Creating and using Web Maps via Rich Internet Applications

ESRI's ArcGIS Server API's
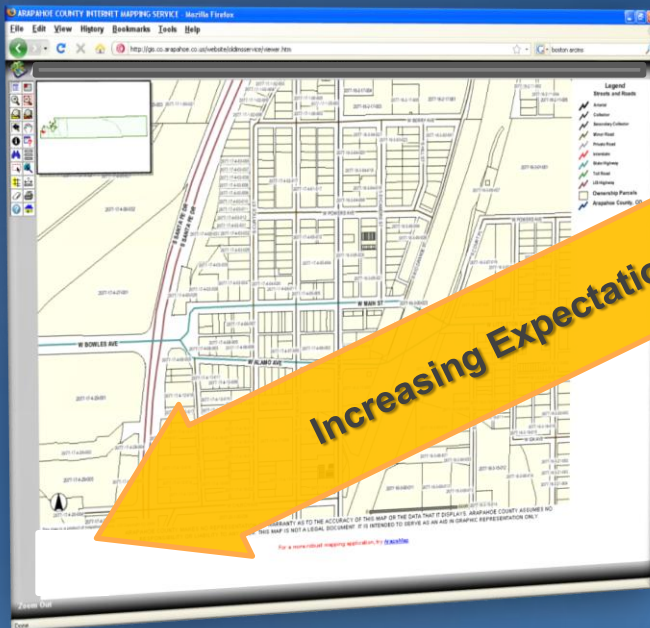
Mark Scott
mscott@esri.com
ESRI
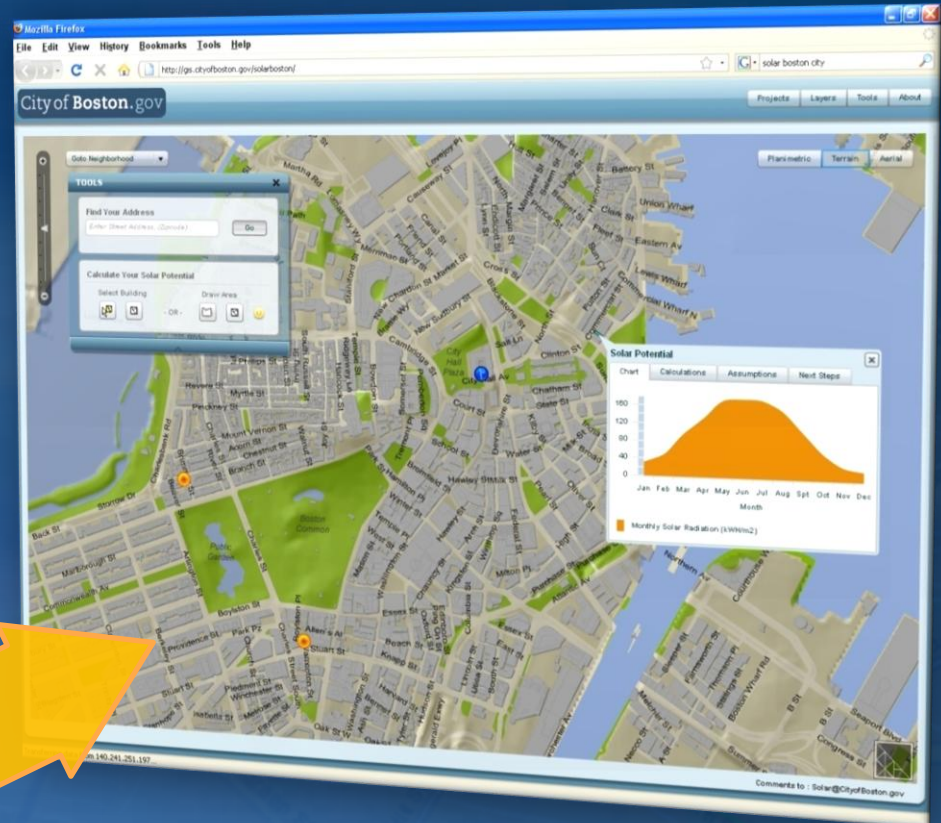*Danvers, MA*

Users expect (and deserve) functional web maps
What we learned about Web Maps from You

- **Growing expectations**

- **"One-size fits all" Web map will not work**
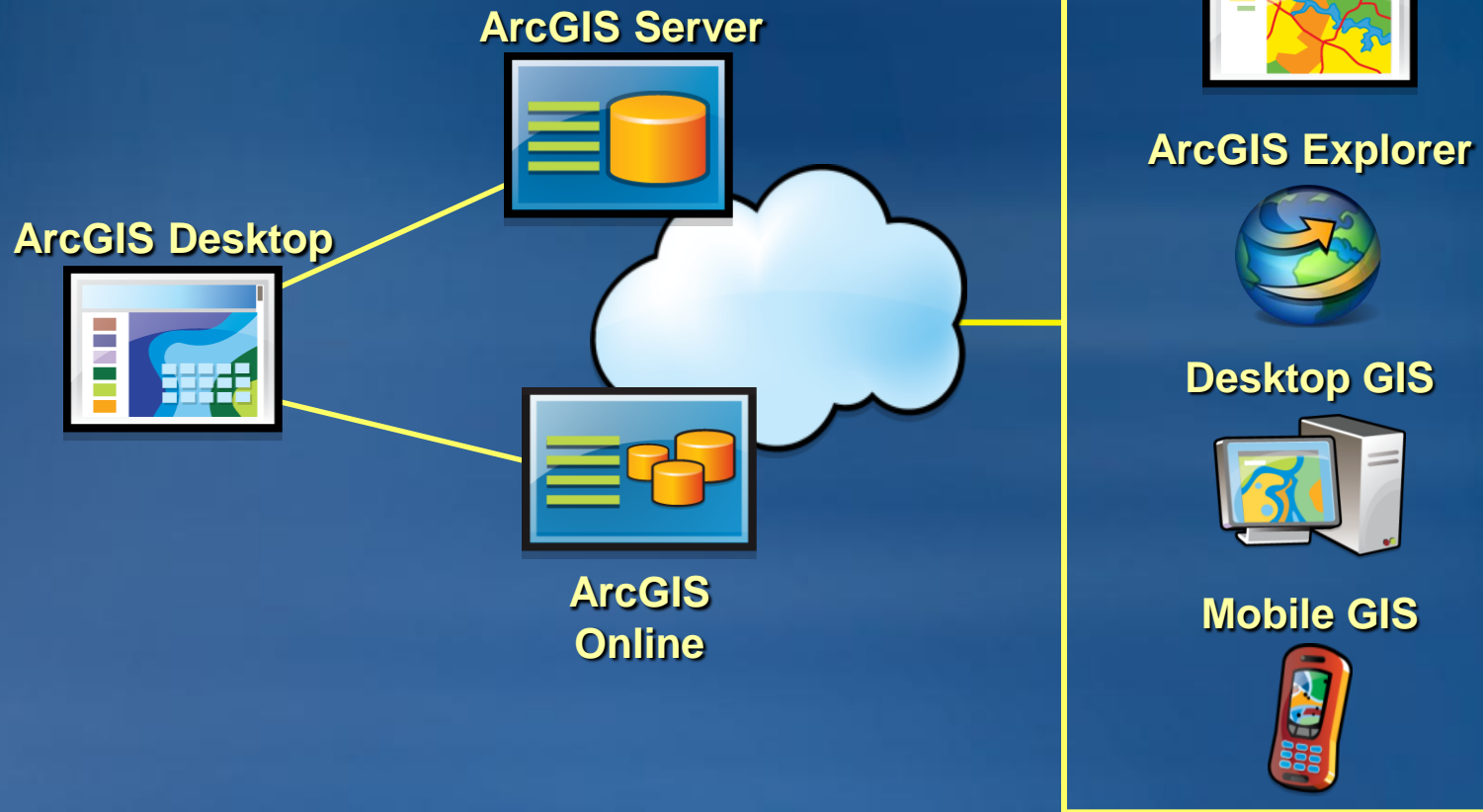
- **Users demand ease of use**

Increasing Expectations

- **ArcView in a browser – not an effective approach**
- **Deliver only the tools and information the user needs**

Let's talk about ArcGIS Server

Publishing Geographic Information

ArcGIS Server

ArcGIS Desktop

ArcGIS Online

Web Maps/GIS

ArcGIS Explorer

Desktop GIS

Mobile GIS

Author	Publish	Use

The Web as a GIS platform

Oh, hey, BTW…ArcGIS Server: More that just maps

Map
  View or query a 2D map on the server

Globe
  View or query a 3D globe on the server

Geocode
  Perform address matching on the server

Geodata
  Perform data replication, extraction, or query over the intranet or Internet

Geoprocessing
  Run a tool or model on the server and get the results back

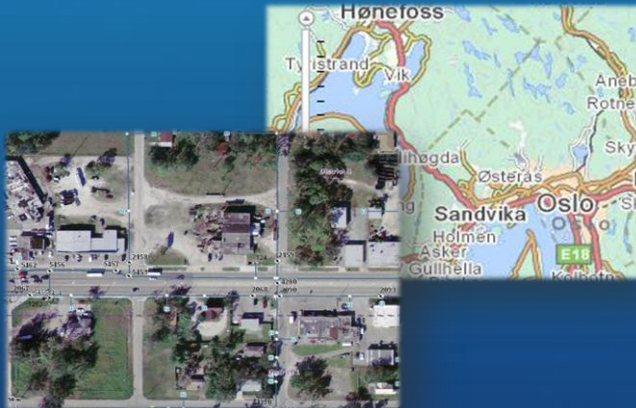**Image**
Provide access to raster data though a Web service

Two types of map services to consider

Basemaps

Geographic frame of reference

Contain static vector and raster data
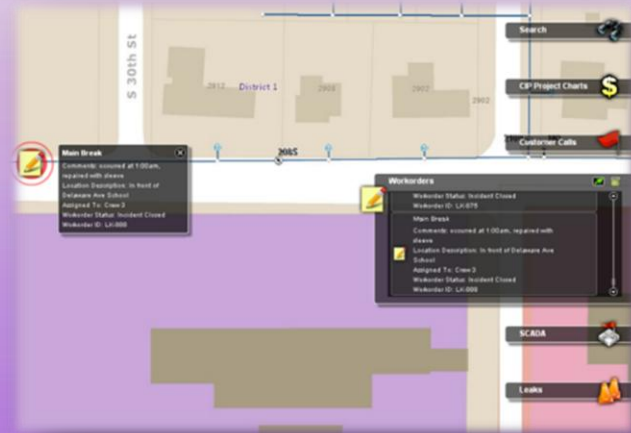
Reusable in multiple applications

Operational Layers

Show a focused item of interest

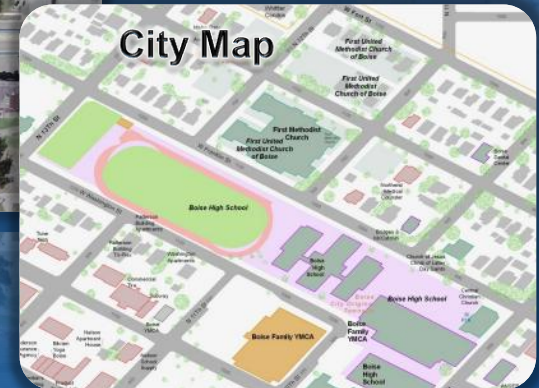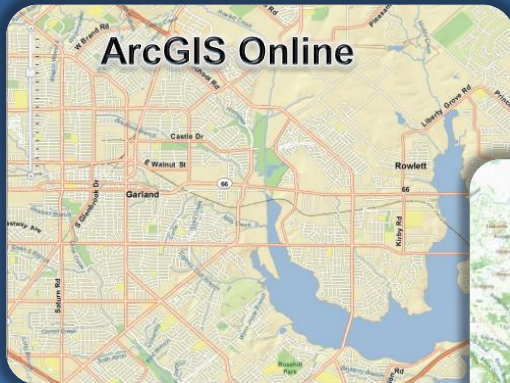**Support functionality of the application**

**Displayed on top of base map**

Basemaps
Provide geographic reference

- **Use your own resources**
  - Your data from your organization
  - Authoritative data?
- **Consider using ArcGIS Online services**
- **Streets, Imagery, Topographic Map, Demographics, and more**

Cached map and globe services

- **Create a map or globe cache**
  - Good for basemaps and some operational layers

- **Pre-creates map/globe images as tiles at multiple scale levels**
  - Map displays use cached tiles
  - Queries still use dynamic data

- **Very fast**

- **ArcGIS Server tools manage the cache tiles**
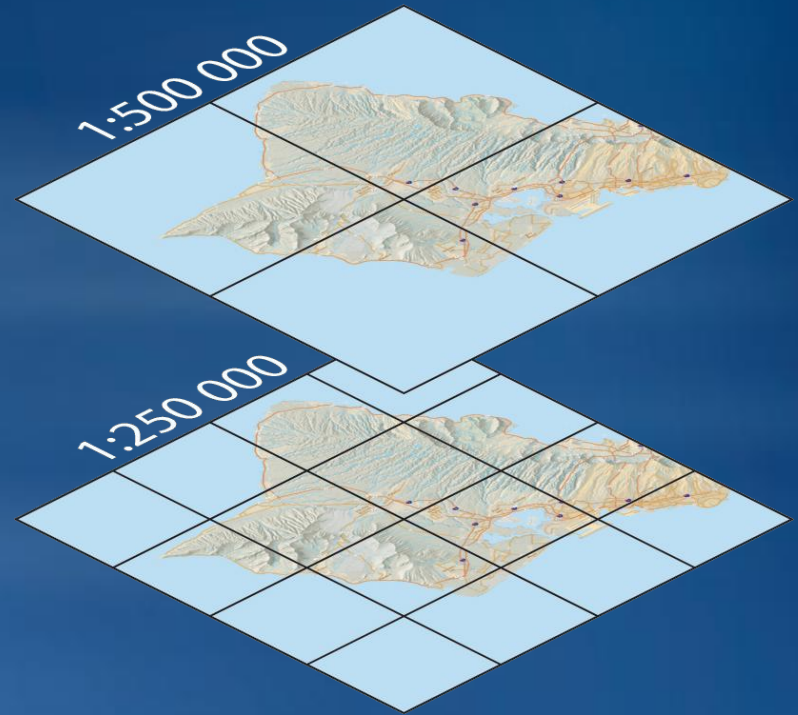
Operational Layers
Application focus

- **Contain application specific content**
    - **Observations, sensor feeds, incidents**
    - **Query or computation results**
    - **Result layers derived from geoprocessing**
    - **Editing and data access layers**

Incidents, Customer Calls, Work Orders

Inundation areas & affected buildings
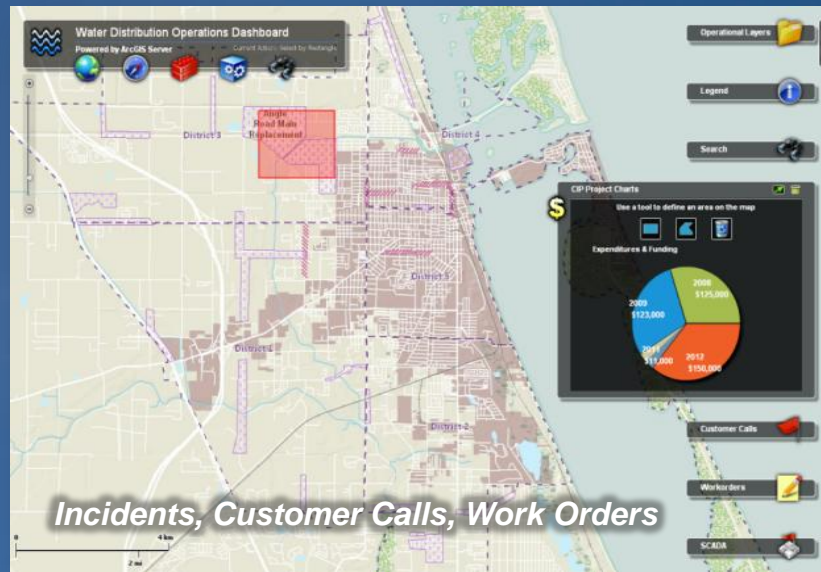
Operational layer display
Choose the best option

- **Dynamic map layers**
  - **Real-time data**
  - **Frequently-changing data**
- **Can use Optimized Map Service for fast dynamic maps**
  - **New rendering engine in server**
  - **Analysis tools to optimize map**
  - **Identify layers or issues that may degrade performance**
- **Cached map layers**
  - **High volumes of traffic**
  - **Do not change often**
- **Client-side graphics**
  - **Informational popups**
  - **Query or geoprocessing results**

ArcGIS Online Content
Leverage data and services in your web maps

Basemaps & Globes

Imagery & Elevation

Demographics & Market Data
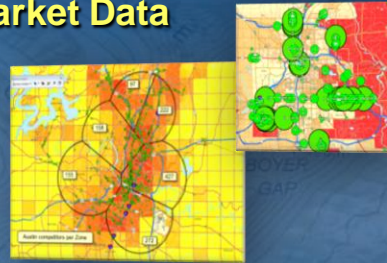
Street Maps

U.S.

Coming soon…
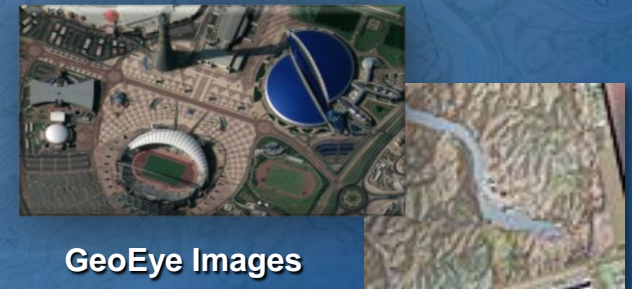
Geocoding & Routing Services
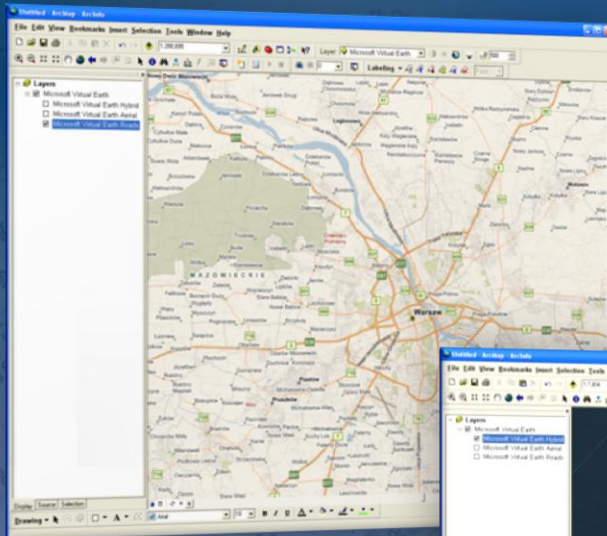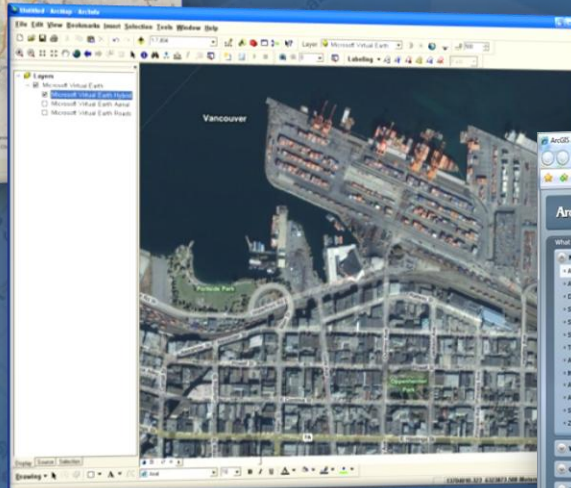
Europe

Asia
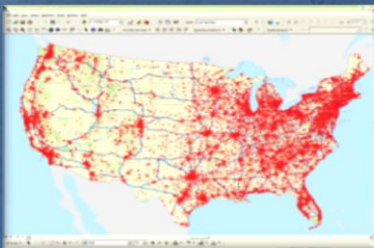
GeoEye Images

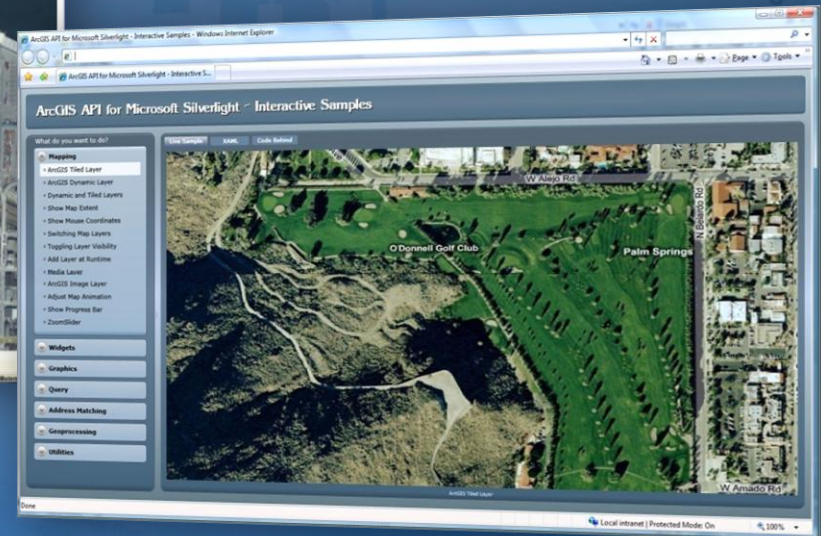**DeLorme Basemaps**

Microsoft Bing Data Collection

- **Now available through ArcGIS Online**

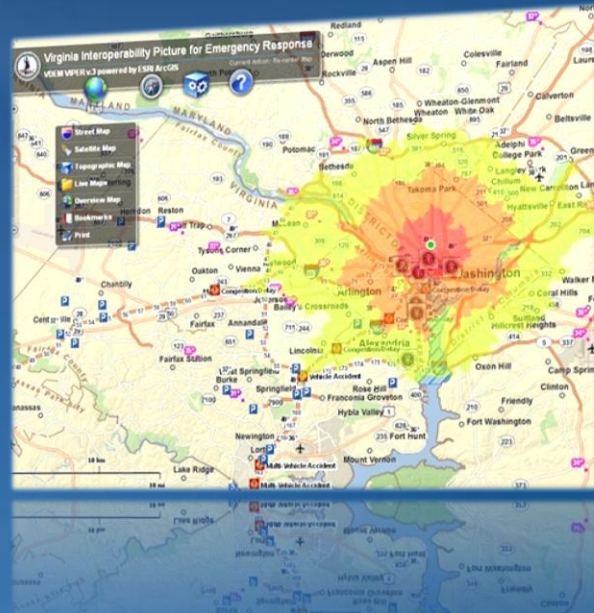- **Free to use with ArcGIS Desktop**


Roads

Aerial Imagery with labels

Aerial Imagery

What can I do with a browser based web application

- **Create a mashup with other services**
  - **ArcGIS Online**
  - **Google Maps**
  - **Microsoft Virtual Earth**

- **Add tasks**
  - **Query**
  - **Geoprocessing**
  - **Find Address (geocoding)**
  - **Route**

- **Keep the interface limited to what the users want/need**

ArcGIS Server APIs

- Application Programming Interface
- Silverlight, Flex, or JavaScript
- Lean and mean
- Map-Centric
- Lots samples and tools on the Resource Center
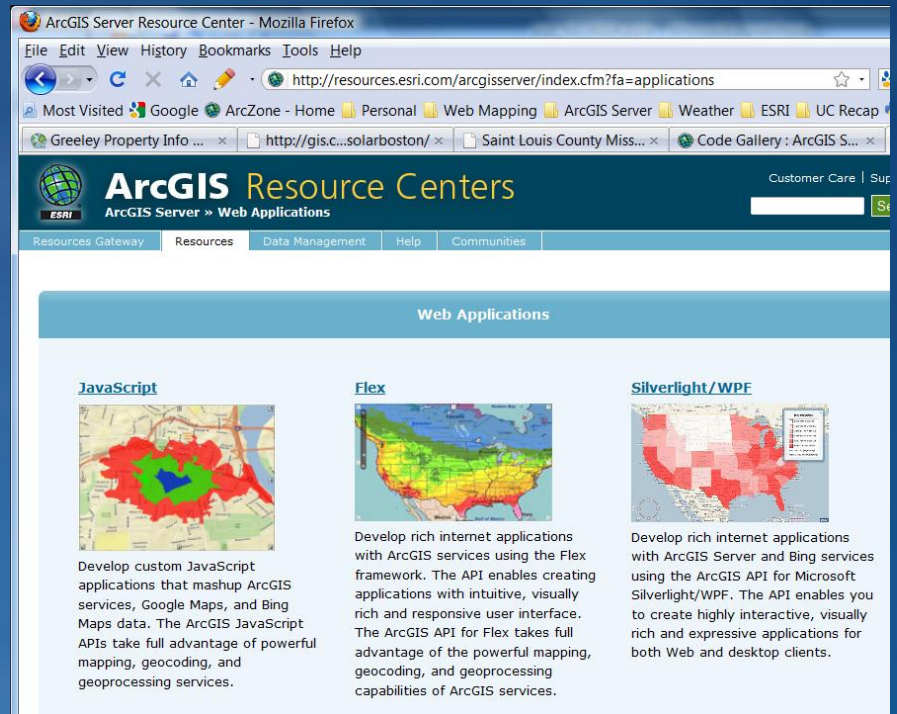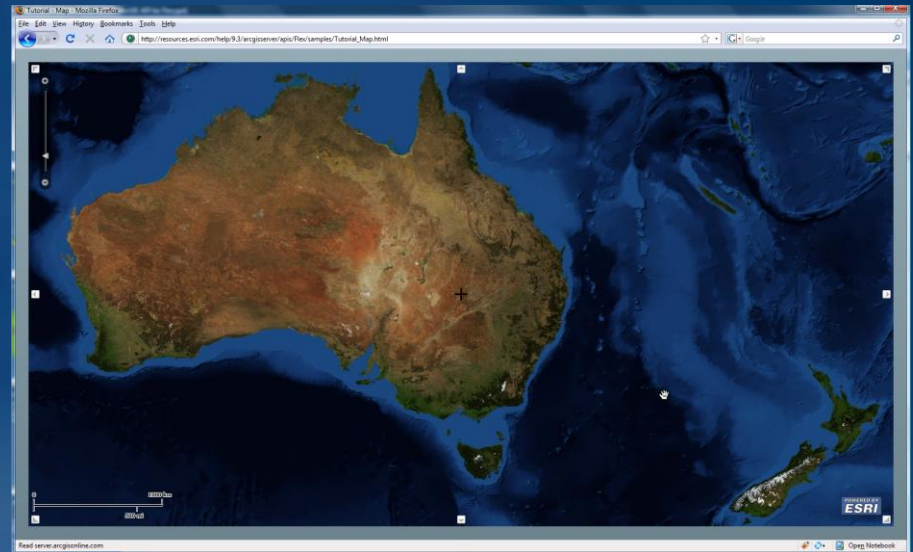
ArcGIS Server API for Microsoft Silverlight

- Uses Silverlight plug-in and WPF Platform

- Integrate ArcGIS Server, *Map*It, and Bing Maps Services and capabilities

- Create rich, interactive and expressive web applications

- Popular with .NET crowd

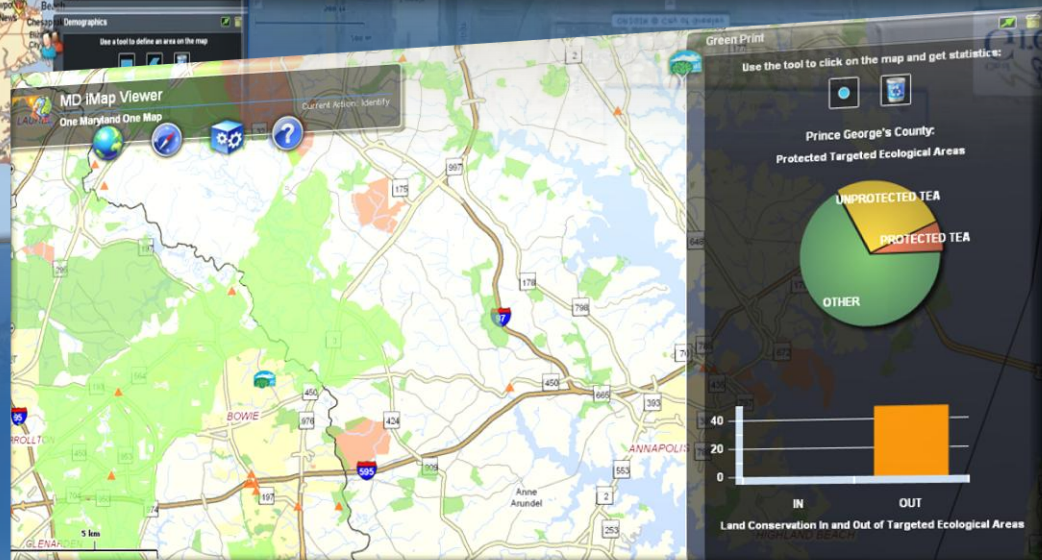- Develop in Microsoft Visual Studio 2008 SP1, Express is supported
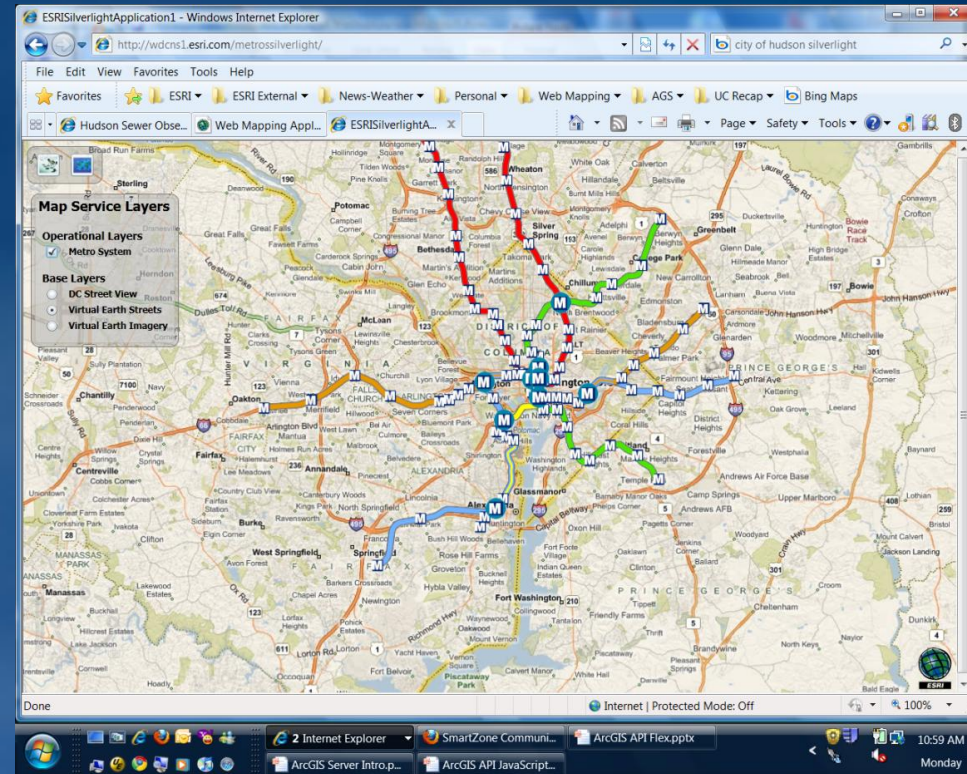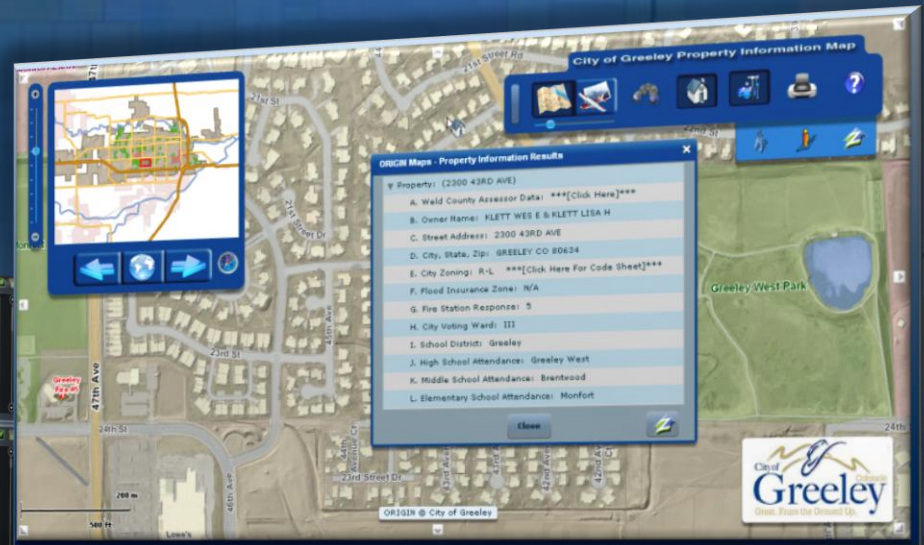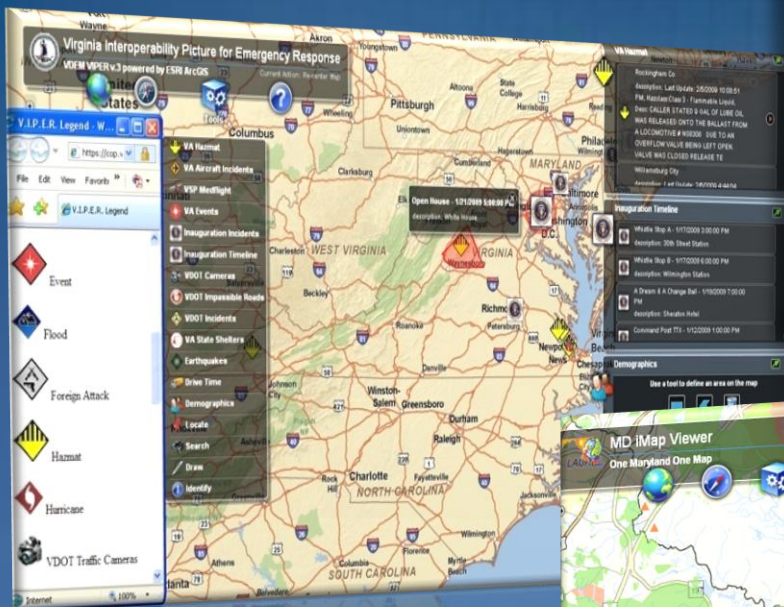
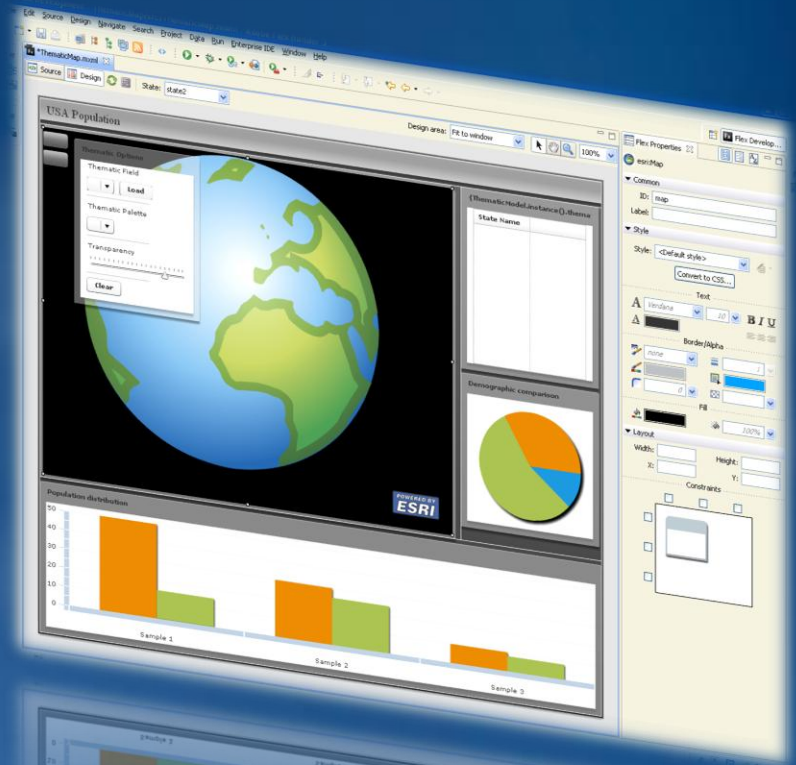# Examples using Microsoft Silverlight
Hudson, Ohio Sewer
ArcGIS Online Tools
Washington Metro Demo

ArcGIS Server API for Adobe Flex

- **Uses Flash plug-in**

- **Can write ActionScript or MSXML or a combination**

- **IDE**
  - **Adobe Flex Builder**
  - **FlashDevelop**
  - **Visual Studio plug-ins**

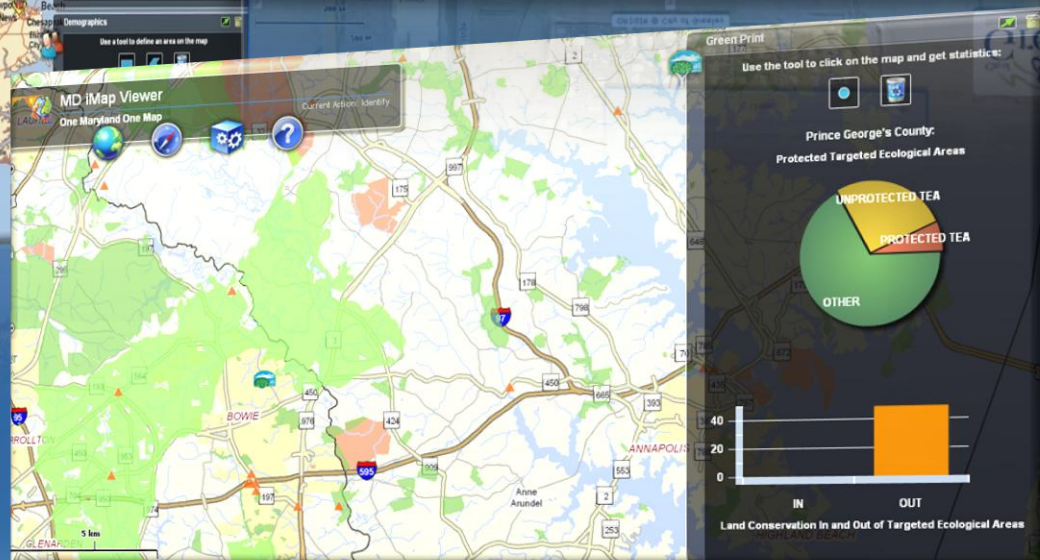- **Strong developer community**
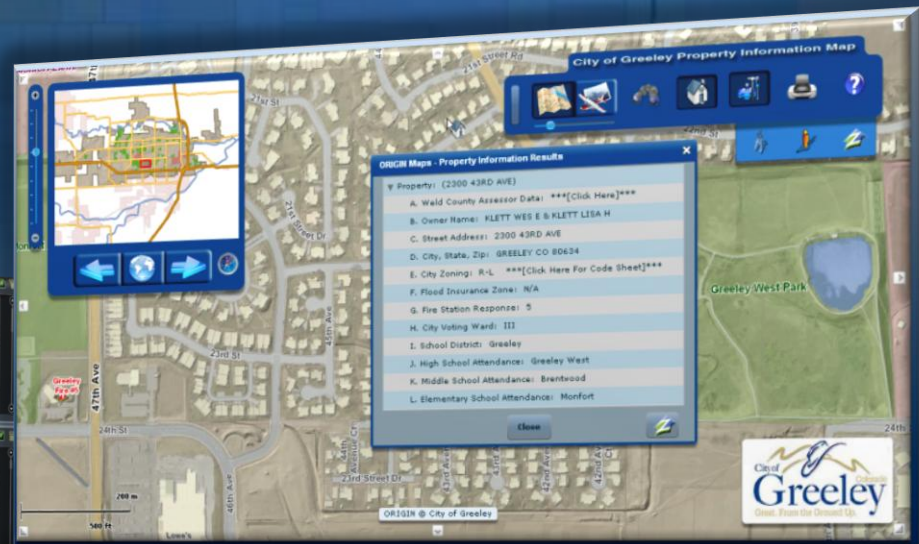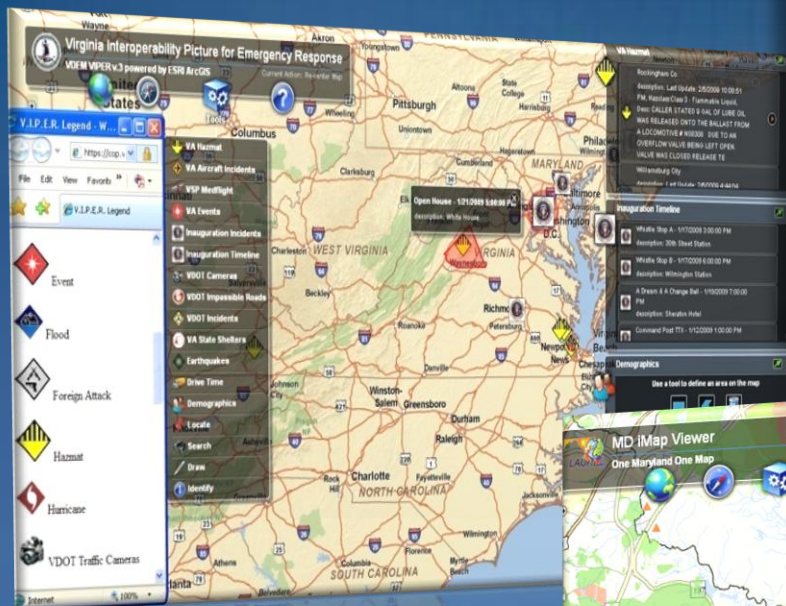 - **http://www.adobe.com/devnet/flex**

Examples using Adobe Flex
Greeley, Colorado
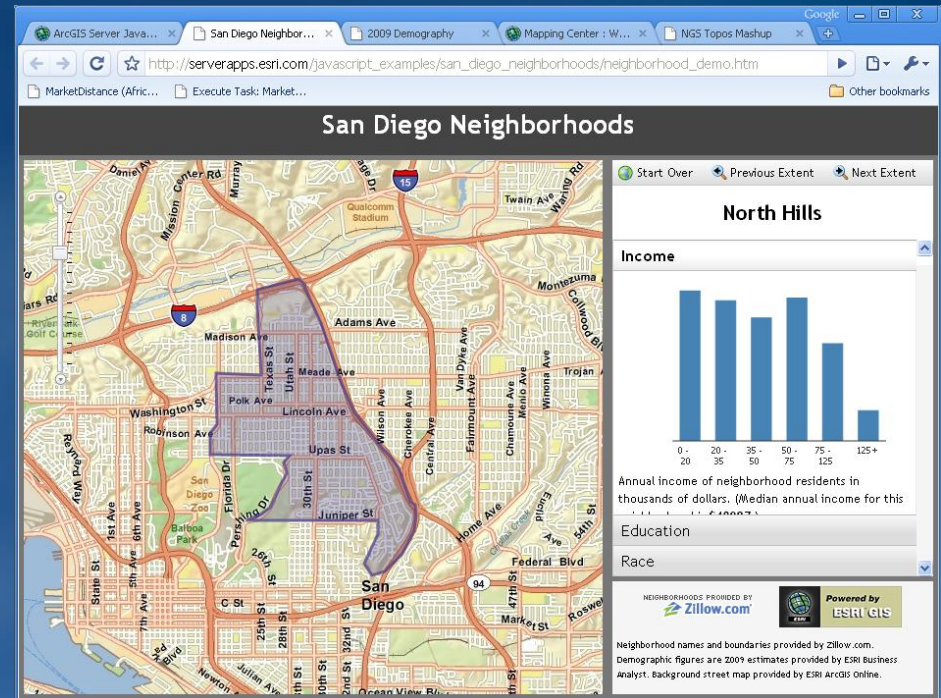*Virginia Emergency Operations*
Maryland StateStat
*Fort Pierce Florida Water*

ArcGIS Server API for JavaScript

- **Develop custom JavaScript applications that mashup ArcGIS services, Google Maps, and Microsoft Bing**

- **Uses Dojo tools, no plug-in required**

- **Support for Google Maps and Bing Maps integration**

- **Many options for development IDEs like Amethyst and Aptana**

JARGON ALERT - What is Dojo?

- **Robust JavaScript Toolkit**

- **Active Community**

- **Dojo Dijits**
  - **Strong Widgeting system**
  - **Grids, charts, toolbars, trees, and many more**

- **Rich client side Graphics**

- **http://dojotoolkit.org**

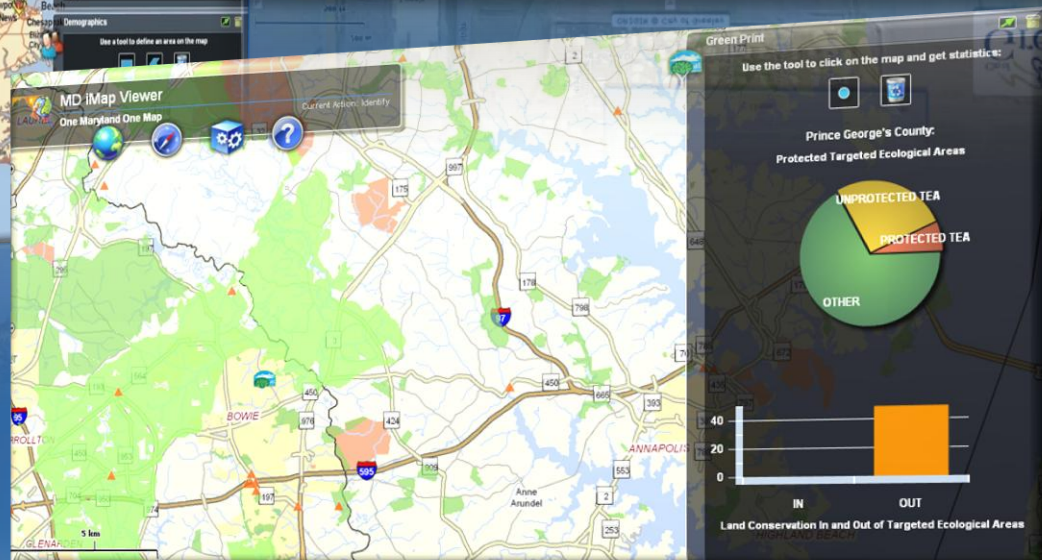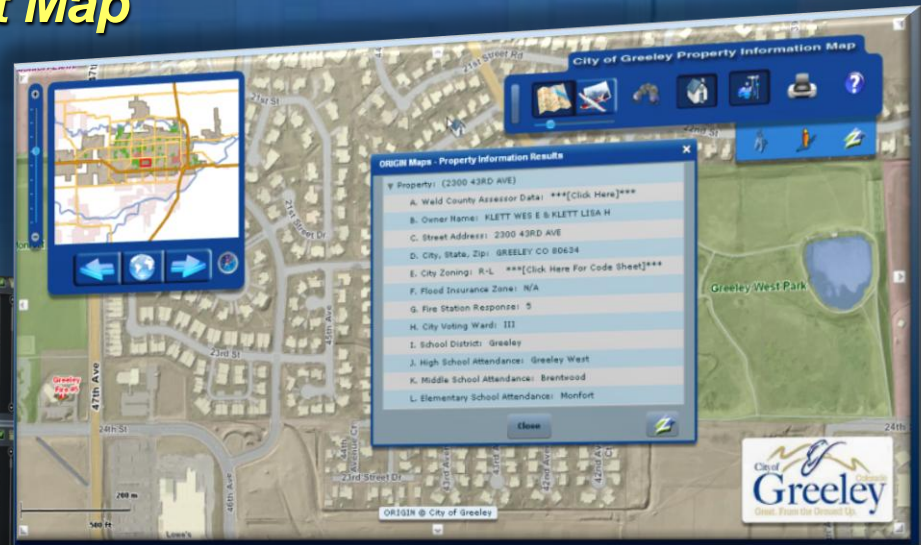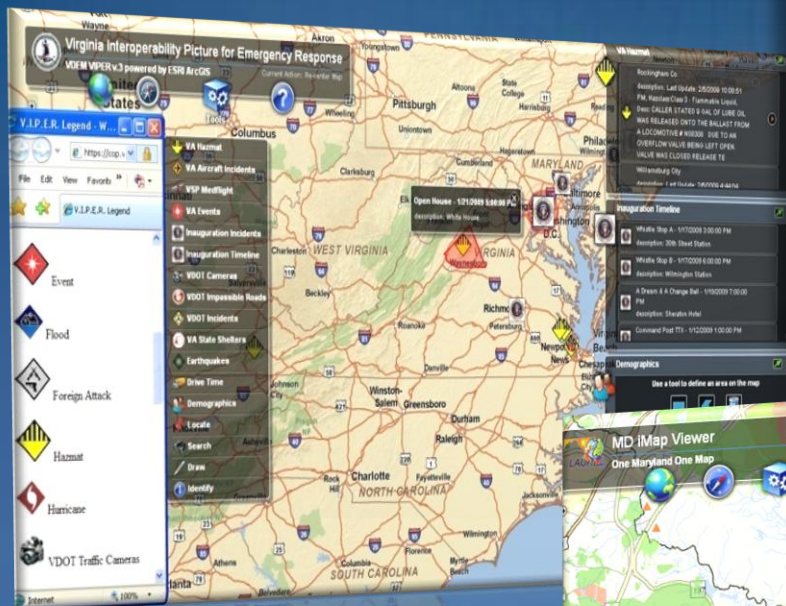- **http://dojocampus.org**
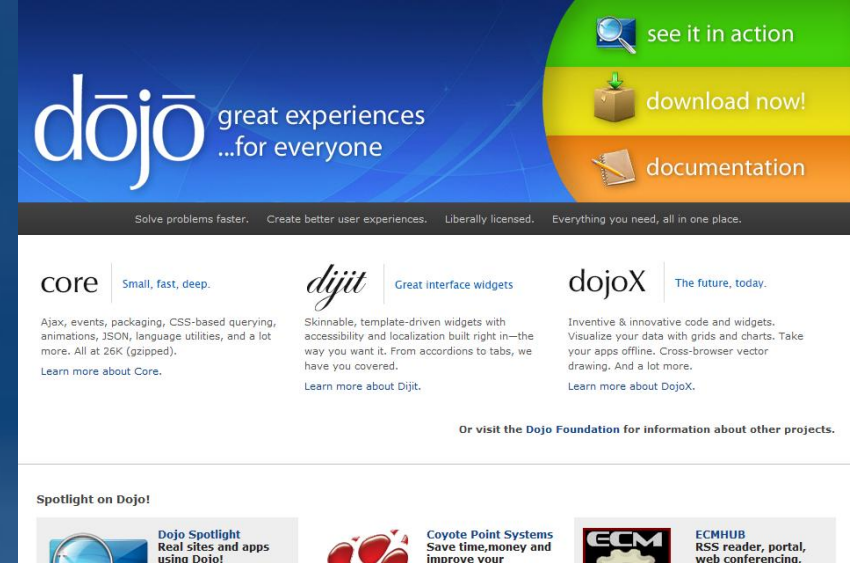
Examples using JavaScript
*Newport Beach, CA Community Maps*
St. Louis County Crime Incident Map
ArcGIS Online Mashup

Looking for more? Resource Center for ArcGIS Server

- **Central location for ArcGIS resources**
- **SDK for ArcGIS Server APIs**
- **Sample GIS Server**
- **ArcGIS Online**
- **Help**
- **ArcGIS Server Development Blog**
- **Support**
  - **Forums**
  - **Technical articles**
  - **Software updates**

http://resources.esri.com/arcgisserver
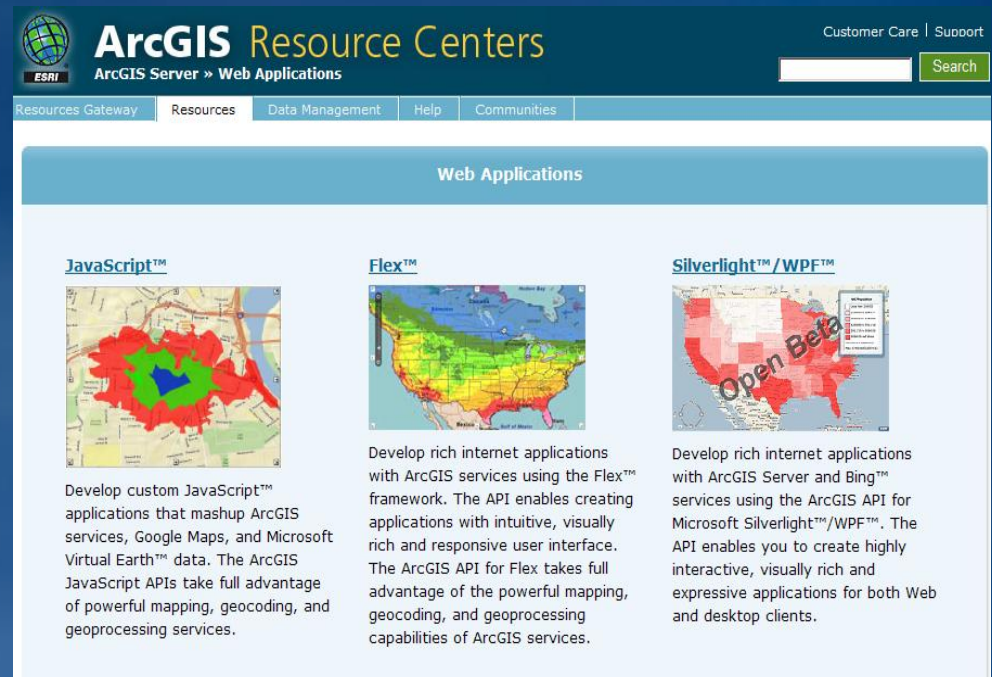
Questions?

mscott@esri.com

Visit www.esri.com for more info

Thanks!