

# Parcel Fabric Automation using Python

Land Records Meetup


March 2020





# Land Records Meetup



## Land Records Meetup

 Redlands, CA

 1,919 members · Public group 

 Organized by Brent Jones and 5 others

- **URL: <https://www.meetup.com/Esri-Land-Records-Meet-Up/>**
- **1900 + active members, 100+ meetings**
- **Keep up with latest technology**
- **A professional community for Land Records /Cadastre**
- **Global**
- **All meetings are recorded and published on GeoNet: <https://community.esri.com/groups/land-records>**
- **Have a good idea? Vote or create on <https://community.esri.com/community/arcgis-ideas/>**
- **See a bug? Report an issue? <https://support.esri.com/>**
- **ArcGIS Pro crash? Please send it and tell us what you did**

# Agenda

- **arcpy library:**
  - Basics (Amir)
  - Example 1 shp → parcel fabric (Amir)
  - Example 2: GNSS coordinates in text file to points feature class (Amir)
  - Example 3: old ArcMap COGO to new COGO (Jason)
  - Example 4: upgrade ArcMap parcel fabric script tool (Jason)
- **Pro tips and tricks:**
  - General (Jason)
  - Scheduled tasks (Ken)
- **arcgis python library (Ken)**



# Arcpy Basics



- **What is arcpy** - <https://pro.arcgis.com/en/pro-app/arcpy/get-started/what-is-arcpy-.htm>
- **Getting started – free 5 hour course**
- **Describe method:**
  - `arcpy.Describe()` – many things: feature class, attribute rules, file, folder, GDB, ... parcel fabrics
  - `arcpy.Describe( <your feature class>).spatialReference.Name`
  - `arcpy.Describe( <your feature class>).extent`
  - Parcel Fabric properties - [LINK](#)
  - `arcpy.Describe( <your parcel fabric> ).<one of the following methods>`
    - Version
    - `connectionsFeatureClass`, `pointsFeatureClass`, `recordsFeatureClass`
    - `parcelTypeNames`
    - `parcelTypes`
    - Topology

# Arcpy Basics



- **Command line**
- **Creating a new script tool (import arcpy, ...)**
- **Creating a function**
- **Error and messaging: Arcpy.AddMessage**
- **“arcpy How to ...”**

## shp → parcel fabric

- The Parcel fabric in Pro is designed with automation in mind
- Script:
  - Create a parcel fabric
  - Add a parcel type
  - Add field
  - Append (load) polygons from source data
  - Enable parcel topology
  - Create parcel records
  - Build

```
PF = arcpy.CreateParcelFabric_parcel(FDS, "ParcelFabric") #Creat
(PF, Parcels, Lines) = arcpy.AddParcelType_parcel(PF, "Ownership")
arcpy.AddField_management(Parcels, "RecordName", 'TEXT') #Addin
arcpy.management.Append(ParcelSourceData, Parcels, "NO_TEST") #a
arcpy.EnableParcelTopology_parcel(PF) #enabl
arcpy.CreateParcelRecords_parcel(Parcels, "RecordName") #creat
arcpy.BuildParcelFabric_parcel(PF) #builc
```

# GNSS coordinates in text file to points feature class

- **Import from TXT file using:**

```
PointFC = arcpy.management.XYTableToPoint(TextFilePath, PointFCName, "Field2", "Field3", "Field4", SpatialReference)
```

- **Add multiple fields:**

```
arcpy.management.AddFields(PointFC, ...)
```

- **Project and active map view:**

```
aprx = arcpy.mp.ArcGISProject("CURRENT")  
activeMap = aprx.activeMap
```

- **Add data to active map:**

```
activeMap.addDataFromPath(pointFCPath)
```

- **Zoom to features extent:**

```
mapView = aprx.activeView # new in Pro 2.5  
pointsExtent = arcpy.Describe(pointFCPath).extent  
mapView.camera.setExtent(pointsExtent)
```

# I Have ArcMap COGO Lines, How Do I Use Them In Pro

- In ArcMap, Angle, Distance, Radius, etc. were all Text fields
- In ArcGIS Pro, Direction, Distance, Radius, and Arc Length are Double and use minimal parameters to define a curve
- Data will need to be converted
- We have a script tool for that!
- The tool will create a new Line feature class carrying over all your data
- Any lines that fail to carry over COGO measurements will be detailed in an optional Error Line feature class.
- Tool found here: <https://arcgis.is/1zXOSq>



# Upgrade ArcMap Parcel Fabric is a Python Script

- **Upgrading your ArcMap Fabric utilizes python and arcpy capabilities**
- **How plans (table) get's a geometry?**
- **How are lines associated to the correct Parcel Type**
- **How are Stated Areas calculated?**
- **What if something didn't come across properly or I need to do comparisons with my ArcMap Fabric**

## Tips and tricks

- **Web search: “arcpy how to ...”**
- **Command line: Use the Python Window in Pro to test with data in real time**
- **Use messages (print and arcpy.AddMessage)**
- **Pseudo code and modular implementation using functions**
- **Proof of concept: GP Model**
- **Copy command syntax from GP history**

# Scheduling GP tools including Script tools

- **Every geoprocessing tool can be scheduled**
- **Why?**
  - Automation – run a tool on a regular basis
  - Long and computationally intensive processes
  - Run a process (or multiple) outside of ArcGIS Pro
- **Examples**
  - Parcel fabric validation of newly entered records
  - Integration with business system to sync certain attributes
  - ETL process from production environment to publication environment (ArcGIS online)
  - Analysis process that is time and resource consuming
  - Parcel aggregating of PLSS from 2<sup>nd</sup> division to sections and townships





