

Software Development Samples

Jayashree Surendrababu

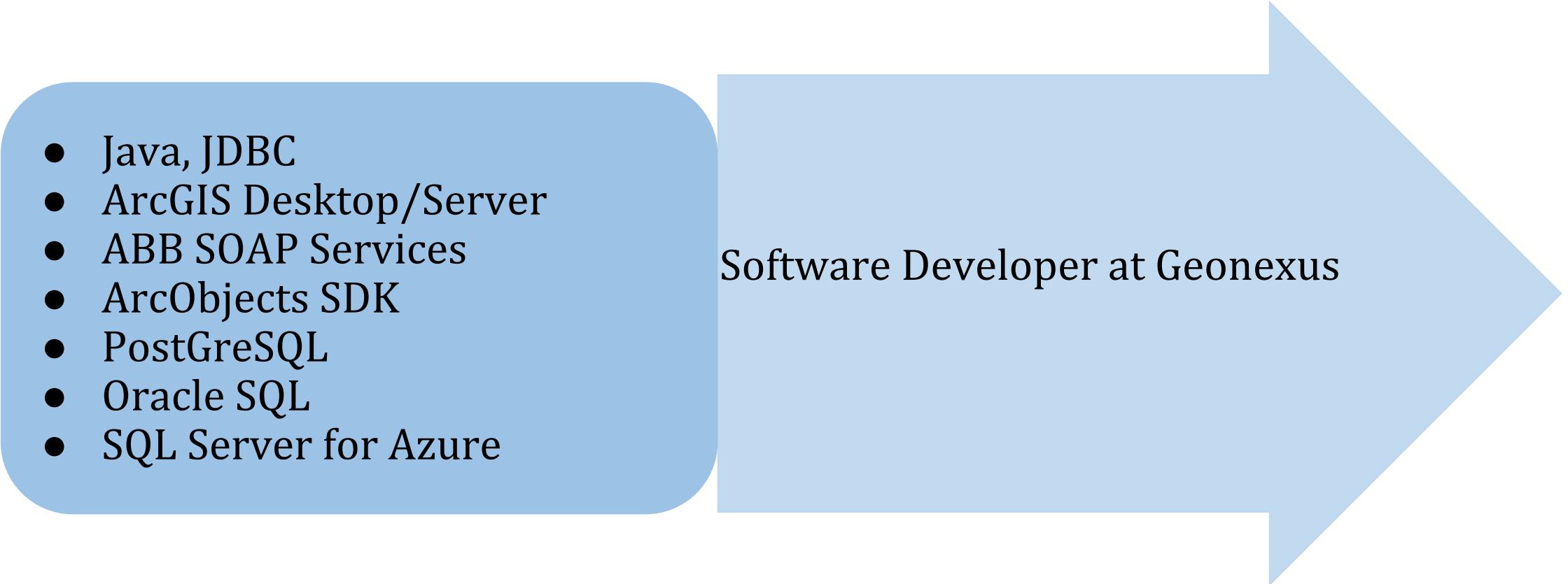
<https://github.com/sjayashree01>

Overview 2018-2020

Technologies Used

- Java, JDBC
- ArcGIS Desktop/Server
- ABB SOAP Services
- ArcObjects SDK
- PostGreSQL
- Oracle SQL
- SQL Server for Azure

Organization



Software Developer at Geonexus

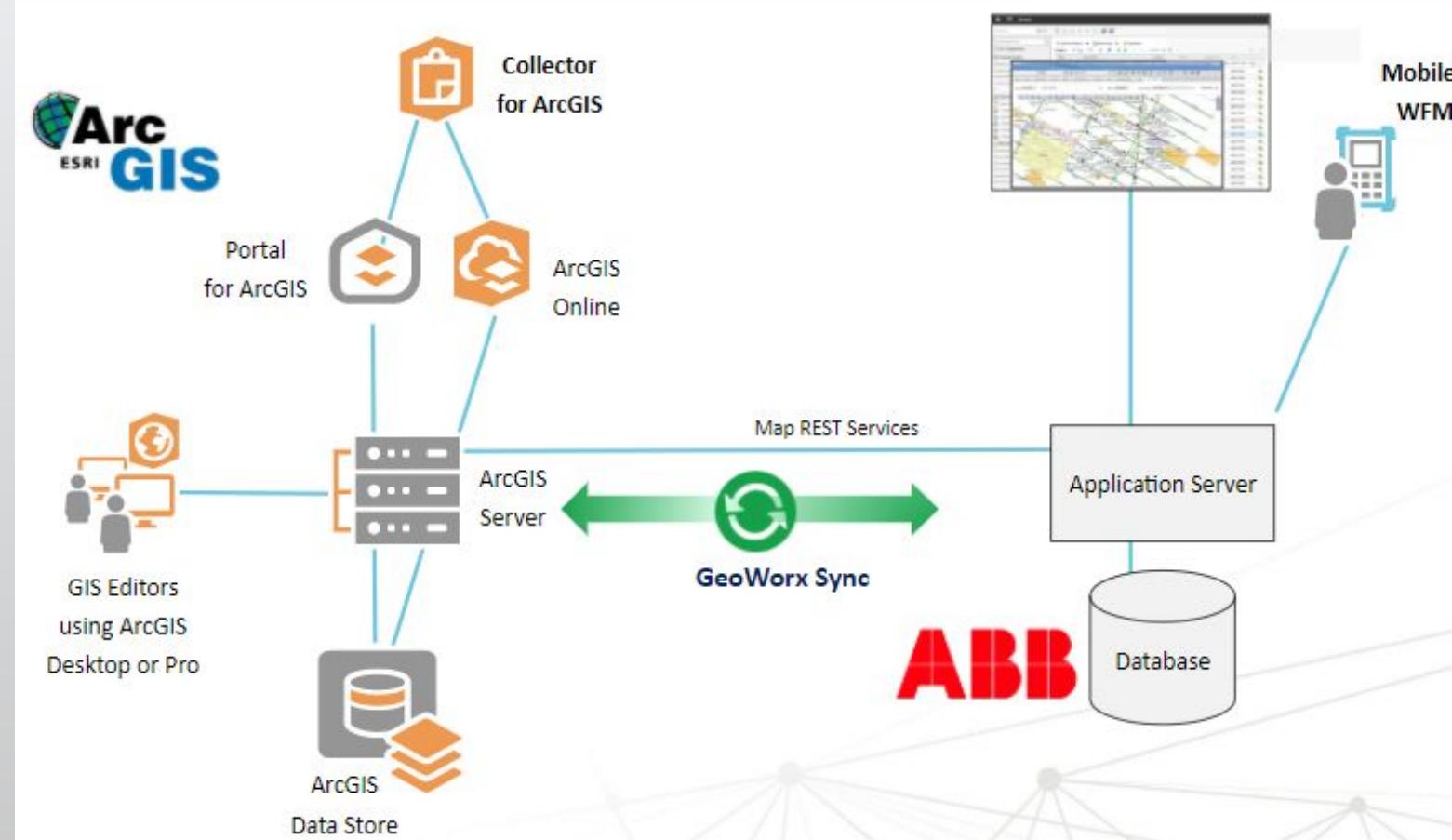
Purpose:

Build GeoWorx Sync product and
GeoNexus Integration Platforms
for [GIS](#), [ABB Ellipse](#), [ABB AssetSuite](#) and [ArcFM](#)

Team Size for Dev and QA/QC:

9

My contribution: Lead developer



Overview 2016-18

Technologies Used

- GeoServer
- ArcGIS Business Analyst,
- QGIS
- ArcGIS REST API,
- JavaScript frameworks
- AWS
- Python
- Netezza

Organization



Sr Market Planning Developer at Petco

Overview 2015-16

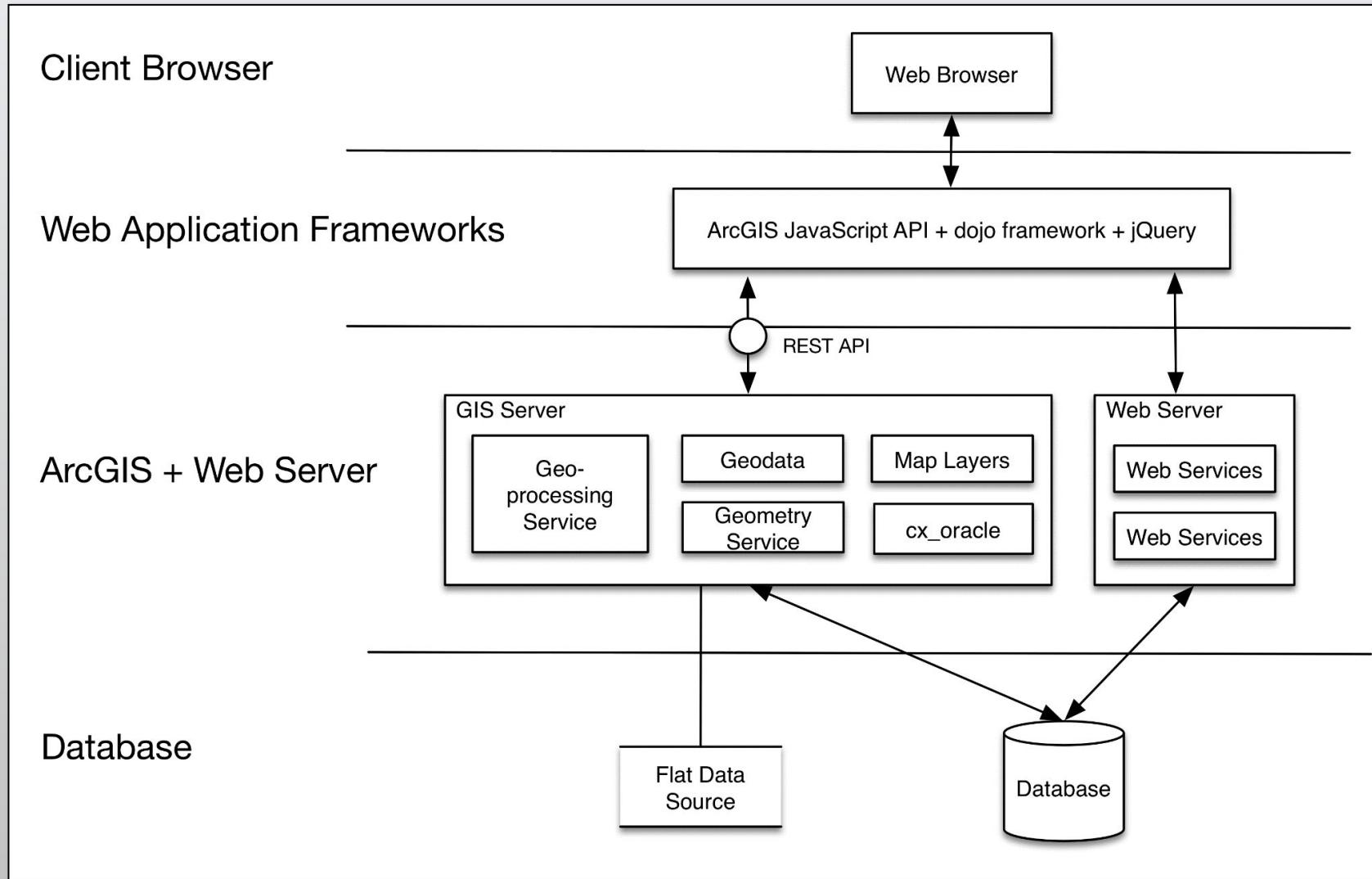
Technologies Used

- ArcGIS Desktop/Server, ArcGIS REST API
- ArcObjects SDK
- jQuery, AngularJS
- C#
- Python

Organization

GIS Programmer at Langan
Engineering and Environmental
Services, Inc.

Application Architecture



Application Examples

Desktop:

- Contour Generation Plugin for ArcMap – To avoid using Spatial Analyst Licenses
- Auto Spell Check for ArcGIS Desktop 10.1
- Custom Solar Heat Map generator for ArcMap
- GPS Geometry Conversion tools for ArcMap

Web/Mobile Applications:

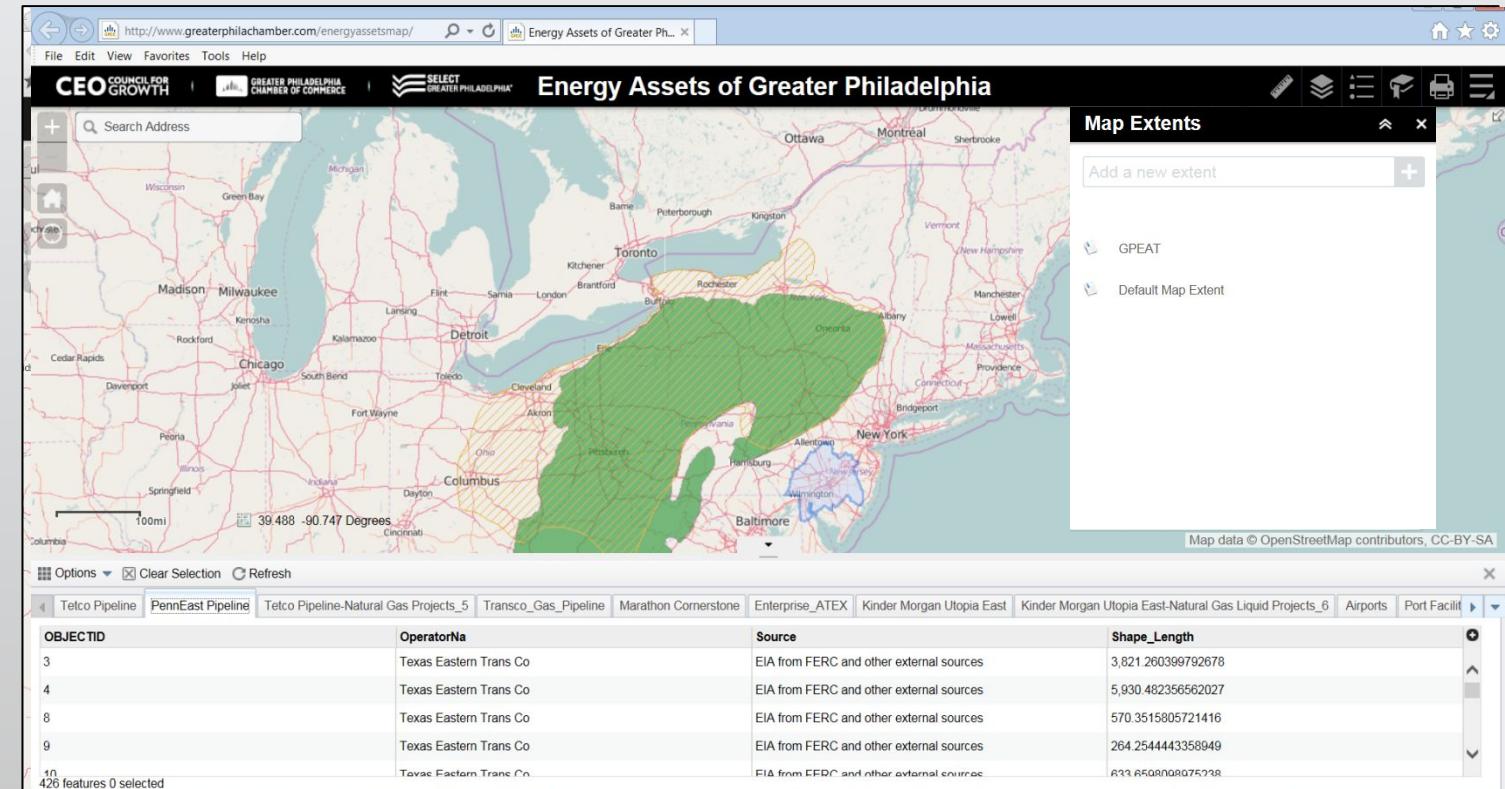
- Site Analyzers
- Network apps for telecom and water utilities
- Field mobility apps for asset management/tracking
- [Greater Philadelphia Chamber of Commerce](#)

Consulting/Business Development:

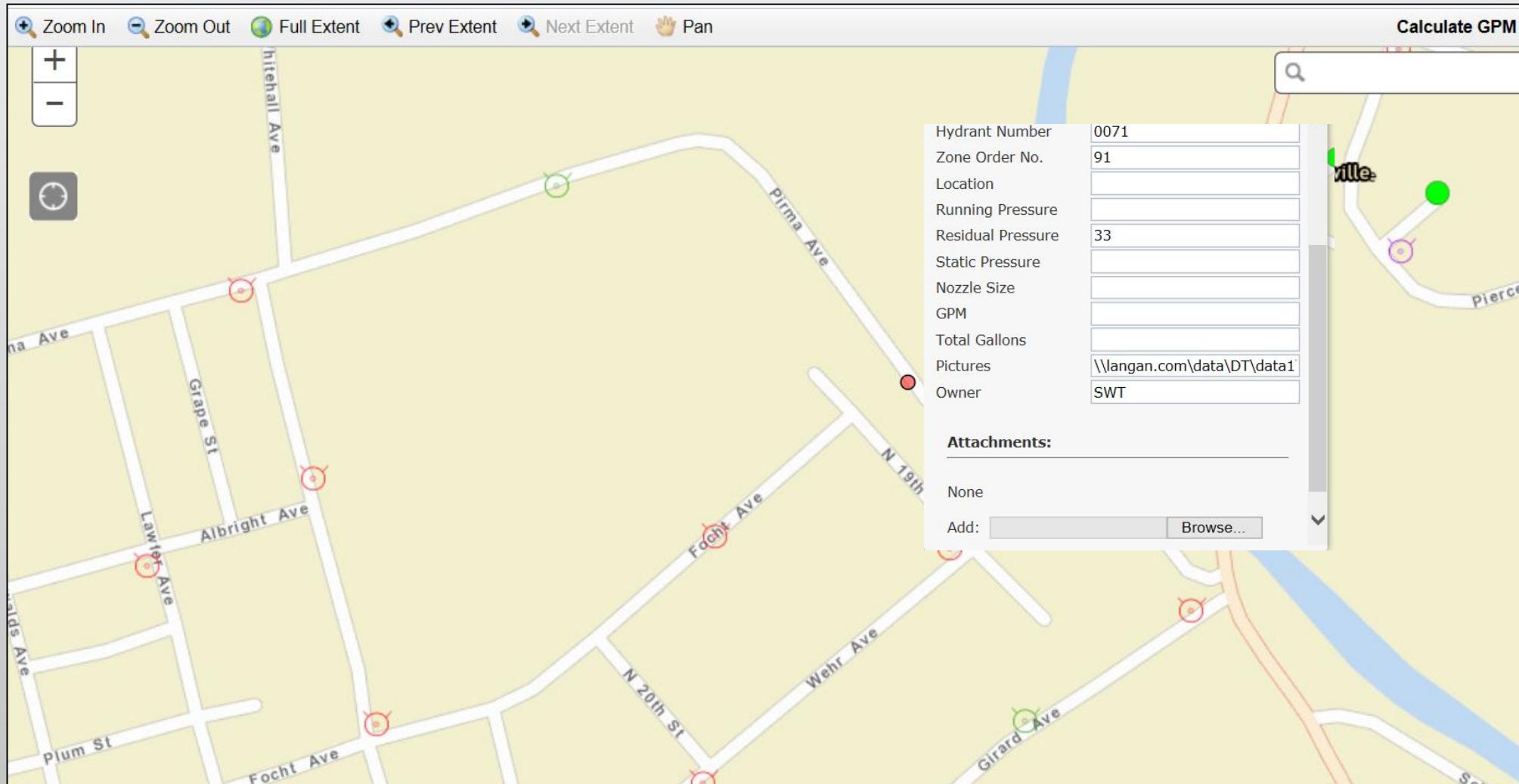
- Business Development (RFQs, RFPs, Conferences and Tech Talks)
- GIS Training & Consultancy for Clients

Greater Philly Chamber of Commerce

- **Purpose:** Web and Mobile App for Greater Philadelphia Energy Action Team
- **Team Size:** 15
- **My contribution:** Lead developer



Hydrant App: GPM Calculator



Field Inspection Form

Flow Test and Plan Review Forms

The interface displays an aerial map of a residential area with several sewer manholes marked by orange dots. A specific manhole, identified by ID NEA01M0294, is highlighted with a green line and a callout box. The callout box contains the following information:

(1 of 4)

Sewer Manholes

To Edit Manhole: [Click Here](#)

Manhole ID: NEA01M0294

City, Town:

Rim Elev: 16.05000038

Bottom Elev: 3.96000022

[Zoom to](#)

60ft 41.306 -72.911 Degrees

Microsoft

Options Zoom to Clear Selection Refresh

Flow Tests Plan Review Sewer Manholes Pump Stations Sewer Connection Sewer Lateral Sewer Main Sewer Structure Catch Basin Drain Manhole Drain Lateral Drain Line Stormwater Structure Customer Private Mains Regulators CSO Outfalls

OBJECTID_1	OBJECTID	Town	Street1	Street2	ProjectDes	MHLocation	Meter_Type	MeterID	LocX	LocY	Start_Date	End_Date	ConductedB	ReviewNumb
1	1	New Haven	Prospect Street		Yale - Forestry Building	P13N170	Development		952,031	675,687	10/18/2007, 8:00 PM	11/11/2007, 7:00 PM	NEPCCO	2007-020
2	2	New Haven	Prospect Place		Yale - Forestry Building	P13N010	1		951,928	675,489	9/4/2007, 8:00 PM	10/18/2007, 8:00 PM	NEPCCO	2007-020
3	3	New Haven	Dell Drive		Dell Drive -	X12N400	Development		967,778	677,812	3/19/2007, 8:00	4/12/2007, 8:00	NEPCCO	2006-022

Field Inspection Form

Flow Test and Plan Review Forms

The map displays several flow test points marked with orange dots along a green line. Labels for these points include NEA01M0229, NEA01M0288, NEA01M0083, NEA01M0083, NEA01M0083, NEA01M0083, and NEA01M0294. A legend indicates 'Flow Tests' and 'Flow Meter'. A green arrow points towards the right side of the map.

Search Address:

Flow Tests

ID	3693
Town	East Haven
Street1	293 EAST ST
Street2	
ProjectDescription	
FlowMeterLocation	
LocX	956,118.863166874
LocY	672,398.727452461
Date Conducted From	
Date Conducted To	
ConductedBy	

Zoom to [Zoom to](#)

Options ▾ [Zoom to](#) Clear Selection [Refresh](#)

Flow Tests Plan Review Sewer Manholes Pump Stations Sewer Connection Sewer Lateral Sewer Main Sewer Structure Catch Basin Drain Manhole Drain Lateral Drain Line Stormwater Structure Customer Private Mains Regulators CSO Outfalls

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Edit Flow Tests

Select a template to create features

Flow Tests

Flow Test

Zoom to [Zoom to](#)

PDF Report Generation

Manhole Inspection Form

* required fields

Operator's Name: <input type="text" value="RC"/>	*	Date: <input type="text" value="2/29/2016"/> 			
City/Town: <input type="text" value="NEWHAVEN"/>	Location(Street): <input type="text" value="EASEMENT EAST ST"/>				
Sewershed: <input type="text" value="EA 01"/>	Manhole Number: <input type="text" value="NEA01M0294"/>				
Cover Size: <input type="text"/> inches	Cover Vented: <input type="button" value="▼"/>	Potential for Runoff: <input type="button" value="▼"/>			
Cover Condition: <input type="button" value="▼"/>	Evidence of Surcharge: <input type="button" value="▼"/>				
Depth (Rim to Inv.): <input type="text"/> inches	Additional Information: (Max Characters: 200) <div style="border: 1px solid black; padding: 5px; height: 100px; width: 100%;">test 2/29/2016</div>				
Frame Condition: <input type="button" value="▼"/>					
Wall Material: <input type="button" value="▼"/>					
Wall Condition: <input type="button" value="▼"/>					
I&I: <input type="button" value="▼"/>					
Bench Material: <input type="button" value="▼"/>					
Bench Condition: <input type="button" value="▼"/>	MH Structural Rating: <input type="text" value="5"/>	*			
Inspection Status: <input type="button" value="▼"/>	MH O/M Rating: <input type="text" value="5"/>	*			
Sheet Picture #: <input type="text"/>	MH Picture #: <input type="text"/>				
Pipe Rating:					
Picture #:	Pipe Number: <input type="text" value="NEA01P0348"/>	Pipe Material: <input type="button" value="▼"/>	Pipe Diameter: <input type="text"/> inches	Structural: <input type="text" value="5"/>	O/M: <input type="text" value="5"/>
Out:	<input type="text"/>	<input type="button" value="▼"/>	<input type="text"/>	<input type="text"/>	*
In 1:	<input type="text" value="NEA01P0347"/>	<input type="button" value="▼"/>	<input type="text"/>	<input type="text"/>	
In 2:	<input type="text"/>	<input type="button" value="▼"/>	<input type="text"/>	<input type="text"/>	
In 3:	<input type="text"/>	<input type="button" value="▼"/>	<input type="text"/>	<input type="text"/>	

Hospitals Data Viewer

Hospital Data Viewer

- Basemaps
- Legend
- Layers
 - Hospital Locations
 - Langan Projects
- Buffer
 - Double click on map location to draw buffer
 - 10 Miles ▾
 -
- Export

A topographic map of the San Francisco Bay Area, centered on the city of San Jose. The map shows detailed terrain, roads, and place names. Two specific hospital locations are marked with blue dots: one near Redwood City and another near Stanford University. Numerous other green dots represent additional data points or projects. A dashed circular buffer is drawn around the Stanford location, extending approximately 10 miles in radius. The map includes labels for major cities like San Jose, Santa Clara, and Milpitas, as well as smaller towns and parks. Major highways like I-80, I-880, and I-280 are also visible.

Find address or place

Site Analyzer

NJ Site Analyzer

Legend

Layers

Filter Parcels

Travel Time to Hwy (mins)

Showing parcels with between 0 and 69 travel time

Distance to Hwy (miles)

Showing parcels with between 0 and 17.83 highway distance

Property Acres

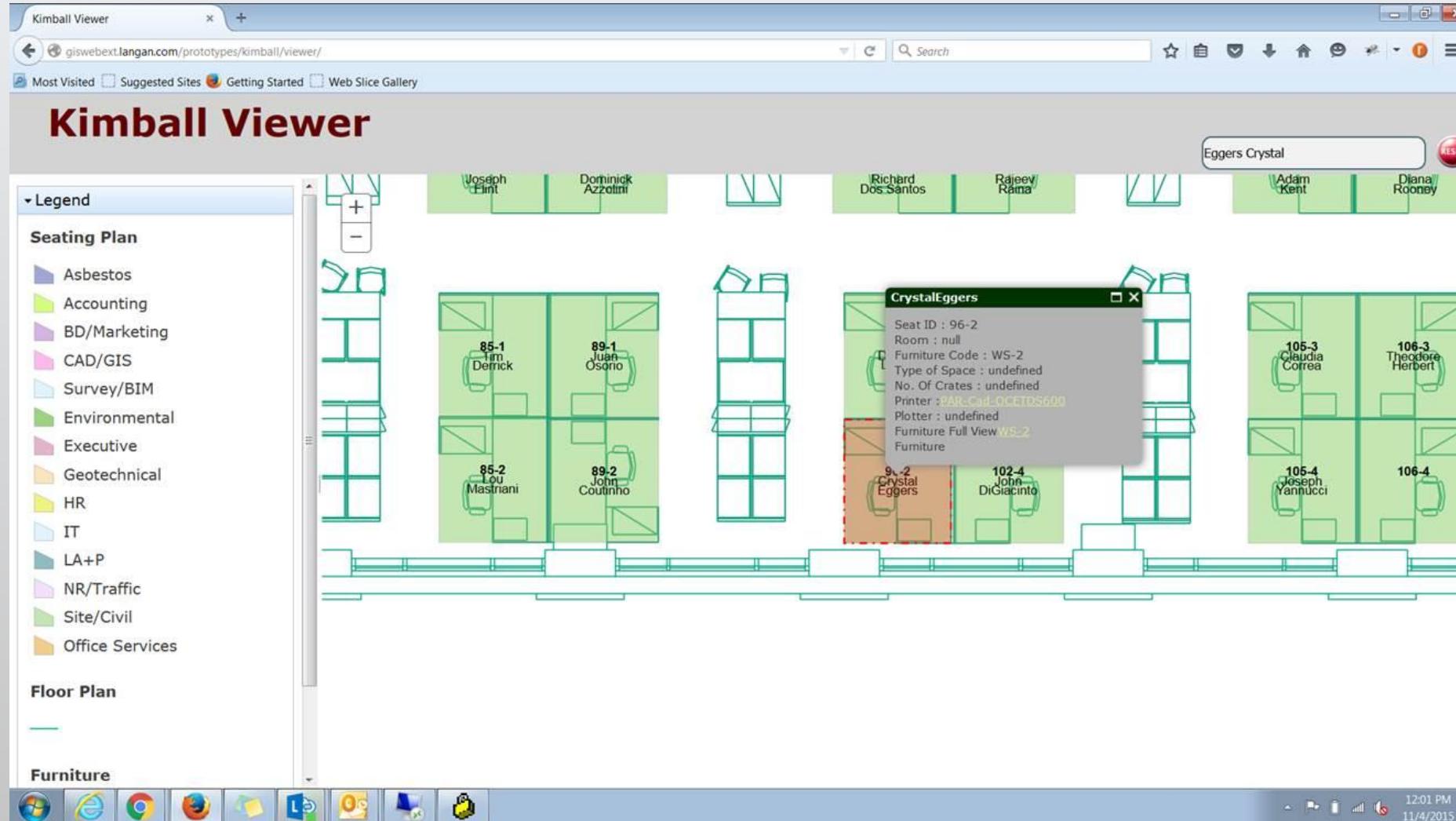
Showing parcels with between 10 and 18000 acres

Basemaps

Find address or place

Distance to Hwy (miles)	Travel Time to Hwy (mins)	Property Acreage
8.766756111978205	21.293524593079265	913.212902817
0.016554365663148347	0.025373025996275583	541.558167517
0.7916724695384535	3.822221198954184	458.360984258
0.09128286318666402	0.11911262726054381	395.40976068
0.725375010771857	2.16785298111316	290.363512802
3.2871744873081523	15.870588524286548	288.004318947
0.42223081337063045	1.7196607640117376	250.662334137

Office Seating Plan



Additional Reusable Tools for Web Viewers

Save Settings

LANGAN GeoTech Belmont County Pipelines INT Developed By: Langan Engineering & Environmental Services, Inc.

A map of Belmont County, West Virginia, showing various towns and pipeline routes. Towns labeled include Piedmont, Holloway, New Athens, Harrisville, Mt Pleasant, Colerain, Lafferty, Bannock, Fairview, Old Washington, Lore City, Barnesville, Salesville, Quaker City, Senecaville, Batesville, Alledonia, Wilson, Malaga, Jerusalem, Realleville, Powhatan Point, and Glen Easton. A red dashed line highlights a specific route across the county.

Save Map Session

Save the current map settings

Name:

Save

Saved Sessions

Session	Actions
Test Session 1	

[Load from file](#) [Save to file](#)

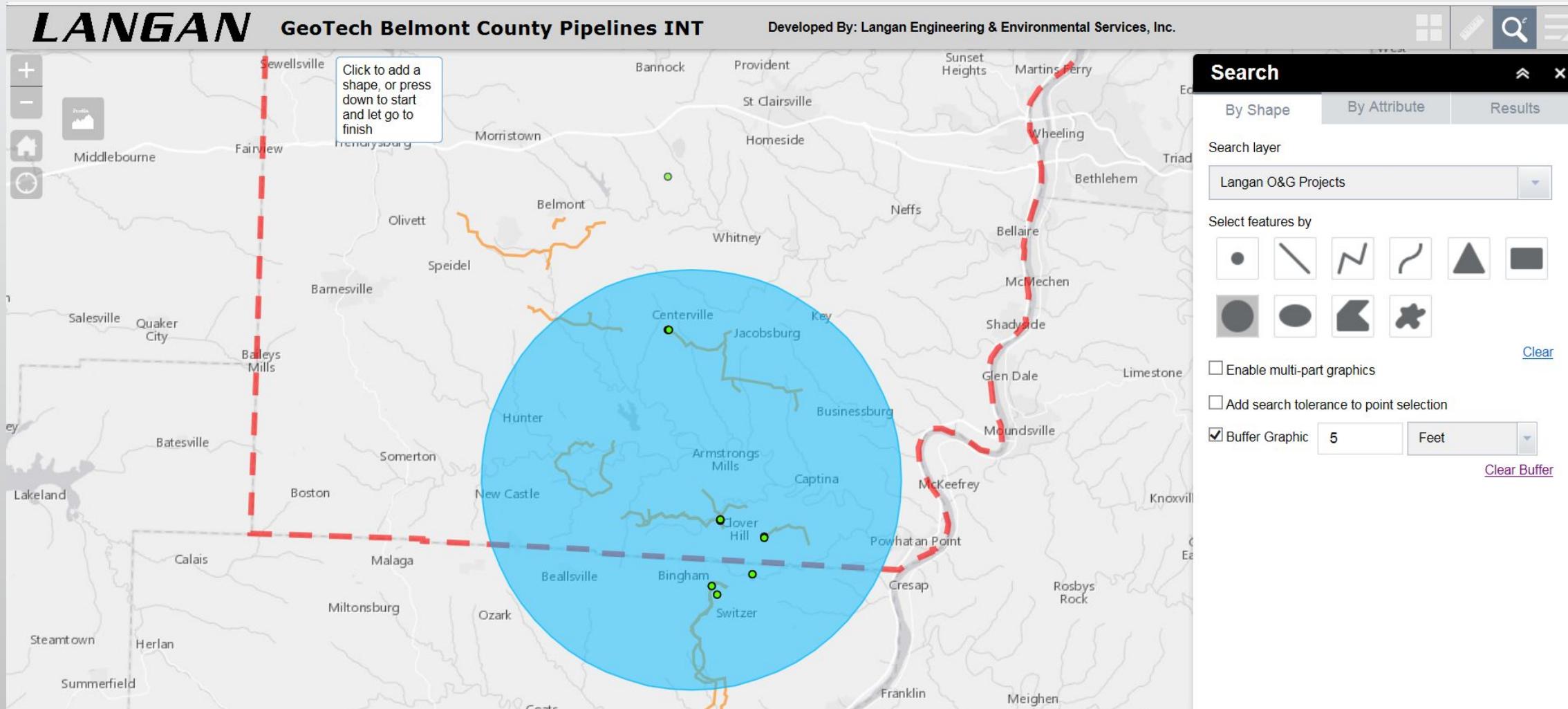
Load sessions from file

Choose the file to load:

[Browse...](#) No file selected.

Ok **Cancel**

Spatial Query



Overview 2012-14

Technologies Used

ArcGIS JavaScript API,
Dojo, JQuery, PHP

Organization

- Research Assistant at NDSSL,
Virginia Tech

ArcGIS JavaScript API,
Dojo, Jquery, ArcObjects
SDK for .NET

- Summer Internship at ESRI

C#. NET, ArcObjects SDK

- I Prize, Geoleague Challenge 2013,
ASPRS



Network Dynamics Simulation Science Lab, Virginia Tech

- Dynamic Behavior Visualizer - Map interaction & Behavior Plots Functionality
- Csv Plotting
- Synthetic Population Viewer
- Activities Viewer





Dynamic Behavior Visualizer

Purpose:

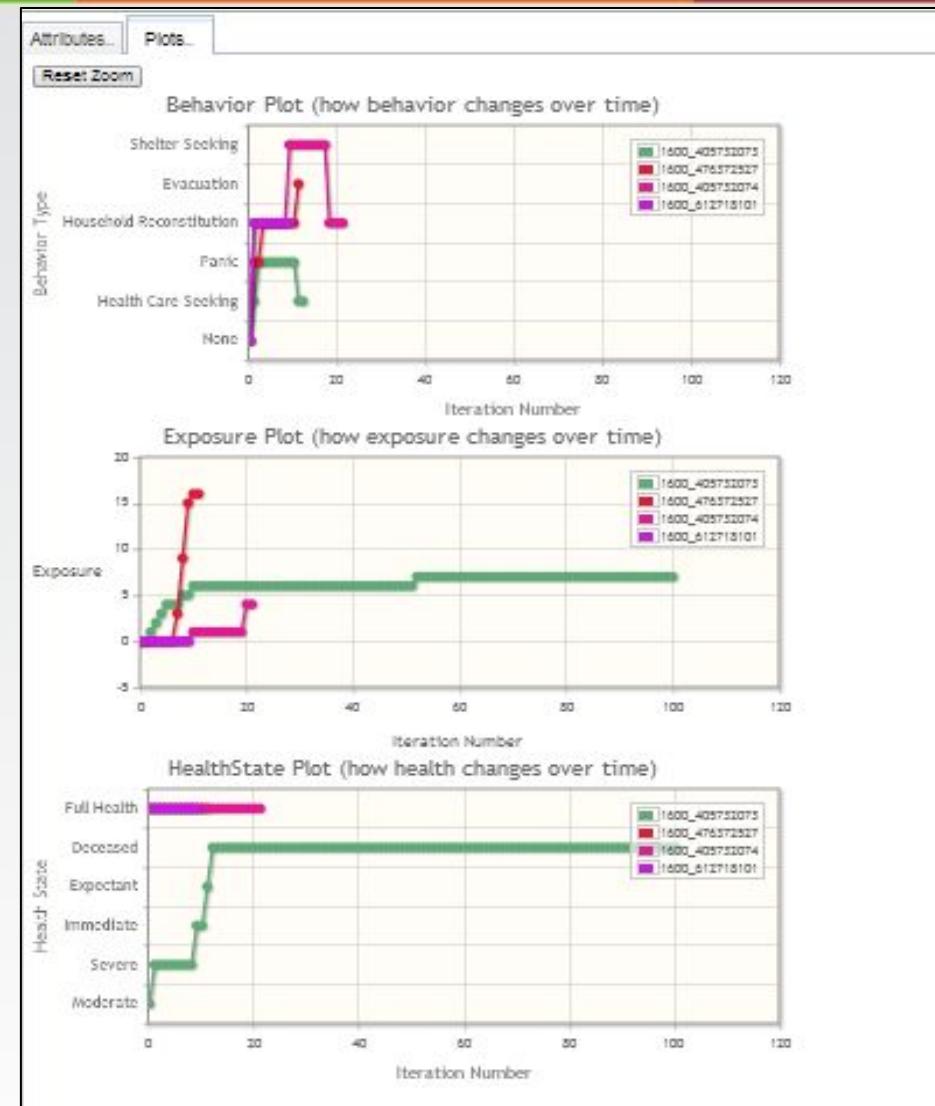
Visualize and Plot people's behavior,
Health state, Interaction in a disaster
simulation study

Team Size:

4

My Contribution:

Coding; Unit Testing





Dynamic Behavior Visualizer

← → ⌂ ndssl.vbi.vt.edu/gis/dbv/v2.0/ ⌂ Apps ⌂ Folder: /

Routes from 11:15:00 to 11:35:00

[About DBV](#)

Add Persons

Step 1: Choose a Run No*: 1727 (C1)

Step 2: Enter Person Ids (comma separated) OR No Of Persons: Person Ids (PID)*:

No Of Persons*: 2

Health State (optional): Immediate

Step 3: (optional)
 Show Family Members

Submit

Job Completed

Show/Hide Analysis

Map Output | GUI - PID Generator | Query - PID Generator

Behavior Plot (how behavior changes over time)

Household Reconstitution

Iteration Number

Exposure Plot (how exposure changes over time)

HealthState Plot (how health changes over time)

Attributes... Plots...

Reset Zoom

Behavior Type

Exposure

Iteration Number

Health State

Immediate

Minor

RunNo:1727 - ID:405584825 - Age:80

Person Location

Location Id: 12408480
Loc_Type: 1
Power: 0
Cellphone: 0
People Present: 28

Map showing routes and a heatmap overlay. A callout box displays detailed person information.

Iteration Number	1727_405512474 (Green)	1727_405584825 (Red)
0	None	Immediate
1	Household Reconstitution	Household Reconstitution
2	Household Reconstitution	Household Reconstitution
3	Household Reconstitution	Household Reconstitution
4	Household Reconstitution	Household Reconstitution
5	Household Reconstitution	Household Reconstitution
6	Household Reconstitution	Household Reconstitution
7	Household Reconstitution	Household Reconstitution
8	Household Reconstitution	Household Reconstitution
9	Household Reconstitution	Household Reconstitution
10	Household Reconstitution	Household Reconstitution
11	Household Reconstitution	Household Reconstitution
12	Household Reconstitution	Household Reconstitution
13	Household Reconstitution	Household Reconstitution

Iteration Number	1727_405512474 (Green)	1727_405584825 (Red)
0	-100	0
1	220	220
2	220	220
3	220	220
4	220	220
5	220	220
6	220	220
7	220	400
8	220	450
9	220	450
10	220	450
11	220	220
12	220	220

Iteration Number	1727_405512474 (Green)	1727_405584825 (Red)
0	Minor	Minor
1	Minor	Minor
2	Minor	Minor
3	Minor	Minor
4	Minor	Minor
5	Minor	Minor
6	Minor	Minor
7	Minor	Minor
8	Minor	Minor
9	Minor	Minor
10	Minor	Minor
11	Minor	Minor
12	Immediate	Immediate



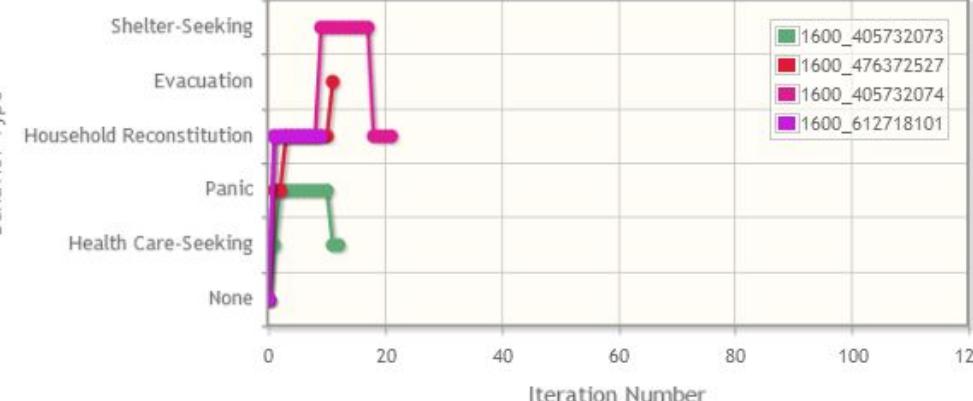
Dynamic Behavior Visualizer

Routes from 19:35:00 to 20:55:00

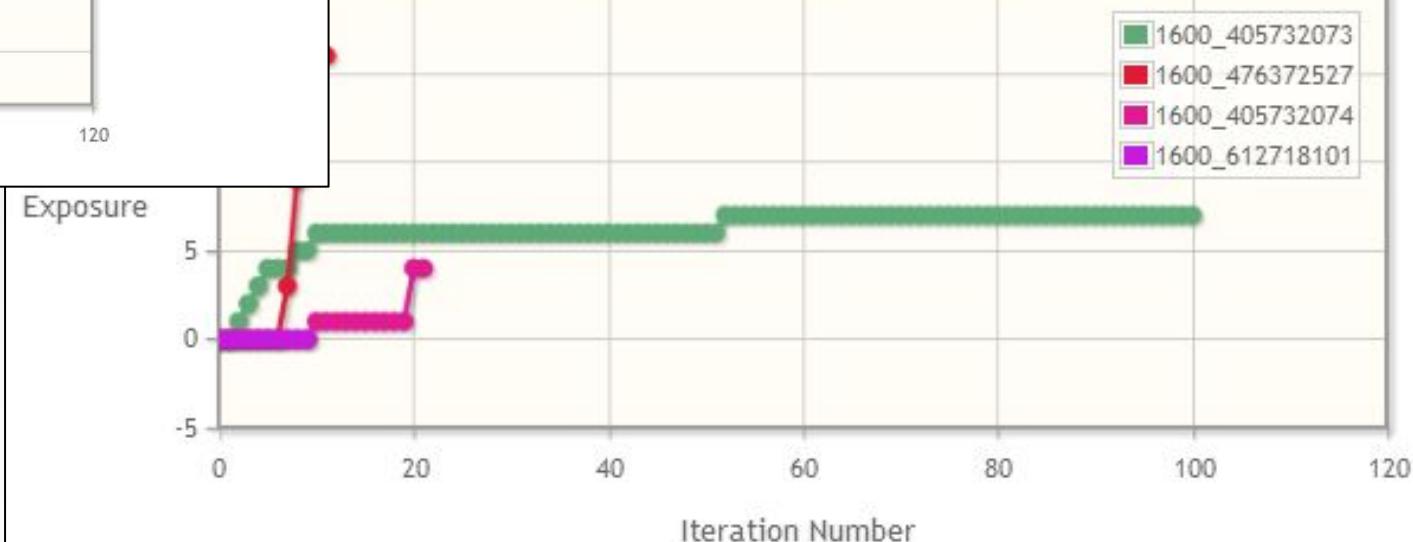
Attributes... Plots...

Reset Zoom

Behavior Plot (how behavior changes over time)



Exposure Plot (how exposure changes over time)





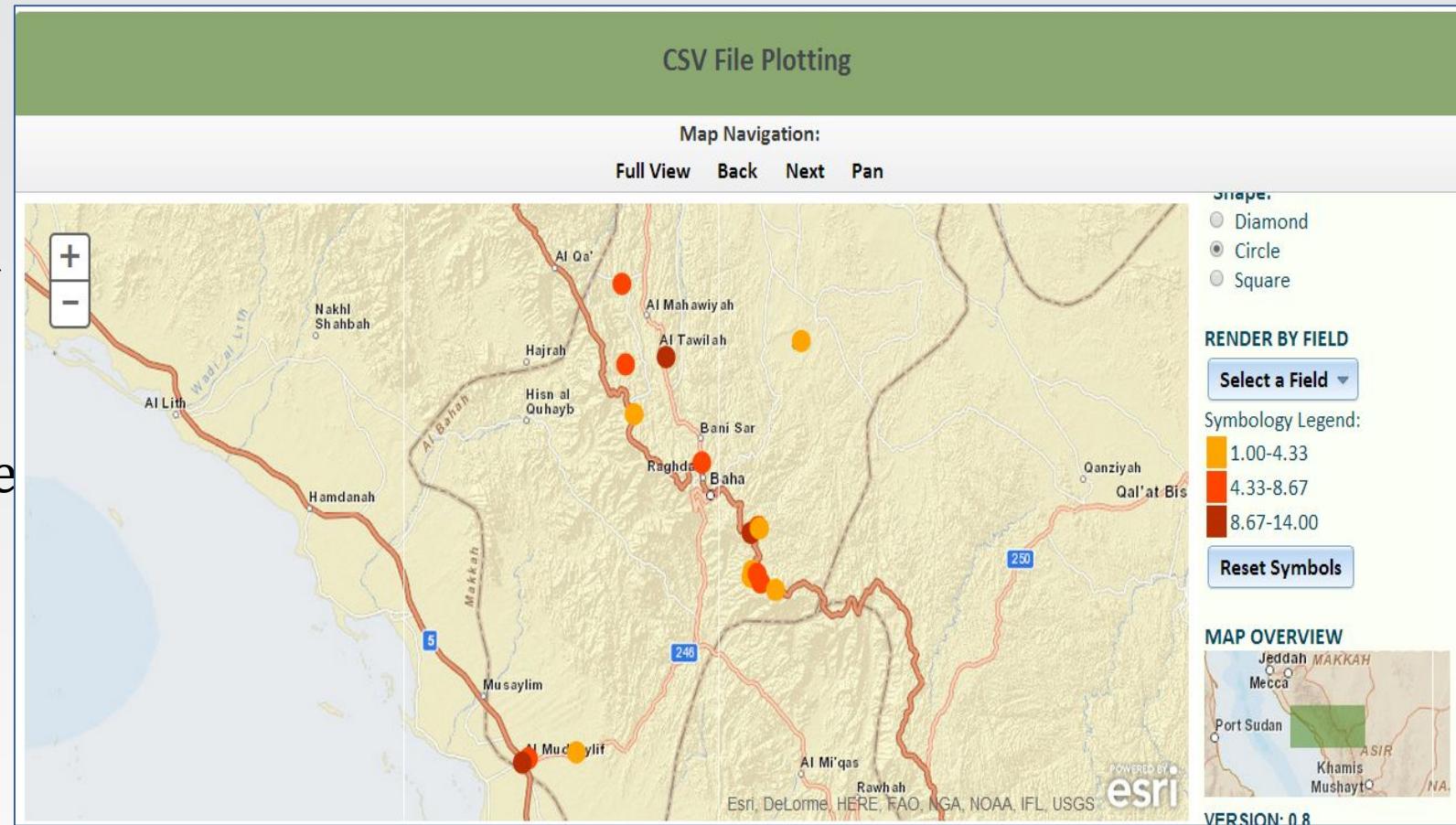
CSV Plotting

Purpose:

- Plot & visualize CSV Files on Maps
- Map click to show associated attribute information of features
- Color based rendering for the plotted CSV features

Team Size:

Individual





Synthetic Information Viewer for the US

Purpose:

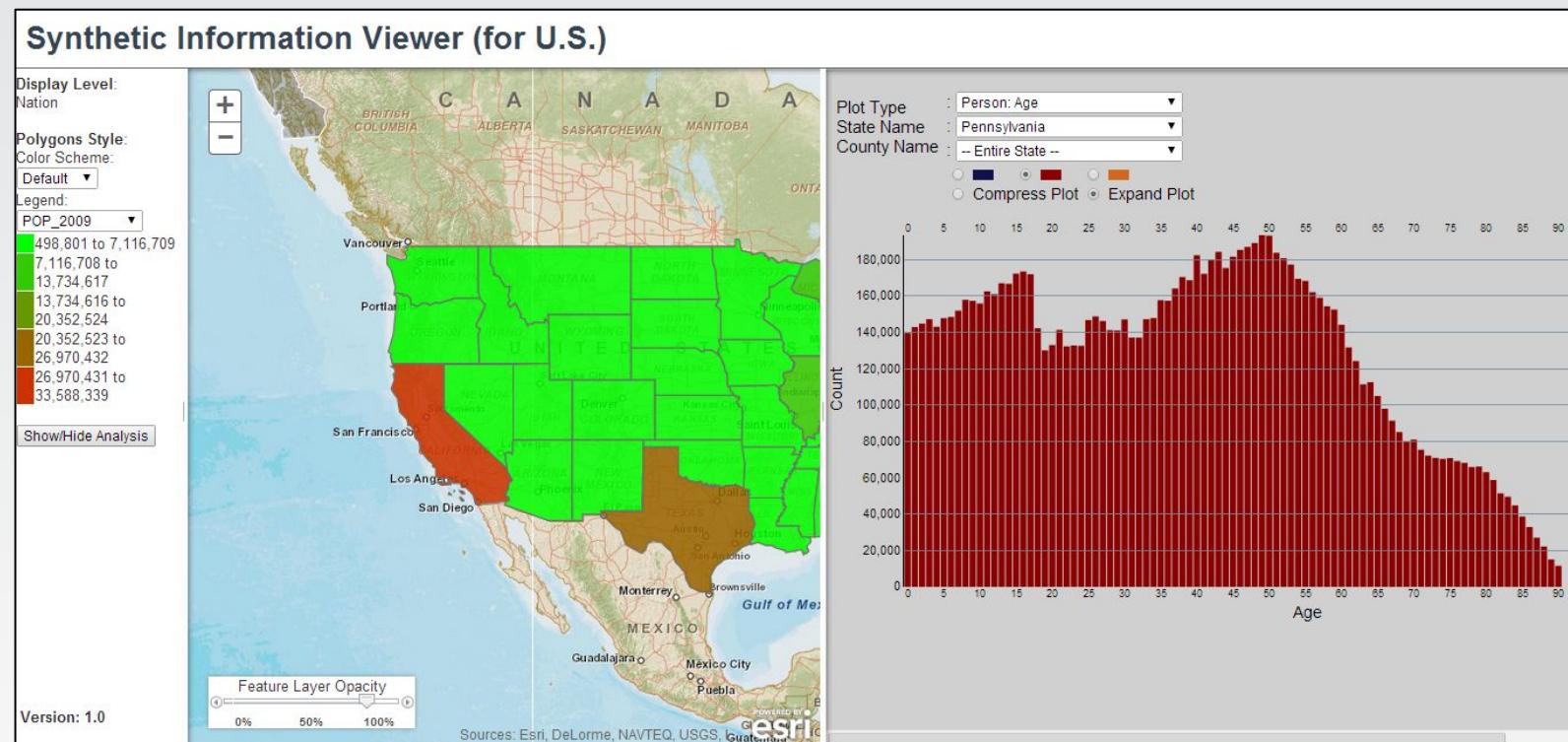
- Aggregate data on different admin region levels(state, county, block group level for the United States)
- Analysis panel complements to plot attributes for user selected level

Team Size:

5

My contribution:

Development and Unit Testing



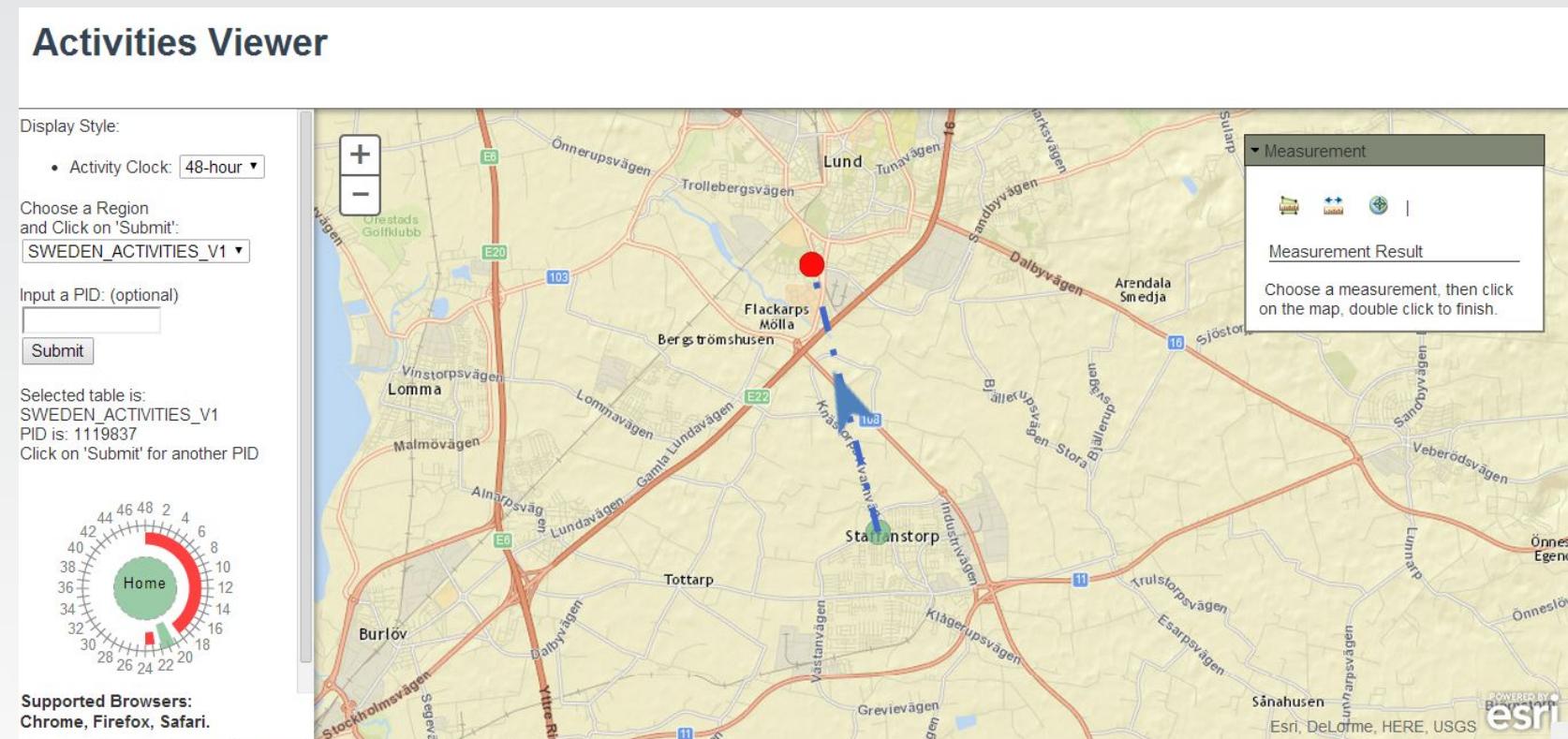


Activities Viewer

Purpose:

- Prototype application to view a random/specific person's activities
- Clock-Map interactions will be improved and used for Synthetic Viewer

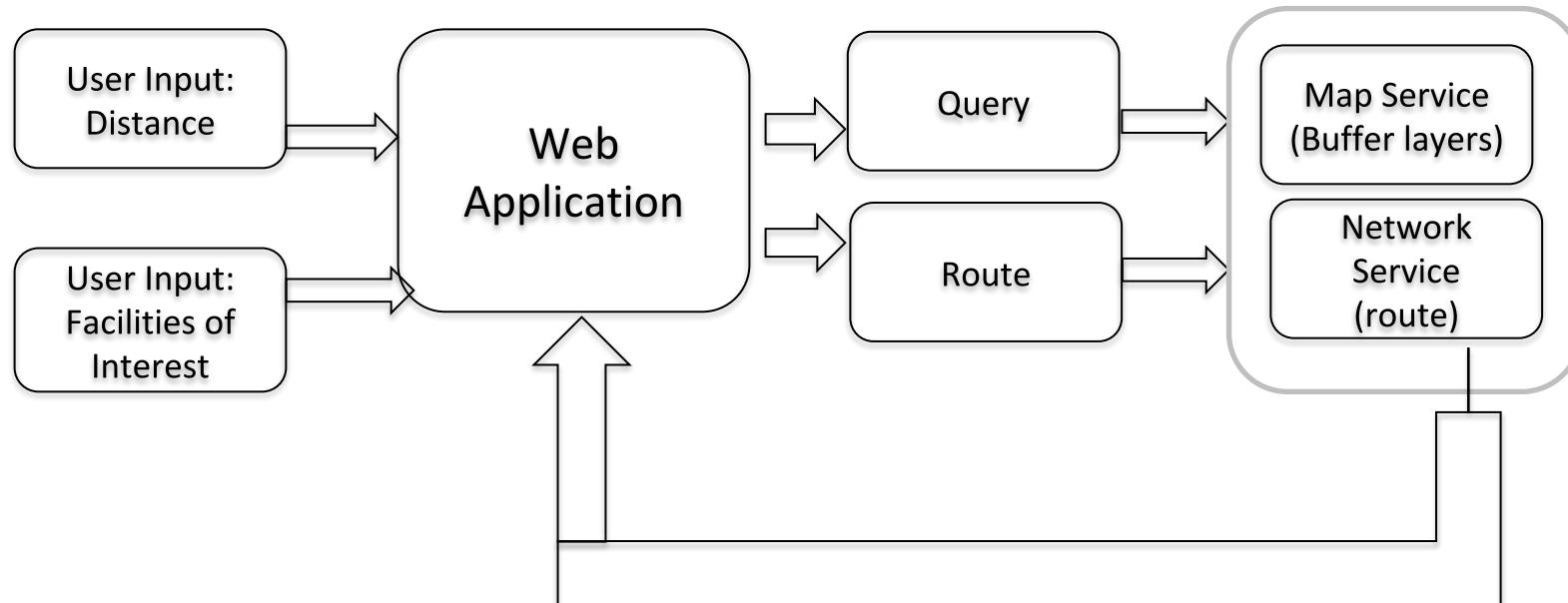
Team Size:
Individual



Summer Internship Project

Purpose:

Web App for tourists
commuting via Charlotte
Light Rail System to explore
uptown Charlotte



Team:

Individual

Charlotte Walks

Your walkability guide for Charlotte

Enter Your Walking Limit

.25 Miles



Places of interest

- Retail
- Parks
- Restaurants
- Theatres
- Transportation
- Banks
- Educational
- Hotels
- Museums
- Other Attractions
- Police
- PostOffice

Clear Graphics

[Clear Route](#)

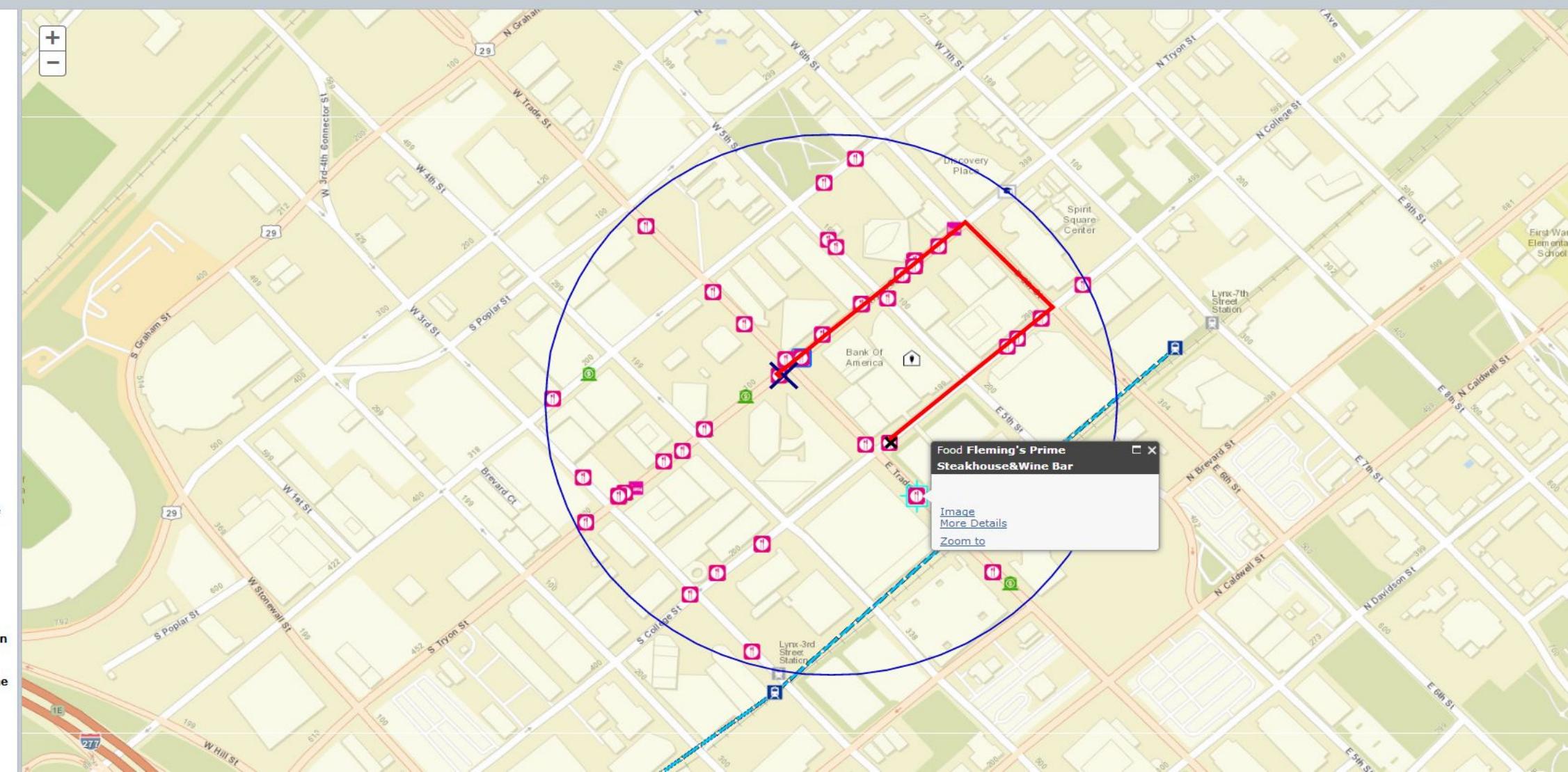
[Clear Buffer](#)

Reach Your Destination!

[Add Point](#)

[Find Route](#)

1. Start at Location 1
2. Go northeast on N College St toward E 5th St
3. Turn left on E 6th St
4. Turn left on N Tryon St
5. Continue on S Tryon St
6. Turn left to stay on S Tryon St
7. Finish at Location 2, on the left



Geoleague Challenge 2013: Winner

Objective:

ArcGIS tool to implement a Least Cost Algorithm for Mapping Trails

Purpose:

Designed and implemented ArcGIS tool for the Boy Scout of America (BSA)

- To generate a map
- To Parameterize trails using the Least Cost Path algorithm

Team size:

7

My Role:

GIS Developer

Geoleague Challenge 2013: Winner

- Choose trail characteristics
- Select points to connect
- Generate the trail
- Output (trail) opens as a new map document

The screenshot displays the Geoleague Dockable Window interface. On the left, there is a map titled "My new trail" showing a green line representing the proposed trail route through a mountainous terrain. A legend titled "Points of Interest" identifies various features: Mountain (yellow star), Staffed Camp (blue triangle), Trail Camp (green triangle), Base Camp (blue plus), and Proposed trail (green line). Below the map, there is a smaller inset map showing the location of the main area with labels like "Explorers", "U.S. Park", "Cimarron", "Angie Fire", and "Bayard". A sidebar on the left contains input fields for "Camp Boundary" and "Base Camp", and a list of trail characteristics: Trail Length: _____, Trail difficulty: _____, Intended Use: _____, Average slope: _____, and Desired features: _____.

Geoleague Dockable Window

Difficulty Level: Easy Medium Difficult

Points of Interest: Camps Mountains Water Features

Trail Use: Hiking Biking Equestrian ATV Multipurpose

Save As: _____

Create Cost Surface Point A Point B Generate Trail

Table

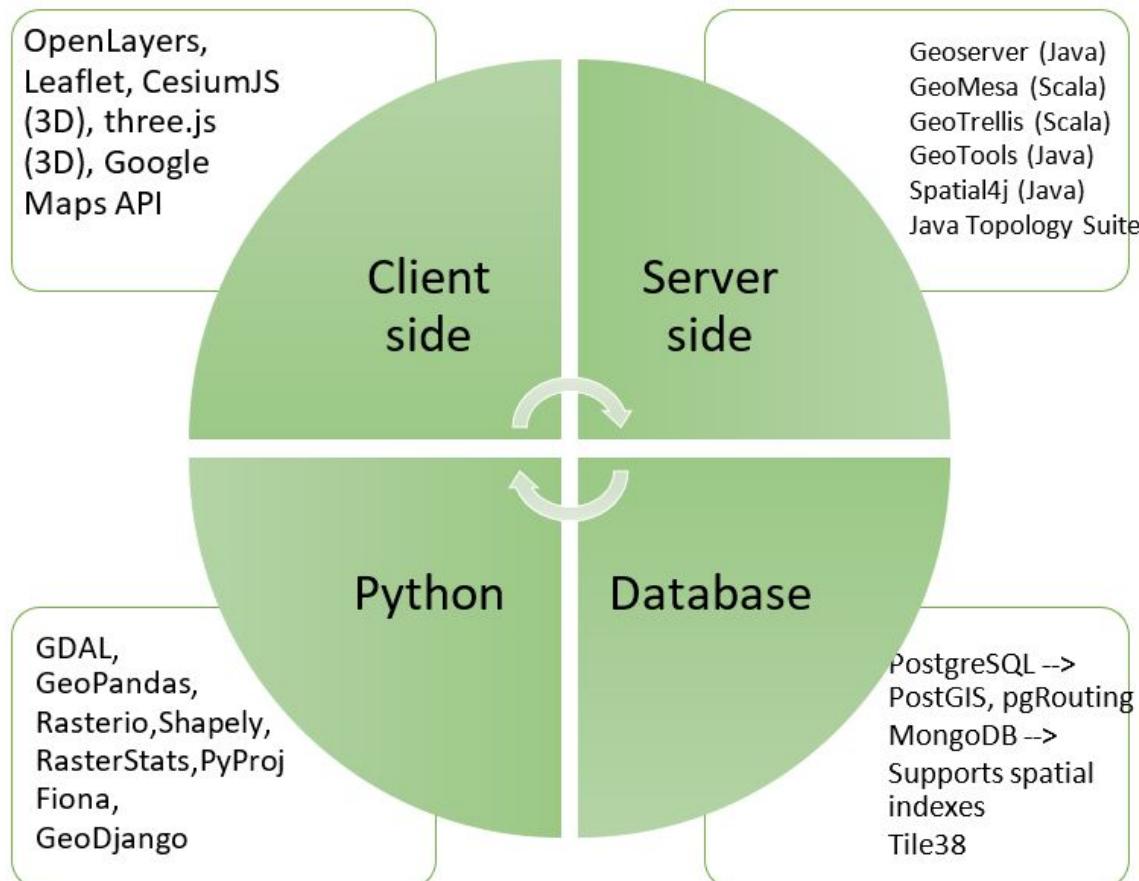
trail4a

OBJECTID*	SHAPE*	MI_LENGTH	NAME	USE	START_POINT
1	Polyline	3.89	NewTrail	Multipurpose	492643.62 4033838.00

(0 out of 1 Selected)

Open Source Geospatial Samples

Technologies Used



Organization(s)

- Petco
- Langan
- [Personal Projects](#)

Thank you