Creating Successful Map Services for ArcGIS Online

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A Successful Map Service is:

- A layer in a web map that does what we need.

We need:
- Reliable communication
- Interactivity
- Good looking content
Overview

• Define a few key terms
• Examples
• Our Goals:
  - Share as much as we can in 75 minutes
    - 3+ years of mapmaking tips
    - New and helpful
  - Show how Platform awareness leads to success
Vocabulary
New terms every few months

- **ArcGIS Online “Layers”**
  - Tiled Map Service (Tiles)
  - Dynamic Map Service (Map Image)
  - Image Service (Imagery)
  - Feature Service (Features [editable])
  - Some Geoprocessing Services

- Web Map
- Web Map App
- Content Items

*What you author and what your audience sees may have different names*
Rationale for our examples

• Data
  - Setting up for success

• Maps & Popups
  - Interactivity and expectations

• Apps
  - Sharing/Doc/Finding
Data Preparation

Charlie: Biodiversity (4min driving a species pop-up) & Toxic Release (3min – GIS helps tell the story)
Jim: ??
Maps & Pop-ups

Charlie: Toxic Release (report style & online symbols 4 min), 3 soils examples (each has diff. audience and approach 3 min)

Jim:
Apps from Maps

Charlie: Toxic Release (5 min), Biodiversity (2 min) Show configuring and content items.

Jim:
The Problem

We now have the expertise, the data, the hardware, the software, the applications, social media and an audience ready to listen….

… but many web maps don’t say anything.

Successful map services say something specific.
Planes and helicopters are critical tools in managing wildland fire. Although aircraft are often used to fight wildfires, aircraft alone cannot put them out. Firefighters rely on planes and helicopters to:

- Deliver equipment and supplies.
- Deploy smokejumpers and rappellers to a fire.
- Transport firefighters.
- Provide reconnaissance of new fires, fire locations, and fire behavior.
- Drop fire retardant or water to slow down a fire so firefighters can contain it.
- Ignite prescribed fires
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Context

• Goal of communication unchanged:
  - message sent = message received
• Examples shown today are shown to connect the dots between message & technique.
• Technology keeps moving forward
• No map can do everything.
• A map of uninterpreted data is without message.
Solution: Author Your Maps

- Look at your data critically
- Challenge the data: look for bias, outliers & address them
- Don’t let the software decide everything
- Decide what scale ranges are critical, required, and unnecessary
- Decide what “multi-scale” means for each map
  - Symbology
  - Data sources
  - User expectations
• Data ‡ Analysis ‡ Data ‡ Presentation

• Examples
Maps Need to be Anchored
Good Maps Show Patterns

• What’s the goal of the map?
• What’s the one thing you want the audience to see?
• What else should be shown, but is secondary in importance?
• What should not be shown?
Three Stages

• Data evaluation
  - What kind of maps are possible?
  - What kinds of popups are possible?

• Map creation
  - What is the priority message?
  - What’s the first map the reader will see?

• Sharing
  - Who is the primary audience?
  - How will you get this map into their line of sight?
Data Evaluation Stage

- Scenario 1: There might be data for this story
- Scenario 2: There might be a story in this data
- Scenario 3: I need to publish this data
Data dump maps

• There are valid reasons to publish your data into a map layer (as a map service, feature service, CSV, shapefile etc)
  - when you are just exploring the data
  - when an application will make the maps smart
• Data ‡ Analysis ‡ Data ‡ Presentation
Data Evaluation Stage

- Scenario 1: There might be data for this story
- **Scenario 2:** There might be a story in this data
- Scenario 3: I need to publish this data
Case Study: Urban Observatory maps

- Goal: make comparable maps for specific themes
- Multiple data sources
Example: Population Density

A theme with a “universal” measurement

- Technique: identical legend
- Data implication: identical population density calculations
- Known issue: land area may include water
- Known issue: census years vary
Population Growth & Decline
Map Creation Stage

- What is the priority message?
- What’s the first map the reader will see?
Case Study: Obama/McCain map

- new level of granularity (precincts)
- source: Harvard / Stanford
- how homogenous are precincts?
- what kind of vote variation exists by precinct?
- what does it mean to have 50-50%? 51-49? 52-48? 55-45? 60-40? 100-0?
- polygon choropleth? dot density? proportional circles? graduated circles?
- Goal: find the edges of the data, and show them
- Data issues: Oregon, Montana, Maine
- publishing - chose tiled cache so that small scale maps would look useful
Case Study: Predominant population map

- a logical "capstone" map for traditional race, ethnicity and diversity maps
- show atlas with diversity and race maps
- these maps don't capture what people tend to observe, i.e. predominance
- our approach: define "predominant" and shade it
- puts everyone on an equal footing
- bottom line: do the maps create clarity?
Predominant Populations in the U.S.A.

Predominant racial or ethnic groups in the U.S.A. by county and tract, and the extent to which they are predominant.

The population of some areas in the U.S.A. is dominated heavily by one racial or ethnic group. These areas stand out on this map. In other areas, one group may be the majority, but the population is much more evenly balanced. Still other areas have one group claiming a plurality, but not a majority.

In each neighborhood, county and state, this map shows which race or ethnicity is predominant, and by how much. It uses map colors to identify the predominant racial or ethnic group in specific areas, by county and tract. The strength of the color indicates the extent to which one group is dominant over the next most predominant.

LEGEND

Predominant Population

Major Highways and Interstates

African American majority
- Predominant (gap > 50%)
- Sizeable (gap 10% - 50%)
- Slim (gap < 10%)

Asian majority
- Predominant (gap > 50%)
- Sizeable (gap 10% - 50%)
- Slim (gap < 10%)
Assess your maps

• Does your map work for areas you know very well?
• Does your map work for areas you don't know at all?
• Ask someone who does not know your area to look at your map of it, and just listen to them
Popup Design Change: Median Age of the Population

Reduce 18 age classifications to 9:
<10, 11-19, 20s, 30s, 40s, etc.
Popup Design Change: Median Home Value
Population Density

Make pop density more relatable
More data needed

- To normalize the information
- To populate the popups with meaningful content
  - Counts
  - Percentages, Ratios, Indexes
  - Comparative values
- To support multi-scale views of your subject
Sharing Stage

- Who is the primary audience?
- How will you get this map into their line of sight?
Five Seven Ways to Improve Your Web Map

1. Get the basemap right.
2. Give your map a human-readable title
3. Write human-readable description and summary
4. Set the “first impression” map extent & save - try different scales, areas, choose something engaging
5. Turn your basic popup into a great popup:
   - Ask the data expert what the basic popup tells them
   - Write down the answer - that’s your popup
   - Usually, you find out you need 1-2 more pieces of info
6. Put the web map in a simple web app and *share* that with your test subjects to gain reactions
7. Make GREAT thumbnails for your items
Use an app!

- Preview different apps to see what works best
- Need to tweak something? Download it and start editing.
- Your app should be what you share the most - its web map and services are secondary
Connect with people

- Tweet / Facebook / email your apps and maps
- join groups in ArcGIS Online
- create groups
Thank you

- Questions
- Feedback – Please fill out the session evaluation:

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