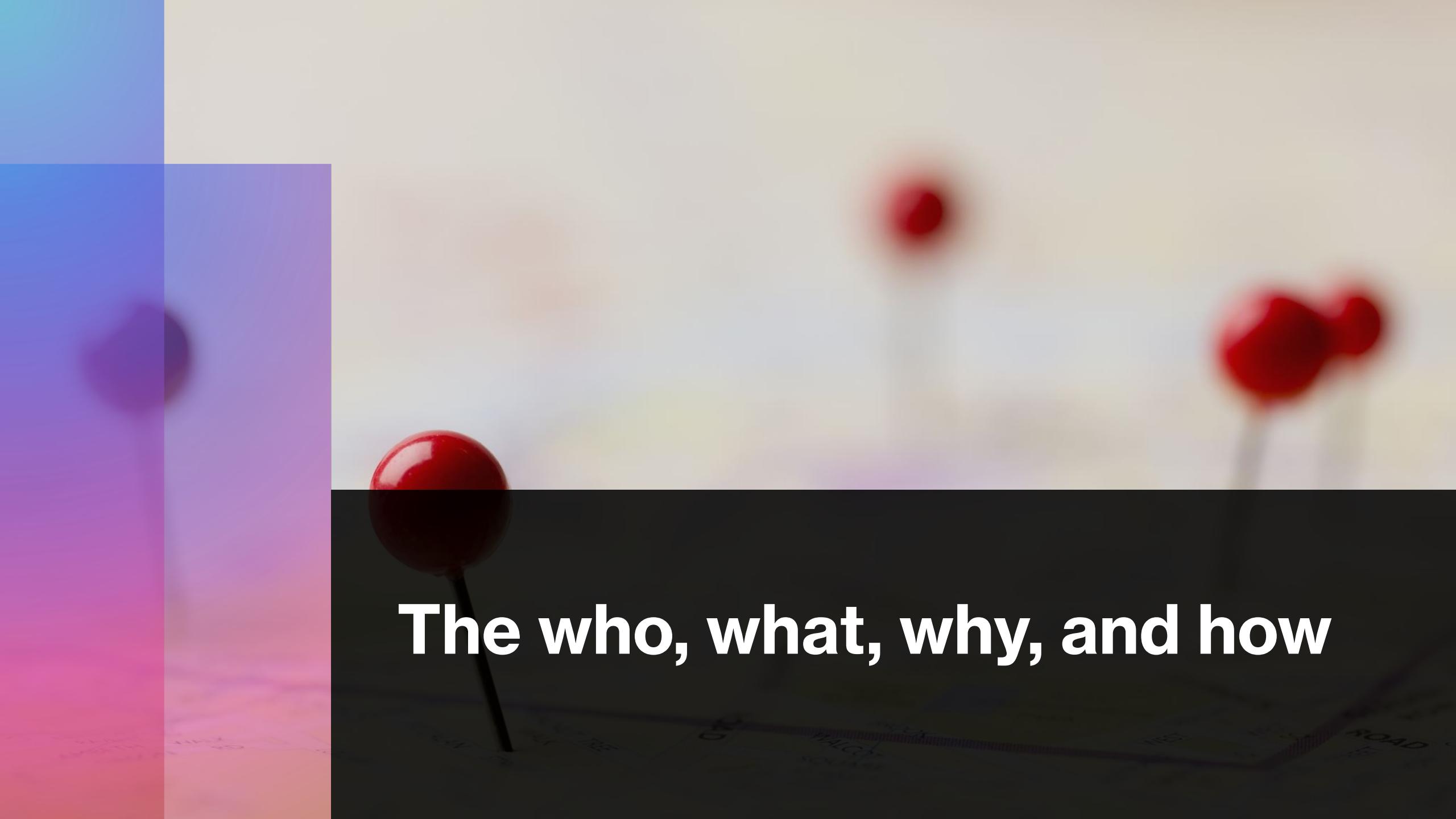


Non-Emergency Phone Number Directory

Gus Lipkin, Luis Moraguez, Nathaniel Fuller, Ahna Cecil

How can we make non-emergency police phone numbers more accessible to people in need?

A background image showing a map with several red pushpins. One pin is clearly visible in the foreground on the left, while others are blurred in the background. The map includes labels like 'ROAD' and 'MILE'.

The who, what, why, and how

What is it we're actually building?

- Based on your current location, our app will serve you information, primarily the non-emergency phone number, for the Sheriff's office for the county you are in and a quick way to access information for Sheriff's offices in adjacent counties just in case

What is a non-emergency number?

- Non-emergency phone numbers are the regular police numbers that you can call for things that aren't emergencies (duh)
 - Need to find out how to pay a ticket
 - People are parked on your lawn
 - Etc.

Who wants this?

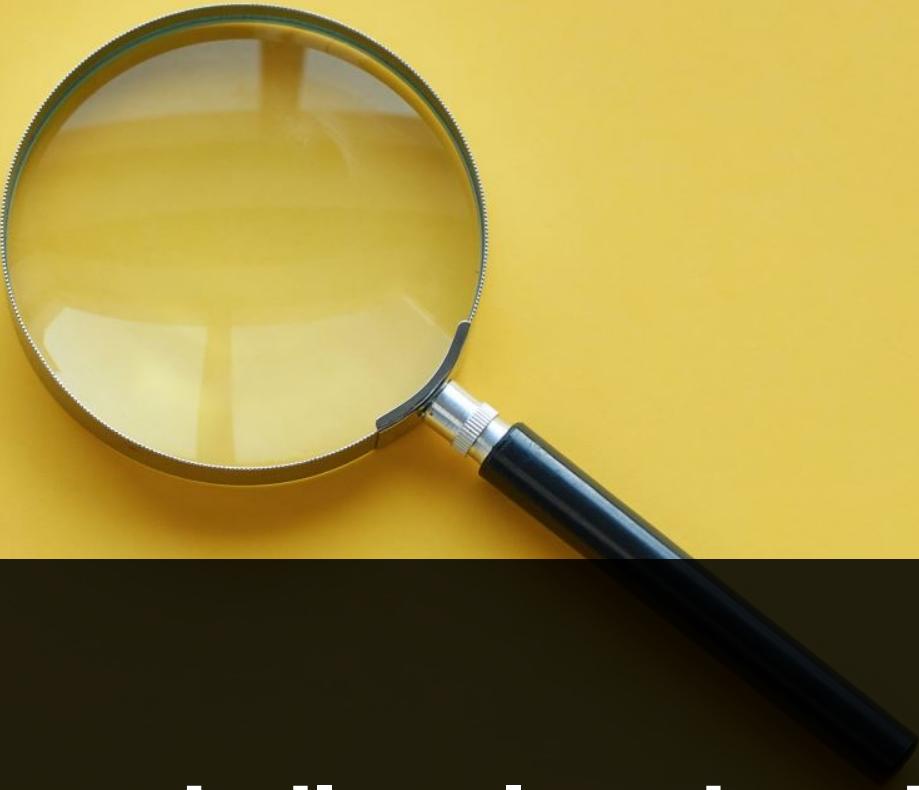
- You do!

Why do I want this?

- Non-emergency numbers can be hard to find
- You might not know which city or county you're in and so don't know what to search for
- You want a quick and easy way to find your current non-emergency number and make a call

How are we going to do this?

- Let's find out!



Does anything similar already exist?

No 😞

- Police1.com has a list of phone numbers for the largest cities in Florida, but nothing as complete as we were hoping for

Literature Review

Directory vs Database

Directory

- Hierarchical
- Fast query speed
- Data can be changed in multiple places at the same time
- Changes to layout must be done through a change in schema
- Changes in schema cannot be undone once made [1]

Database

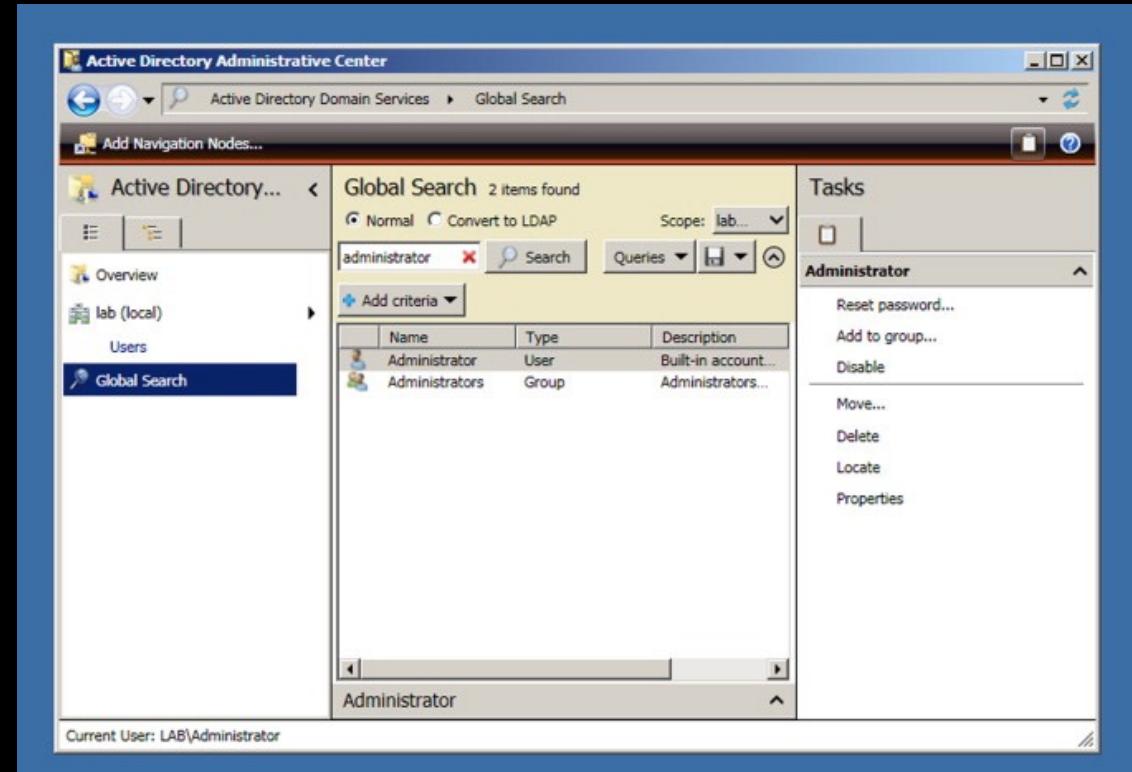
- Traditional table format
- Fast write speed
- Data cannot be changed in multiple places at the same time
- Changes to layout can be done at any time (no schema) [1]

1. *Differences between Directory Services and Databases*. Tech Direct Archive. (2019, December 18). Retrieved November 19, 2021, from <https://techdirectarchive.com/2019/12/18/differences-between-directory-services-and-databases/>.

Directory AND Database

Active Directory

- The first directory and database combination [1]
- Built on Windows 2000 by Microsoft [1]
- First to combine usability of a directory structure with simplicity of a database [1]
- Presents a hierarchical structure to users, data is still stored in a traditional database format [2]



1. *A Brief History of Microsoft's Active Directory.* AJS Networking. (2017, March 8). Retrieved November 19, 2021, from <https://www.ajsnetworking.com/microsofts-active-directory/>.
2. Hannifin, D., Alpern, N. J., & Alpern, J. (2010). *Active Directory*. Science Direct. Retrieved November 19, 2021, from <https://www.sciencedirect.com/science/article/pii/B9781597495783000049>.

Contact Database

Traditional

- Used for businesses to maintain information of sales contacts (i.e. names, addresses, tracking) [2]
- Allows the organization to manage and organize important information [1]

Our Usage

- Stores information for different Sheriff's Offices non-emergency numbers
 - Location, jurisdiction, contact numbers
- Does not track interactions, only maintains crucial information to supply the user with appropriate contacts

1. *Creating Microsoft Access Contact Management Database*. Software Matters. (n.d.). Retrieved November 19, 2021, from <https://www.software-matters.co.uk/creating-ms-access-contact-management-database.html>.
2. *Contact Database*. Experian. (n.d.). Retrieved November 19, 2021, from <https://www.edq.com/glossary/contact-database/>.

Our Implementation

- Inspired by the usability of Active Directory and a typical contact database
- Program behaves like a directory to the user but is backed by the database services
- Allows user to submit a request through a directory format based on their location and need (utilizing a hierarchical structure)
- Request then is passed through the three databases to produce a result



Our Databases



PostgreSQL

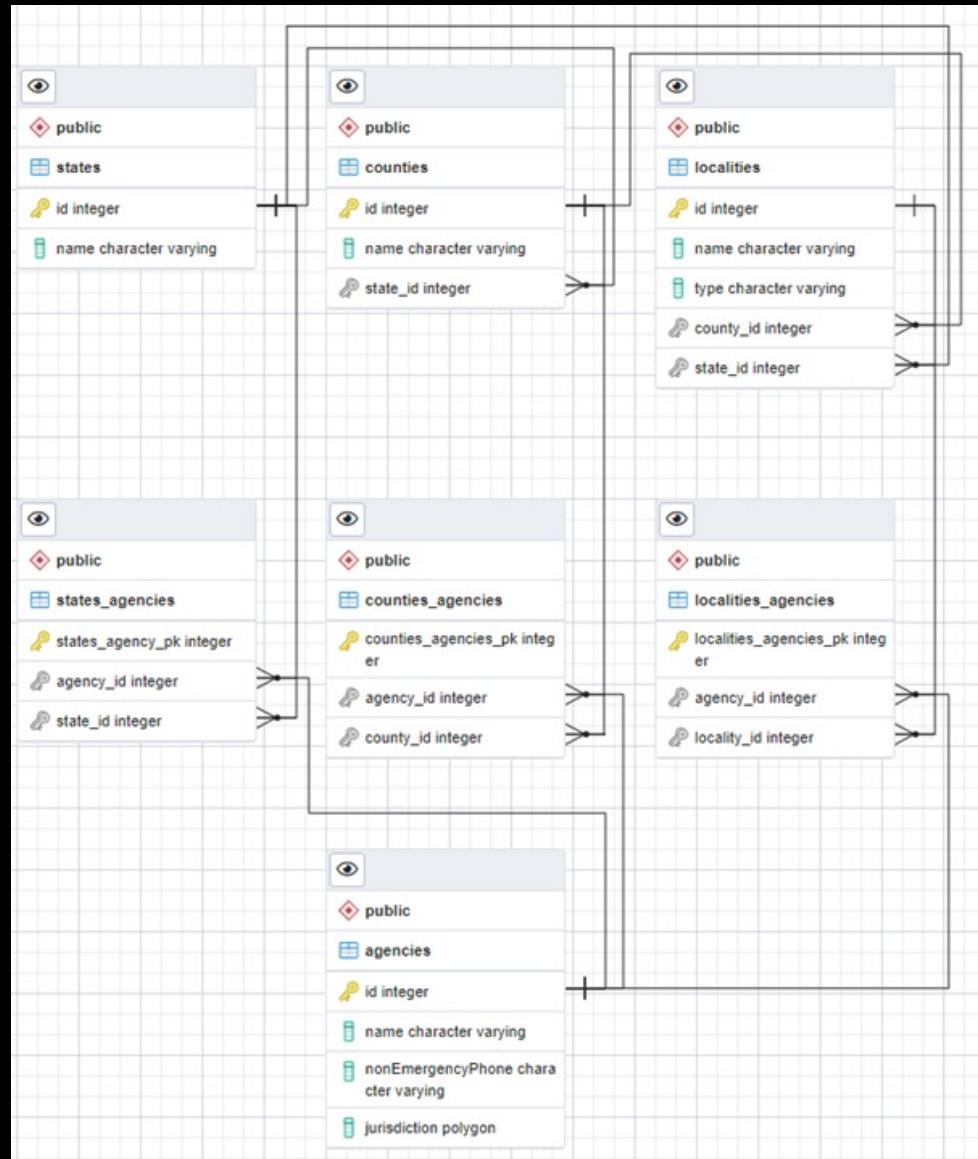
PostgreSQL

Why we chose PostgreSQL

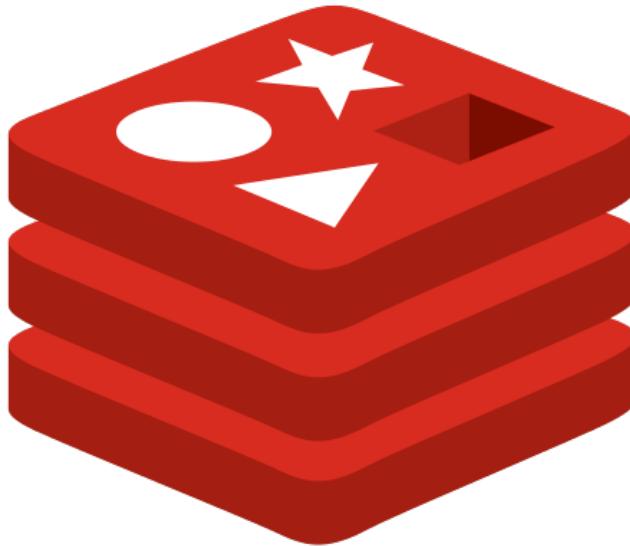
- Great for storing detailed properties where enforcement of the structure of data is important
- Agency details won't change very often, so fast writing speed is not a factor, but quality/consistency of the data is
- Details can be quickly served with proper indexing set up

How we're using PostgreSQL

- Querying the detailed properties for the nearest and surrounding agencies.
- Based off user location, query comes from Redis and Neo4J to get the details of those agencies



Redis



redis

Why we chose Redis

- Pass in memory information to Postgres and Neo4j
- Query doesn't need to be saved, just passed
- In-memory cache to decrease data access latency, increase throughput, and ease the load off our relational Database

How we're using Redis

- Redis for mapping towns/cities to counties
- Fast and easy access to county information
- In memory storage to collect the county of the user to be passed to the other databases

```
127.0.0.1:6379> SET city:yulee "Nassau"
OK
127.0.0.1:6379> SET city:zellwood "Orange"
OK
127.0.0.1:6379> SET city:zephyrhills "Pasco"
OK
127.0.0.1:6379> SET city:zephyrhills_north "Pasco"
OK
127.0.0.1:6379> SET city:zephyrhills_south "Pasco"
OK
127.0.0.1:6379> SET city:zephyrhills_west "Pasco"
OK
127.0.0.1:6379> SET city:zolfo_springs "Hardee"
...
127.0.0.1:6379> GET city:zephyrhills_west
"Pasco"
127.0.0.1:6379> GET city:lakeland
"Polk"
```



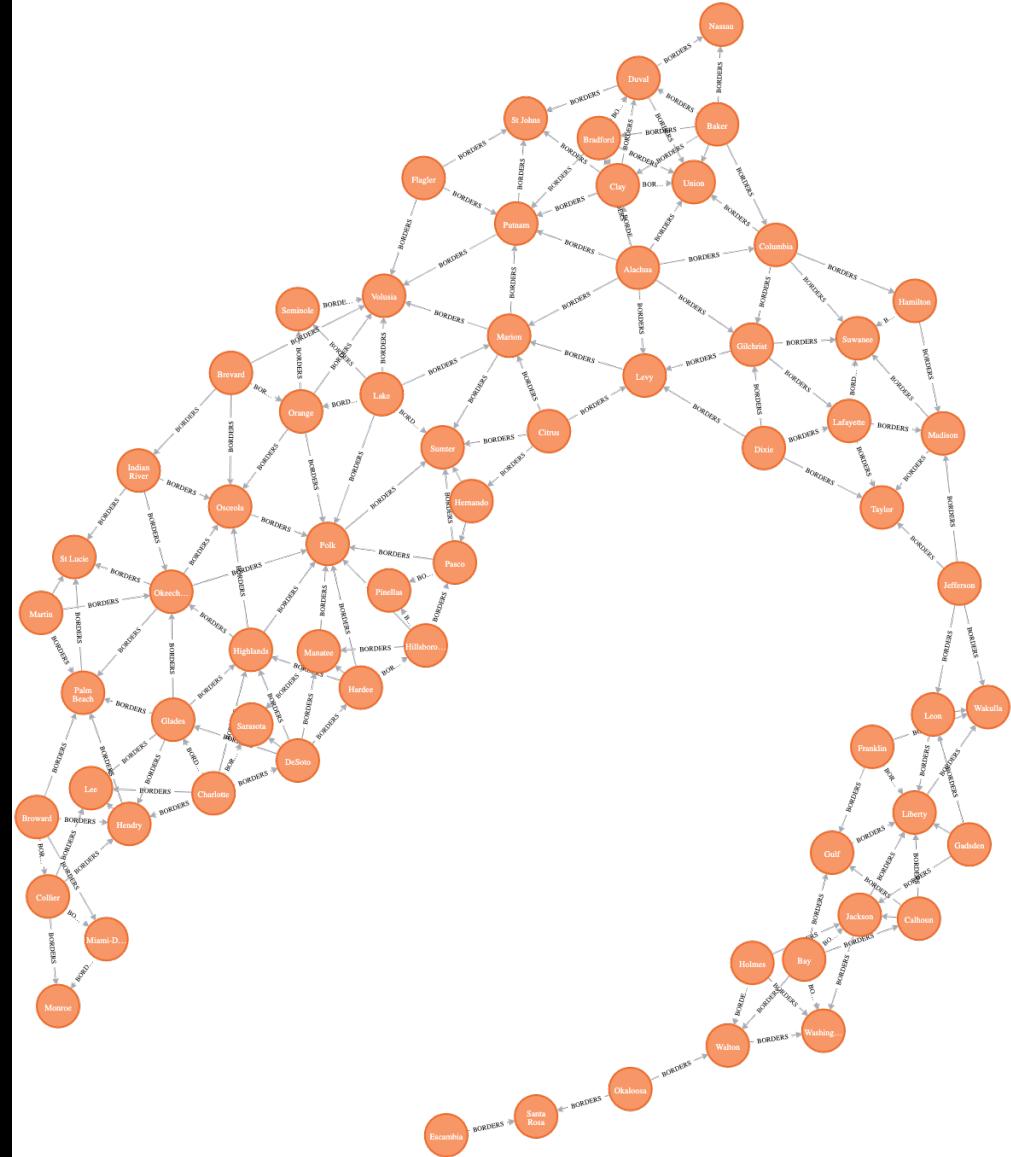
Neo4J

Why we chose Neo4J

- Neo4J is a graph database, relationships are more important than the data itself
- It can be scaled to very large sizes and retains its lightning-fast operation speeds
- It is consistent and available, both traits are very important in emergency management

How we're using Neo4J

- Tells you which counties are adjacent
 - This includes corner connections such as Polk and Manatee counties





Next Steps



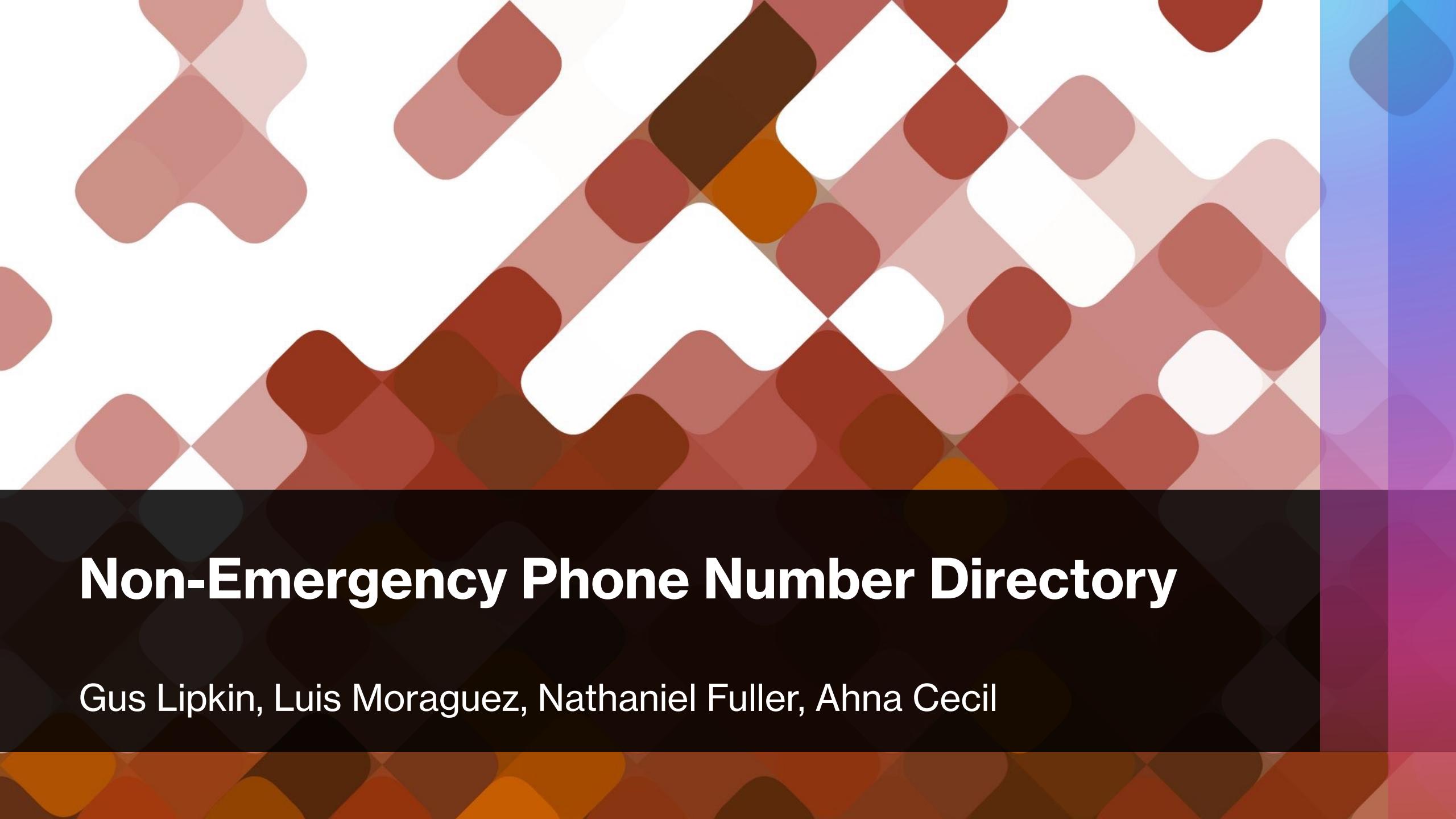
Expanded Features

- Coordinate based locations for better adjacent recommendations
- A more reliable way to pull agency data in case of changes



Potential Features

- Expanding on the core concept, information from other law enforcement agencies and points-of-interest can be provided
- Personal Trusted Contact Network



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