

Environmental Information



# EN2015

## A Mobile Compliance Application Using GIS, GPS, and Environmental Databases

Patrick Barickman, Whitney Oswald; *Utah Department of Environmental Quality*

**2015 Exchange Network National Meeting**

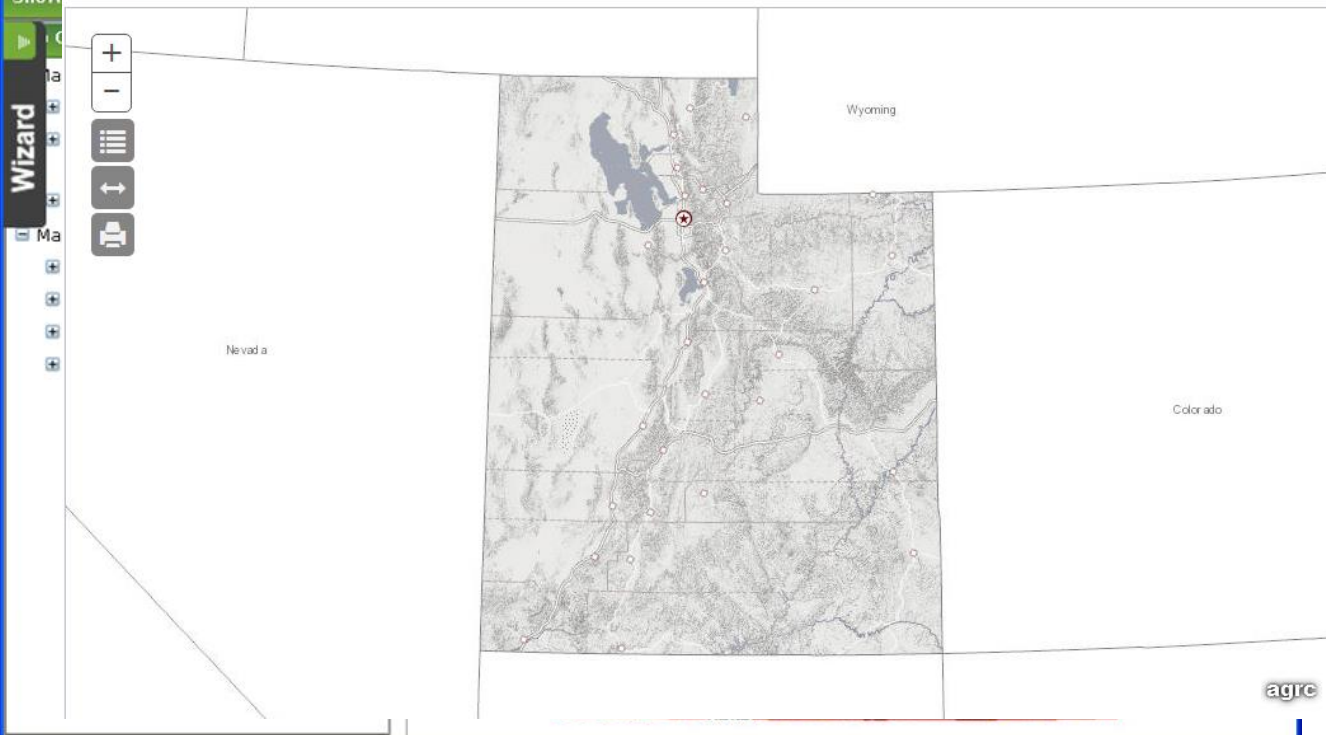
Supporting the Business of Environmental Protection

September 29–October 1, 2015  
Sheraton Philadelphia Society Hill Hotel  
Philadelphia, Pennsylvania

<http://www.exchangenetwork.net/en2015>

# ABSTRACT

Utah DEQ completed a 2013 EN grant to improve and update its environmental GIS database which is accessible to the employees and the public. Building upon these and other shared data sets, a tablet-based application for compliance inspections is now in development. This tool uses GIS base maps, a tablet with GPS location and direction capabilities, databases from multiple agencies, and UDEQ's Air Quality document management system for permit and compliance records. Inspectors will have an integrated system for data gathering and editing using the departmental compliance database, desktop GIS with facility location, and a coupled tablet application for inspections and data collection.



Original development  
circa 1997

Select Query Layers

- Drinking Water
- Water Quality
- Air Quality
- Environmental Response & Remediation
- Solid and Hazardous Waste

Define Search Criteria

# **2015 Exchange Network Grant (Partially Funded)**

General Platform Architecture for Tablet-Based  
Field Collection

Offline capability ( out of cell phone range )

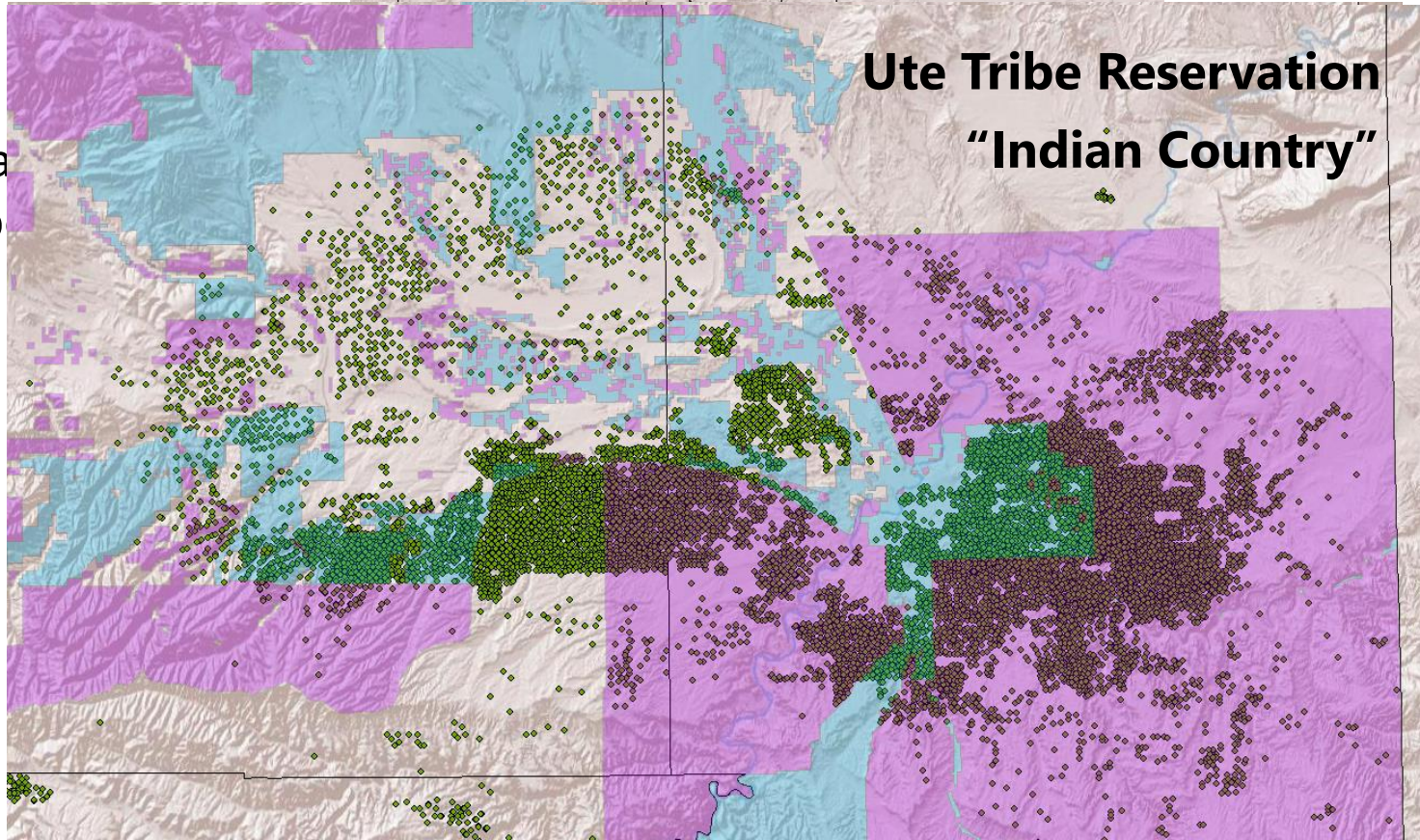
Cached data layers and imagery

Improved navigation and directions

Custom editing and data sync

“Wasatch”  
80% p

# Ute Tribe Reservation “Indian Country”



013  
> 140 ppb



**NUCOR STEEL- NUCOR STEEL**  
**WEST NUCOR RD**  
**PLYMOUTH**  
 (N/A)

### Result Filters

Program

Sub Program

Project Manager

All

Clear Filters

281 documents found.

	<u>Doc #</u>	<u>Name</u>	<u>Branch</u>	<u>Fac ID</u>	<u>Pgm</u>	<u>Sub Pgm</u>	<u>Doc Date</u>	<u>Title</u>	<u>Division</u>	<u>Proj. Mgr.</u>	<u>Category</u>
<a href="#">View</a>	DAQ-2011-004034	Nucor Steel- Nucor Steel	Agency Interest - Compliance	10008	Nucor Steel- Nucor Steel		7/18/2011	Nucor Bar Mill Group - Pretest Protocol Review memo & Protocol dated 7/5/2011	DAQ		Nucor Bar Mill Group - Pretest Protocol Review memo & Protocol dated 7/5/2011
<a href="#">View</a>	DAQ-2008-005223	Nucor Steel- Nucor Steel	Agency Interest - Compliance	10008	Nucor Steel- Nucor Steel		2/7/2008	Nucor Steel - Title V Annual Compliance Certification Report Evaluation 1/23/08	DAQ		Nucor Steel - Title V Annual Compliance Certification Report Evaluation 1/23/08
<a href="#">View</a>	DAQ-2011-004940	Nucor Steel- Nucor Steel	Agency Interest - Compliance	10008	Nucor Steel- Nucor Steel		9/29/2011	Nucor Steel - Full Compliance Evaluation	DAQ		Nucor Steel - Full Compliance Evaluation



# Utah Oil and Gas

Division of Oil, Gas and Mining - Department of Natural Resources



[Utah Oil & Gas Home](#) >> [Data Research Center](#)

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- DATA RESEARCH CENTER**
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- Well Files
- Well Logs
- Well Spacing Orders

- QUICK REFERENCES:**
- [Drilling Permits](#)
  - [Drilling a Well](#)
  - [Operator Changes](#)
  - [Well Bonding](#)
  - [Reporting](#)
  - [Undesirable Events](#)

## DATA RESEARCH CENTER

Resources Available:

- [Online Database Search](#)
- [Permitting](#)
- [Drilling](#)
- [Drilling Completed](#)
- [Production](#)
- [General Resources](#)
- [Database Download Files](#)



### ★ Online Database Search

- [LiveData](#)

The "Live Data" link allows the public to perform their own searches of Utah Division of Oil, Gas and Mining databases. Information available includes basic well information, monthly production and disposition data, injection data, scanned well files, log images, and more. Go to [LiveData Online Oil & Gas Information System Help](#) for more information.

### ★ Permitting

- Statistical Overview (totals):

- By County
- By Month
- By Year



# ArcGIS API for JavaScript

[Home](#) [Guide](#) [API Reference](#) [Sample Code](#)

# ArcGIS for Developers

## Use the API

Reference the ArcGIS JavaScript API from our CDN and you are ready to get started:

```
<link rel="stylesheet" href="http://js.arcgis.com/3.14/esri/css/esri.css">
<script src="http://js.arcgis.com/3.14/"></script>
```

## Your first map



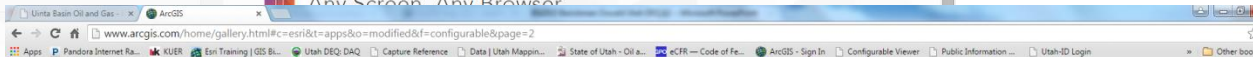
```
require(["esri/map", "dojo/domReady!"], function(Map) {
  var map = new Map("map", {
    center: [-118, 34.5],
    zoom: 8,
    basemap: "topo"
  });
});
```

[GET STARTED](#) [SAMPLES](#) [API REFERENCE](#)

## ArcGIS Integration

Use ArcGIS.com or your own on-premises ArcGIS Server. The API provides tools to make working with both simple.

## Any Screen. Any Browser.



ArcGIS [Features](#) [Plans](#) [Gallery](#) [Map](#) [Scene](#) [Help](#) [Sign In](#)

## Gallery

# Gallery

### Featured Apps from Esri

Sort By: [Most Recent](#)

#### Maps

#### Apps

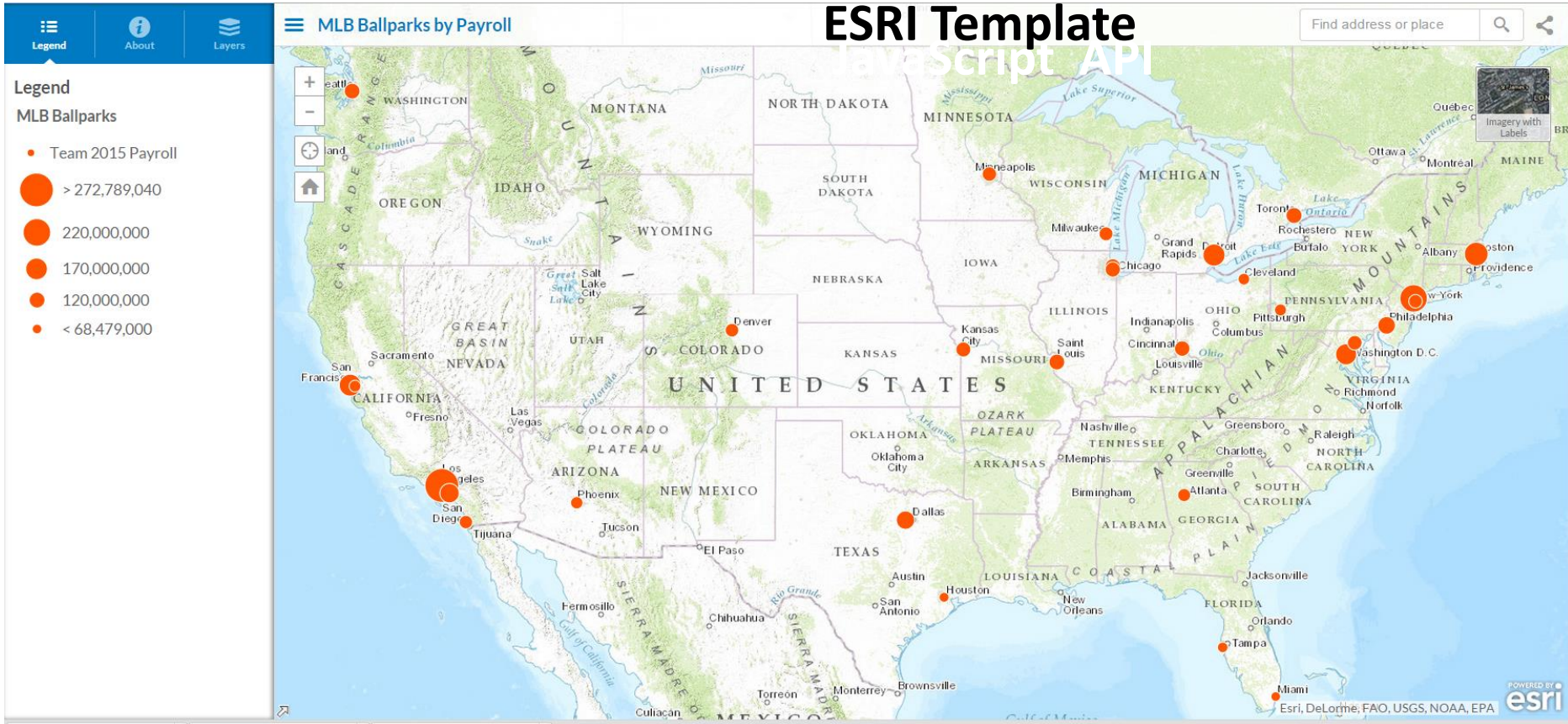
Show [Ready-to-Use Apps](#) [Configurable Apps](#)

Search the website or visit the [ArcGIS Marketplace](#)



<a href="#">Crowdsource Manager</a>	<a href="#">Map Carousel</a>	<a href="#">Maps and Apps Gallery</a>	<a href="#">Public Gallery</a>
<a href="#">Simple Map Viewer</a>	<a href="#">Public Information</a>	<a href="#">Map Tools</a>	<a href="#">Finder</a>
<a href="#">Find, Edit, and Filter</a>	<a href="#">Filter</a>	<a href="#">Edit</a>	<a href="#">Directions</a>





Legend

Gas Wells - Matched

+

Oil Wells - Matched

+

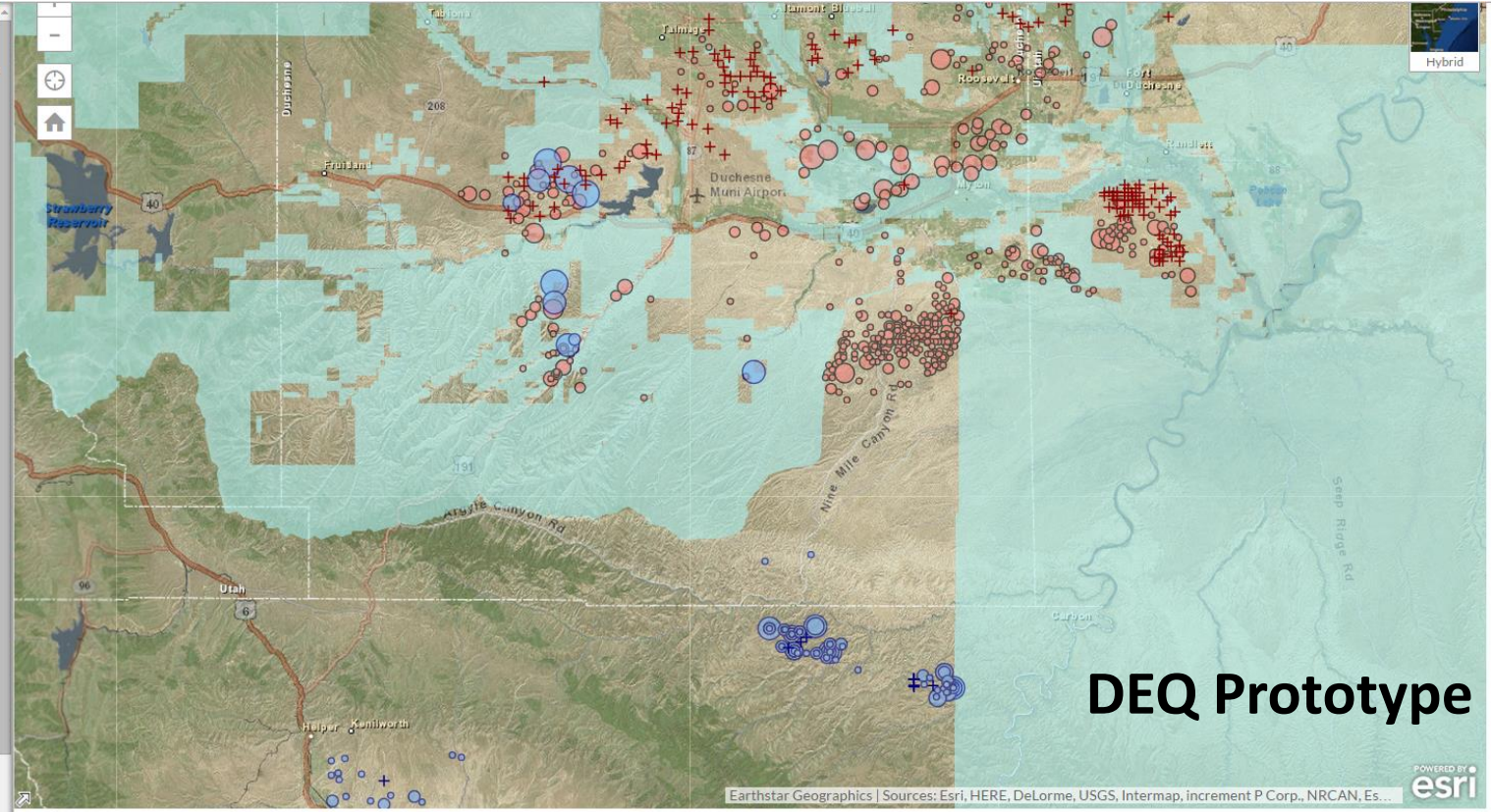
Gas Wells - Unmatched

- 5.0154 - 8.9177
- 8.9177 - 14.978
- 14.978 - 23.0795
- 23.0795 - 46.3083
- 46.3083 - 134.4934

Oil Wells - Unmatched

- 5.0215 - 11.6325
- 11.6325 - 23.5587
- 23.5587 - 43.8196
- 43.8196 - 78.6368
- 78.6368 - 246.1745
- 246.1745 - 451.3432

Reservation/Tribal Land and Indian Country



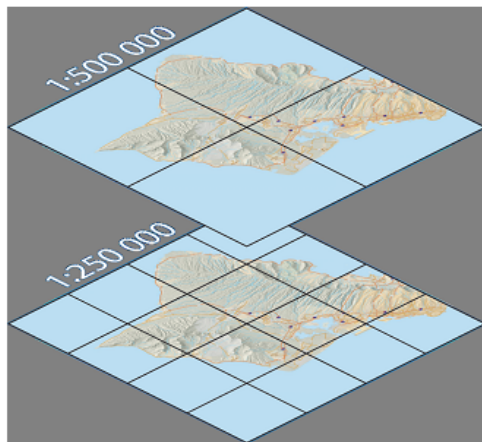
A

B

# Offline, Out of Cell Network Range

## What is a cached map service?

A cached map service is a regular map service that has been enhanced to serve maps that contain image tiles of a map extent at specific scale levels. Returning a tile from the cache



The map above has been cached at two scales. The server can now return these tiles directly. In this case, you can

You can create a cache from any existing map service using ArcCatalog or scriptable geoprocessing tools. You can also download tiles and will not have to dynamically render the map again. Creating an effective cache

A complete cached map service uses all of the following components to do its work:

- **The cache.** This is composed of a map service cache directory that contains a description of the cache called a tiling scheme.
- **The web server.** The web server references the actual map service, a web virtual directory when the virtual cache directory is not directly accessible.
- **The ArcGIS Server.** The ArcGIS Server hosts the map service that provides in cases draws map tiles when the cache is unavailable.



### Tutorials

Collect data

Update a feature

Delete a feature

Guided tour

### Additional help

Quick reference

# Driving Directions

## Navigator for ArcGIS

The upcoming release of Navigator for ArcGIS will allow you to navigate to the places that m field workforce reliability. Features of Navigator for ArcGIS include:

- Voice-guided **directions** and automatic route recalculation.
- Location searching and **directions** to one or more stops.
- Access to downloadable maps for offline navigation.
- Support for travel modes such as walking, trucking or driving.
- Integration from other ArcGIS Apps such as Collector for ArcGIS and your own apps.
- For more information, see [Navigator for ArcGIS Help](#).

# Web AppBuilder for ArcGIS (Developer Edition)

[Home](#)[Guide](#)[API Reference](#)[Sample Code](#)[Forum](#)

# AppBuilder

## Download Current version 1.2 (August 2015)

Get the Developer Edition to create custom widgets and themes. Boost your productivity by extending the framework. Build powerful GIS apps that run on desktops, tablets and smartphones.

[DOWNLOAD](#)[Supported Browsers](#) | [License](#) | [Key Features](#)

## Install and set up

Instructions are provided to help you install and start the Web AppBuilder for ArcGIS.

[GET STARTED](#)

## Your first app



### Extensible framework

Enable developers to build custom widgets and themes.



### Create apps with ease

Create apps with a simple configuration builder experience (WYSIWYG).



### Any devices

HTML/JavaScript apps that run on any devices.



### Live sites showcase

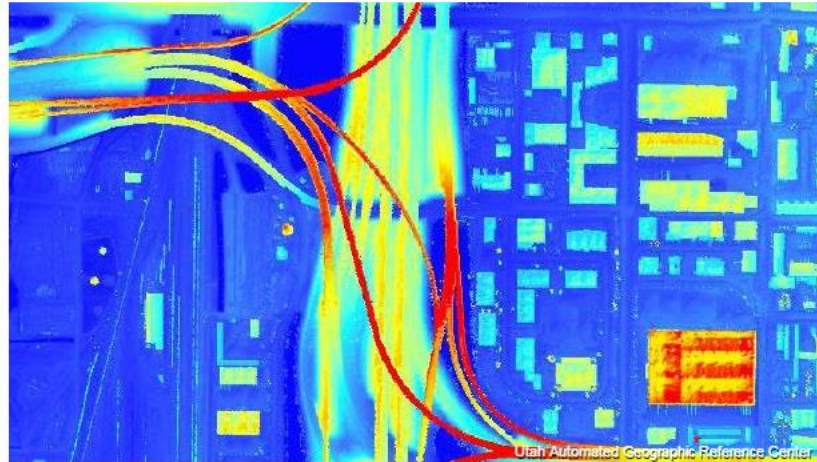
See what others have built in our [showcase](#)

[DEVELOPER'S GUIDE OVERVIEW](#)

# Leverage funds from Statewide Initiative

KSL.com

News Sports Brandview TV Radio Live Weather ☁️ 89°



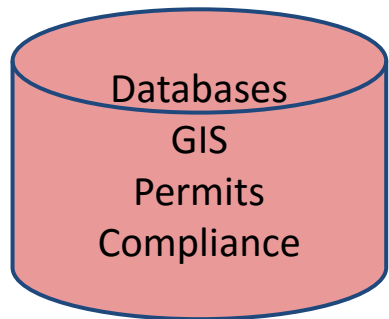
## Utah agencies partner to share high-resolution map information

By Katie McKellar | Posted Feb 1st, 2015 @ 4:20pm

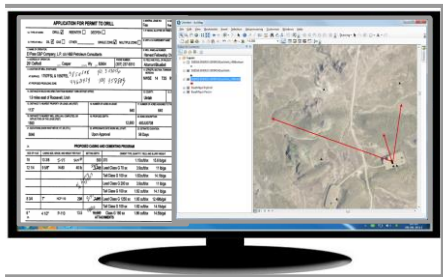
# Integrated Desktop and Tablet System



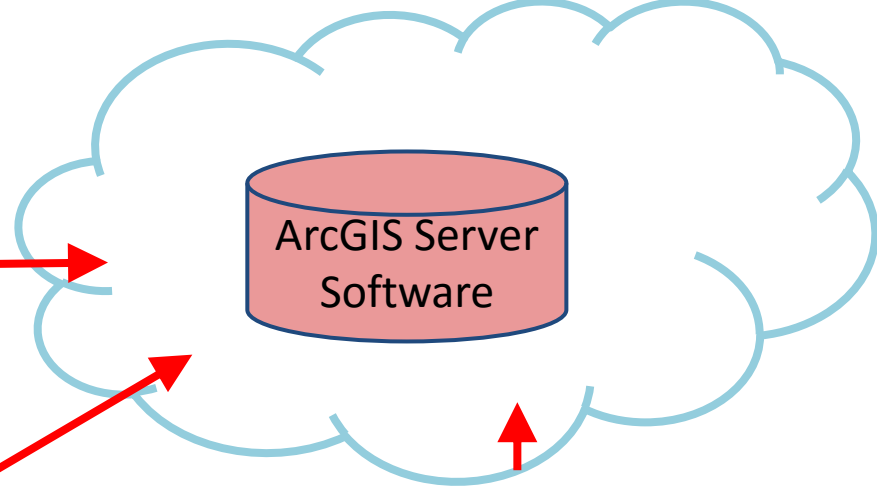




connected



**Desktop** Preparation, Analysis, and Data Editing



disconnected



**Connected/Disconnected Field  
Work Platform: Inform & Collect**

# Summary of EN Grant Focus

- **Offline capability**
- **Cached data layers**
- **Improved navigation**
- **Custom editing and data sync**