



Enabling High-Quality Printing in Web Applications

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High Quality Printing on the Web

- Create a printable document (**PDF** preferably)
- Have that document printed to **'exact' scale**
- Leverage **ArcMap layouts**
- Support **large format plots**
- Display **ALL** contents of my Web map
 - **Services, graphics, feature layers, etc.**
- Be able to modify the map content during the process
- High DPI

High Quality Printing – Options

- *Simple printing*
- *Custom configuration*
- *Developer cases*

Simple Printing

- **Out of the box Printing Service with ArcGIS Server**
- **Small format**
- **Synchronous Execution (Fast!)**
- **Supports token-based secure services out of the box**

ArcGIS Online Organization & Portal

- Register your own print service
- Print on-premises services behind a firewall

The screenshot displays the ArcGIS Online interface for a user named Scott. The main map shows a street grid in San Diego with a black rectangular selection box. A print menu is open over the map, listing various print templates such as MAP_ONLY, A3 Landscape, A3 Portrait, A4 Landscape, A4 Portrait, Letter ANSI A Landscape, Letter ANSI A Portrait, Tabloid ANSI B Landscape, and Tabloid ANSI B Portrait. To the right, the 'Utility Services' configuration page is visible, featuring a 'Printing' section with a printer icon and a text input field for a print service URL. Below the input field are 'CREATE PRINT TEMPLATE' and 'RESET' buttons. A table lists the configured print templates with their names and action icons (info, edit, delete).

HOME ▾ San Diego Shortlist New Map ▾ Scott ▾

Details Add ▾ Edit Basemap Analysis Save ▾ Share Print ▾ Directions Measure Bookmarks Find address or place 🔍

Contents

- ☑ Fun
- ☑ Food
- ☑ Design
- ☑ Ferries
- ☑ TrolleyStations
- ☑ TrolleyLines
- ☑ Neighborhoods
- ☑ Beaches
- ☑ Parks
- 🌐 Light Gray Canvas

MAP_ONLY

- A3 Landscape
- A3 Portrait
- A4 Landscape
- A4 Portrait
- Letter ANSI A Landscape
- Letter ANSI A Portrait
- Tabloid ANSI B Landscape
- Tabloid ANSI B Portrait

SAVE CANCEL

General

- Home Page
- Gallery
- Map
- Item Details
- Groups
- Utility Services
- Roles
- Security
- Open Data

Utility Services

Configure the utility services for your organization.

Printing

Configure your print service. Enter the URL of your print service, or leave blank to use the default printing service.

<http://nwdemo1.esri.com/arcgis/rest/services/Utilities/PrintingTools/GPServer/Export%20Web%20Map%20Task>
Example: <http://webadaptor.domain.com/arcgis/rest/services/Utilities/PrintingTools/GPServer/Export%20Web%20Map%20Task>

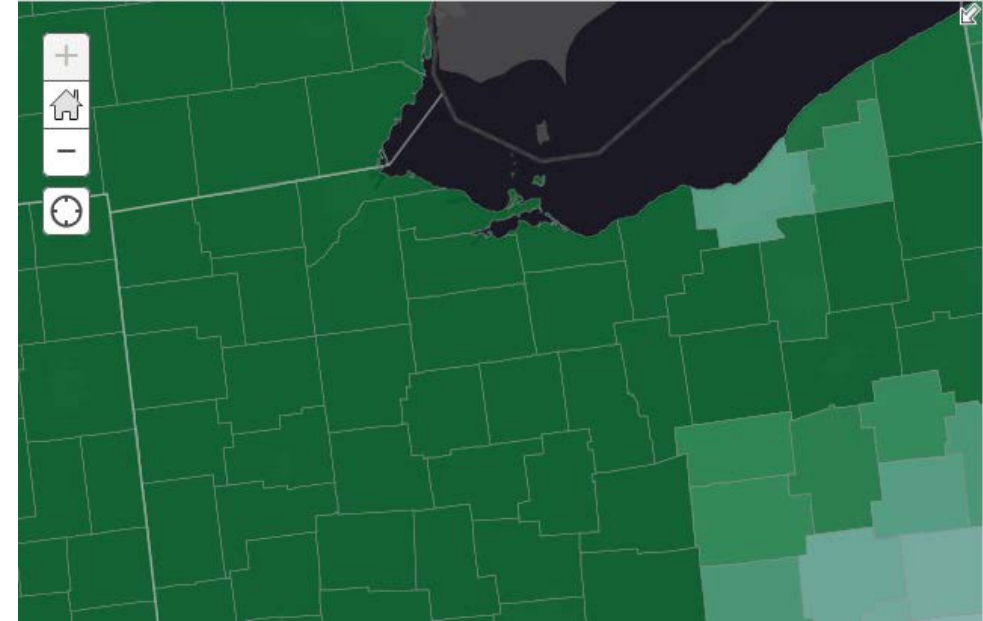
CREATE PRINT TEMPLATE RESET

Template Name	Info	Edit	Delete
MAP_ONLY	ⓘ	✎	✕
A3 Landscape	ⓘ	✎	✕
A3 Portrait	ⓘ	✎	✕
A4 Landscape	ⓘ	✎	✕
A4 Portrait	ⓘ	✎	✕

1 - 5 of 9 results << < 1 2 >>

Demo

Out of the Box Print Service



Utilities/PrintingTools (GPServer)

Service Description: The PrintingTools service is used by web application developers to export the contents of a webmap to pdf, jpeg, png or other formats. This service is generally used in the context of providing applications with printing functionality.

Tasks:

- [Export Web Map Task](#)

Execution Type: esriExecutionTypeSynchronous

Result Map Server Name:

MaximumRecords: 1000

Child Resources: [Info](#)

Demo Recap

- Log into your ArcGIS Server Manager
- Navigate to the Utilities folder
- Start the PrintingTools service
- Navigate to the rest endpoint for it
 - http://{your_server}/arcgis/rest/services/Utilities/PrintingTools/GPServer/Export%20Web%20Map%20Task
- Add the URL to your Portal settings

Custom Configuration

- **Publish the Export Web Map tool as your own service**
 - Use your own layout templates
 - Can support large format prints
 - Handle HTTP secure services
 - Choose to make the service asynchronous if desired
 - This choice depends on the size of your prints and the length of time they'll take



Demo

Printing with custom templates

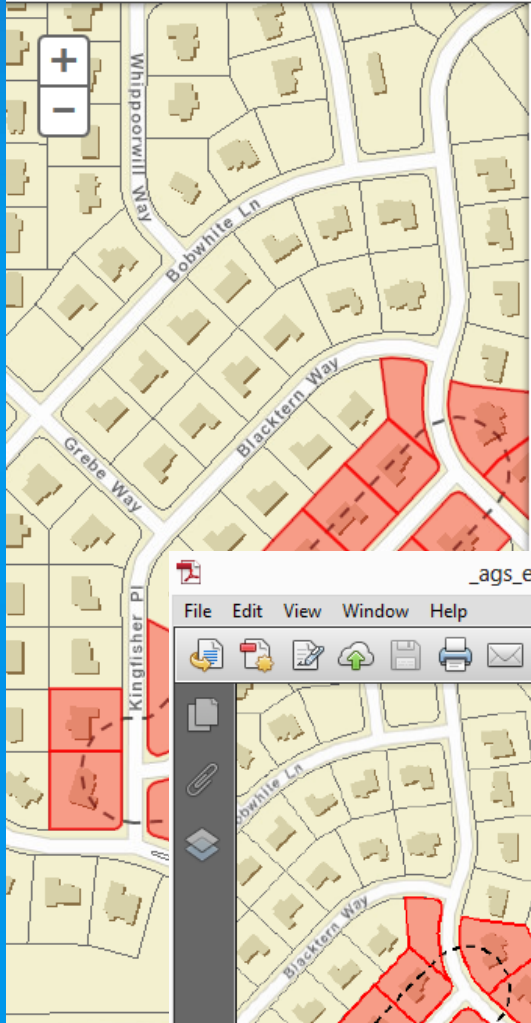
Web Printing: using my layouts
with custom texts

Find parcels within: ft

▾

Selected streets segments: 1
Snow Owl Dr (865.34 ft)

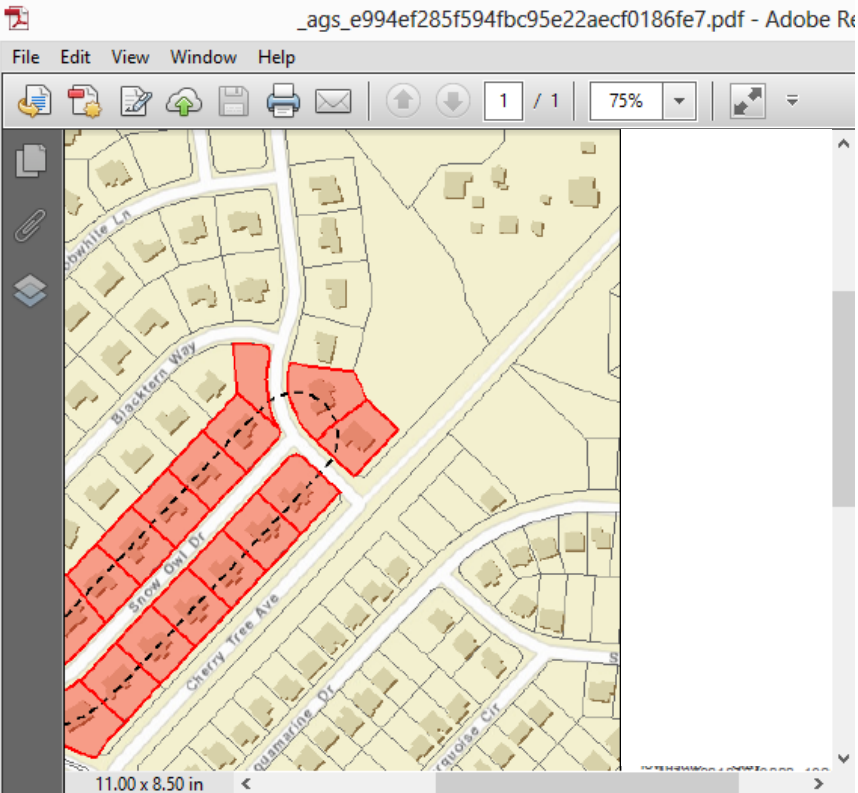
Selected parcels: 18



_ags_e994ef285f594fbc95e22aecf0186fe7.pdf - Adobe R

File Edit View Window Help

1 / 1 75%



11.00 x 8.50 in

Recap

- Authored template Map Documents (MXD) in ArcMap
 - Add logo, title, inset map, scalebar, etc.
- Run Export Web Map GP tool in the Server Tools toolbox
 - Select folder of templates
 - Run tool
- Share the Geoprocessing result as a service to your server
- Use REST endpoint in ArcGIS Online/Portal/Web AppBuilder, etc.)
- Detailed Walkthrough: <http://esriurl.com/9719>

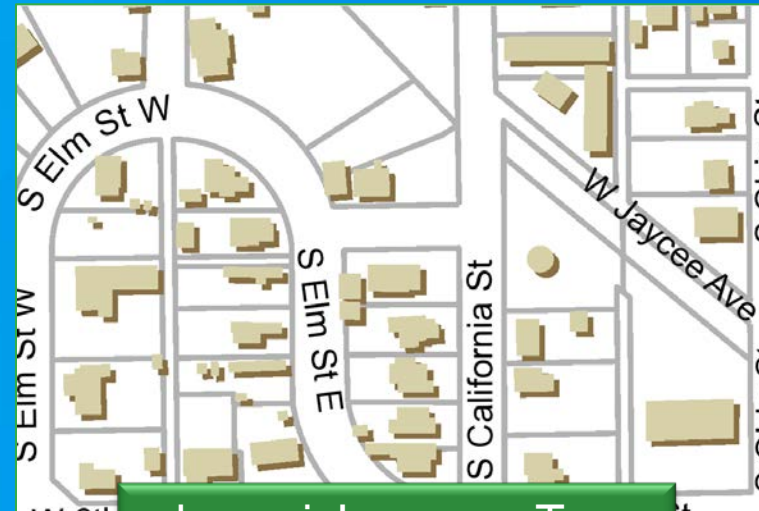


Tip: Printing Cached Services

- Tiles created using 96 DPI
- 10.1 and greater have dynamic layer support for Map Services
 - Allows for printing at higher DPI than cached images
- *For use in your own service



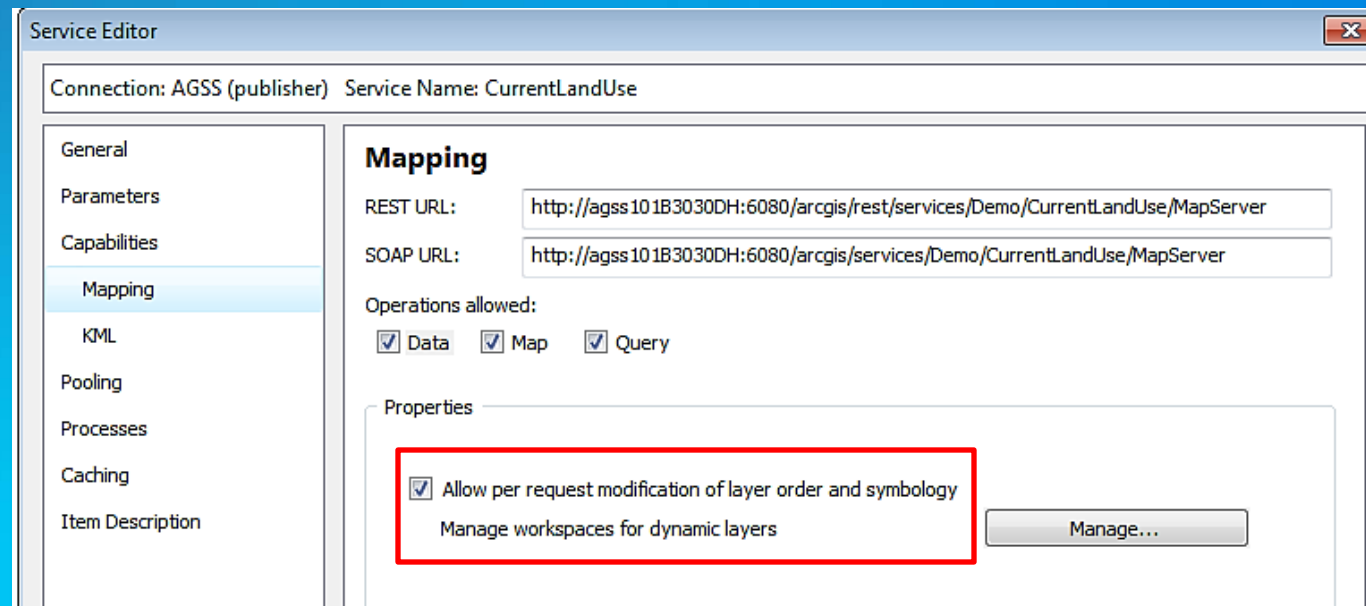
dynamicLayers = False
(600 DPI requested)



dynamicLayers = True
(600 DPI requested)

Enabling Dynamic Layers

- Option in properties of map service

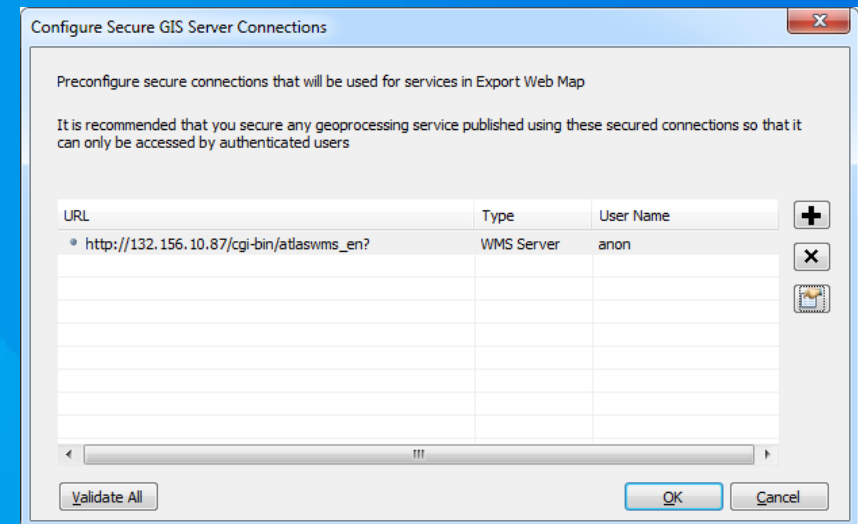


Configuring Secured Services

- HTTP security requires configuration
 - Add service connections for each secure service before publishing
 - “Edit” the tool to edit security configurations
- Secure the print service itself if you configure security for services

- **Configure service security**

- Token security handled automatically
- HTTP security must be configured
- <http://esriurl.com/secureprint>

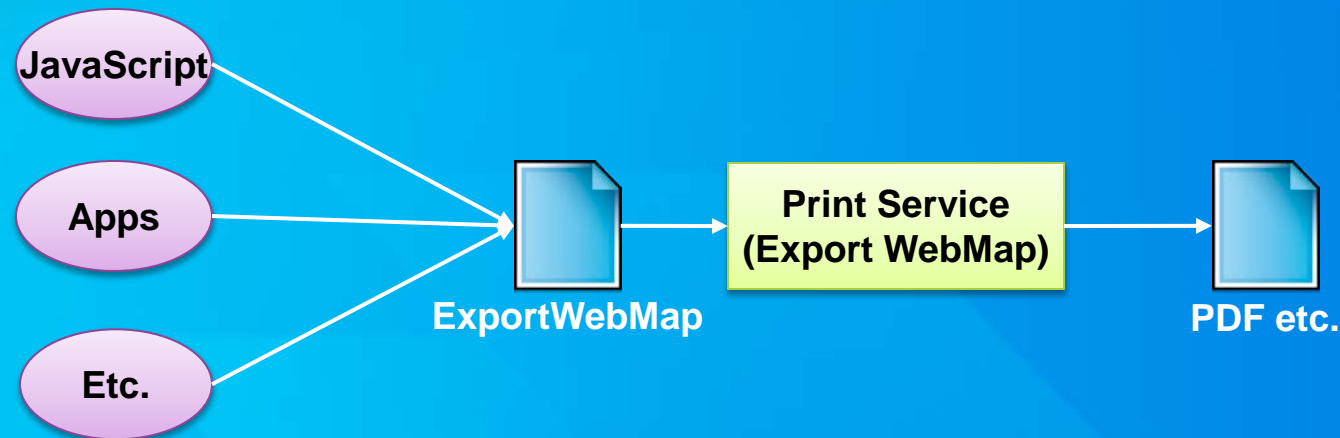


Developer Options for Printing

- Supported via ArcPy.Mapping (Geoprocessing Services)
- Map/Layer addition, replacement, etc.

Printing Service Developer Overview

- Print services are powered by the ExportWebMap specification
 - Consistent format produced by all the ArcGIS APIs
 - JSON based spec for sharing services, graphics, symbols etc.
 - <http://esriurl.com/ewm>
- Note: The services in the WebMap must be accessible to the Print Service
 - HTTP security is a special case: <http://esriurl.com/secureprint>



Demo

Printing with custom templates and a custom application

Web Printing: using my layouts
with custom texts

Find parcels within: ft

▾

Selected streets segments: 1
Snow Owl Dr (865.34 ft)

Selected parcels: 18

_ags_e994ef285f594fbc95e22aecf0186fe7.pdf - Adobe Reader

File Edit View Window Help

1 / 1 75%

11.00 x 8.50 in

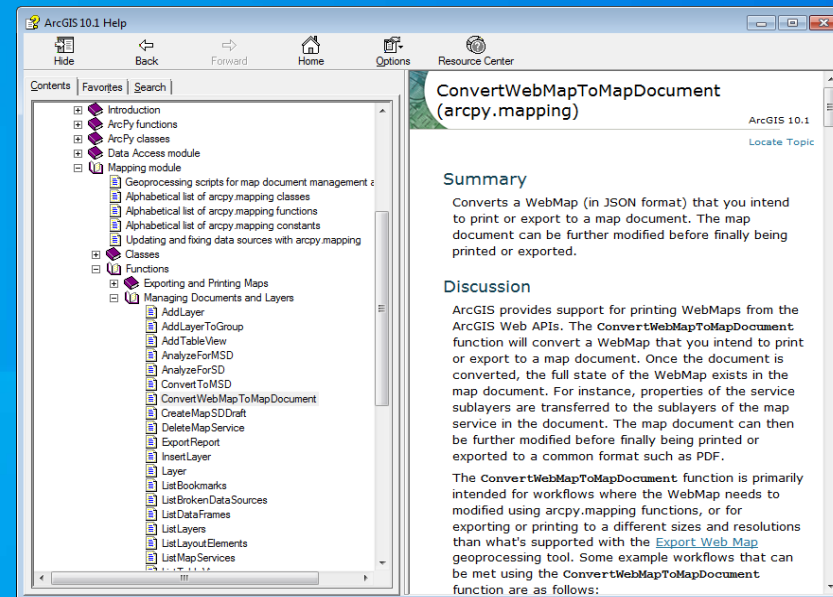
Selected parcels: 18
1610280202018000, 0 Cx
1610280202018000, 0 Cx
1610280104040000, 132
1610280104040000, 132
1610280202025000, 132
1610280202025000, 132
1610280104041000, 132
1610280104041000, 132
1610280202020000, 132
1610280202020000, 132
1610280202024000, 132
1610280202024000, 132
1610280104029000, 577
1610280104029000, 577
1610280202023000, 132
1610280202023000, 132
1610280202021000, 132
1610280202021000, 132
1610280202022000, 132
1610280202022000, 132
1610280104042000, 132
1610280104042000, 132
1610280202001000, 575
1610280202001000, 575
1610280202019000, 132
1610280202019000, 132
1610280202028000, 132
1610280202028000, 132
1610280104028000, 576
1610280104028000, 576
1610280202007000, 576
1610280202007000, 576
1610280104043000, 132
Township: Clay

Recap

- We used the same print service as before, but added additional text elements to the layout
- Requires you are building a custom app (i.e. Javascript) that can pass additional parameters to the print service
- Download the code: <http://esriurl.com/print1>

Custom Print Workflows: ArcPy.Mapping

- ArcPy.Mapping method for converting ExportWebMap JSON to MapDocuments
- ConvertWebMapToMapDocument (webmap_json, {template_mxd}, {notes_gdb}, {extra_conversion_options})
- Secure services handled via the *extra conversion options* parameter



ArcPy.Mapping Workflows

- **Once a WebMap is converted to a map document**
 - Full capabilities of ArcPy.Mapping on the document
 - Modify content
 - Add content
 - Export using custom options
 - etc.

- **See the ArcPy.Mapping help for examples...**



ArcPy.Mapping Help Examples

- Use the web help
- Updated samples and discussion
- Tutorials:
 - Basic high-quality web map printing:
<http://esriurl.com/bhqwmp>
 - Advanced web map printing:
<http://esriurl.com/ahqwmp>



Demo

Vector printing

Layers

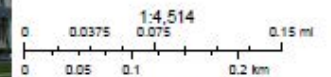


- Other 2
- Webmap
- Other
- polygonLayer
- Outline
- Lots
- Image

Parcel: 073-006-002



- Lots
- World Imagery
- Low Resolution 15m Imagery
- High Resolution 60cm Imagery
- High Resolution 30cm Imagery



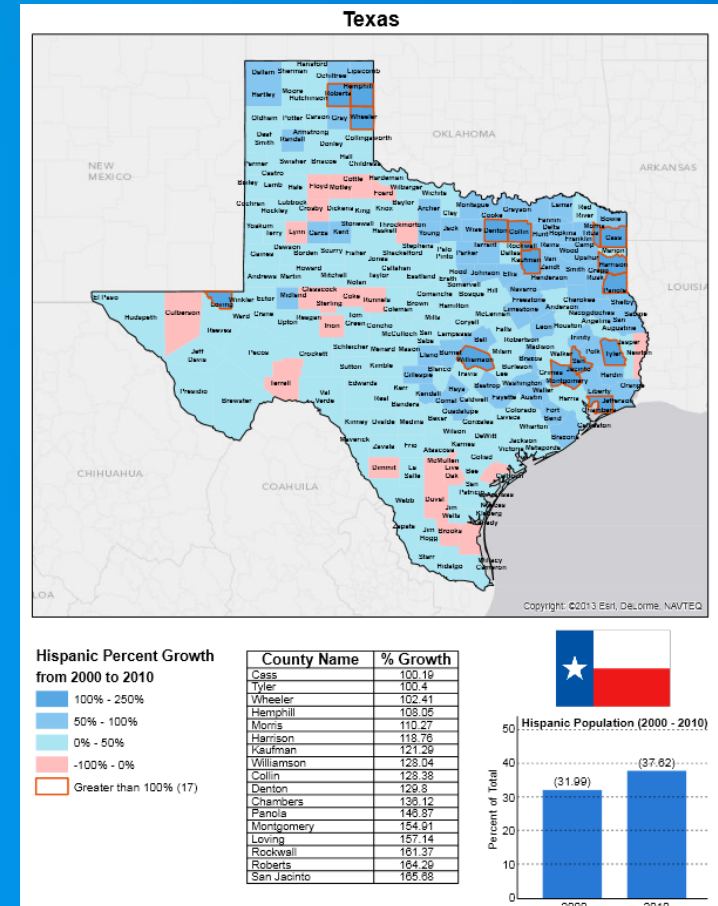
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroX, Geoprocessing, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

Recap

- Custom print service replaces service layers with feature layers
- Rasterization of all output occurs when layers have certain attributes: (Layer with transparency, Picture Marker Symbols, Raster Layers)
- Detect rasterization with this script: <http://esriurl.com/detectras>
- Download the code: <http://esriurl.com/print2>

Tables with ArcPy.Mapping

- Data Driven Pages with Dynamic Tables and Charts Sample
 - <http://bit.ly/11Hwtur>
 - Took the sample code and customized it for my needs



Demo

ArcPy.Mapping

with Web AppBuilder for ArcGIS

Printing Driving Directions

Esri World Geocoder

Directions

A 277 N Avenida Caballeros, Palm Springs, California, 92
B 380 New York St, Redlands, California, 92373

ADD DESTINATION

BY CAR BY TRUCK WALKING

SHOW MORE OPTIONS

GET DIRECTIONS CLEAR

75.36 kilometers · 51 min

ZOOM TO FULL ROUTE

1. Start at 277 N Avenida Caballeros, P
California, 92262



<start>

- | | | |
|-----|---|-------|
| 1. | Start at 277 N Avenida Caballeros, Palm Springs, California, 92262 | 0.00 |
| 2. | Go north on N Avenida Caballeros toward E Amado Rd | 0.55 |
| 3. | Turn left on E Alejo Rd | 0.80 |
| 4. | Turn right on N Indian Canyon Dr | 1.61 |
| 5. | Turn left on CA-111 N (E Vista Chino) | 0.11 |
| 6. | Turn right at N Palm Canyon Dr / W Vista Chino to stay on CA-111 N (N Palm Canyon Dr) | 5.13 |
| 7. | Take ramp and go on I-10 W | 55.45 |
| 8. | At exit 77B take ramp on the right to Tennessee Street | 0.35 |
| 9. | Turn left on Tennessee St | 0.61 |
| 10. | Turn left on W Redlands Blvd | 0.43 |
| 11. | Turn right on New York St | 0.33 |

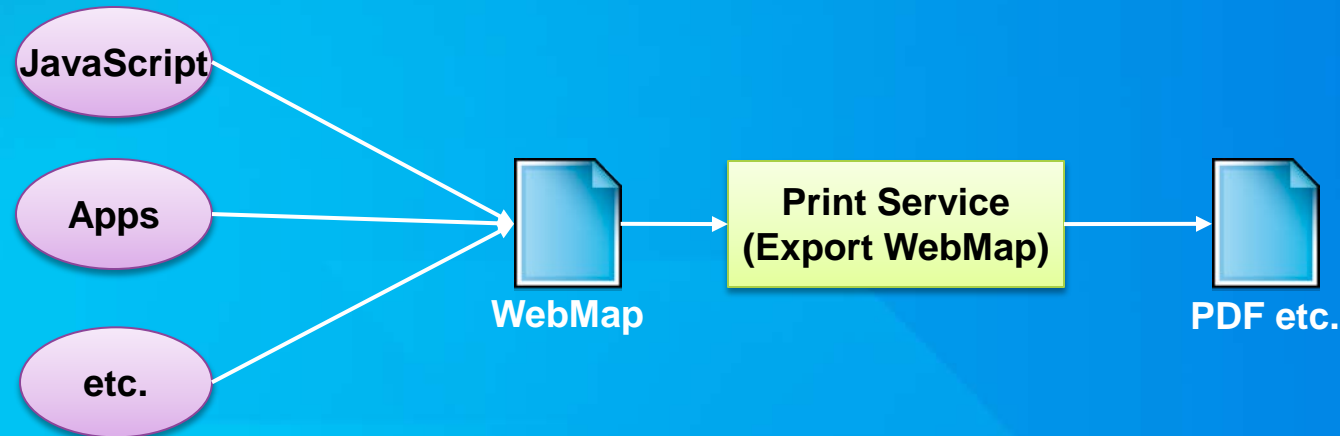
- | | | |
|-----|---|------|
| 12. | Finish at 380 New York St, Redlands, California, 92373, on the left | 0.00 |
|-----|---|------|

Recap

- Used ArcPy.Mapping
- Printed a table of directions that span multiple pages
- Download the code: <http://esriurl.com/print3>

Printing Service Recap

- **Print services are powered by WebMaps**
 - Consistent format produced by all the WebAPIs
 - JSON based spec for sharing services, graphics, symbols etc.
- **You can use the out of the box tool, a custom configuration, or an ArcPy.Mapping approach**



Esri Production Mapping for Server Extension

- Deliver dynamic, self-service online map production
- Standardize database-driven, cartographic production and high-quality layouts
- Produce high-end map graphic outputs and share map products with high cartographic accuracy over the web
- <http://arcg.is/1Khj1qV>

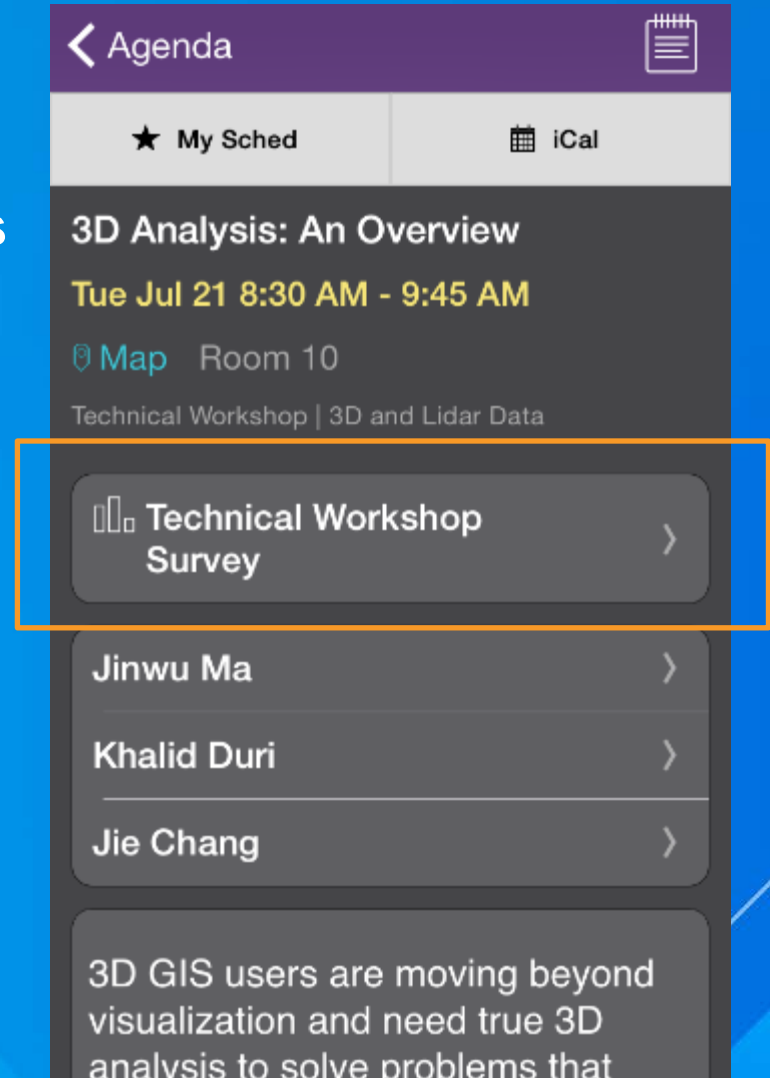


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 - Use the Search Feature to quickly find this title
- Click “Technical Workshop Survey”
- Answer a few short questions and enter any comments





Understanding our world.