Developing ArcGIS Web Mapping Applications

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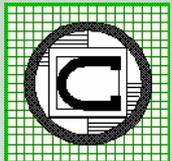
Topics to be Covered

◆ Brief Intro to CEDRA and City of Edmond

◆ Creating Apps using ArcGIS Online

◆ Creating Apps using ArcGIS Server

◆ Presentation of City of Edmond Web Mapping Apps

◆ Pros and Cons of ArcGIS Online and ArcGIS Server

◆ Summary then Q&A

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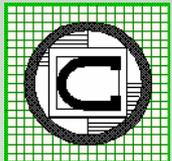
The CEDRA Corporation

1985 The CEDRA Corporation is established.

1987 CEDRA begins a long standing relationship with Esri.

1993 CEDRA becomes an authorized Esri Business Partner and Developer.

CEDRA offers engineering/GIS solutions in the form of software and services to governmental agencies, engineering consultants, tax assessors, oil companies and various utility enterprises.
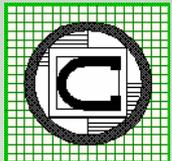
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The City of Edmond

The City has more than 5 years of experience in developing web based mapping applications and 26 live web based applications.

The City maintains their web applications on a number of platforms.

These applications currently use the Esri JavaScript API, Silverlight application viewer, and the Web Application Builder (WAB).
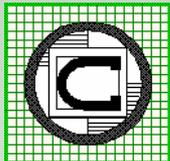
CEDRA and The City of Edmond

CEDRA-DataEditor has been embedded in 9 of The City of Edmond's web applications.

CEDRA-DataEditor is a JavaScript ArcGIS Server based application for data editing and maintenance.

CEDRA-DataEditor provides for custom single and multi-column user-dialog boxes via configuration file thereby eliminating any programming.
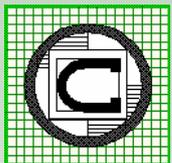
Why go Web Based?

1. Cross-platform compatibility (Wide variety of browsers running on Windows, Linux, Mac OS)

2. More manageable (need to install on server rather than numerous PCs)

3. Highly deployable (just need a URL address to access an application and data)

4. Reduced costs (less support, maintenance and lower end user requirements, i.e. less desktop licenses)

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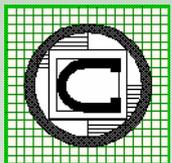
Creating Web Applications

ArcGIS Online (Cloud Based Mapping Platform)

ArcGIS Online application templates
Web App Builder
ArcGIS Viewer for Flex
ArcGIS Viewer for Silverlight

ArcGIS Server (Organization Server Platform)

Web Mapping APIs (JavaScript, Flex, Silverlight)
HTML, CSS

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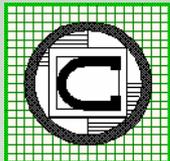
ArcGIS Online vs. ArcGIS Server

ArcGIS Online

Subscription based (minimal cost)
No Server infrastructure required
Application Customization via Configuration
Multi-platform support including mobile

ArcGIS Server

Server infrastructure required
Programming and IT Expertise required
Application Customization via Programming
$$$

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ArcGIS Online – Sign In

https://www.arcgis.com/features/index.html
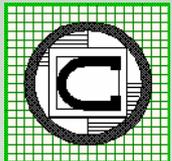
ArcGIS Online – My Organization

Home Gallery Map Scene Groups My Content My Organization
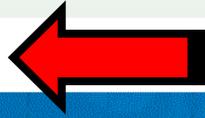
Use the Tabs to navigate ArcGIS Online

The CEDRA Corporation

🔧 **EDIT SETTINGS**   📇 **INVITE MEMBERS**   🌐 **VIEW STATUS**   ✅ **VIEW SYSTEM HEALTH**   🔑 **MANAGE LICENSES**

Members

Subscription Status

Viewing: Current Members ▾

Search for Name... 🔍

▲Name	Username	Last Login	Role	Action
muniroute muniroute	muniroute	Mar 31, 2015	User ▾	⚙ ▾
Nick Tonias	nicktonias	Aug 8, 2016	Administrator ▾	⚙ ▾

2,500 credits remaining
Expires: 09/30/2016   RENEW
ID: 6384400033

Find...

The most viewed items in the organization

The last items added to the organization

The items added to the organization that are public

The organization's groups

The organization's groups that are public

The organization's registered apps

My Organization Tab can be used to manage the Organization's members and view information regarding the organization

◀◀ ◀ Page 1 of 1 ▶ ▶▶ 1 ▾

Viewing 1 - 2 of 2

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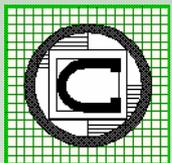
ArcGIS Online – My Content

My Content Tab can be used to manage the Organization's Maps and Applications
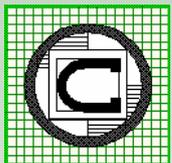
ArcGIS Online – Map Viewer

Prior to creating an App, a map must be created by clicking the Map Tab
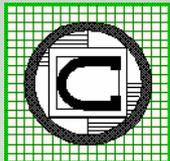
ArcGIS Online – Add Layer

Map Layers can be added on top of the basemap by specifying a URL to a Map Service

http://www.xxxxxx.com/arcgis/rest/services/NYSbridges/MapServer/0
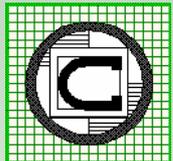
ArcGIS Online – Layers Added

As the Map Layers are added they appear in a Table of Contents
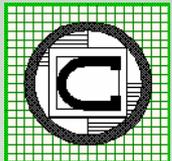
ArcGIS Online – Save the Map
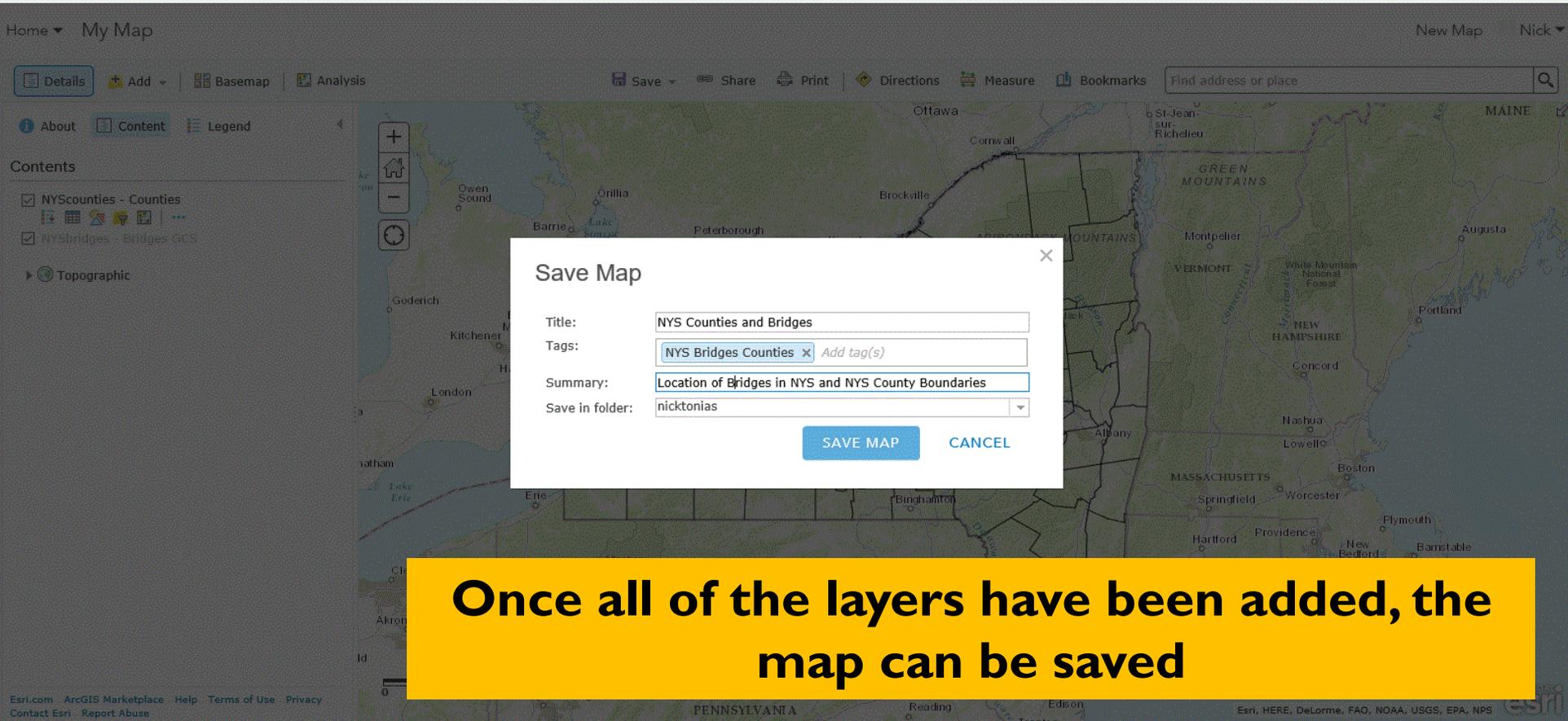
Once all of the layers have been added, the map can be saved
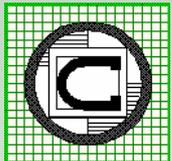
ArcGIS Online – Share the Map

The map can then be saved for Internal or Public Consumption
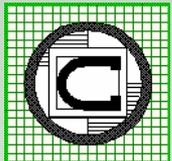
ArcGIS Online – Create an App

Categories of Configurable Maps

To create an App, a Configurable App can be used or the Web App Builder

ArcGIS Online – Basic Viewer

The Basic Viewer is an example of a configurable App

Configurable Apps offer specific functionality as well as look and feel
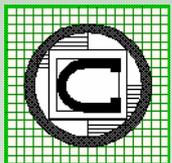
ArcGIS Online – Web App Builder

The Web App Builder can be used in the following manners:

ArcGIS Online
Develop and Deploy the App in the Cloud

Web App Builder (Developer Edition)
Download and install the WAB locally
Develop the App locally
Upload the App to ArcGIS Online
Upload the App to Organization's Server

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ArcGIS Online – Web App Builder

The WAB is the alternative to a configurable App

WAB provides more flexibility in customizing the App
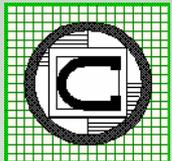
ArcGIS Online – Web App Builder

Configure the App by clicking on the desired Theme, Style, Layout

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ArcGIS Online – Web App Builder

Configure the App by specifying the desired Map Properties Initial Extent Visible Scales Etc.
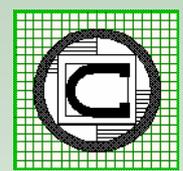
ArcGIS Online – Web App Builder

Configure the App by specifying the desired widgets to be included in the App
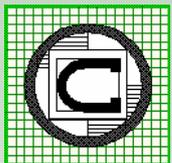
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ArcGIS Online – Web App Builder

Available Widgets for Printing Querying Basemaps Drawing Editing …

ArcGIS Online – Web App Builder

Configure the App by specifying a logo and additional text in the Apps's title bar
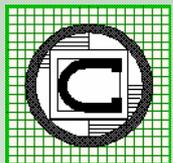
ArcGIS Online – Web App Builder

Prior to launching the App, the App can be previewed at different resolutions, such as Mobile Devices

ArcGIS Online – Web App Builder

Once the App has been configured, it can be Saved and Launched
for
Internal or
Public Consumption

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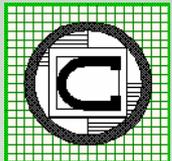
ArcGIS Online – Summarizing

Apps can be created using:

1.   a Configurable Template or
2.   the Web App Builder (locally or cloud)

Using the ArcGIS Online interface, Apps can be created by the user starting from the following:

Map Viewer (Map Tab)
Gallery (Gallery Tab)
My Content (My Content Tab)
Item Details (My Content Tab)

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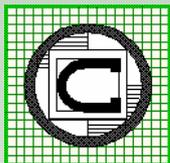
ArcGIS Server

"Things to have"

ArcGIS Server, SQL Server, Windows Server software

A Development Environment

Notepad ++, Sublime Text Editor, etc.

Web Mapping APIs (JavaScript, Flex, Silverlight)

Programming Experience (JavaScript, HTML, CSS)

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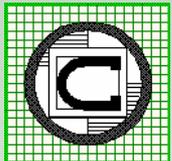
Application Location

*"Ever wonder where an Application is stored"*

Applications reside in the inetpub\wwwroot folder on the Organization's Server

Development can occur locally or on a server

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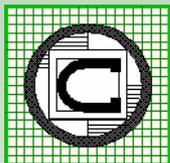
ArcGIS Server – Sample App

Developer has total control of the App's look and feel as well as its functionality

Developed using JavaScript API HTML CSS
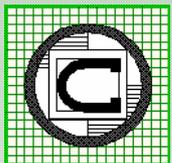
COE – Wastewater Line Maintenance

Platform: JavaScript API 3.17
Purpose: To mark completed inspections of wastewater lines according to fiscal year.
Who uses it?   Wastewater Line Maintenance Crews (TV, Saw and Hydro applications)
Browsers: Internet Explorer, Firefox, Chrome, Safari
Deployed: July 2016

Data editor form, export attributes, bookmarks, navigation tools, find asset facility ID number, printing, and popups. CEDRA custom data editor tools incorporated into the application.

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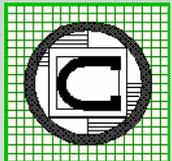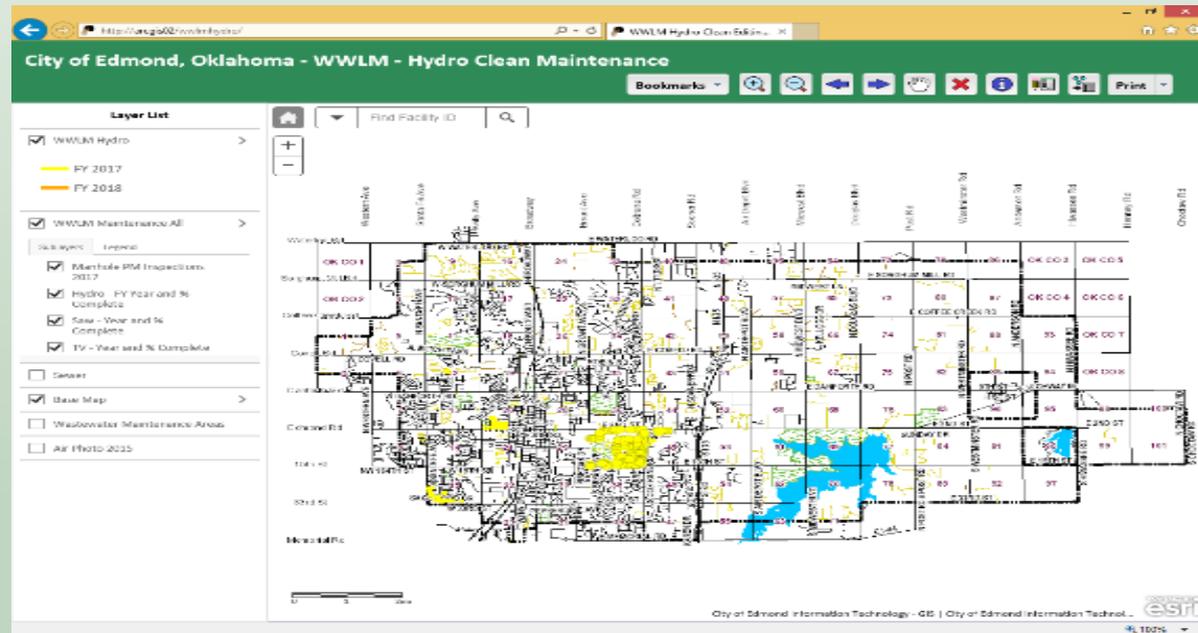
COE – Emergency Management

Platform: JavaScript API 3.09
Purpose: To edit storm shelter registration information.
Who uses it?   Emergency Management
Browsers: Firefox, Chrome
Deployed: September 2014

Data editor form, export attributes, navigation tools, search tools, printing, measuring, and template picker for adding features. CEDRA custom data editor tools incorporated into the application. Application is used on desktop.
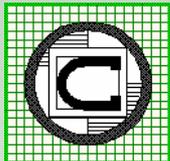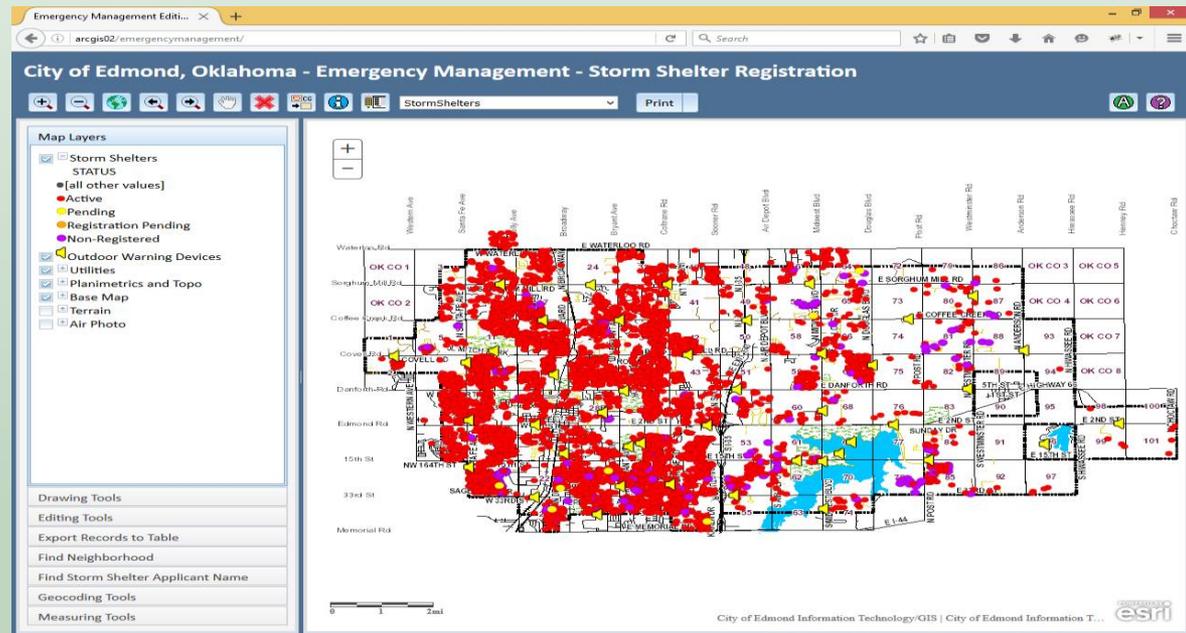
COE – Urban Forestry

Platform: JavaScript API 3.09
Purpose: Maintaining and editing public tree inventory information.
Who uses it?   Urban Forestry
Browsers: Firefox, Chrome
Deployed: September 2014

Data editor form, export attributes, navigation tools, search tools, printing, measuring, and template picker for adding features. CEDRA custom data editor tools incorporated into the application. App has been used in mobile (iPad).

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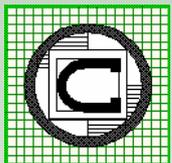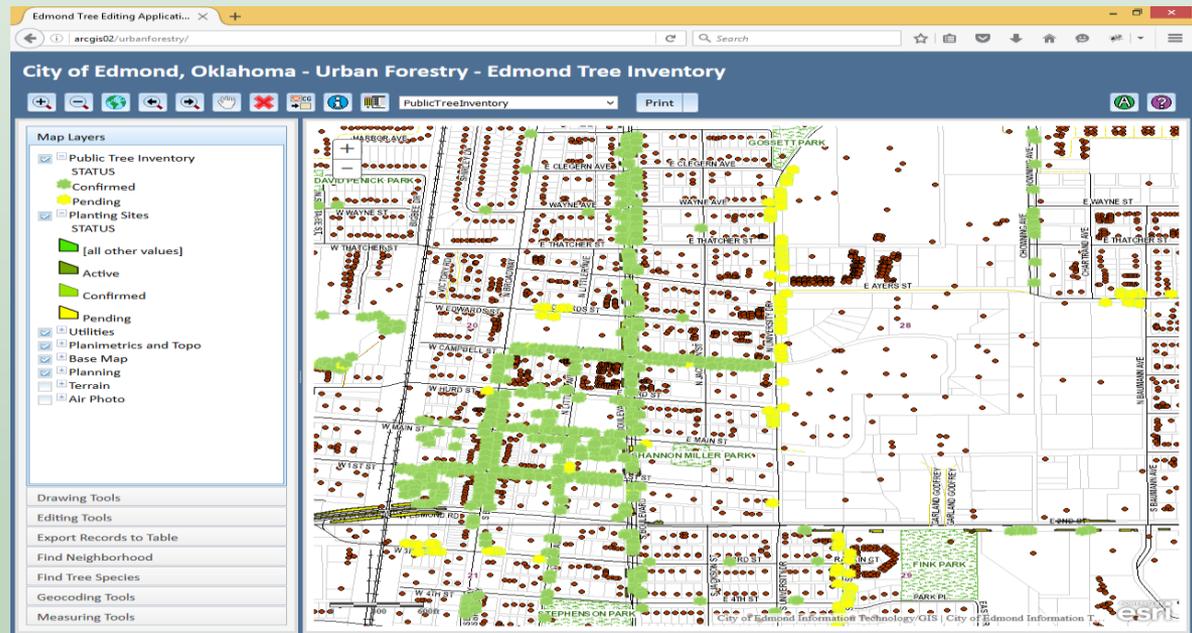
COE – Art in Public Places

Platform: Web App Builder Version 1.3
Purpose: Used for finding and identifying public art. Fact sheets are available.
Who uses it?   Open to the Public
Browsers: Internet Explorer, Edge, Firefox, Chrome, Safari
Deployed: February 2016

Art list, Popups, links to factsheets. Required the development of the search tool using a data grid (JavaScript API). Custom fact sheets were built using HTML.

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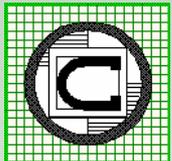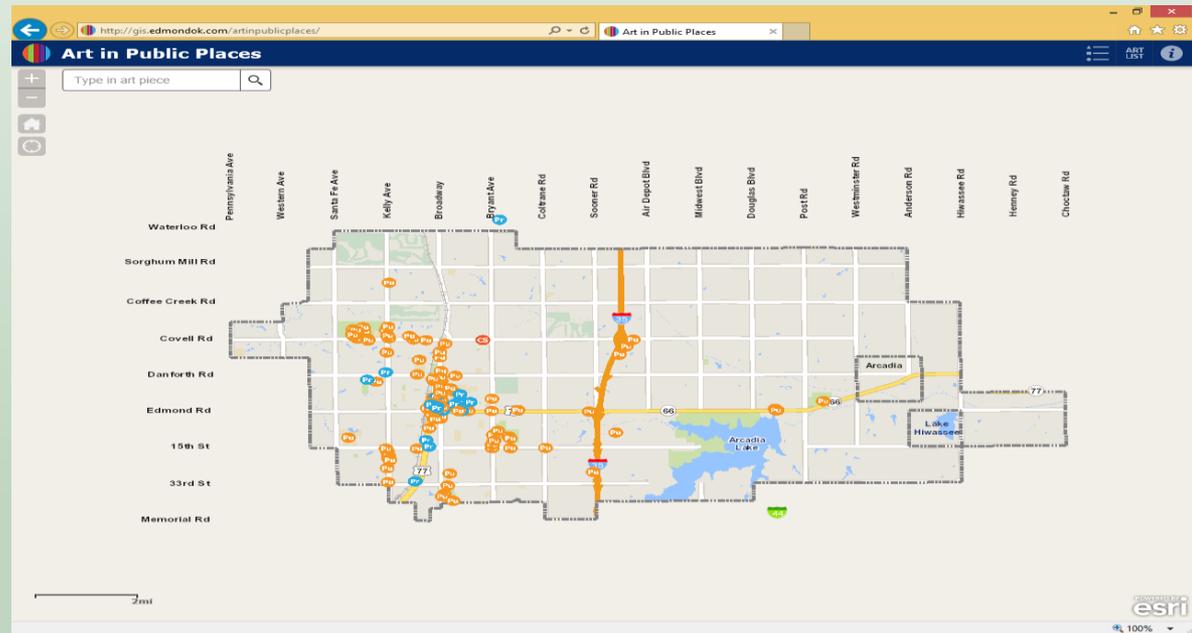
COE – Art in Public Places

No ability to control pixel tolerance results in the application being

"Not Fat-Finger Friendly"

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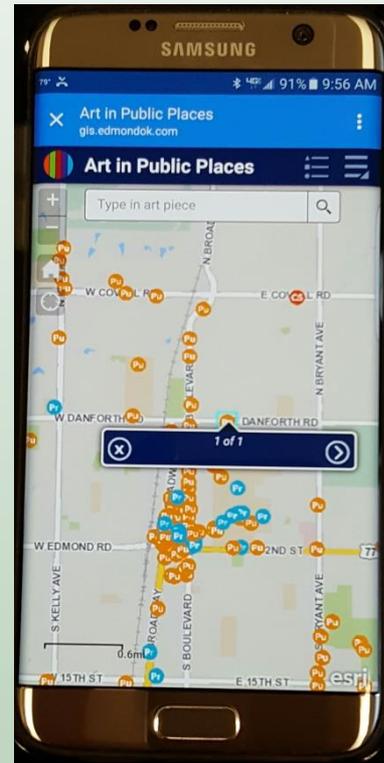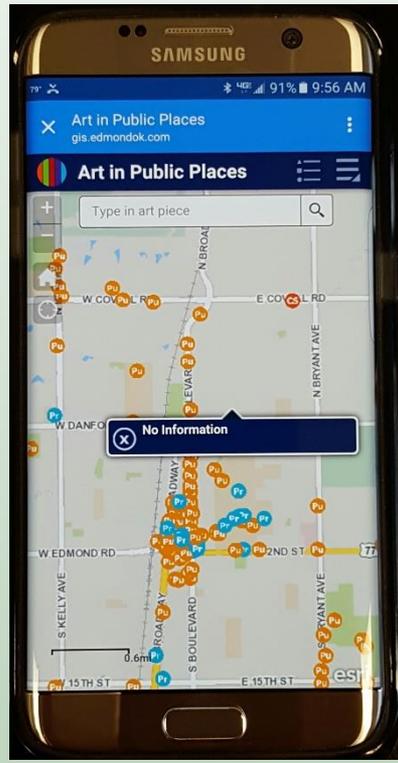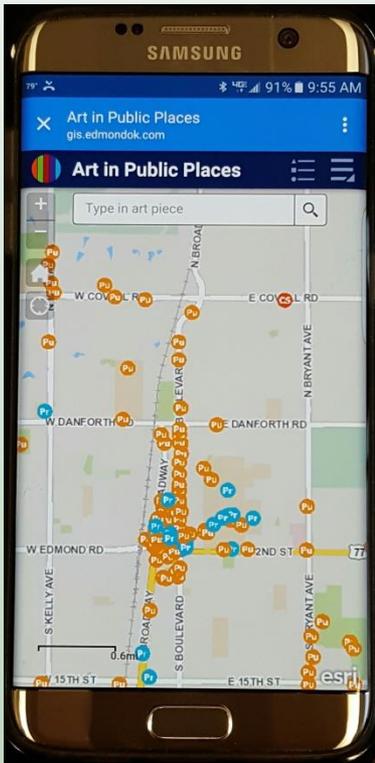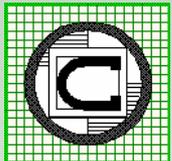
COE – Vegetation Management

Platform: JavaScript API 3.17
Purpose: To mark completed maintenance/work completed for trees near power lines.
Who uses it?   Urban Forestry will be using this application.
Browsers: Internet Explorer, Firefox, Chrome, Safari
Deployed: August 2016

Data editor form, export attributes, bookmarks, navigation tools, find asset facility ID number, printing, measuring, and popups. CEDRA custom data editor tools incorporated into the application.
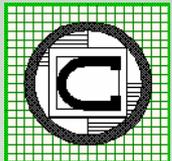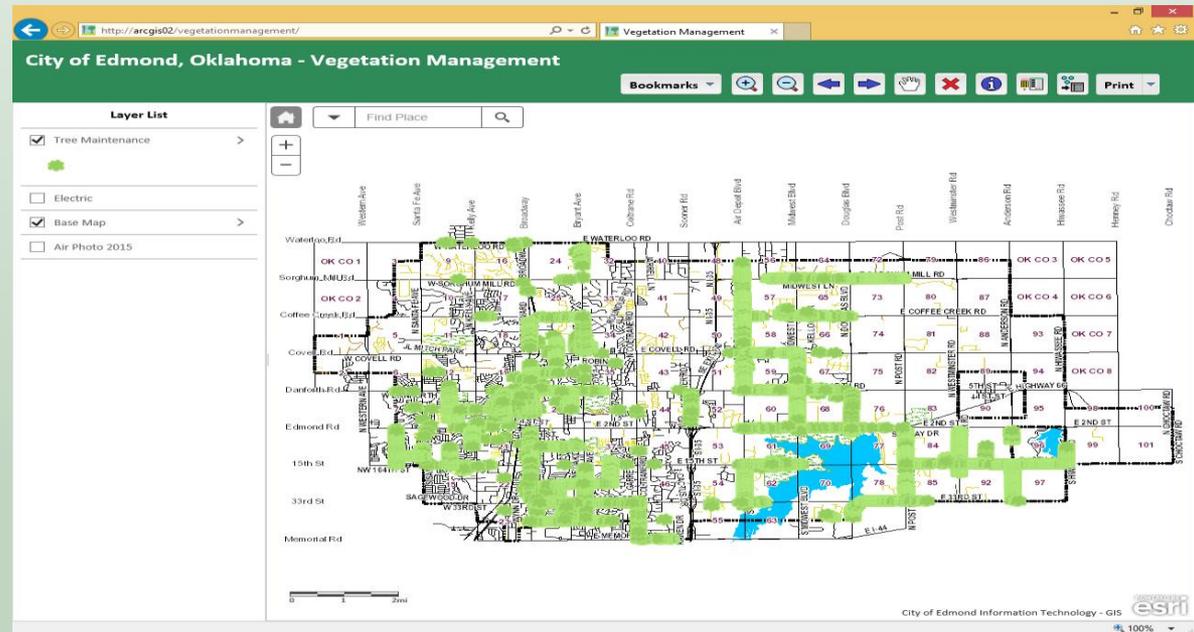
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File Management

When developing multiple Applications, some with identical code bases, consideration should be given to the **inetpub** organization

```
                            inetpub
              ┌───────────────┼───────────────┐
            App 1           App 2           Common
```

Index.html   Index.html   File 1
📁 Images   📁 Images   File 2
📁 CSS   📁 CSS   File 3
📁 Data   📁 Data   ....

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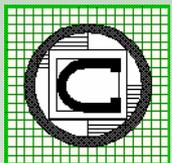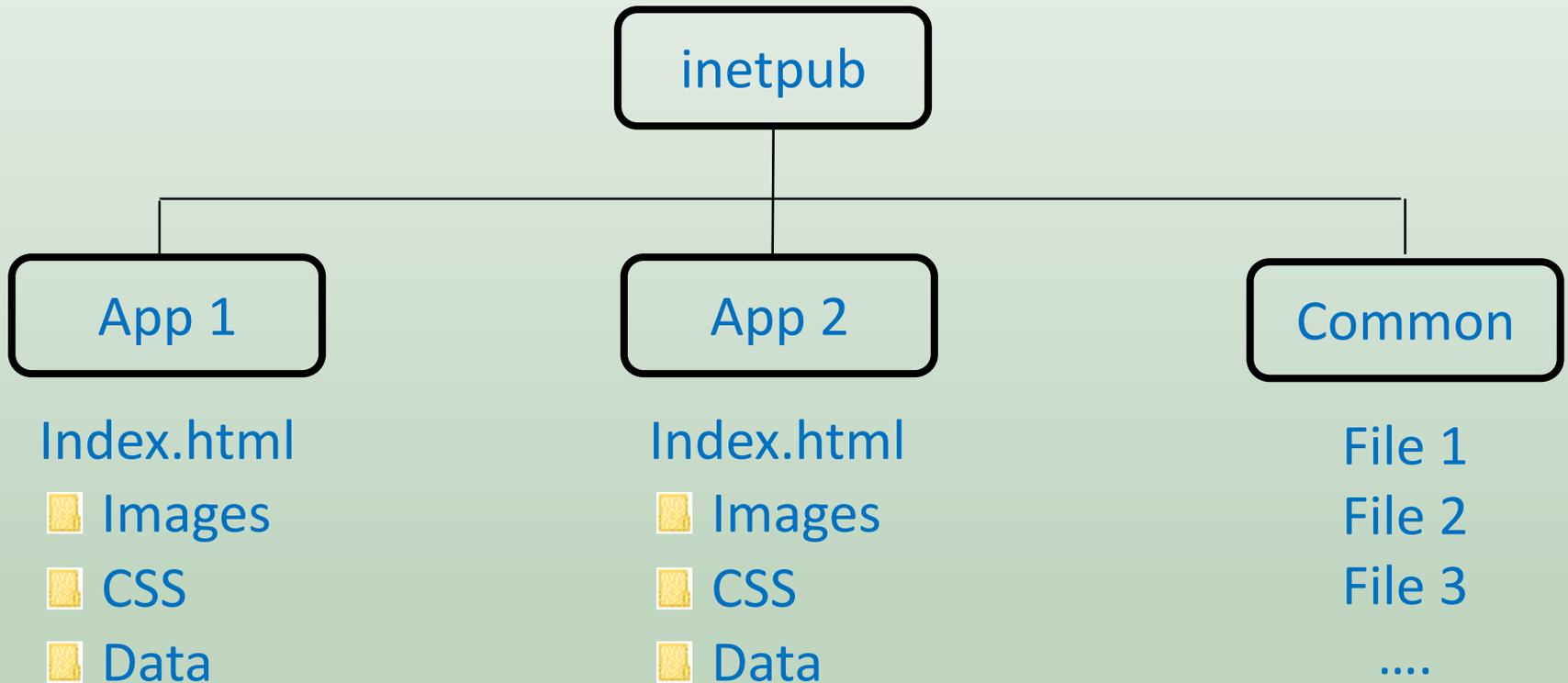
Deployment Issues

❖ User expectation that App will act like ArcMap

web apps and desktop apps are different

❖ Different browsers behave differently

decide on the preferred browser to be used

❖ Browser Cache getting in the way (clear it)

❖ Network bandwidth impacting performance

❖ Training

❖ Designing UI pleasing to all

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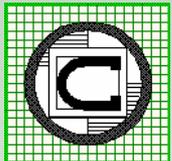
JavaScript Application Pros

❖   ESRI JavaScript API provides lots of functionality

❖   A variety of widgets can be added into an application

❖   Build the App the way you want (look and feel)

❖   Can be built for desktop and mobile environments

❖   Light weight applications, no installs required

❖   Easy to deploy
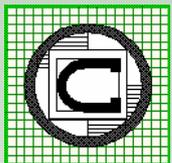
JavaScript Application Cons

❖ Must have knowledge of programming and CSS

❖ Not intuitive for regular GIS users

❖ Application development takes time

❖ Hard to replicate ArcGIS Desktop functionality
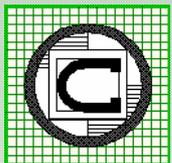
Web App Builder Pros

- ❖ Easy to install and configure

- ❖ Can run on any machine

- ❖ Can be used by developers and regular GIS users

- ❖ Provides easy solution to build applications

- ❖ Does not require the use of a cached base map

- ❖ Numerous out-of-the-box widgets available

- ❖ Compatible in any browser and mobile devices

- ❖ Application builder is highly customizable

- ❖ Easy to deploy application

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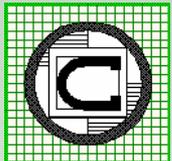
Web App Builder Cons

❖ Requires the use of ArcGIS Online to use the WAB

❖ Popup Identify/pixel tolerances are not configurable

❖ Hard to identify feature on mobile device

❖ Multiple related objects are not supported can go only one level down when using the popup or displaying attribute table.

❖ Some styling and custom settings are lost when deploying the application to inetpub
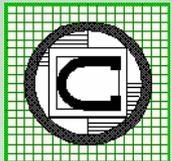
Summary

ArcGIS Online for those with:

> *No or few Development/Support Staff*
> *No in-house Server*
> *Budget limitations*

ArcGIS Server for those:

> *Not subject to the above items*
> *Wanting complete control over the App's*
> > *hosting environment*
> > *design and development*

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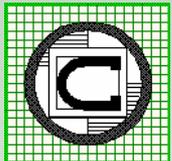
Application Development Considerations

ArcGIS Online good for:
general viewing and map interaction

ArcGIS Server good for:
when specific functionality, such as editing, drawing, printing, etc. is desired

Very feasible for ArcGIS Online and ArcGIS Server to coexist (both be used in application development)

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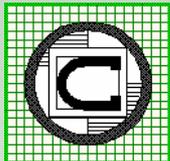
Thank you!

Questions
And
Answers

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