# Operationalizing Real-Time Fire & EMS Data with GeoEvent Server

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City of Tempe, AZ

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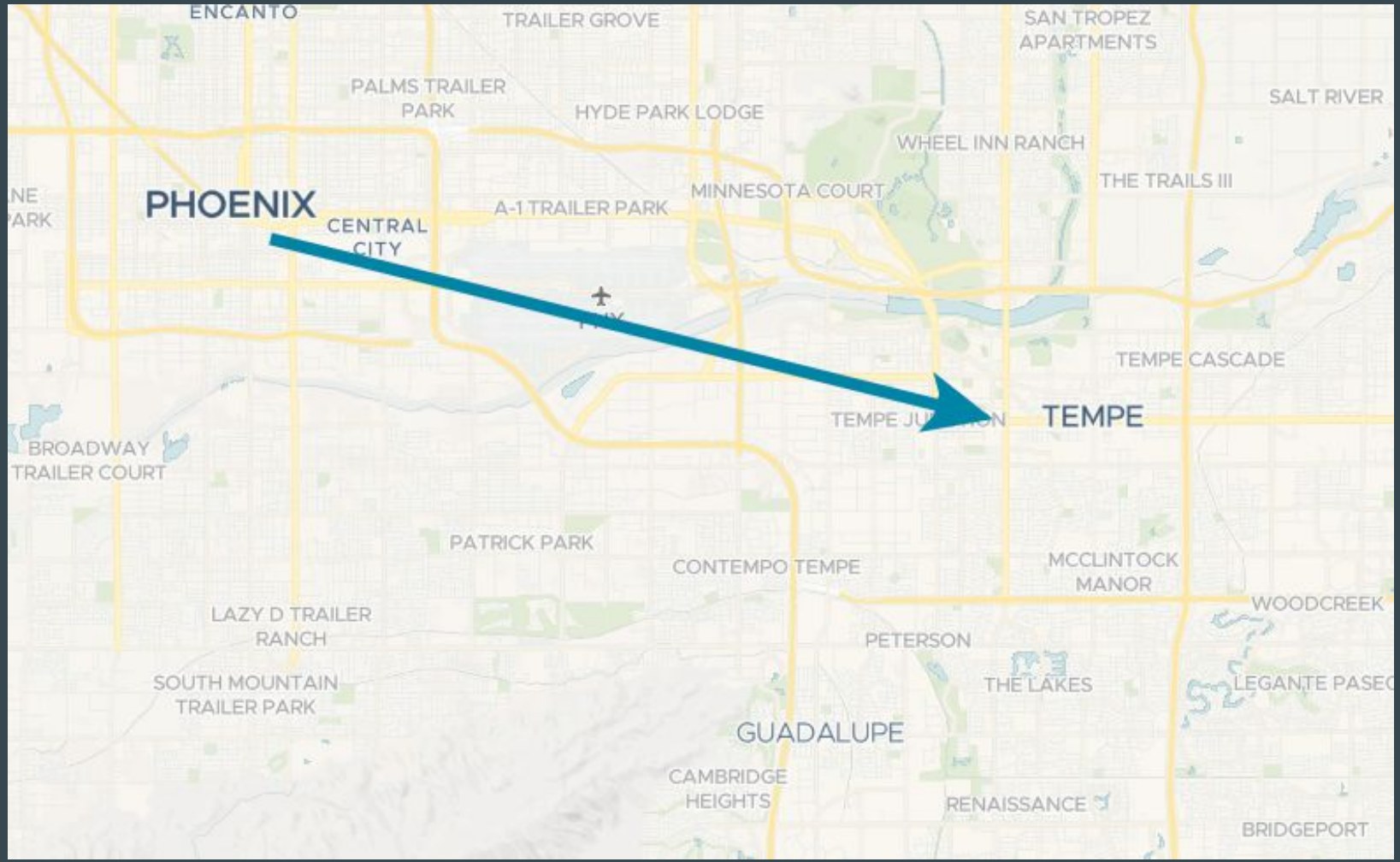
# The Story from 20,000 ft

# Increased Focus on Performance Measurement and Data Driven Decision Making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SAN TROPEZ APARTMENTS
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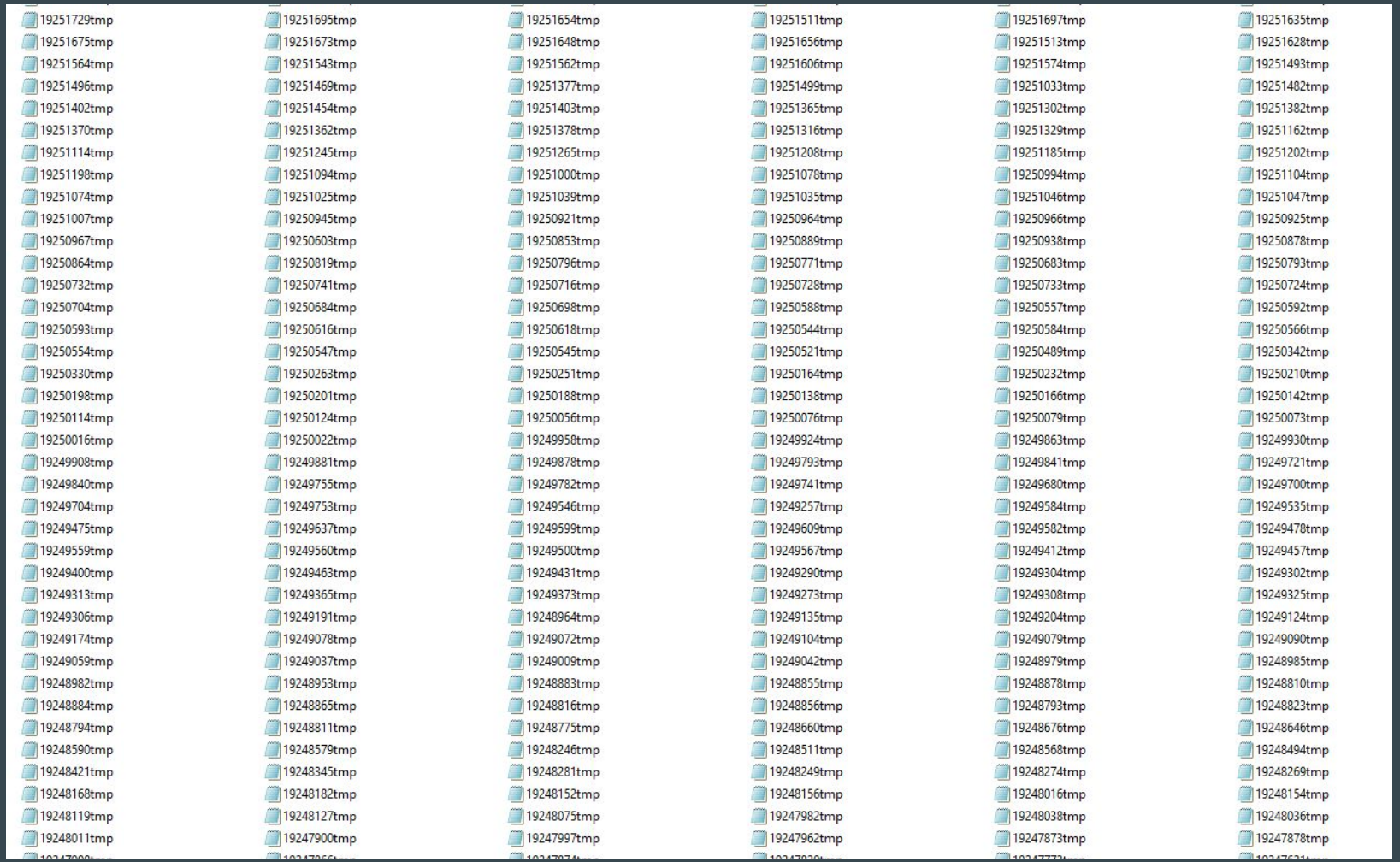
HYDE PARK LODGE
SALT RIVER
WHEEL INN RANCH
THE TRAILS III
MINNESOTA COURT
PHOENIX
A-1 TRAILER PARK
CENTRAL CITY
TEMPE CASCADE
TEMPE
BROADWAY TRAILER COURT
PATRICK PARK
CONTEMPO TEMPE
MCCLINTOCK MANOR
WOODCREEK
LAZY D TRAILER RANCH
PETERSON
SOUTH MOUNTAIN TRAILER PARK
THE LAKES
GUADALUPE
CAMBRIDGE HEIGHTS
RENAISSANCE
BRIDGEPORT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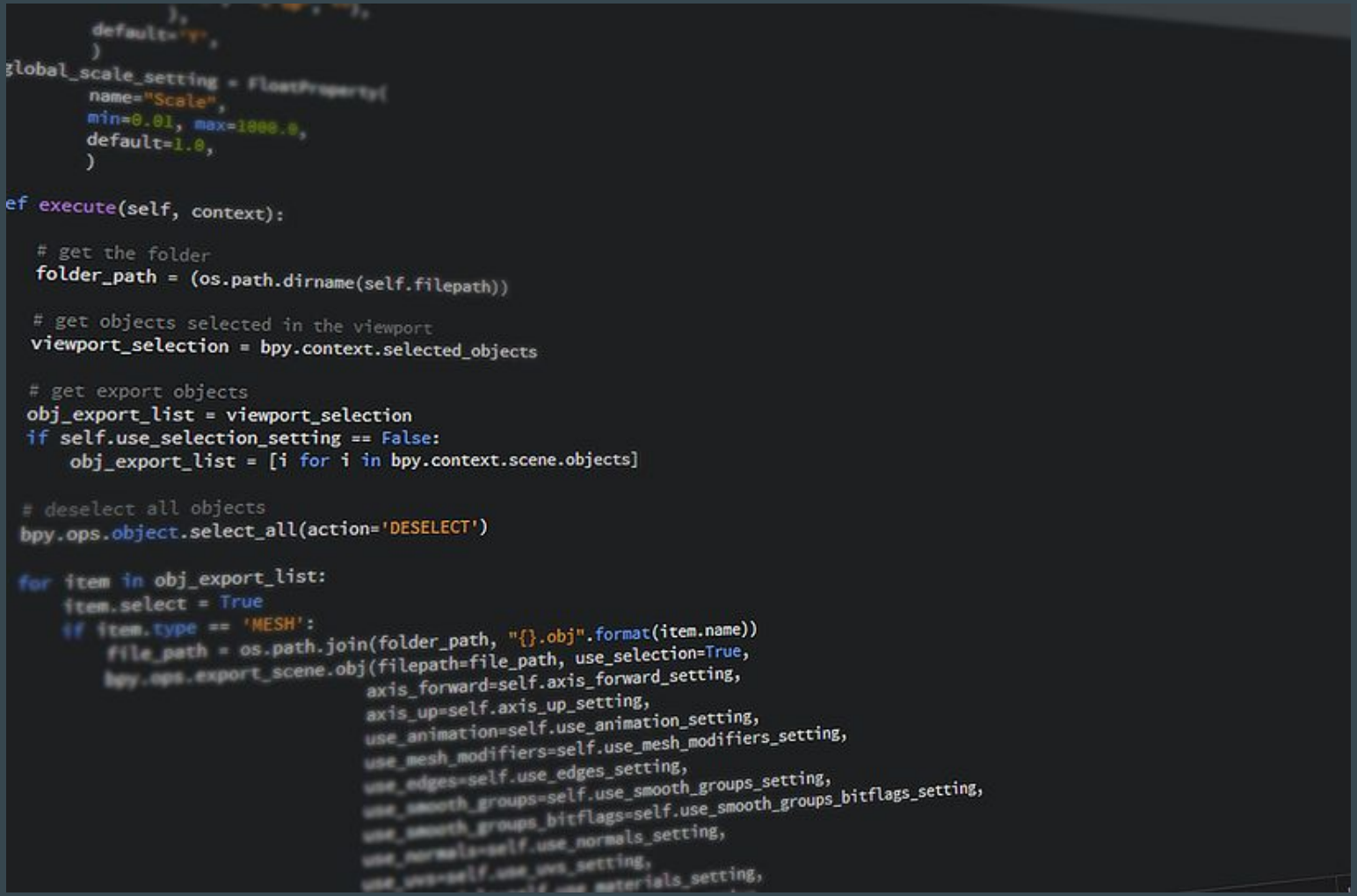
WHAT DO WE DO?

# Multiple Possible Solutions

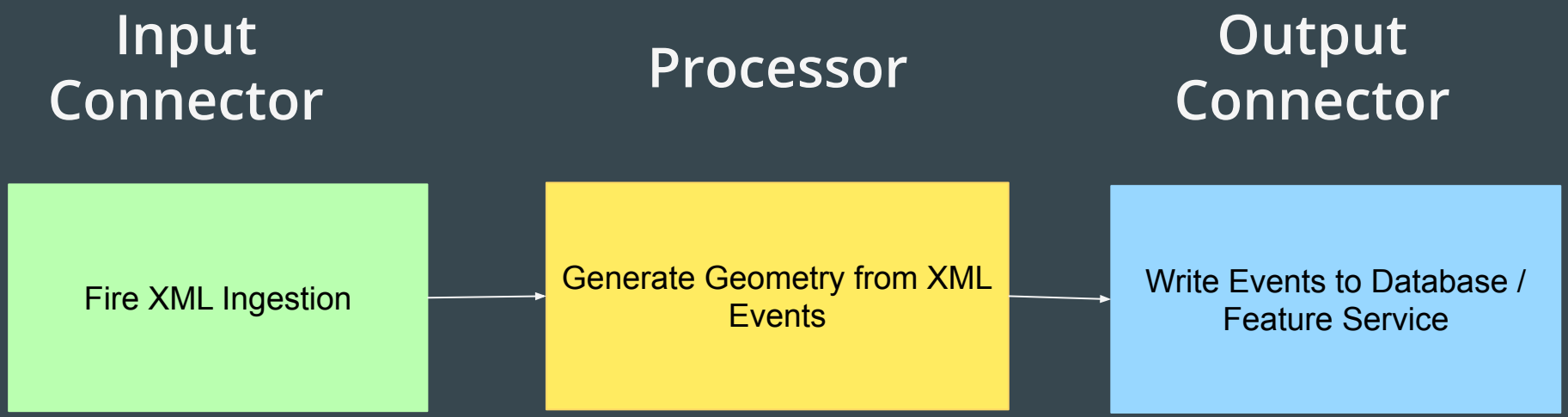


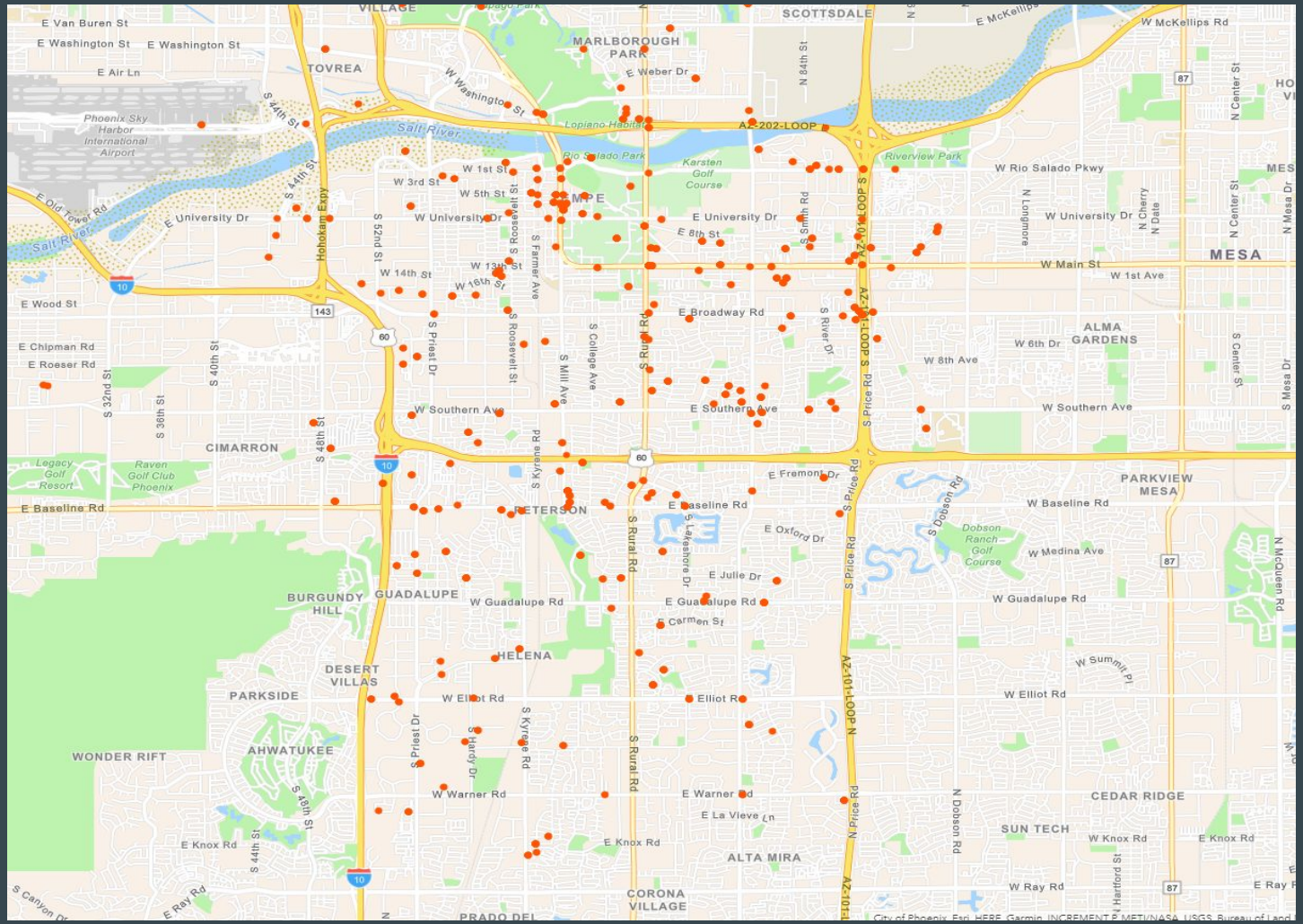
```
        default='Y',
        )
global_scale_setting = FloatProperty(
        name="Scale",
        min=0.01, max=1000.0,
        default=1.0,
        )

def execute(self, context):

    # get the folder
    folder_path = (os.path.dirname(self.filepath))

    # get objects selected in the viewport
    viewport_selection = bpy.context.selected_objects

    # get export objects
    obj_export_list = viewport_selection
    if self.use_selection_setting == False:
        obj_export_list = [i for i in bpy.context.scene.objects]

    # deselect all objects
    bpy.ops.object.select_all(action='DESELECT')

    for item in obj_export_list:
        item.select = True
        if item.type == 'MESH':
            file_path = os.path.join(folder_path, "{}.obj".format(item.name))
            bpy.ops.export_scene.obj(filepath=file_path, use_selection=True,
                                     axis_forward=self.axis_forward_setting,
                                     axis_up=self.axis_up_setting,
                                     use_animation=self.use_animation_setting,
                                     use_mesh_modifiers=self.use_mesh_modifiers_setting,
                                     use_edges=self.use_edges_setting,
                                     use_smooth_groups=self.use_smooth_groups_setting,
                                     use_smooth_groups_bitflags=self.use_smooth_groups_bitflags_setting,
                                     use_normals=self.use_normals_setting,
                                     use_uvs=self.use_uvs_setting,
                                     use_materials_setting,
```

ArcGIS Server / GeoEvent Server

Relational Database

Client (Dashboards)


Input Connector
Processor
Output Connector
Fire XML Ingestion
Generate Geometry from XML Events
Write Events to Database / Feature Service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E Air Ln
VILLAGE
TOVREA
MARLBOROUGH PARK
SCOTTSDALE
E McKellips Rd
W McKellips Rd
E Weber Dr
N 84th St
Phoenix Sky Harbor International Airport
S 44th St
Salt River
W Washington St
Lopiano-Habitat
AZ-202-LOOP
Rio Salado Park
Karsten Golf Course
Riverview Park
W Rio Salado Pkwy
N Center St
W 1st St
W 3rd St
W 5th St
TEMPE
E University Dr
W University Dr
S Smith Rd
N Longmore
N Cherry
N Date
MESA
E Old Town Rd
Hohokam Expy
S 52nd St
S Roosevelt St
S Farmer Ave
E 8th St
W Main St
W 1st Ave
W 14th St
W 16th St
W 13th St
E Wood St
143
60
E Broadway Rd
S River Dr
S Price Rd
ALMA GARDENS
W 6th Dr
W 8th Ave
E Chipman Rd
E Roeser Rd
S 40th St
S 32nd St
S 36th St
S Priest Dr
S College Ave
S Mill Ave
S Rural Rd
W Southern Ave
E Southern Ave
S 48th St
CIMARRON
Legacy Golf Resort
Raven Golf Club Phoenix
S Kyrene Rd
E Fremont Dr
PARKVIEW MESA
E Baseline Rd
PETERSON
S Lakeshore Dr
E Oxford Dr
S Dobson Rd
Dobson Ranch Golf Course
W Medina Ave
N McQueen Rd
E Julie Dr
BURGUNDY HILL
GUADALUPE
W Guadalupe Rd
E Carmen St
HELENA
DESERT VILLAS
W Summit Pl
PARKSIDE
W Elliot Rd
Elliot Rd
AZ-101-LOOP N
WONDER RIFT
AHWATUKEE
S Priest Dr
S Hardy Dr
S Kyrene Rd
W Warner Rd
E Warner Rd
E La Vieve Ln
CEDAR RIDGE
SUN TECH
E Knox Rd
W Knox Rd
ALTA MIRA
CORONA VILLAGE
W Ray Rd
E Ray Rd
S Canyon Dr
PRADO DEL
City of Phoenix, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, Bureau of Land

# What About Extensibility?

# Time Measurements

Alarm Processing Time: Alarm to Dispatch Notified

Turnout Time: Dispatch Notified to Enroute

Travel Time: Enroute to First Unit Arrival

Total Time: Alarm to First Unit Arrival

# GeoEvent Field Calculator vs SQL for Datetime Measurements

# Using T-SQL for Time Measurements:

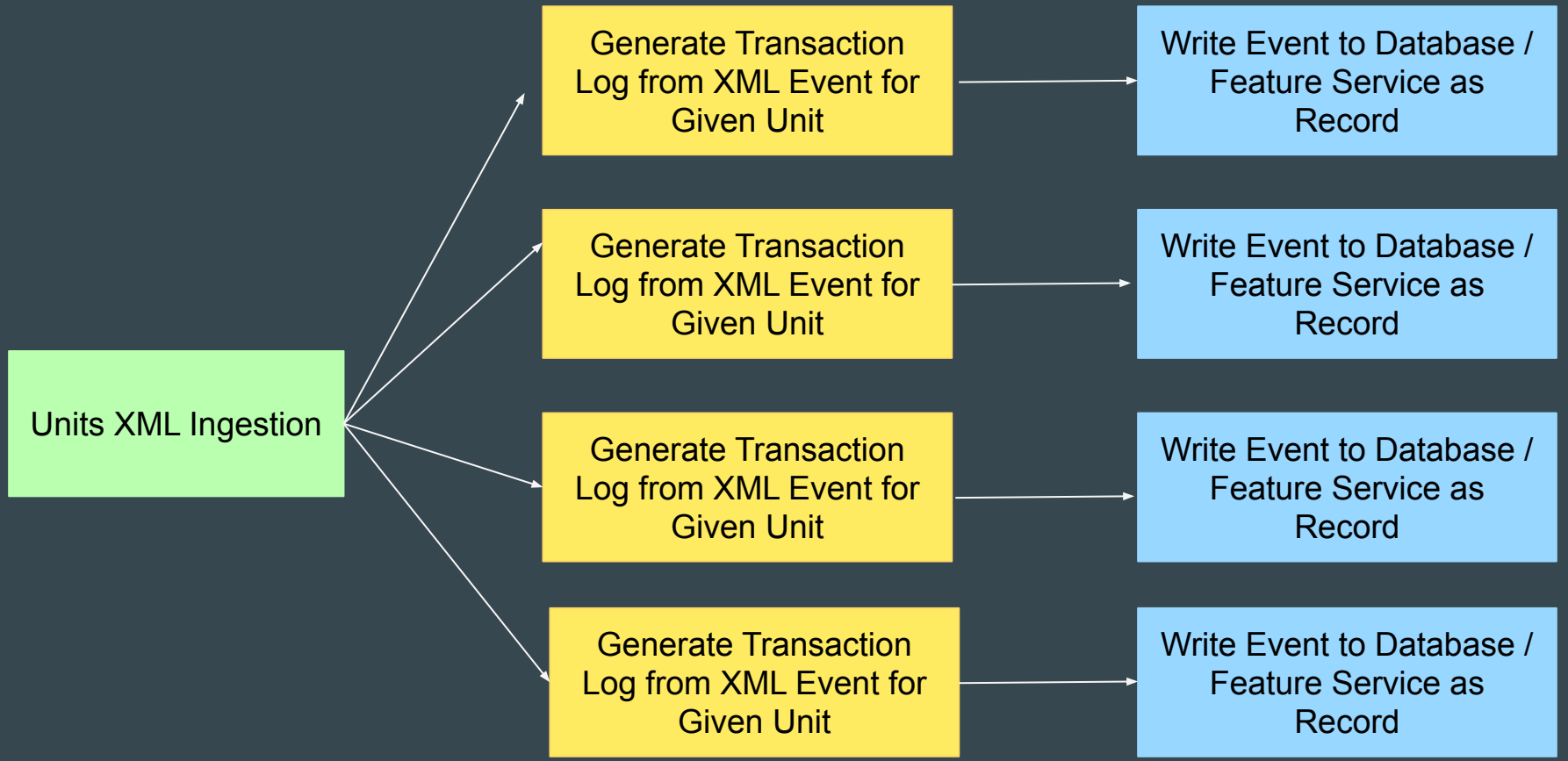
Upside: Configurability, Ease of use

Downside: Rendering Performance of Database Views & Feature Services, Additional Staging Steps

# Multi-Cardinality or Units => Unit

Units

- Unit
  - Notified Datetime, Enroute Datetime, etc.
- Unit
- Unit


Units XML Ingestion
Generate Transaction Log from XML Event for Given Unit
Generate Transaction Log from XML Event for Given Unit
Generate Transaction Log from XML Event for Given Unit
Generate Transaction Log from XML Event for Given Unit
Write Event to Database / Feature Service as Record
Write Event to Database / Feature Service as Record
Write Event to Database / Feature Service as Record
Write Event to Database / Feature Service as Record

# Custom Processor: Field Splitter

Esri / multi-cardinal-field-splitter-for-geoevent

Watch 27 | Star 1 | Fork 0

Code | Issues 0 | Pull requests 0 | Projects 0 | Wiki | Security | Insights

ArcGIS GeoEvent Server sample Multicardinal Field Splitter Processor for splitting a field into individual GeoEvents

geoevent | geoevent-for-server | arcgis | server | java | processor | multicardinal | multi-cardinal | splitter | field

16 commits | 4 branches | 0 releases | 5 contributors | Apache-2.0

Branch: master | New pull request | Create new file | Upload files | Find File | Clone or download

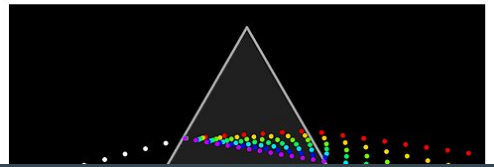
venukanaparthy updated version to 10.6.0 — Latest commit 377c929 on Apr 12, 2018

| | | |
|---|---|---|
| multicardinal-field-splitter-processor | updated version to 10.6.0 | last year |
| .gitignore | Initial check-in | 5 years ago |
| CONTRIBUTING.md | Initial check-in | 5 years ago |
| README.md | updated version to 10.6.0 | last year |
| license.txt | Initial check-in | 5 years ago |
| multicardinal-field-splitter-for-geoevent.gif | Initial check-in | 5 years ago |
| pom.xml | updated version to 10.6.0 | last year |

README.md

# multi-cardinal-field-splitter-for-geoevent

ArcGIS GeoEvent Server Sample Multicardinal Field Splitter Processor for splitting a field into individual GeoEvents.



| Unit ID | Notified Datetime | Enroute Datetime | Arrival Datetime | Cleared Datetime |
|---|---|---|---|---|
| Unit 1 | 2019-07-02 10:00:42 | 2019-07-02 10:01:30 | 2019-07-02 10:08:45 | 2019-07-02 11:00:00 |
| Unit 2 | 2019-07-02 10:00:42 | 2019-07-02 10:01:41 | 2019-07-02 10:06:54 | 2019-07-02 10:35:00 |
| Unit 3 | 2019-07-02 10:00:42 | 2019-07-02 10:02:00 | 2019-07-02 10:09:07 | 2019-07-02 10:50:00 |

# Slowly Changing Dimensions

| Nature Code Description | Notified Datetime | Enroute Datetime | Arrival Datetime | Incident Number |
|---|---|---|---|---|
| Code Value 1 | 2019-07-02 10:00:42 | | | 123456789 |
| Code Value 2 | 2019-07-02 10:00:42 | 2019-07-02 10:01:41 | | 123456789 |
| Code Value 3 | 2019-07-02 10:00:42 | 2019-07-02 10:01:41 | 2019-07-02 10:04:07 | 123456789 |

# Tempe Fire and Medical Rescue Department

Performance Times

ALS? All | Shift All A B C | Station All 1 2 3 4 5 6 | Date Range 6/28/2019 – 7/5/2019

## Alarm Processing
65.1
Target: <60 sec

## Turnout (pending)
62.1
Target: <60 sec

## Travel (pending)
62.1
Target: <60 sec

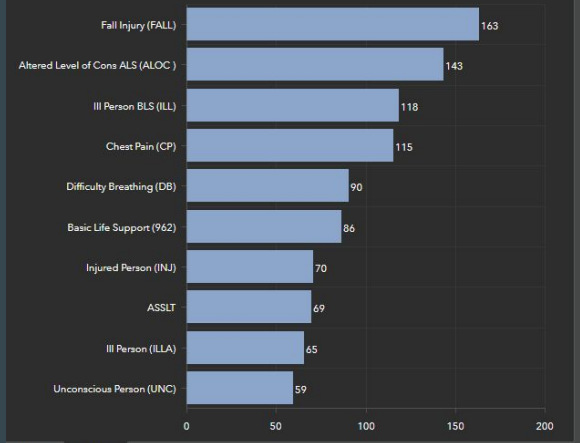
## Total Time
395.1
Target: <360 sec

Max Total Time
37.833 minutes

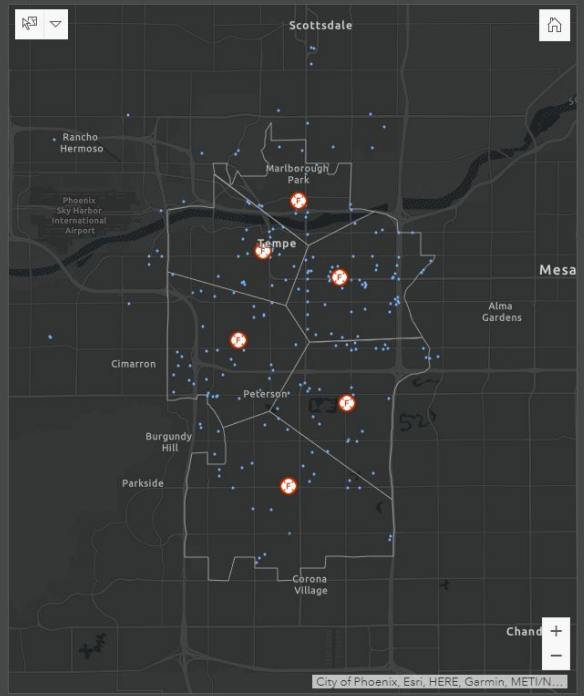
Min Total Time
0.283 minutes

Incidents
2,037
688 (ALS)

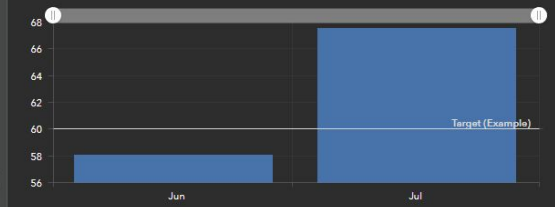
## Incident Types (Top 10)




Alarm | Incident

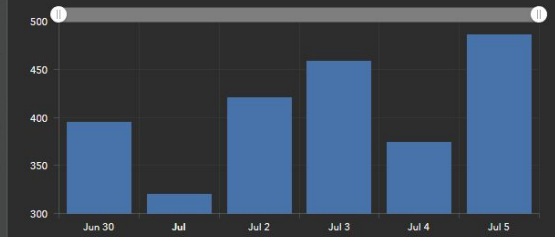



## Alarm Processing



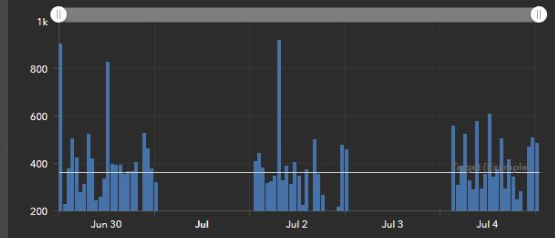

Month | Day | Hour

## Turnout Time (Data Pending)




Month | Day | Hour

## Total Time




Month | Day | Hour

# Tempe Fire and Medical Rescue Department

Performance Times

ALS? All | Shift All A B C | Station All 2 | Date Range 7/1/2019 – 7/5/2019

## Alarm Processing

59.6

Target: <60 sec

## Turnout (pending)

62.1

Target: <60 sec

## Travel (pending)

62.1

Target: <60 sec

## Total Time

342.8

Target: <360 sec

## Max Total Time

2.367 minutes

## Min Total Time

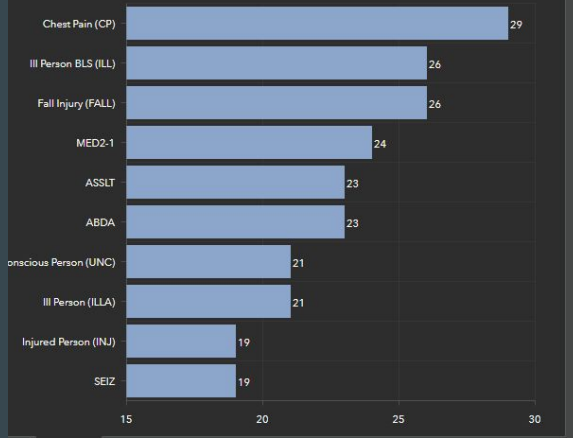
2.85 minutes

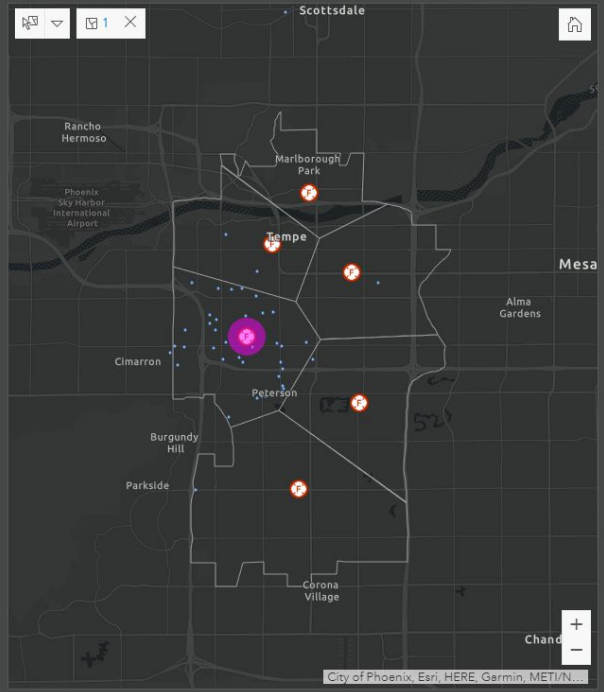
## Incidents

3,021

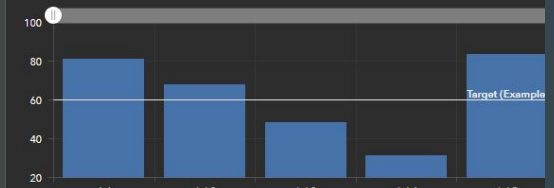
1,135 (ALS)

## Incident Types (Top 10)



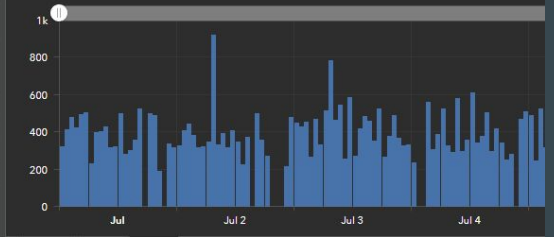




## Alarm Processing



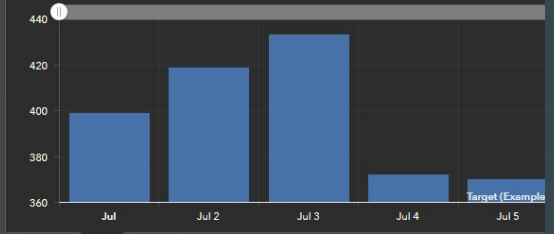

Month | Day | Hour

## Turnout Time (Data Pending)




Month | Day | Hour

## Total Time




Month | Day | Hour

# Takeaways

- Performant with High Number of Events
- Configurable (to a Large Degree)
- Python, .NET, Java Not Needed
- Easy Integration

# Q&A

slides: https://bit.ly/2YA6nxd

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