ArcGIS 10.5 Show & Tell script

# Introduction

Good morning, we don’t have any slides for this show and tell. We are going to do 3 demos to showcase how 3 different personas can make use of the API.

1. First we will show how a GIS administrator can quickly populate a portal with users, groups and content for each user
2. A power user / developer story with emphasis on updating existing content
3. Followed by how a scientist can use the API for perform big data analysis

# GIS Administrator – populate with users

**Setup:**

* Run cleanup script
* open both batch files in sublime text with large fonts
* Open both Python scripts in PyCharm with large fonts
* Open the portal in browser but accessed via port number for web adaptor
* Access via <https://dev002783.esri.com:7443/arcgis/home/>
* Have conda env activated for running the batch script.
* Open CSV in spread sheet

**The** GIS Admin of FEMA office in East Coast gets an overnight call to urgently set up an ArcGIS Portal that will be used by field inspectors the next day. The portal should have all the users added and appropriate groups created and even content for each user specifying which area they need to target.

The Admin uses Chef cookbooks to stand up the portal and enables IWA authentication on the portal to allow easy access to the users. Here I have such a portal, and as you can see there are no users.

The Admin then runs a batch file like this which calls python scripts. The first script will create a set of groups and the second will add users and join them to the appropriate groups. All of this is data driven from a CSV file. For this demo, I picked the first 50 users from **portaldev** email alias.

Let’s run the batch file.

While the script is running, lets look at the portal. We can already see some users being created and some groups created.

## GIS Publisher – populate with content

**Once** the admin finishes his/her script. The publisher takes over early the following morning. The publisher connects to the portal using his/her’s IWA account. The ArcGIS Python API can pick up the user’s IWA credential from the OS.

Lets run this batch file. It lists all the users and is now publishing one csv for each user as a feature service, creates a webmap pointing to that feature service adds the appropriate type keywords. Finally, it reassigns ownership of all those items to that user.

Anytime during this process, the script or publisher does not have to know the password for any other users in the org but can create content into their accounts and have them ready.

While this is running, Eva can drive the last part of this demo. Eva represents a field user and has never logged into this portal before. But she can use a mobile app like ‘Collector for ArcGIS’ on her way to the field and will find a webmap in her My Contents and can immediately get to work.

The example here published a CSV, but it can be a SD file, file geodatabase or shape file.

Rohit will drive the 2nd demo from here.

# GIS scientist persona – hurricane tracks

**Setup**

* Start conda and open notebook
* Open Pro and have the hurricane points ready
* Have chrome and connect to the GAX portal
* Notebook – all cells clear output

We are into the last demo, and we will see how a scientist can use the Python API with Scipy stack and perform analysis.

In my Pro, I have the hurricane tracks from 1842 to early 1900s. There are over 177k points in this dataset. I want to answer a simple question, has the number of hurricanes per season increased since 1840s?

By aggregating these points, I can get something much more manageable and for that I will use the big data tools available on my portal.

I am connecting to a different portal for this demo. I am querying the portal to find which server is running the geoanalytics tasks.

I am getting datastore managers for all the servers federated to the portal. Pick the one for geoanalytics server and query data store entries.

I find my dataset registered, if not present, the API provides an add datastore method which the user can use.

I can also look for data store items in my contents like this. Lets the pick the first item and query its layers. In this case, I the dataset broken down into 10 year periods.

Lets inspect another item, in this case I have all the points as 1 dataset. Let us use this for further analysis.

Before running the Reconstruct Tracks tool for aggregation, I need to know which field I have to aggregate on. For that lets print the manifest of the datastore entry we say early on.

I will pick the Serial\_Num as the track field and run the tool. It produces a feature service as output.

While this is running, let us proceed with a previous analysis result for rest of the demo:

## Analysis

I will search for the previous result published as a feature service. And display that on the map. Here the points are converted into hurricane tracks. The dataset is time enabled, so I can filter the widget by time and can quickly explore the dataset right here in the notebook.

For the next segment of analysis, I am going to read the attribute info of this service into a pandas dataframe. Here I am displaying a few rows and columns to understand how the attribute table looks like.

Finding the dimensions of this table will show how many hurricanes occurred during this period. It was 568.

I am going to explore the dataset a bit more so lets print out the column names here.

### Has the number increased?

For the last part of this, I will sort and group by year or season. Get the count and plot that as a bar chart.

To answer the question, do we see a positive trend in number of hurricanes, let us fit a first order polynomial on this data and see the result.

We have a mild slope. Lets overlay the trend line on the bar chart in red color.

This is an example of some of the questions a scientist can answer using data.