

A GISystem Approach to Improving Resource Discovery and Provisioning for In Need Community Members



Matt Brush

Pennsylvania State University – MGIS Capstone Proposal

October 20th, 2020

Advisor: Emily Rosenman

Presentation Overview

- Background
- Current Approach
- Proposed Solution
- Use Examples
- The Four Phases
- Constraints
- Next Steps
- Questions

Why This Project

- Solve a Problem
- Help People
- Build Something

Background

- Some History
- Stats
- Current Stressors
- Forecast



Photo by Erik McGregor/Sipa USA/Reuters (reproduced for educational use)

Figure 1. "Homelessness Assistance Audit Series: Allocation of City Resources". City of Austin Office of the City Auditor. May 2018.

Questions

- Can a GISystem solution more efficiently allocate available resources to the unhoused and in need?
- Can it better demonstrate where need overwhelms availability?
- Can it provide a more comprehensive understanding of the locus and extent of need in our communities?
- Can it connect those in need with what they need without requiring them to be questioned and cataloged?

Current Approach

- Tracking individuals to demonstrate existing need

1. Point in Time Survey
2. HMIS
3. Coordinated Assessment

- Funding



Figure 1. "Homelessness Assistance Audit Series: Allocation of City Resources". City of Austin Office of the City Auditor. May 2018.

Proposed Solution

- Let demand on available resources demonstrate existing need
- Maximize resource availability
- Create a comprehensive provider network
- Connect those in need with what they need

Proposed Solution

- Let demand on available resources demonstrate existing need
- Maximize resource availability
- Create a comprehensive provider network
- Connect those in need with what they need

- What's the difference?

Examples of Use

- Resource Provider
- Outreach Volunteer
- Social Worker
- Police
- In Need
- Houseless

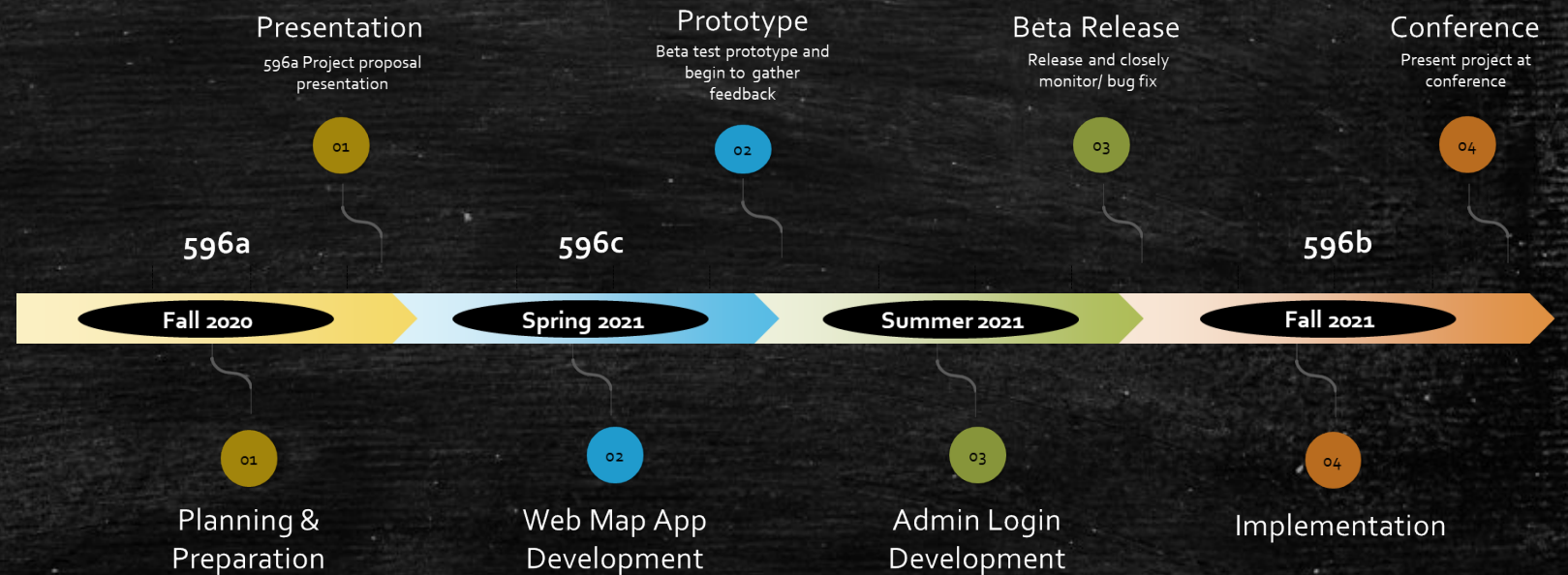
The Project in 4 Phases

1. Planning and Preparation

2. The Web Map Application

3. The Admin Portal

4. Implementation



Planning and Preparation

Criteria for Selecting Technologies

- Freely Available
- Free to Distribute
- Light and Fast
- Well Documented
- Familiarity

Planning and Preparation

Requisite Functionality – Web Map

- Spatial data
- Geolocation
- Routing
- Spatial Querying
- Attribute Querying
- Mobile/Desktop
- Nice GUI

Planning and Preparation

Requisite Functionality – Admin Portal

- Login Protection
- Privilege limiting
- Take User Input
- Push Input to Database
- Mobile/Desktop
- Nice GUI

Planning and Preparation

- Comprehensive Dataset of Resources
 - Shelters
 - Food
 - Clothing
 - Medical

The Web Map Application

Evaluating Technical Solutions

- Database
 - PostGIS

The Web Map Application

Evaluating Technical Solutions

- Server
 - GeoServer
 - MapServer
 - FeatureServer

The Web Map Application

Evaluating Technical Solutions

- Framework
 - Leaflet
 - OpenLayers
 - GeoExt
 - Folium

The Web Map Application

- Current Solution
 - PostGIS
 - GeoServer
 - Leaflet

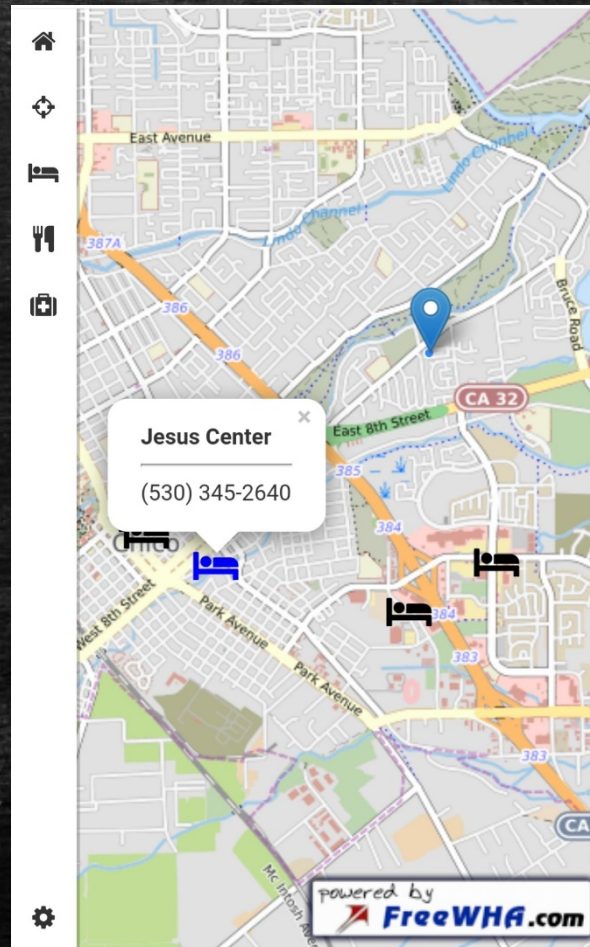
Leaflet 


GeoServer

PostGIS

Spatial PostgreSQL

The Web Map Application



The Web Map Application



The Web Map Application

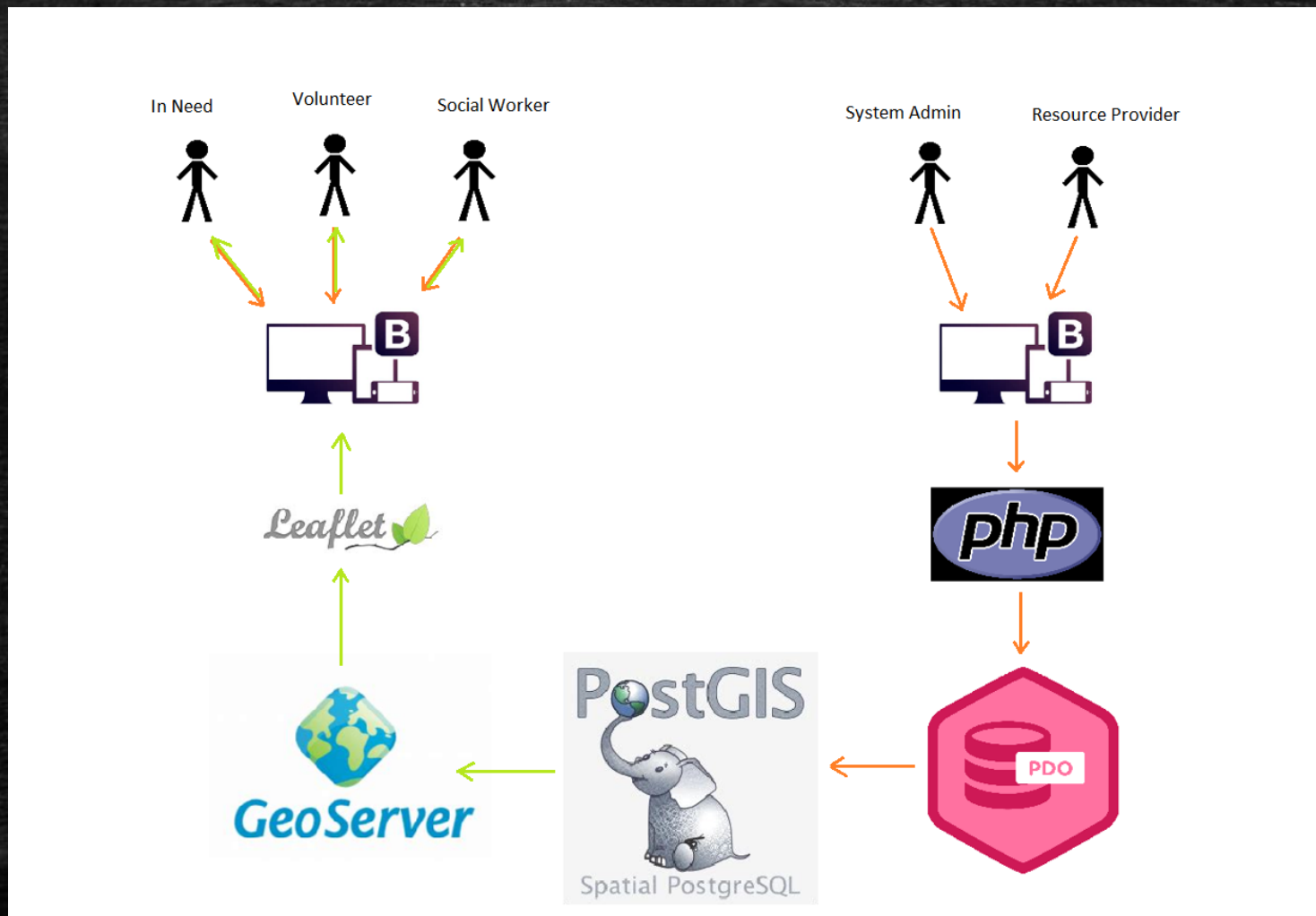
- Field Testing
- Get Feedback
 - In Need Community
 - Social Workers
 - Resource Providers
- Refine Web Map

The Admin Portal

- Login
- Input
- Push to Database



Putting it Together



Implementation

- Soliciting Resource Provider Buy-In
- Incorporate Feedback
- Prepare Beta Release

Possible Constraints

- Resource provider participation
- Limited access to internet connected devices
- Completeness of resource dataset

Next Steps

- Add all additional resources
- Process use data to demonstrate demand
- Incorporate portal to HMISs and social workers
- Find grant funding opportunities
- Create portal for donations to providers
- Allow dynamic scalability and unlimited adoption

Questions?
