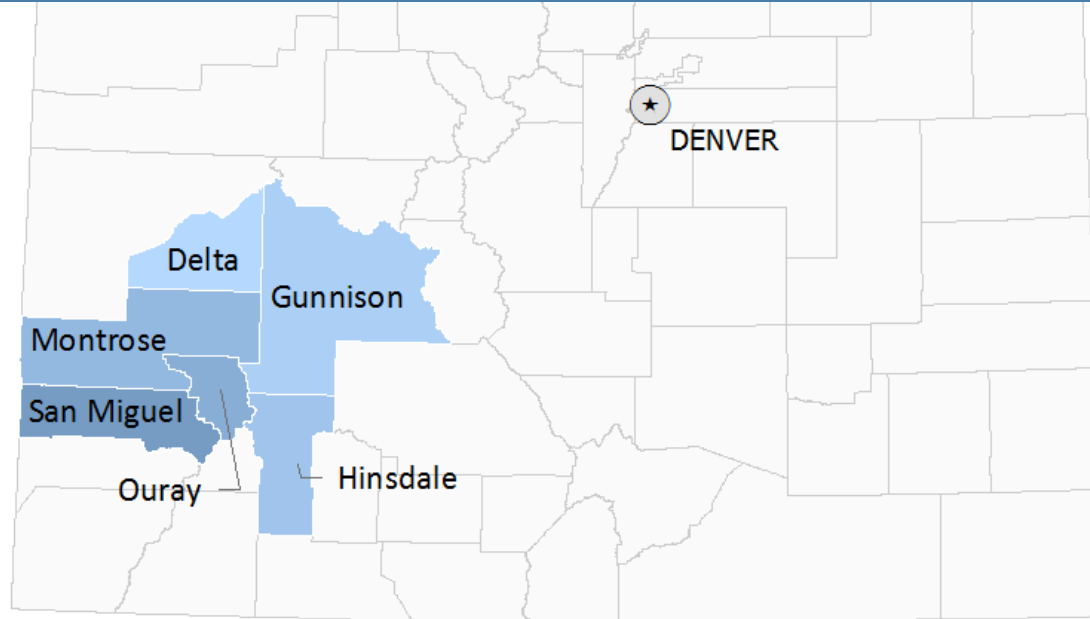# AUTOMATING REGIONAL DATA INTEGRATION WITH PYTHON & ARCPY

Heather Widlund
GIS Coordinator, San Miguel County

Integrated data

❖Standardized schemas
  o Street centerlines
  o Address/structure points
  o Addressed places/landmarks

❖Other: ESNs, PSAP boundaries, Parcels

❖Emergency preparedness & response focus
  o Verify emergency notification addresses (CodeRED)
  o Visual mapping in multi-agency dispatch
  o 911 call address verification (Spillman CAD)

What is the problem?

Data updates are arduous.

Why is this a problem?

Data updates are infrequent.

What are the consequences?

EXCLUSIVE: Aiea heart attack victim dies after ambulance sent to wrong address

Published: Wednesday, September 2nd 2015, 10:21 pm MDT

Pa. Family: Ambulance sent to Wrong Address; Man Died

DEC 17, 2014

Colorado's patchwork of reverse 911 systems hobbled by flaws

- Questions Remain About Reverse Emergency Alert System During Lower North Fork Fire (9News.com - numerous videos)
- Mapping Glitch Blamed For No Colorado Fire Warnings (Boston.com - Google maps in the mix)
- Colorado Wildfire: Mapping Glitch Blamed For Failure To Alert Some Residents To Wildfire (Associated Press - best overall article)

more than 100,000 geo-coding errors in the ENS database that was in use at the time

What is the solution?

```
>>Make a machine do the work:

    . . .
```

Automation Project

❖ Phases
1) Source data with valid schema
2) Ability to integrate easily & automatically
3) Data updates pushed to Spillman CAD

❖ Script tools, Python & arcpy library
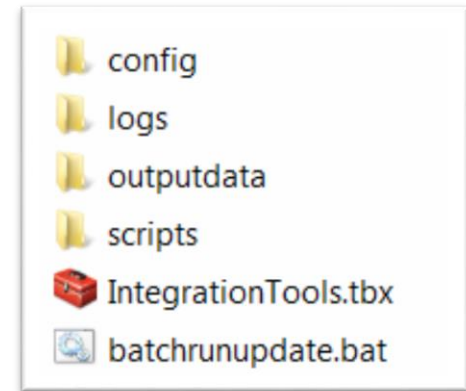o Familiar, available
o No extra installs/libraries

❖ Ground-up: hosted at each agency
o Pros: data ownership & responsibility, specific needs
o Cons: keeping scripts in sync, specific needs

Implementation

❖Set up environment

❖Run script tools to create configuration files
   o Esri's Community Addresses Solution

❖Configure batch file

❖Run batch file
   o Manually
   o Windows Task Scheduler

config
logs
outputdata
scripts
IntegrationTools.tbx
batchrunupdate.bat

□ 🔴 IntegrationTools.tbx
   📜 Configure ESN Layer
   📜 Configure Place Name Points Layer
   📜 Configure Roads Layer
   📜 Configure Structures Layer

Schematic

⚙ esns.ini
⚙ places.ini
⚙ roads.ini
⚙ structures.ini

batch.bat → **runupdate.py** → **replacedata.py**

□ 🗄 SANMCO.gdb
   ▣ ESN
   ▣ PLACES
   ▣ ROADS
   ▣ STRUCTURES

📁 SANMCO.zip

```
Validate fields
Map fields
Extract data
Drop old data
Append new data
Unique IDs
Calc Lat/Long
Strip metadata
```

Demo

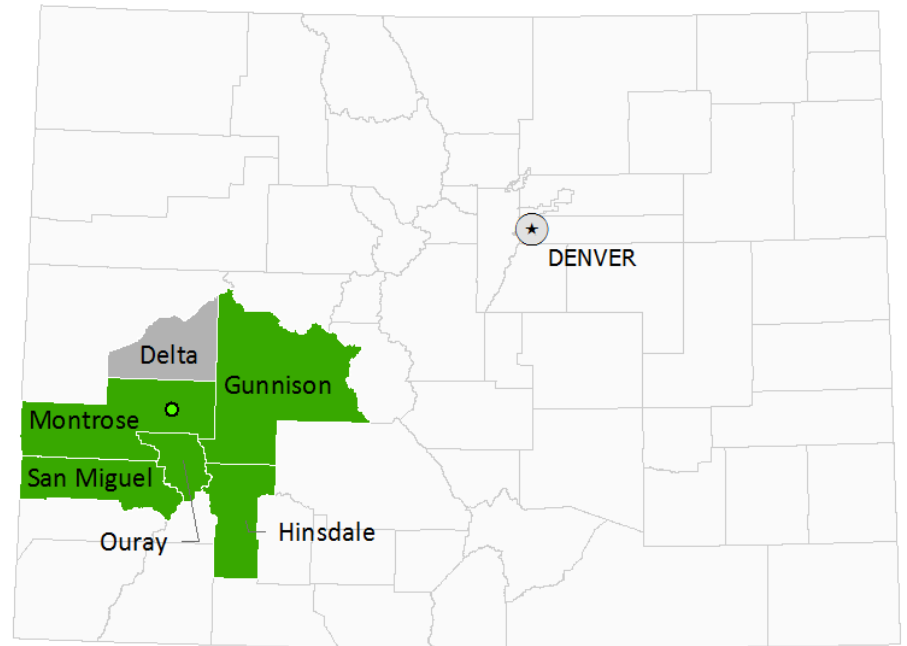# Lessons learned (so far)

❖ Test, test, test: real data & real environments

❖ Customized agency scripts

❖ Functions
  ○ Generate a result (e.g. T/F)
  ○ Keep them short & re-useable

❖ Tools
  ○ IDE: PyScripter
  ○ Logging module
  ○ The internet – document your sources

Progress

❖Installations to date

❖Next steps
  o Script integration
  o Script data push to Spillman CAD

❖GIS in the Rockies

Questions?

Heather Widlund

heatherw@sanmiguelcountyco.gov

https://github.com/hwidlund/integration.git

Special thanks to:
West Region Data Integration Group