Thematic Image Services
Michael Dangermond
Very Poorly Drained

In these soils water is removed from the soil so slowly that free water remains at or very near the ground surface during much of the growing season. The occurrence of internal free water is very shallow and persistent or permanent. Unless the soil is artificially drained, most mesophytic crops cannot be grown.
Think Ahead

Who is your audience?
What are their expectations?
How, exactly, will they use your service?
Creating a Thematic Image Service

Four Main Steps

• 1. Organize or Create Rasters
• 2. Create an Attribute Table
• 3. Create a Mosaic
• 4. Publish an Image Service

Download the Checklist

Step by step instructions help you through the details as you publish services.
https://shar.es/1Bxpj4
Organizing Your Rasters

Recommended workflow: Use CopyRaster() to create TIFF images with LZW compression. Use the same NoData symbol for each raster. Best thematic global projection is **Mollweide**. TIFFs can be an assortment of coordinate systems.
Make Image Server Layer tool

Creates a server layer that has access to a service’s rasters in their native projections. Bypasses the “middleman” projection used by the image service.
Making Consistent Rasters

- Same Source Type – Thematic
- Same Bit Depth
- Same NoData Symbol
- Same Band Count
- Build Pyramids
- Calculate Statistics
Prepare an Attribute Table

A geodatabase table

Value and Count fields required

Add fields for the legend, map colors, and text to appear in ArcGIS Online popups
Creating a Mosaic

General Properties

- Mosaic Name
- Source type: Thematic
- Bit depth: 1, 2, 4, 8, 16, 32
- Signed or Unsigned?
- Coordinate System
- NoData Value
Creating a Mosaic
Default tab - Image Compression

- Compression methods:
  - LERC, tolerance: 0
  - LZ77 (make default)
  - None
Creating a Mosaic

Defaults

- Maximum Rows, Columns
- LZ77, None, LERC
- Nearest Neighbor
- Maximum Number of Items Downloadable Per Request: 0

- Add Rasters
- Pyramids and Statistics
- Analyze the Mosaic
Overviews
Best practices

• Overviews are a lower resolution version of your rasters.

• Edit the mosaic footprint table, change all MaxPS and HighPS values to the maximum value in the table.

• Define Overviews

• Build Overviews
Functions on the Mosaic

Two ways to apply functions:

Create a function on the mosaic, and Publish the image service.

**Only one set of symbols per service.**

Create a function, save as raster function Template, delete function. Include Template when publishing the service.

**No attributes in popups besides pixel value.**
Attribute Table Function

Best practices

• ClassName field appears in legend
• Red, Green, Blue fields color the map
• Other text fields display in an ArcGIS Online popup
• **Maximum 2000 records** in the attribute table.
Dagwood Services
Are you trying to do too much with one service?
Remap Table Function
One of many functions you can apply to a mosaic

• Remap values if you have more than 2000 records in your attribute table.
• Disadvantage: Attributes will drive a legend and service symbols, but are not available to ArcGIS Online popups.
• Another disadvantage: ArcGIS Desktop can not show the raw pixel value, just the remapped value! ArcGIS Online popups will show the raw pixel value.
After publishing
A few more things to take care of

• Set the bounding box
• Set the intended scale
Thematic Image Service Checklist

Here’s where to download the checklist:

https://shar.es/1Bxpj4
Feature Service Publishing

Keith VanGraafeiland
Feature Service Publishing Overview

- Planning for Publishing
  - What is it?
  - Who is going to use it?
  - How is it going to be used?

- GIS Workflow
  - Create a new map
  - Determine proper coordinate system
  - Fields
  - Symbology
  - Metadata (including thumbnail)

- Managing Web Layer
  - Content Item
  - Default behavior
  - Extent
  - Test
Today we are going to be working with Unexploded Ordnances.
Planning for Publishing

Why is this layer being published?
Who is the audience?
What is it going to be used for?

Take on the persona of the users that are going to be accessing this layer.

All of this is valuable information to use when populating your metadata in your content item, capture it somewhere.
How is the data going to be used?

Use?
- Analysis
- Feature Class
- Display
- Tile Layer

Who is going to use it?

Who?
- Just Me
- People in Group
- People in Org
- Public (Everyone)

What is the intended experience?

Intended Experience?
- Desktop Use
- Web Map
- Web App
Planning for Publishing

Template for item success

**Title:**
Simple meaningful and short

**Tags:**
Keywords users can use to search for this data; ideally each layer will have between 5 and 10 tags that help users locate a layer.

**Summary:**
Everything that you wanted to put into the title; describe the dataset in one sentence.

**Description:**
Include hyperlinks, indicate where the data was downloaded from and when. This is a great opportunity to address users and let them know what they can do with this layer and what it was intended for when it was constructed.

**Credits:**
Where did the data come from? Give credit to the source where you obtained the data.

**Access Use and Constraints:**
Are there any restrictions for using this data?
GIS Workflow

Download data from source.

Extract.

Import into your ArcGIS Pro Project.
GIS Workflow

What is it?
Who’s going to use it?
What’s is the intended use?
What is the intended experience for using this data?
Populate the template for item success with the information you gathered.
GIS Workflow

Create a New Map
Insert - Map

Coordinate System
Project the data into Web Mercator
Output GP results to the ArcGIS Pro Project GDB.
Name Layer Accordingly
GIS Workflow

**Fields**

Field Names and Alias - do they make sense? Are they configured properly for analysis or for use in Pop-ups?

**Symbology**

Symbolize the data with web optimization in mind. Does it make sense? Is it distracting?
GIS Workflow

**Map Metadata**

Map properties - edit the Metadata.

**Create Thumbnail**
GIS Workflow

Sharing your data
GIS Workflow

Share as a Web Layer
GIS Workflow

**Analyze**

Check for errors

Most common errors are not having a feature template set and having layers in your map that have not been removed prior to publishing.

**Publish**

Ignore these errors and click “Publish”.
Managing Web Layer

**Content Item**

Share As Web Layer

Sharing USA Unexploded Ordnance As A Web Layer

General | Configuration | Content | Messages

Name:
USA_Unexploded_Ordnance

Layer Type:

Layer Description:

USA Unexploded Ordnance locations in known areas.

Tags:

Sharing Options:

Add to Favorites

Edit

**USA_Unexploded_Ordnance**

Overview | Data | Visualization | Usage | Settings

USA Unexploded Ordnance locations in known areas.

by Xaviera Kanae Kanae, Oceans

Last Modified: July 2, 2017

Description

Unexploded ordnances (UxO) or UXOs, sometimes identified as UXO, are explosive weapons (bombs, bullets, shells, grenades, land mines, naval mines, etc.) that did not explode when they were employed and still pose a risk of detonation, potentially many decades after they were used or discarded. Casualties have been incurred from accidental and non-accidental contact with live munitions and could possibly be avoided.

While "UXO" is widely and informally used, according to the U.S. Environmental Protection Agency (EPA), munitions and explosives of concern (MEC) is the current preferred terminology within the remediation community. This is NOT a complete collection of unexploded ordnances on the seafloor, nor are the locations to be considered exact. The marine environment is of ambiguous nature, so locations may change on a tide by tide basis.

The presence and locations of the unexploded ordnance have been derived from graphical representations recorded on the NOAAPex Navigation Charts.

Cleanup and Clearance efforts are ongoing, but are slow in progress. Efforts such as underwater replenishment (UNREP) must be conducted in a marine area that is suitably located with sea heights that are adequate to keep vessels from danger of existing UXOs, without loss of more munitions. Location of an existing UXO concern area, may indicate previously unsuspected conditions that should be avoided.
Managing Web Layer

Default behavior
Managing Web Layer

Extent

USA Unexploded Ordnance

General Settings

Delete Protection
- Prevent this item from being accidentally deleted.

Extent

Top: 132.33
Left: 177.2
Bottom: 177.69
Right: 177.69

Feature Layer (hosted) Settings

Editing
Managing Web Layer

Launch in Web Map Viewer and Test
Recap

- **Planning**
  - What is it?
  - Who is going to use it?
  - How is it going to be used?

- **GIS Workflow**
  - Create a new map
  - Determine proper coordinate system
  - Fields
  - Symbology
  - Metadata (including thumbnail)

- **Managing Web Layer**
  - Content Item
  - Default behavior
  - Extent
  - Test
Items
Great Items Reflect Their Lifecycle

Jim Herries
Every item has a lifecycle

Some are short-lived
Examples: “Test” or “Demo” or “vacant.csv”

Some are long-lived
Example: “Vacant Housing As of July 2017”

Released
Pre-release
Test
Demo

Esri Corporate Template:Dark v3.4
16:9 version – January 29, 2017
Every item has a lifecycle

**Birth**
Examples: “Test” or “Demo” or “vacant.csv”

**Toddler**
Example: “Vacant Housing As of July 2017”

**Adolescence**
Example: “Vacant Housing As of July 2017”

**Maturity**
Example: “Vacant Housing As of July 2017”
Every item has a lifecycle

**Aging**
Examples: “1995 Vacant Housing”

**Retirement**
Examples: “1995 Vacant Housing”
Birth: Your Service is Running!

**Now what**
Show your item to someone in the target audience

**Why**
They are not you. They see things differently.
*Observe them* as they look at your item and try to use it.
Every question and comment they have is useful.
Objective: address their questions and comments in your item
Why?

Well-documented things “travel well”

Your colleagues find your item, recognize what it is, and use it
People you don’t know find your item, recognize what it is, and use it.
How? Treat your service like the toddler it is

Open your item, start at the top, work your way down

• Title
• Summary
• Description
• Links from description to More Information
• Links from description to related web maps, apps, documentation
• Badges and images in Description are awesome
• Access and Use Constraints
• Tags
• Sharing
Answers the question “What is this?”

- Avoid jargon
- No acronyms
- Don’t jam everything into the title
  - YES: “Garden Characteristics”
Summary

Answers the question “What is this?”

• As a full sentence.
• Use trigger phrases:
  - “This layer shows…”
  - “Updated information for …”
Description

Answers the question “What is this?”
- Two good paragraphs
- Data source

Fair game
- Documentation
- Full Metadata
- Related web maps
- Related apps
- Videos of someone using this thing
Other considerations

It’s the little things…

- Extents… play them to your advantage
- Delete Protection
- Consider things like Web Map - Save a copy; tiles - allow mobile to download tiles
Adolescence: Test your item out

Test it in the places you expect it to be used
- In ArcGIS Pro
- In ArcMap
- In ArcGIS Online web maps
- In ArcGIS Online scenes
- In configurable apps
- In your custom apps
Maturity

Lock in what works
- Save your item
- Turn delete protection on
- Copy/paste info back into source MXDs and Projects for next update

Note limitations
- Limitations of use
- Update frequency
Trust… but verify

Set up your own alerts for important services

- ServiceMonitor script
- Online monitoring services, e.g. UptimeRobot
- ArcGIS Online status page

Work with your IS department for additional monitoring

- Servers, network, etc.
Tell someone

Provide assets to your public relations or social media team

Story maps that explain your work or new content examples at right
Tell someone

Provide assets to your PR team and social media team

Apps that explain their purpose and deliver results to the user example
Tell someone

Provide assets to your PR team and social media team

Web pages that embed or contain your work [example](#)
Please Take Our Survey on the **Esri Events App**!

Download the Esri Events app and find your event

Select the session you attended

Scroll down to find the survey

Complete Answers and Select “Submit”