/images/i_bookmark.png"
            config="widgets/Bookmark/BookmarkWidget.xml"
            url="widgets/Bookmark/BookmarkWidget.swf"/>
    <widget label="Find an address"    left="100" top="90" preload="open"
            icon="assets/images/i_target.png"
            config="widgets/Locate/LocateWidget_US.xml"
            url="widgets/Locate/LocateWidget.swf"/>
    <widget label="Louisville Police" left="590" top="280"
            icon="assets/images/i_police.png"
            config="widgets/Query/QueryWidget_Louisville_PoliceStations.xml"
            url="widgets/Query/QueryWidget.swf"/>
    <widget label="Search" left="80" top="280"
            icon="assets/images/i_search.png"
            config="widgets/Search/SearchWidget_Louisville.xml"
            url="widgets/Search/SearchWidget.swf"/>
    <widget label="Earthquakes (GeoRSS)" left="410" top="280"
            icon="assets/images/i_rss.png"
            config="widgets/GeoRSS/GeoRSSWidget.xml"
            url="widgets/GeoRSS/GeoRSSWidget.swf"/>
    <widget label="Draw and Measure" left="60" top="400"
            icon="assets/images/i_draw2.png"
            config="widgets/Draw/DrawWidget.xml"
            url="widgets/Draw/DrawWidget.swf"/>
    <widget label="Print" left="390" top="400"
            icon="assets/images/i_print.png"
            config="widgets/Print/PrintWidget.xml"
            url="widgets/Print/PrintWidget.swf"/>

    <!--
    <widget label="My first widget"
            icon="assets/images/i_widget.png"
            config="widgets/Samples/HelloWorld/HelloWorldWidget.xml"
            url="widgets/Samples/HelloWorld/HelloWorldWidget.swf"/>
    -->
</widgetcontainer>
```

My Custom Map Viewer

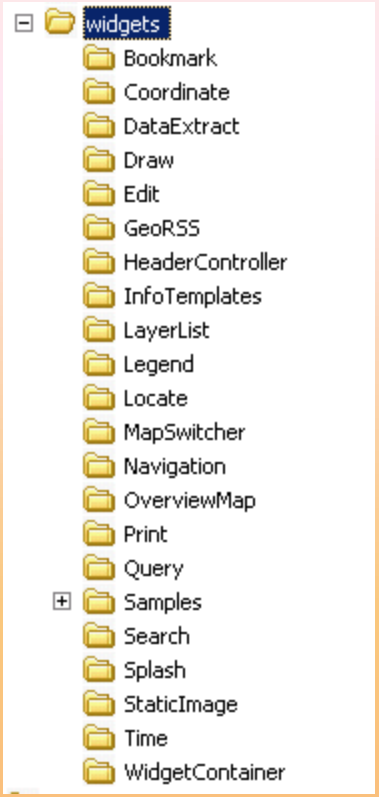
This will now make a pretty decent, custom map for my area.

Demo

I haven’t written a single line of code, or opened any programming tools.

Let's Customize a Widget

There are lots of other widget tools that we can add to our map:



These are still no-code options that you can add and configure.

There is help provided for all of these at the ArcGIS Resource Center. Search for 'ArcGIS Viewer for Flex'.

Link

Let's Customize a Widget

So let's try to customize the Bookmark widget.

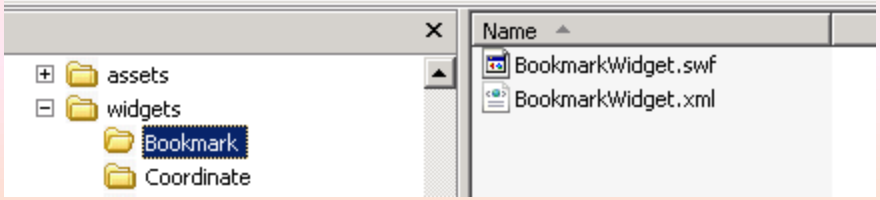
Widgets have two parts … the lines of code that appear in the config.xml file, and the code for the widget itself in the widgets folder.

The code in config.xml provides a label, the location on the screen of where the tool will open, the icon for the tool, and the location of the widget's code.

```
<!-- widgets organized into widget containers that manage close/open etc -->
<!-- supported layout property options: horizontal(default)|float|vertical|fix-->
<widgetcontainer layout="float">
    <widget label="Bookmarks"          left="430" top="90"
            icon="assets/images/i_bookmark.png"
            config="widgets/Bookmark/BookmarkWidget.xml"
            url="widgets/Bookmark/BookmarkWidget.swf"/>
    <widget label="Find an address"    left="100" top="90" preload="open"
            icon="assets/images/i_target.png"
            config="widgets/Locate/LocateWidget_US.xml"
            url="widgets/Locate/LocateWidget.swf"/>
    <widget label="Draw and Measure" left="60" top="400"
```

Let's Customize a Widget

Then in the 'widgets' folder, we'll find a folder for each widget. Let's look at Bookmark and we'll find the configuration file for the widget called BookmarkWidget.xml.



We can edit that to control what bookmarks will be presented to the user. The format is to have a name, and a set of coordinates for the location.

```
<?xml version="1.0" ?>
<configuration>
    <bookmarks>
        <bookmark name="Contiguous USA">-13934000 2699500 -8034300 6710900</bookmark>
        <bookmark name="San Francisco">-13638000 4541000 -13632000 4551000</bookmark>
        <bookmark name="Louisville, Kentucky">-9559973 4601704 -9529513 4621654</bookmark>
        <bookmark name="Los Angeles">-13211400 3993400 -13119200 4056100</bookmark>
        <bookmark name="Japan">13917200 3452300 16908700 5477600</bookmark>
        <bookmark name="Lisbon">-1039800 4665500 -993700 4696800</bookmark>
        <bookmark name="Chile">-8732266 -8111526 -6810170 -1859588</bookmark>
    </bookmarks>
</configuration>
```

Let's Customize a Widget

I've added my owner locations to the bookmarks:

```
<?xml version="1.0" ?>
<configuration>
    <bookmarks>
        <bookmark name="Contiguous USA">-13934000 2699500 -8034300 6710900</bookmark>
        <bookmark name="My Area">-10797071 3872706 -10795210 3873896</bookmark>
        <bookmark name="D/FW">-10850369 3832509 -10735171 3900000</bookmark>
    </bookmarks>
</configuration>
```

… and these show up in my map.

Note: the coordinates you use must match the data!!

[Demo]

Add our own data …

But what about our own data???

This can be added in the config.xml. It should be a map already served out in ArcGIS Server, and must be in the same coordinates as the Esri services … web Mercator sphere.

To find the URL for the services, display the REST services put out by ArcGIS Server.

http://maps.eulesstx.gov:8399/arcgis/rest/services

Demo

Pick the service you want, and copy the URL:

http://maps.eulesstx.gov:8399/arcgis/rest/services/WebUtility/MapServer

Add our own data …

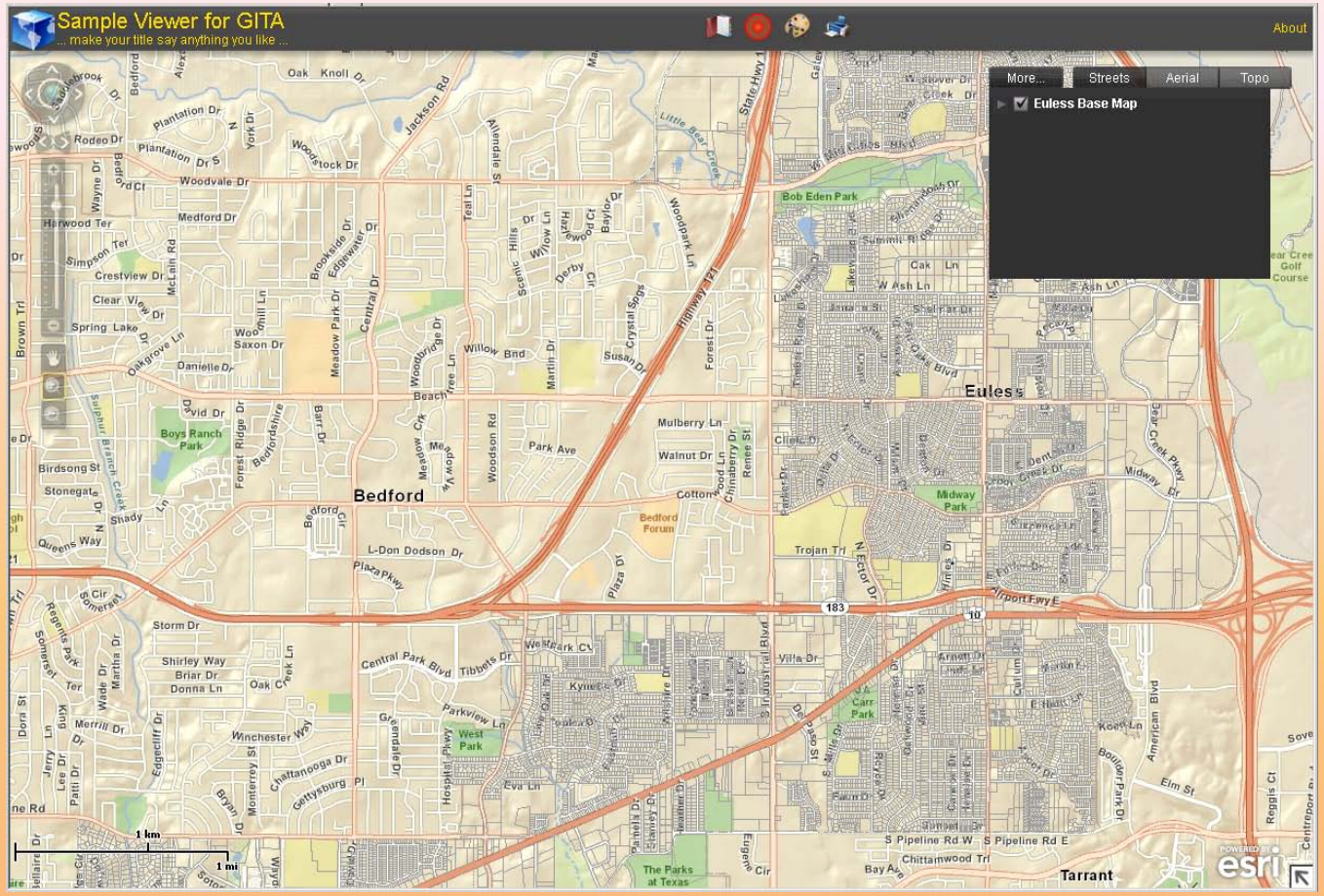
In the config.xml file, go back to the ‘Basemaps’ or ‘Operation Layers’ area. Your service’s URL will go there. Follow the format of the other data.

```
<basemaps>
    <layer label="Streets" type="tiled" visible="true"  alpha="1"
           url="http://server.arcgisonline.com/ArcGIS/rest/services/World_Street_Map/MapServer"/>
    <layer label="Aerial"  type="tiled" visible="false" alpha="1"
           url="http://server.arcgisonline.com/ArcGIS/rest/services/World_Imagery/MapServer"/>
    <layer label="Topo"    type="tiled" visible="false" alpha="1"
           url="http://server.arcgisonline.com/ArcGIS/rest/services/World_Topo_Map/MapServer"/>
</basemaps>
<operationallayers>
    <layer label="Euless Base Map" type="dynamic" visible="false"
           url="http://maps.eulesstx.gov:8399/arcgis/rest/services/WebUtility/MapServer"/>
</operationallayers>
```

Note: services that have been cached to different display scales will be listed as type=“tiled”, and those that are not cached are listed as type=“dynamic” .

Euless ArcGIS Viewer

My no-coding customized map viewer!!! [Demo]



Flex API Based ArcGIS Viewer

There's lot of other widgets and applications available for free from the ArcGIS Resources page. These can be added in just like the default widgets and allow you to do more no-coding customization.

There's also the option to purchase Adobe Flashbuilder 4 and do some of your own coding. It's not too terribly hard, and with some practice you be able to make more personalized touches to your maps.

Here's some of mine:

Main map page Utility maps Plat index Recycling zones

TCC GIS Programming Certificate

We've started a new GIS Programming Certificate here at TCC, and web based mapping will be one of the topics covered, along with customizing the ArcGIS interface, using ModelBuilder, scripting with Python, working with ArcGIS Server, and more.

Check out www.tccd.edu or contact me for more information.

Thanks!!!

Any Questions?

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