



User Experience and Interface Design for Web Apps

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The background features a vibrant blue gradient. On the left side, there are abstract geometric shapes in shades of purple and yellow, some with a grid-like texture. The text 'What is good Design?' is centered in a white, sans-serif font.

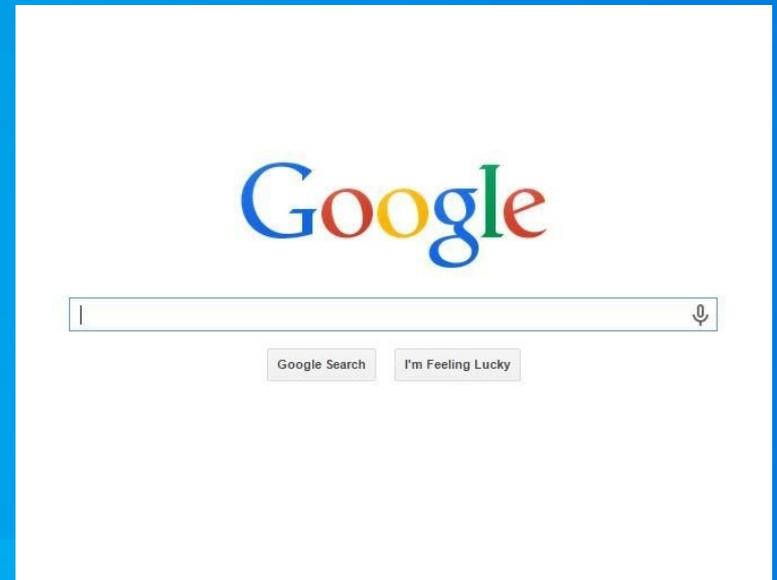
What is good Design?

Which design is better?

A



B



Which design is better?

A



End-User Needs

B



Business Needs

Strategy: End-User Needs

- Who are our users?
- What are they trying to accomplish?
- How successful are they doing that?

Strategy: Business Needs

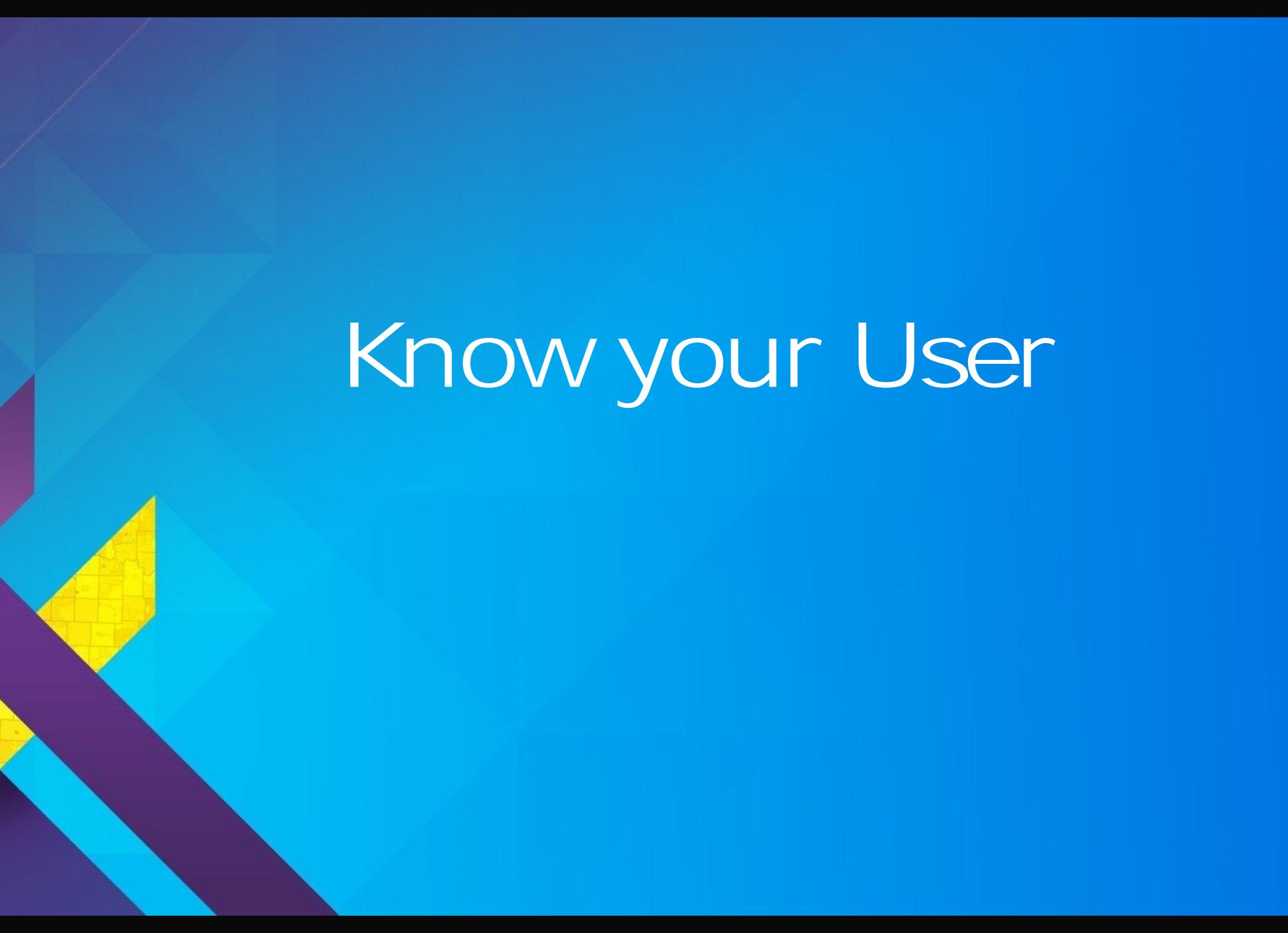
- Where are we now?
- Where do we want to go?
- How do we get there?
- How do we define success?

What is good Design?

It has a Purpose

=> Define Strategy

=> Define Success

The background features a vibrant blue gradient. On the left side, there are abstract geometric shapes in shades of purple and yellow. A prominent yellow shape with a grid-like texture is partially visible, along with several purple shapes of varying sizes and orientations.

Know your User



External
Users

- ⦿ impatient
- ⦿ demanding
- ⦿ in a hurry
- ⦿ in control

Make/Save \$

Internal
Users

- ⦿ skilled
- ⦿ trained
- ⦿ forced



How to create Better Designs?

A decorative geometric pattern on the left side of the slide, featuring overlapping triangles and polygons in shades of purple, blue, and yellow. The pattern is composed of various shapes, including a prominent yellow triangle pointing right, and several purple and blue shapes that create a layered, abstract effect.

Consider the
Empty State

Enter Address or Zip Code



Find a Store



Enter Address or Zip Code

Find



POWERED BY
esri

Better Design

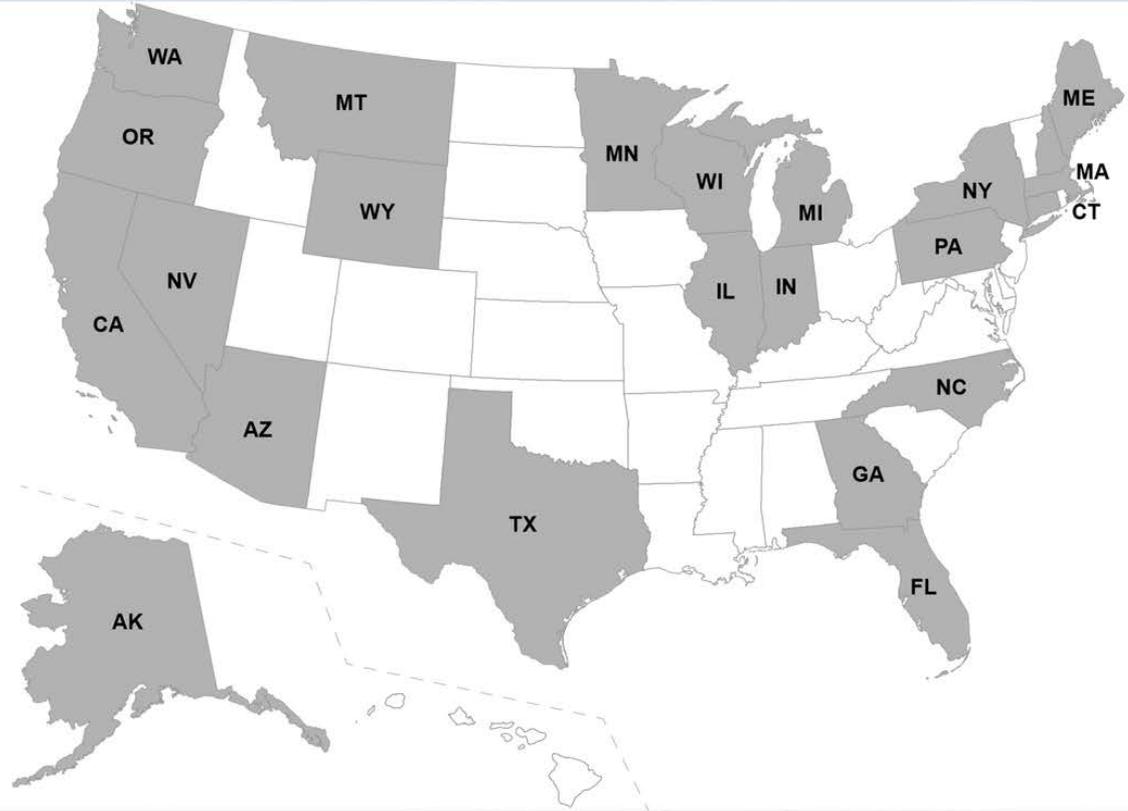
Find a store near you!

Enter Address or Zip Code

Find



Retailer has over 1000 locations nationwide.



A decorative graphic on the left side of the slide, consisting of overlapping geometric shapes in shades of purple, blue, and yellow. The shapes include triangles and polygons, some with a grid-like texture.

Use Task-focused Workflows



1 Find Your Service Area

State, County, Zip, Place

OR USE

Map Selection Tools

ADD ZONES

REMOVE ZONES

2 Define Your Service Options



3 What Date is this Effective?

7/17/2014

4 All Done?

SUBMIT

Select Your Transportation Types

Ambulance Cab Paralift Stretcher Demand Response

Define Services Per Zone

OPEN / CLOSE ALL CLEAR ALL ZOOM ALL

Zip	P/D	P	D	Options
10211	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
10012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
10009	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
10003	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
10002	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>

P/D: Pickup & Dropoff P: Pickup Only D: Dropoff Only

ESRI User Return to MTM

Zip codes here (15):

- 10203 (Bank Of New York Brm)
- 10212 (Business Reply)
- 10256 (Deutsche Bank)
- 10257 (Bank Of New York)
- 10258 (European American Bank)
- 10259 (New York City)

Esri, HERE, DeLorme, MapmyIndia, ...

A decorative graphic on the left side of the slide, consisting of overlapping geometric shapes in shades of purple, blue, and yellow. The shapes include triangles and polygons, some with a grid-like texture.

Utilize UI Patterns

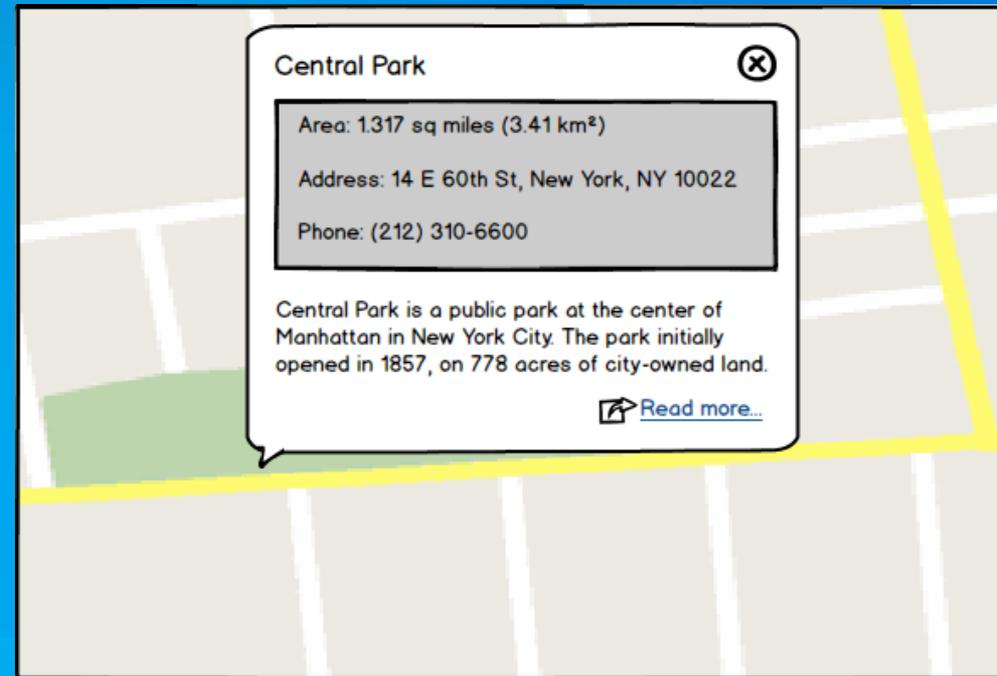
What are UI Patterns?

- Solutions to common design problems
- Help to avoid re-inventing the wheel
- Defined as Problem / Context / Solution

Pattern: Info Window

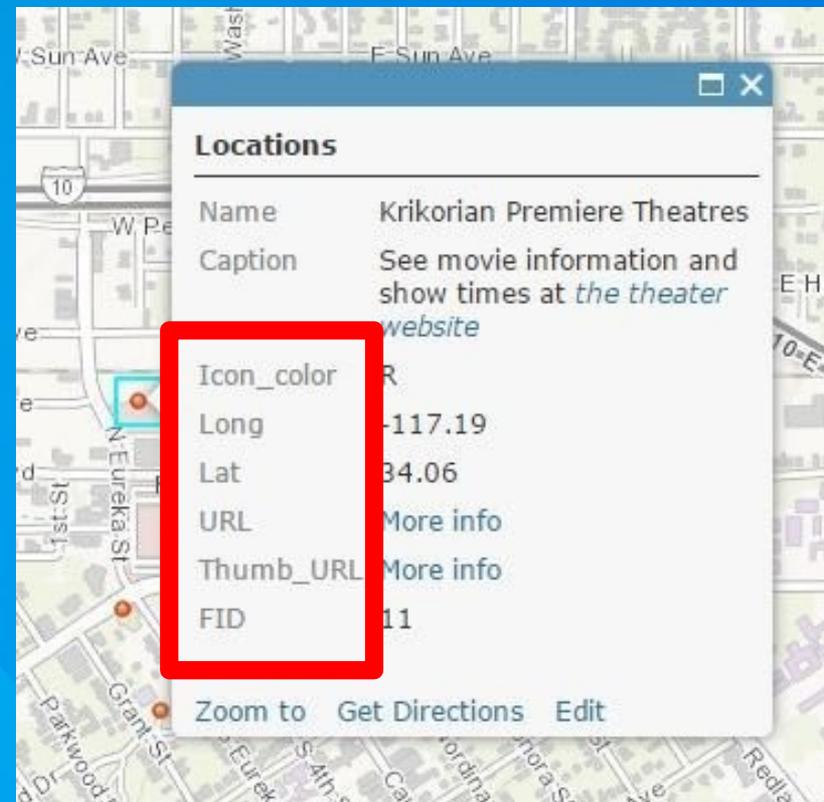
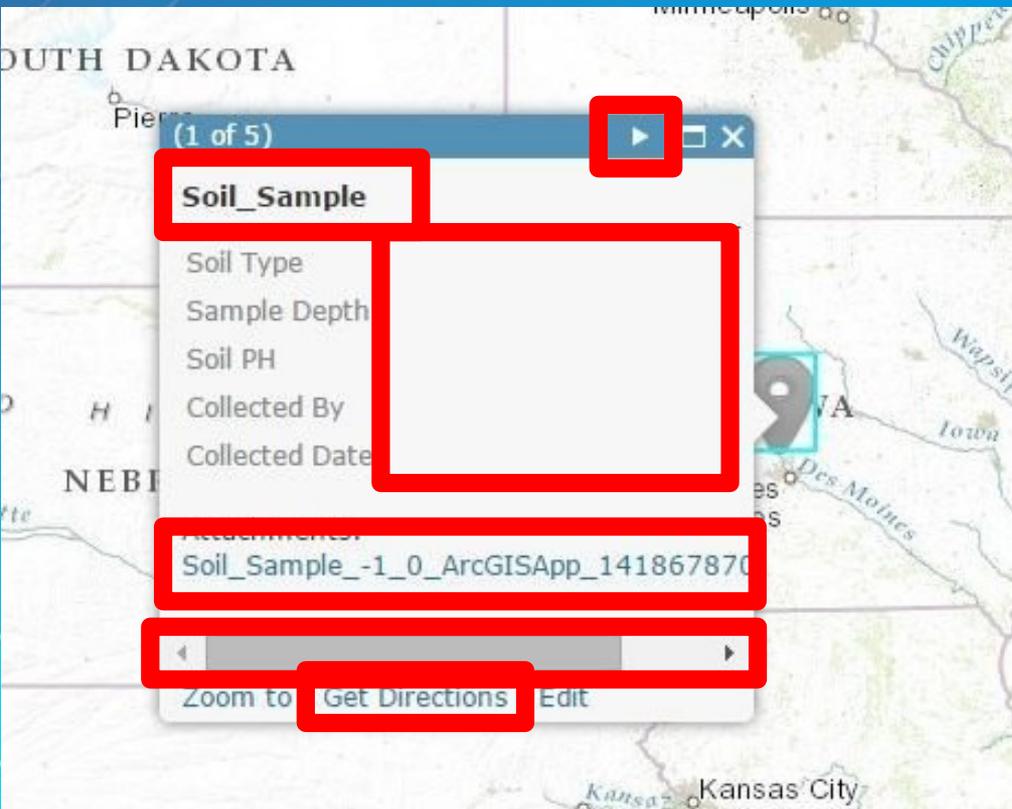
What problem does it solve?

Too much information on the map.
Needs user interaction to disclose.



<http://www.designingmapinterfaces.com/patterns/info-window/>

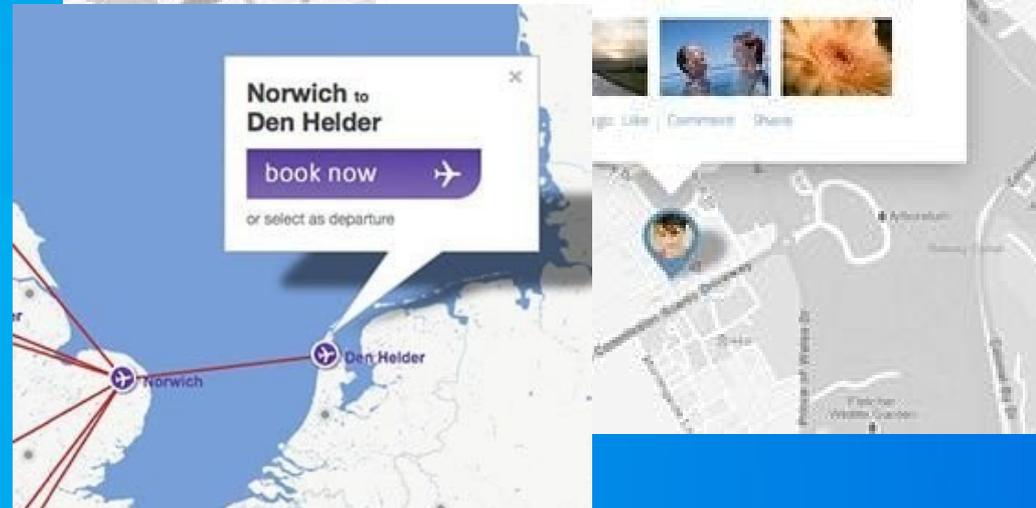
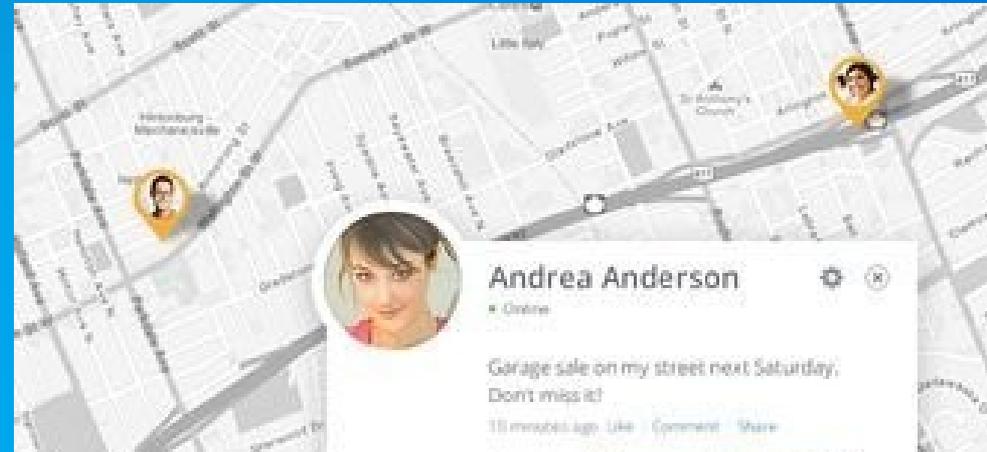
Pattern: Info Window



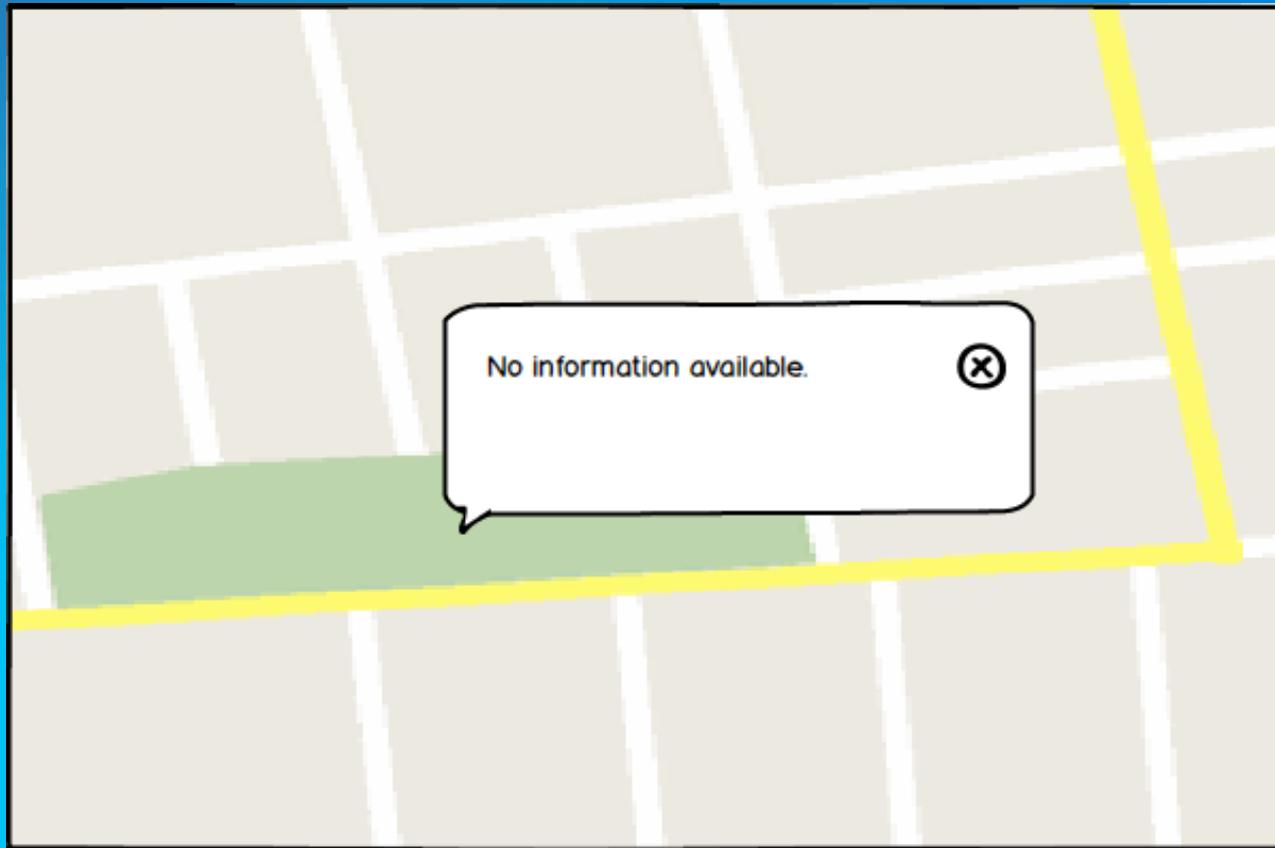
Pattern: Info Window

What's the solution?

- Show useful information
- Include contextual actions (e.g. buttons, links)
- Avoid displaying default column names
- Avoid meaningless data like ID's or Lat/Long



Anti-Pattern: Empty Info Window



<http://www.designingmapinterfaces.com/patterns/empty-info-window/>

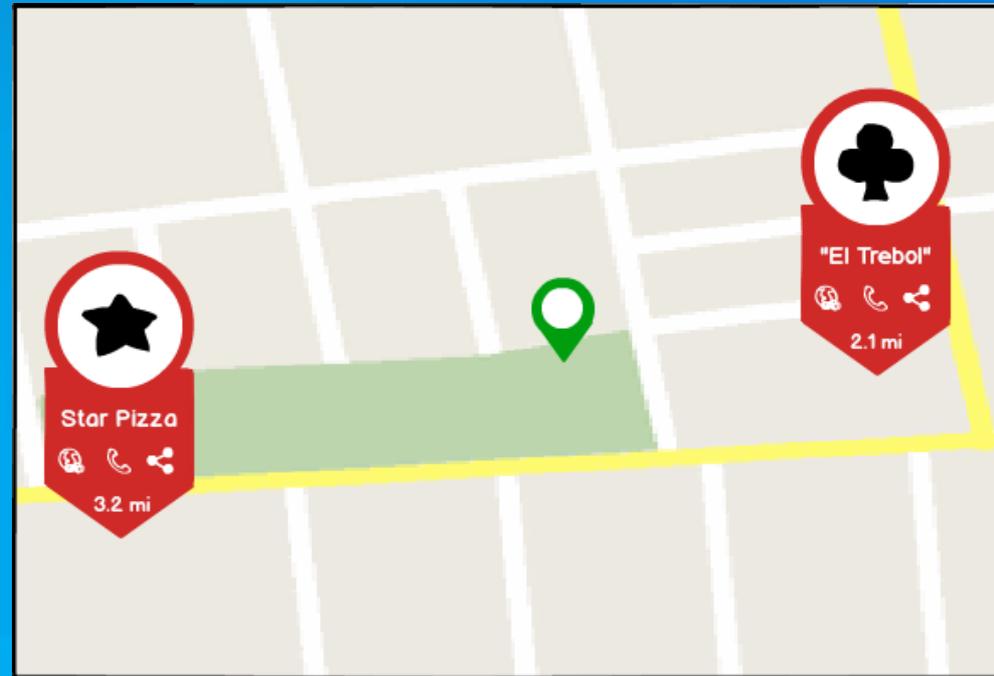
Anti-Pattern: Empty Info Window



Pattern: Rich Marker

What problem does it solve?

Required to make a decision but clicking each feature to popup an InfoWindow is too cumbersome.

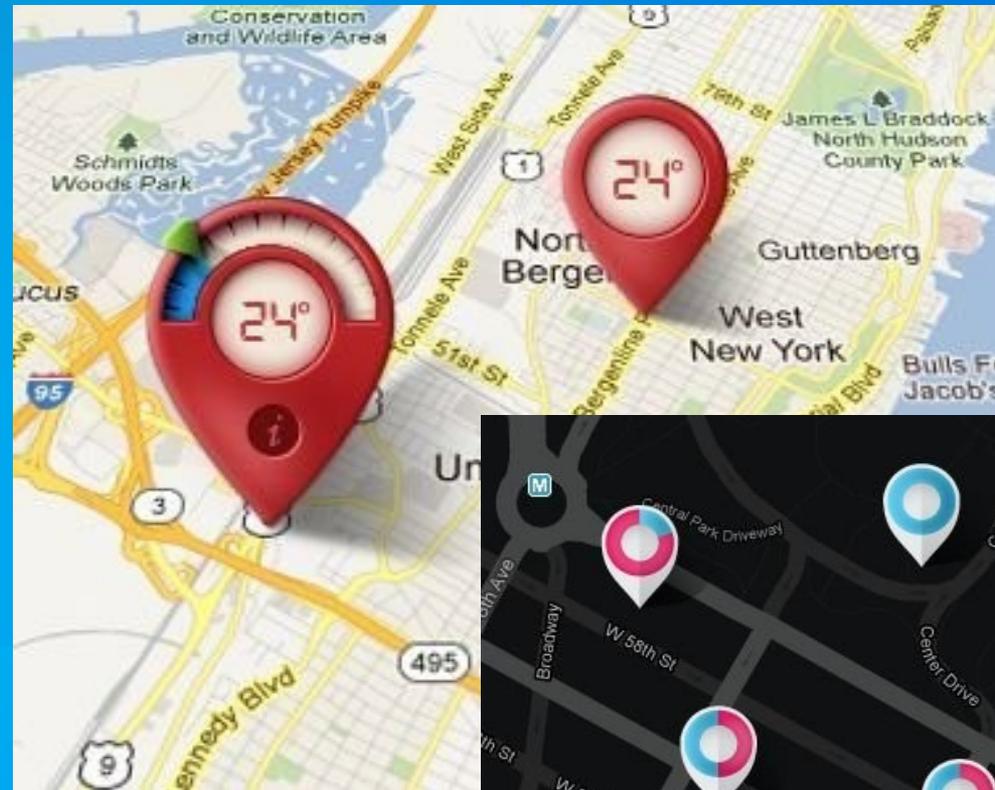


<http://www.designingmapinterfaces.com/patterns/rich-marker/>

Pattern: Rich Marker

What's the solution?

- Show key metric or performance indicator
- Use when the content of the markers is important to make a decision and needs to be seen at a glance
- Must be related to task
- Result set is limited



Utilize UI Patterns

<http://www.designingmapinterfaces.com/>

<https://www.pinterest.com/michaelgaigg/map-ui-pattern>

Invest in Cartography



Find your Representative

Here you can enter your zipcode or search on the map to find out who represents you in Congress and more.

BY LOCATION

Find your representative by location. Enter your zipcode or select a state to begin the search.

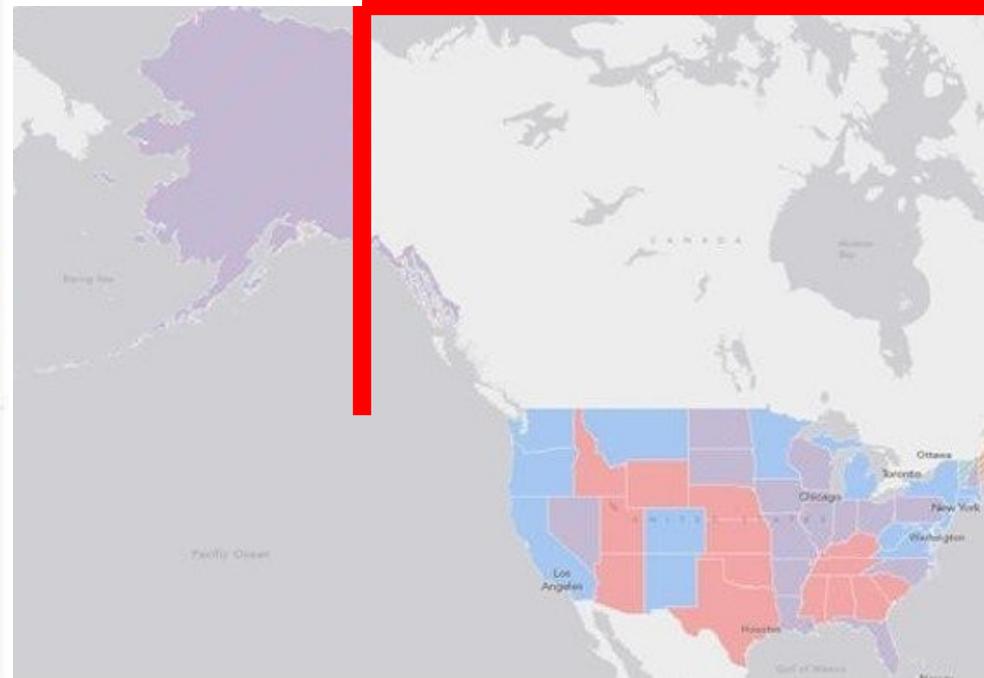
or ▼ or

OR

BY NAME

If you know the name of the representative you are looking for enter the name of the senator or representative below.

🔍 ▼



How to improve Cartography

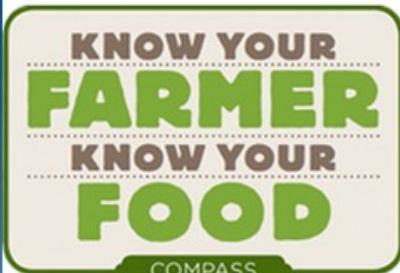
- Follow well established domain conventions & cartographic rules
- Avoid simultaneous contrast and color movement
- Choose your colors wisely



Know your Data

or better

Know what your User
knows about your Data



Know Your Farmer, Know Your Food Compass Map

This map shows efforts supported by USDA and other federal partners as well as related information on local and regional food systems for the years 2009-2012.

To learn about specific projects or what's going on in a particular area, use the slide bar to zoom to that location, and select the pin symbols on the map. Note: Most projects are only accurate to the zip code level. If there are multiple projects in the same zip code, they will show up on the same pin. You can scroll through them using arrows at the top of the pop-up box.

Map Legend-Data Layers

Projects by Compass Theme

- Careers
- Farm to Institution
- Infrastructure
- Stewardship
- Healthy Food Access
- Knowledge
- Marketing and Promotion
- Meat, Poultry, and Fish

Projects by Recipient Type

Projects by USDA Program

Other Federal Partners

- ARC
- Commerce-EDA
- DOL
- DOT
- EPA
- HHS-ACE

Basemaps Search Locate Resources



National Geographic Map



Light Gray Canvas



Dark Gray Canvas



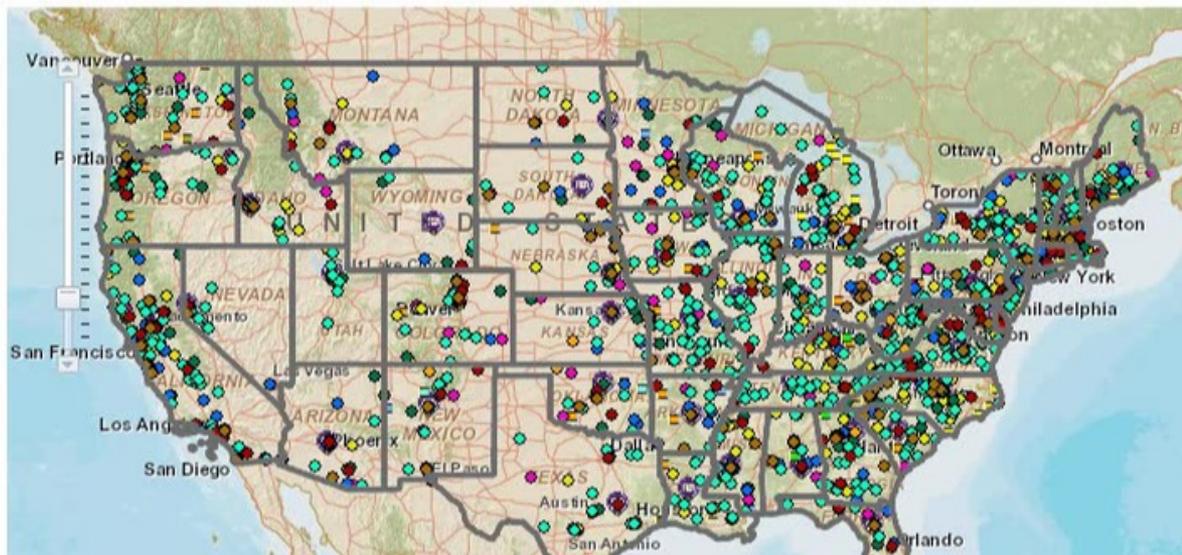
Imagery with Metadata



Imagery with Labels



Streets

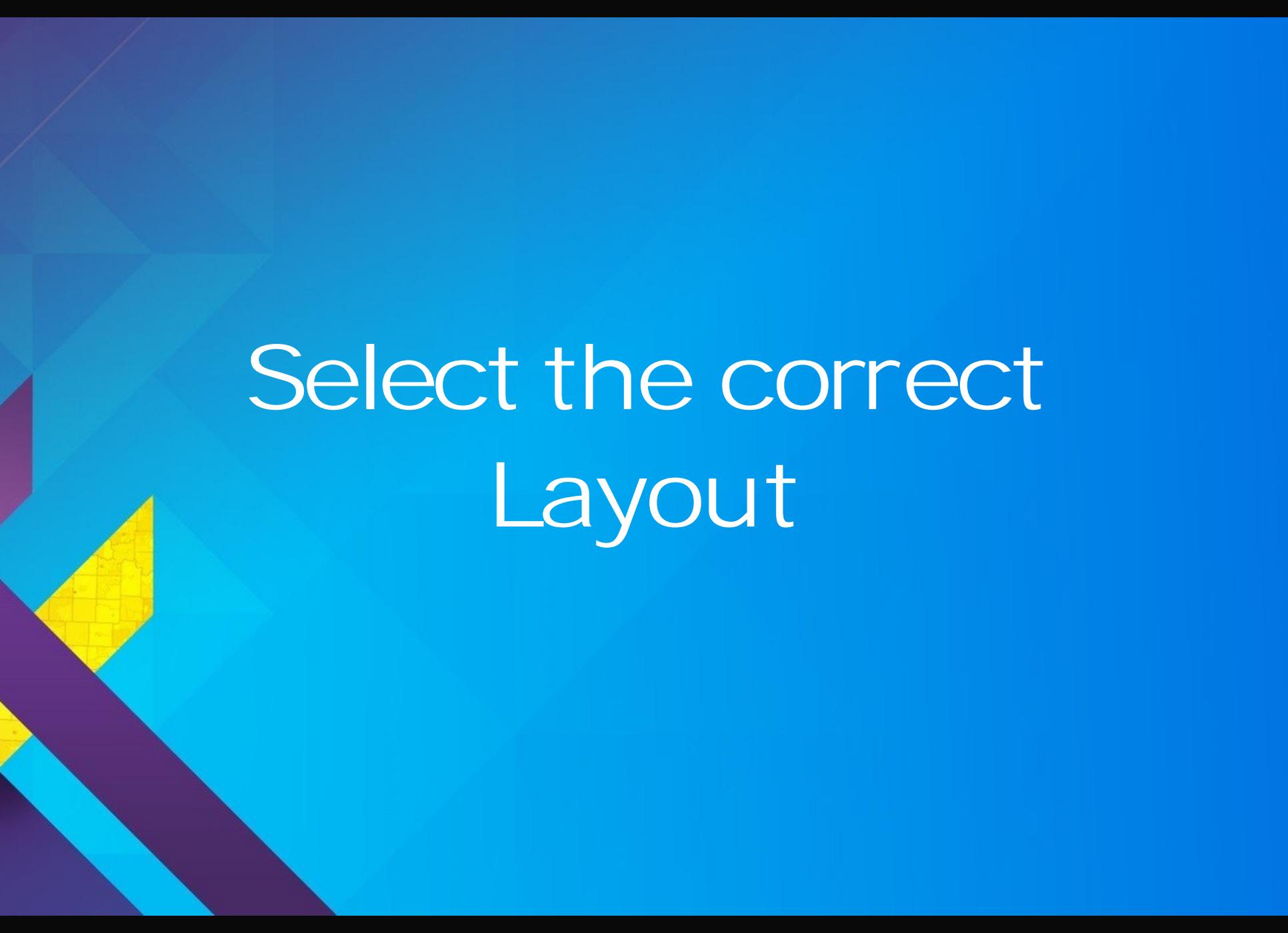


Demo

<http://www.usda.gov/wps/portal/usda/usdamedia?navid=kyf-compass-map>

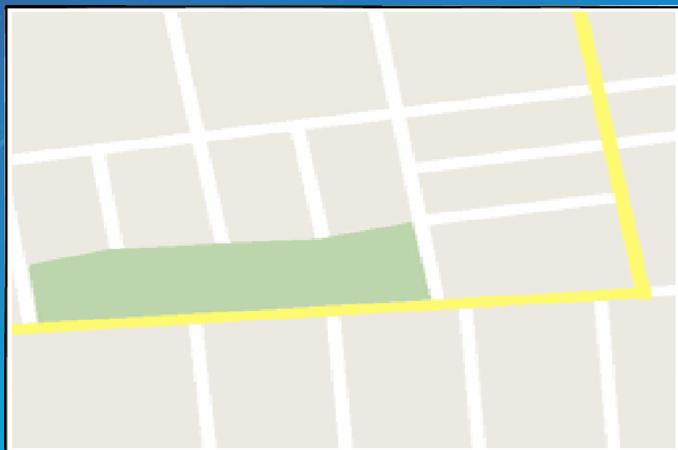
Optimize

- Visible layers (toggle by theme)
- Cartography (based on 1 select basemap)
- Info windows (customized to features)
- Data display (meaningful grid)

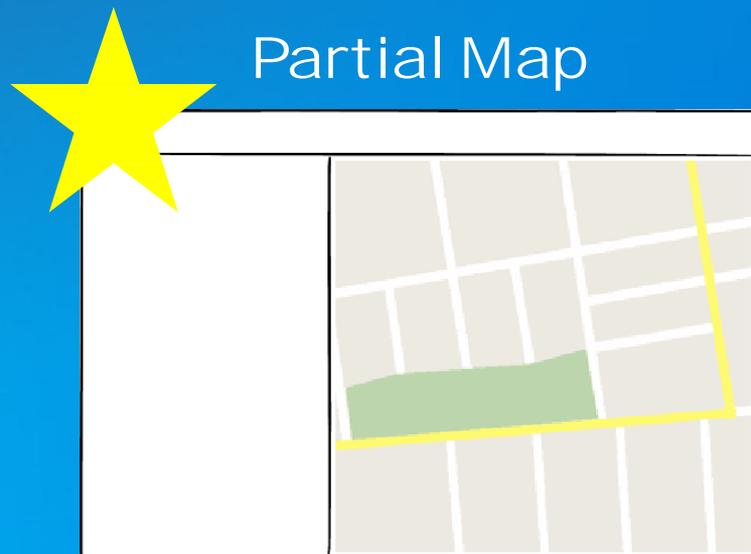


Select the correct
Layout

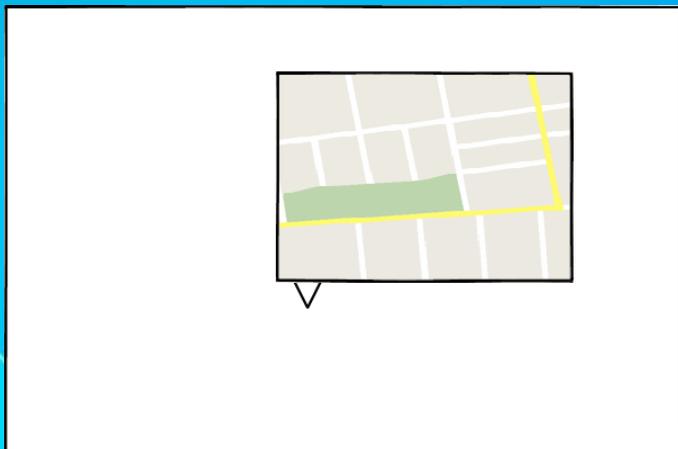
Full Map



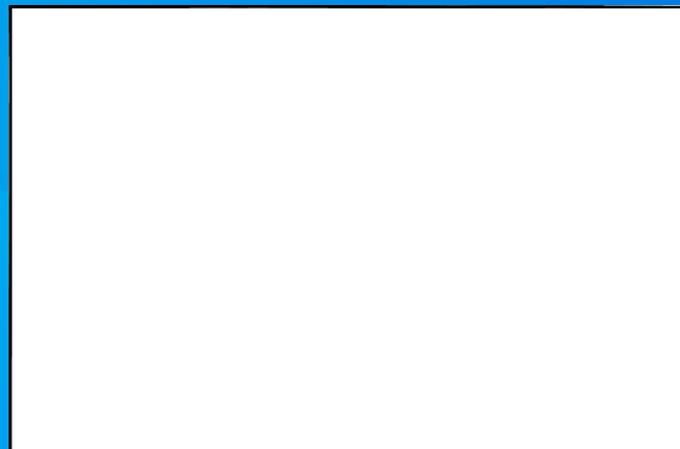
Partial Map



Reference Map



No Map



Full Map

Map is the focus and the core value

Partial Map

Workflow driven

The screenshot displays the SPOT Online web application interface. At the top left is the SPOT Online logo. The top right shows a user greeting: "Welcome Michael Gaigg" with links for "Logout", "About", and "Contact Us".

The main interface is divided into two primary sections: a project list on the left and a map on the right.

My Projects Section:

- A "Create New +" button is located at the top right of this section.
- A search bar labeled "Find SPOT ID..." is present.
- A "Local Input Points" button is also visible.
- A table lists various projects with columns for SPOTID, Mode, Project Category, and Status.

	SPOTID	Mode	Project Category	Status
✓	A140232	Aviation	Statewide Mobility	Draft
✓	A140233	Aviation	Statewide Mobility	Draft
?	A140235	Aviation	Statewide Mobility	Draft
?	B140185	Bicycle & Pedestrian	Division Needs	Draft
✓	H140024	Highway	Regional Impact	Submitted
✓	H140036	Highway	Division Needs	Submitted
?	H140054	Highway	Statewide Mobility	Draft
?	H140055	Highway	Statewide Mobility	Draft
?	H140056	Highway	Statewide Mobility	Draft
?	H140057	Highway	Statewide Mobility	Draft
?	H140064	Highway	Statewide Mobility	Draft
?	H140065	Highway	Statewide Mobility	Draft
?	H140070	Highway	Statewide Mobility	Draft
✓	H140120	Highway	Statewide Mobility	Draft
✓	H140122	Highway	Statewide Mobility	Draft
✓	H140123	Highway	Statewide Mobility	Draft
✓	H140124	Highway	Statewide Mobility	Draft

At the bottom of the project list are buttons for "Submit", "Export", "Edit", and "Delete".

Map Section:

- The map shows a geographical area with roads and water bodies.
- Map controls include a "Layers & Legend" dropdown, "Identify" and "Lasso" tools, and a scale bar at the bottom.
- A popup window for project ID "A140233" is open, displaying details:

A140233	
Aviation	\$ 5,000
Statewide Mobility	
7A8 - Avery County-Morrison Field	DRAFT
Project Title:	asdf
Specific Improvement Type:	105 - Land Acquisition - Runway Approach
TIP #:	
Description:	asdf

Reference Map

For navigation and reference purposes

Kohala Middle

Principal
Phone
889-7119
Zip Code

org/

Jobs

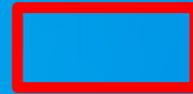
Maximo Work Orders

Avg \$1 467 Total \$9 Avg \$2

Description	Amount	Status	Description	Amount
Edg A Elec Upgrade		CLOSE	WOOD ROTTING: DECAJ, CAN SEE THROUGH	\$4
Resurface field basketball court	\$6	CLOSE	BROKEN TILES	\$80
Repair walkway door/Decking	\$2	CAN	Ballast burn out	
LDG A - RPR ROOF	\$6	CLOSE	Light bulb order	
CAMP TREE TRIM	\$2	CLOSE	HEALTH ROOM TOILET	\$10
RPL BOYS RESTROOM FIXTURES	\$1	CLOSE	CILING IS COMING APART AND DEBRIS IS FALLING OVER THE STUDENTS	\$17
INSTE	\$4			

No Map

Task doesn't require a map but utilizes power of GIS



Toggle between Layouts

Focus on the Subject

HIDOE Facilities Dashboard

Island: All | District: All | Complex: All | School: All

Facilities: 288 | FACTRAK: 3830

Kohala Middle

Principal: Alan Brown | Phone: 889-7119

Address: 53-4155 Akoni Pule Highway, Kapaau, Hawaii | Zip Code: 96755 | Website: <http://kohalamiddle.org/>



FACTRAK Planned Projects			FACTRAK Jobs			Maximo Work Orders			
1	Total \$3	Avg \$3	18	Total \$1	Avg \$1	467	Total \$9	Avg \$2	
Number	Description	Amount	Number	Status	Description	Amount	Status	Description	Amount
C0003546	Storage Room	\$30K	P0093406	Construction	Bldg A Elec Upgrade		CLOSE	WOOD ROTTING: DECAY, CAN SEE THROUGH	\$4
			P1600014	NULL	Resurface field basketball court	\$6	CLOSE	BROKEN TILES	\$80
			P1600113	Design	A Repair Walkway Floor/Decking	\$2	CAN	Ballast burn out	
			P1601610	Construction	BLDG A - RPR ROOF	\$6	CLOSE	Light bulb order	
			P1601710	NULL	CAMP TREE TRIM	\$2	CLOSE	HEALTH ROOM TOILET	\$10
			P1601810	NULL	C RPL BOYS RESTROOM FIXTURES	\$1	CLOSE	CILING IS COMING APART AND DEBRIS IS FALLING OVER THE STUDENTS	\$17

Maximo Work Orders: Total \$14 | Avg \$2

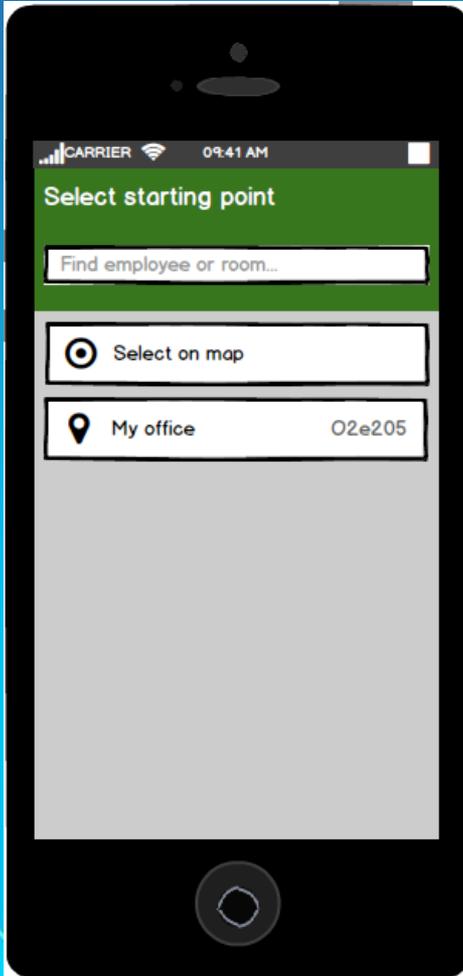
FACTRAK Planned Projects: Total \$3 | Avg \$3

FACTRAK Jobs: Total \$1.6 | Avg \$10

Maximo Work Orders: Total \$9 | Avg \$2

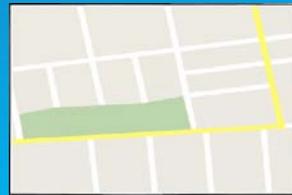
Zoom To

Focus on the Map

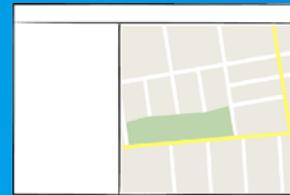


Layouts Summary

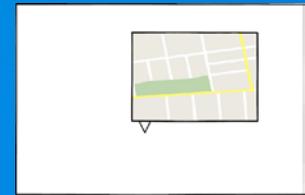
Full



Partial



Reference



Level of Detail

high

high

low to med

Level of Control

high

med to high

none to low

Tools

advanced

in workflows

none/few

Interaction

advanced

advanced ok

limited

Cartography

very important

important

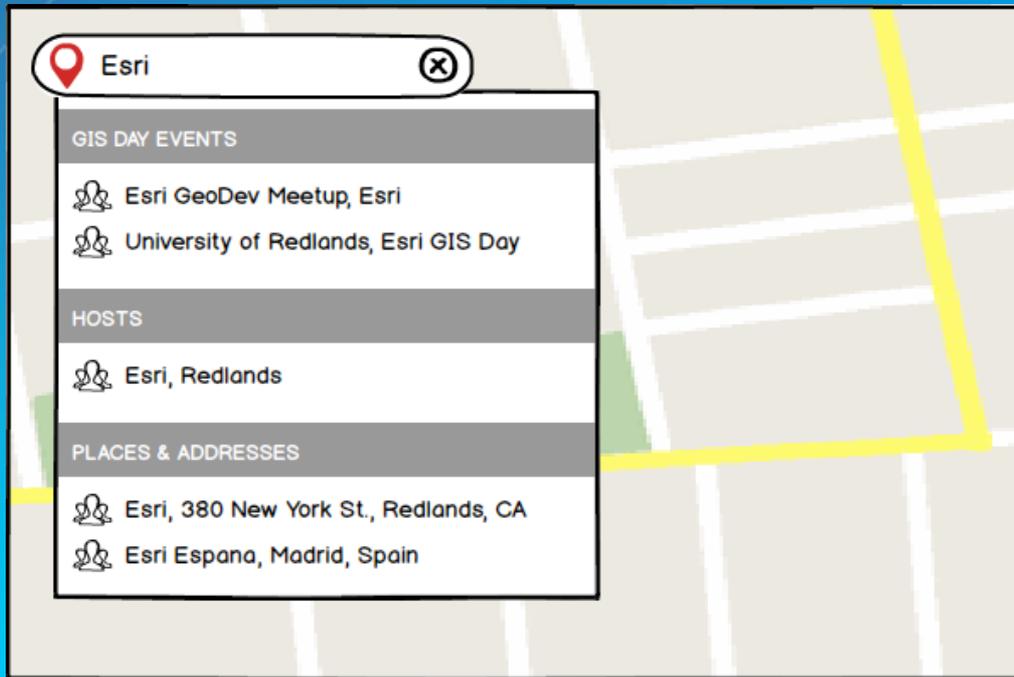
few distractions

Provide Navigation



10% of time is spent on navigation
from one point to another

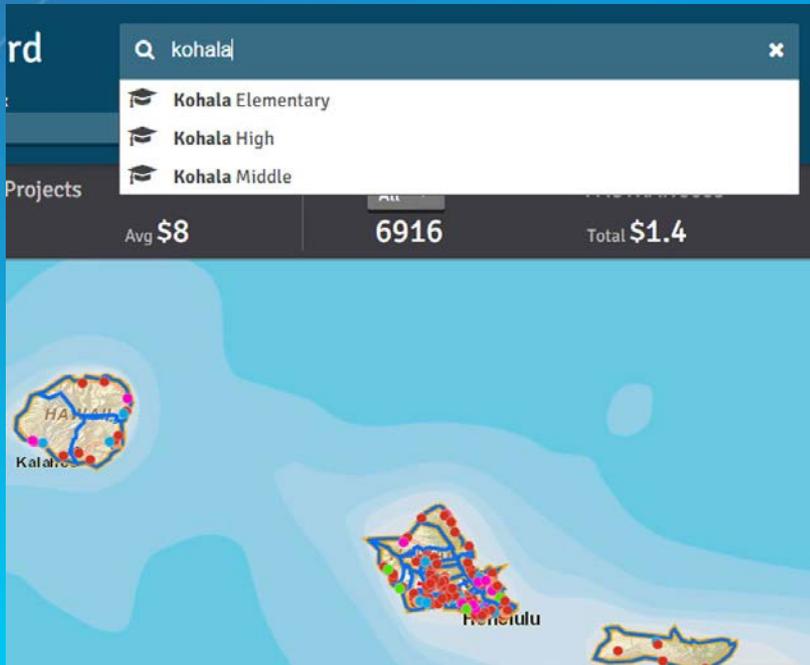
Unified Search



Problem:

Aggregate different data sources into one disambiguated set of search results.

Unified Search



Solution:

- Provide single input field that allow searching multiple sources
- Indicate source or nature
- Show meaningful results
- Remove duplicates and order by relevance

Browse Geographies

The screenshot shows a web application interface for browsing geographies. At the top, there is a search bar with the placeholder text "State, county, census tract" and a "Locate" button. Below the search bar, there is a link that says "or browse list of geographies". A modal window is open, displaying three columns: "State:", "County:", and "Census tract:". The "State:" column contains a list of states: Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, and Florida. The "County:" and "Census tract:" columns are currently empty. At the bottom of the modal, there is a text field that says "Selected geography: <none selected yet>" and an "Open" button.

Problem:

Users want to explore places or locations but don't know exactly what they are looking for.

Browse Geographies

Solution:

- Let users browse hierarchically structured data
- Start simple
- Sort alphabetically
- Show all options if possible

El Paso

Select area by drawing on the map

Alabama
Alaska
Arizona
Arkansas

Hawaii
Idaho
Illinois
Indiana

Montana [change](#) PROGRAMS & PROJECTS

Select area by drawing on the map

Counties in Montana				States
Beaverhead	Gallatin	Missoula	Silver Bow	AL HI MA NM SD
Big Horn	Garfield	Musselshell	Stillwater	AK ID MI NY TN
Blaine	Glacier	Park	Sweet Grass	AZ IL MN NC TX
Broadwater	Golden Valley	Petroleum	Teton	AR IN MS ND UT
Carbon	Granite	Phillips	Toole	CA IA MO OH VT
Carter	Hill	Pondera	Treasure	CO KS MT OK VA
Cascade	Jefferson	Powder River	Valley	CT KY NE OR WA
Chouteau	Judith Basin	Powell	Wheatland	DE LA NV PA WV
Custer	Lake	Prairie	Wibaux	FL ME NH RI WI
Daniels	Lewis and Clark	Ravalli	Yellowstone	GA MD NJ SC WY
Dawson	Liberty	Richland		
Deer Lodge	Lincoln	Roosevelt		
Fallon	Madison	Rosebud		
Fergus	Meagher	Sanders		
Flathead	Mineral	Sheridan		

Farmers Markets Food Hubs Meat Processors Wholesale Markets Green Scho

Navigation Patterns

- Location Finder / Geolocate / Unified Search
- Browse Geographies
- Bookmarks / Placemarks
- Home Button
- Overview Map

Today's Problem