LAS Files

a. Downloads .LAS files from MN DNR [1]

In [2]:
```
import requests
response = requests.get("https://resources.gisdata.mn.gov/pub/data/elevation/lidar/examples/lidar_sample/las/4342-12-05.las")
with open('filename.las', 'wb') as f:
                f.write(response.content)
                f.close()
#download .las file using FTP
```

b. Converts the .LAS file into both a DEM and a TIN

c. Saves the new DEM and TIN to disk

In [1]:
```
import arcpy
in_las = 'filename.las'
arcpy.env.workspace = 'C://Users/Cole/Documents/GitHub/GIS5572/Lab2'
#LAS to TIN
arcpy.LasDatasetToTin_3d(in_las,'TINoutput', thinning_type = 'RANDOM', thinning_method = "PERCENT", thinning_value = 30)
#confirmed, creates TIN that looks right in ArcPro in same folder as notebook
# ''It is not possible to create TIN's in a geodatabase''
#this explicitly forces the raster into the Lab2 folder and not the GDB
#LAS to DEM
arcpy.conversion.LasDatasetToRaster(in_las,'RASoutput','ELEVATION')
```

Out[1]:

Output

C://Users/Cole/Documents/GitHub/GIS5572/Lab2\RASoutput

Messages

Start Time: Sunday, February 14, 2021 12:00:12 PM

Succeeded at Sunday, February 14, 2021 12:00:15 PM (Elapsed Time: 3.07 seconds)

d. Exports PDFs of the DEM and TIN with correct visualization

In [25]:
```
import arcpy
#establish map project
aprx_file = arcpy.mp.ArcGISProject('CURRENT')
#establish map
map_in_aprx = aprx_file.listMaps("Map1")[0]
#find layer
TopLayer = map_in_aprx.listLayers("TINoutput")
# ArcPro Step Here, create a layout for both the TIN and RAS
Layout1 = aprx_file.listLayouts()[0]
#export top layer, remove, export layer
Layout1.exportToPDF(r"TIN_PDF")
map_in_aprx.removeLayer(map_in_aprx.listLayers()[0])
Layout2 = aprx_file.listLayouts()[0]
Layout2.exportToPDF(r"RAS_PDF")
#works!
```

Out[25]:
```
'RAS_PDF.pdf'
```