



INDIGO

INDOOR NAVIGATION SYSTEM

Noam Kontorovich
Omri Solomon
Daniel Bomendill
Mentor: Dr. Amir Kirsh

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1

Hard to navigate inside large buildings.

2

GPS doesn't work well indoors.

3

Need for a low-cost, accessible indoor navigation

OVERVIEW

THE MAIN PROBLEM

Navigating large buildings like malls, hospitals, and campuses is often difficult without clear guidance. Indoor navigation is hard, GPS doesn't work well inside, and existing solutions are costly to set up. There's a need for a simple, GPS-free, and cost-effective tool to solve this.

TARGET AUDIENCE

Our target audience includes facility managers, building operators, developers of public spaces, and anyone who needs to make indoor navigation simple and accessible.



OUR SOLUTION

INDIGO converts architectural CAD files into navigable indoor maps. Automatically extracts room and wall data, then builds a navigation graph.

Supports user-defined routes and locations of interest. Users can locate themselves in real time using Wi-Fi signal data.

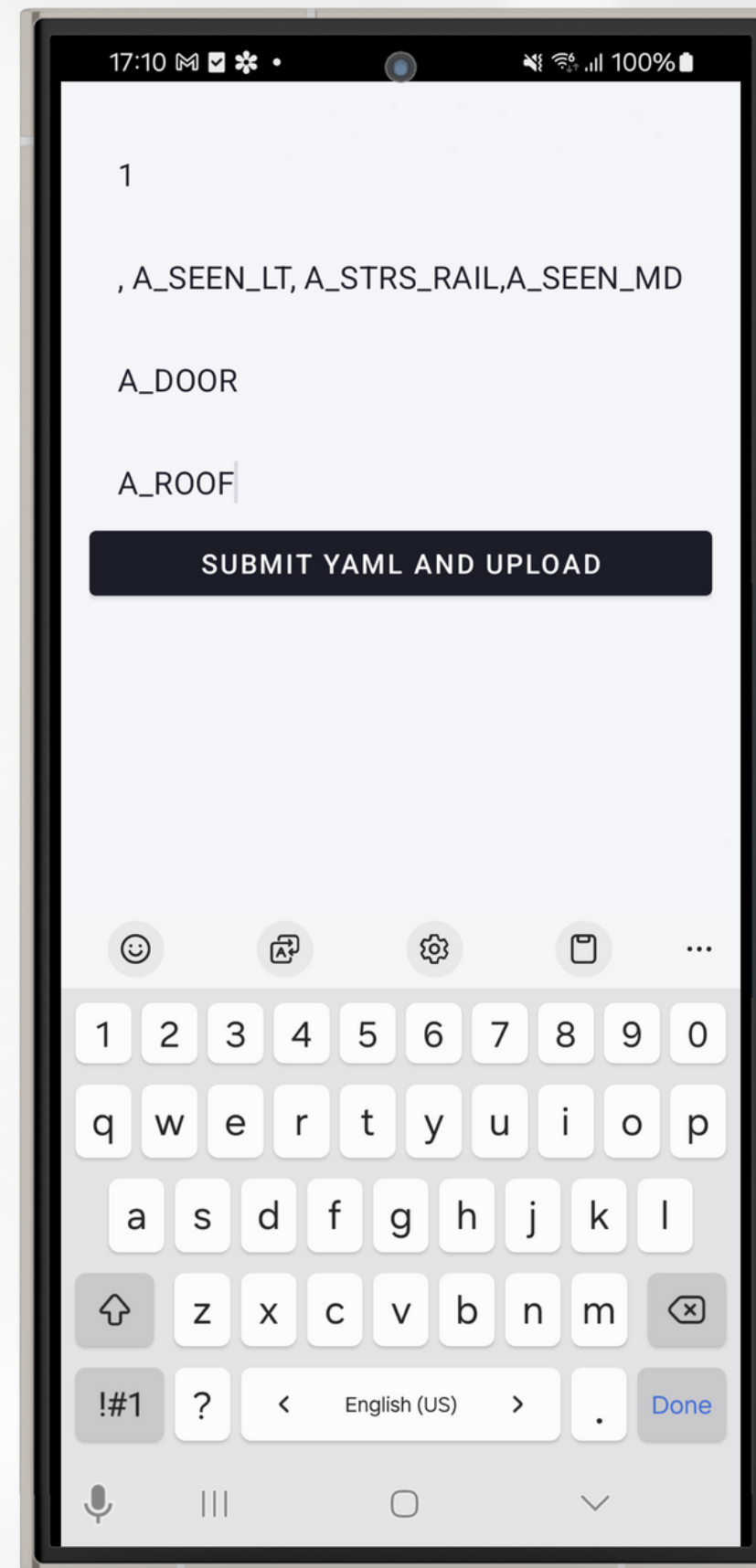
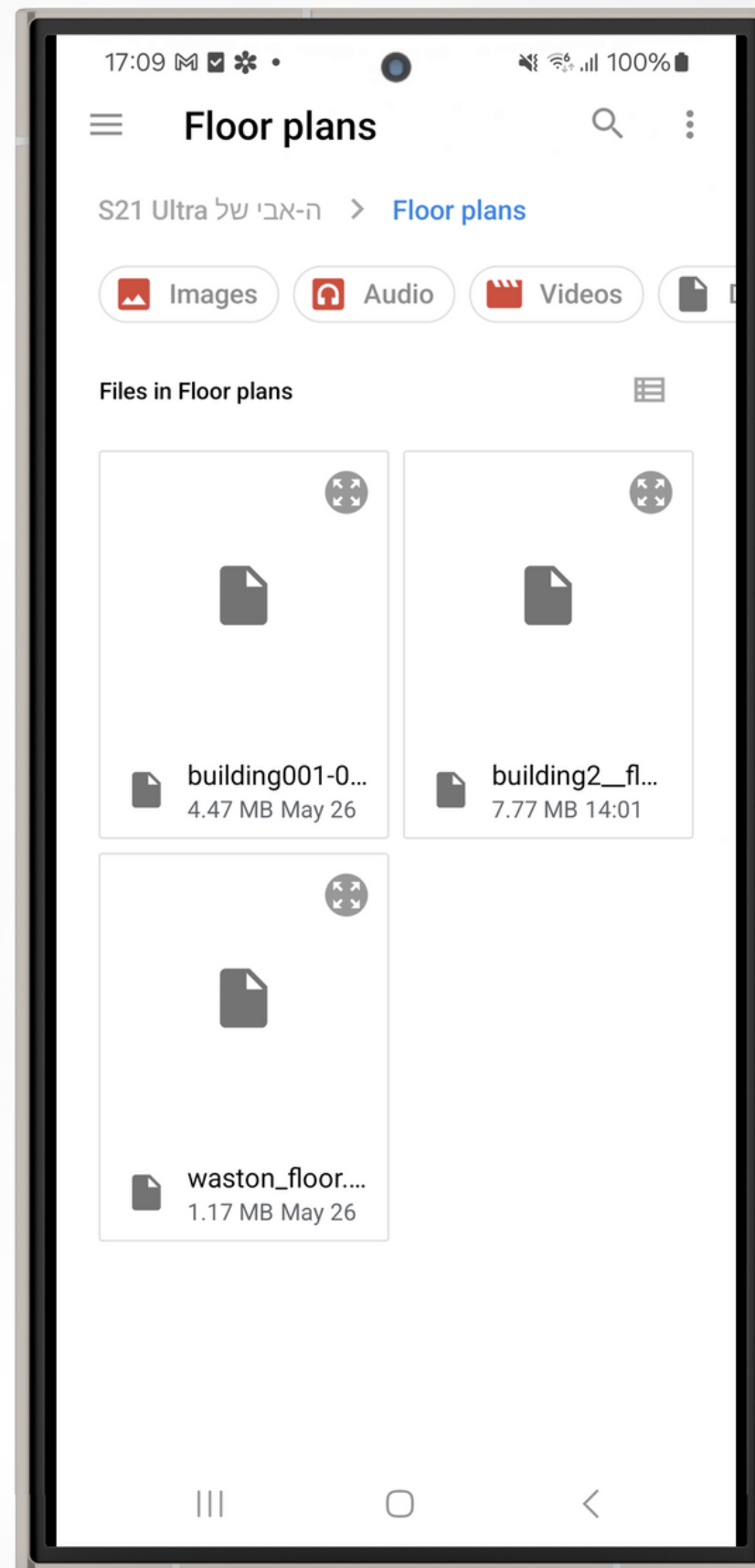
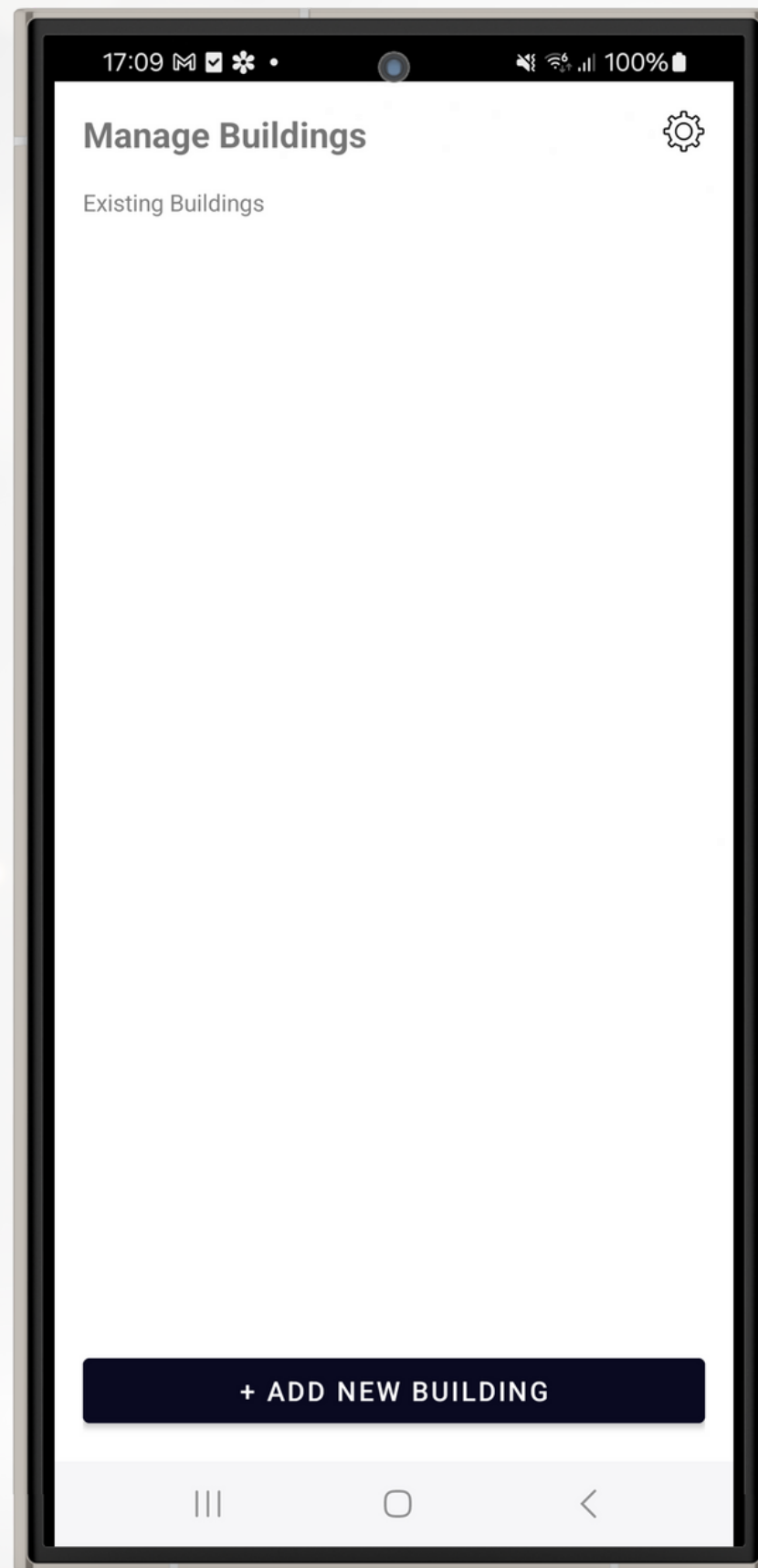
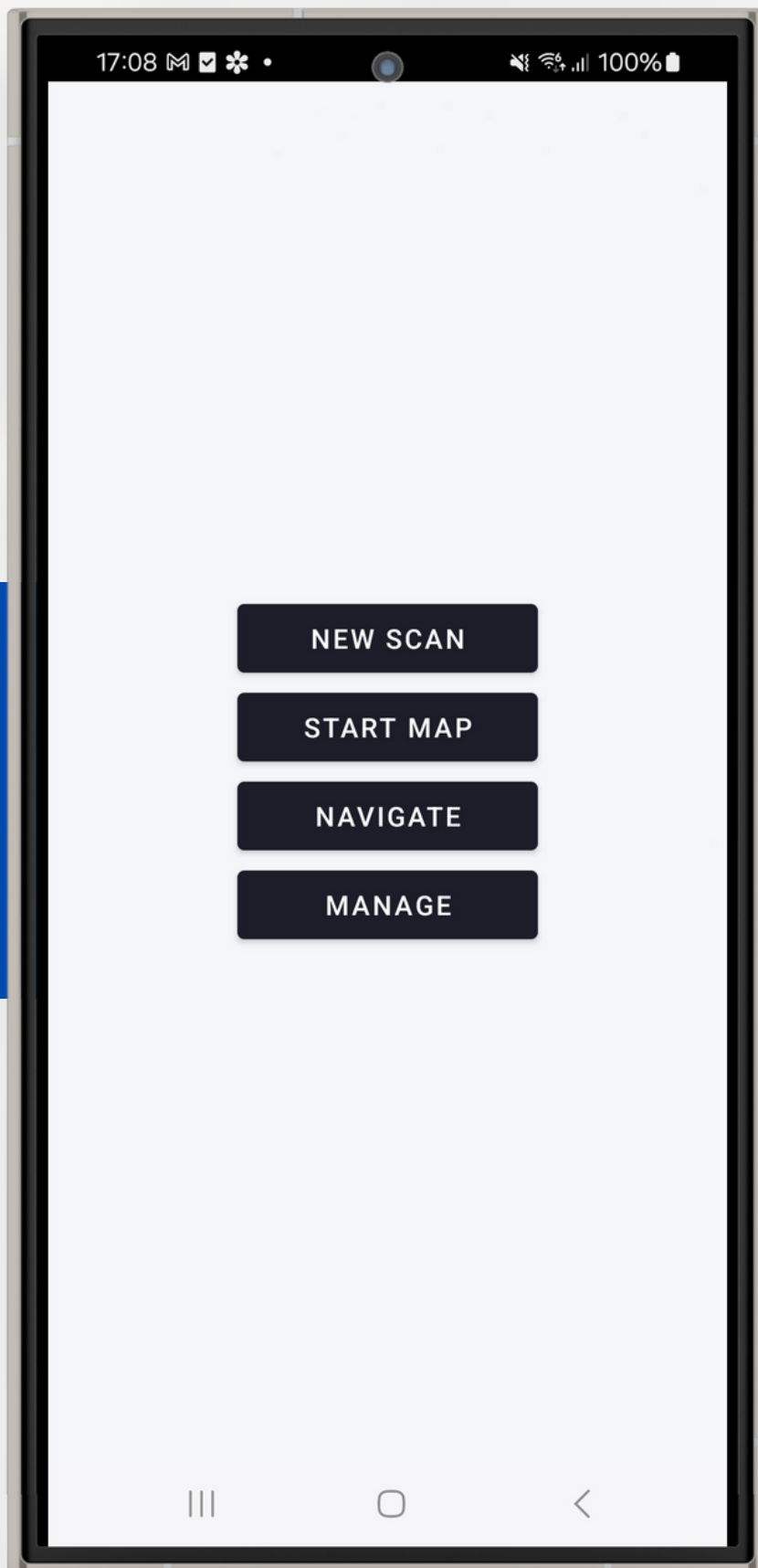
No need for GPS or manual wall tagging!

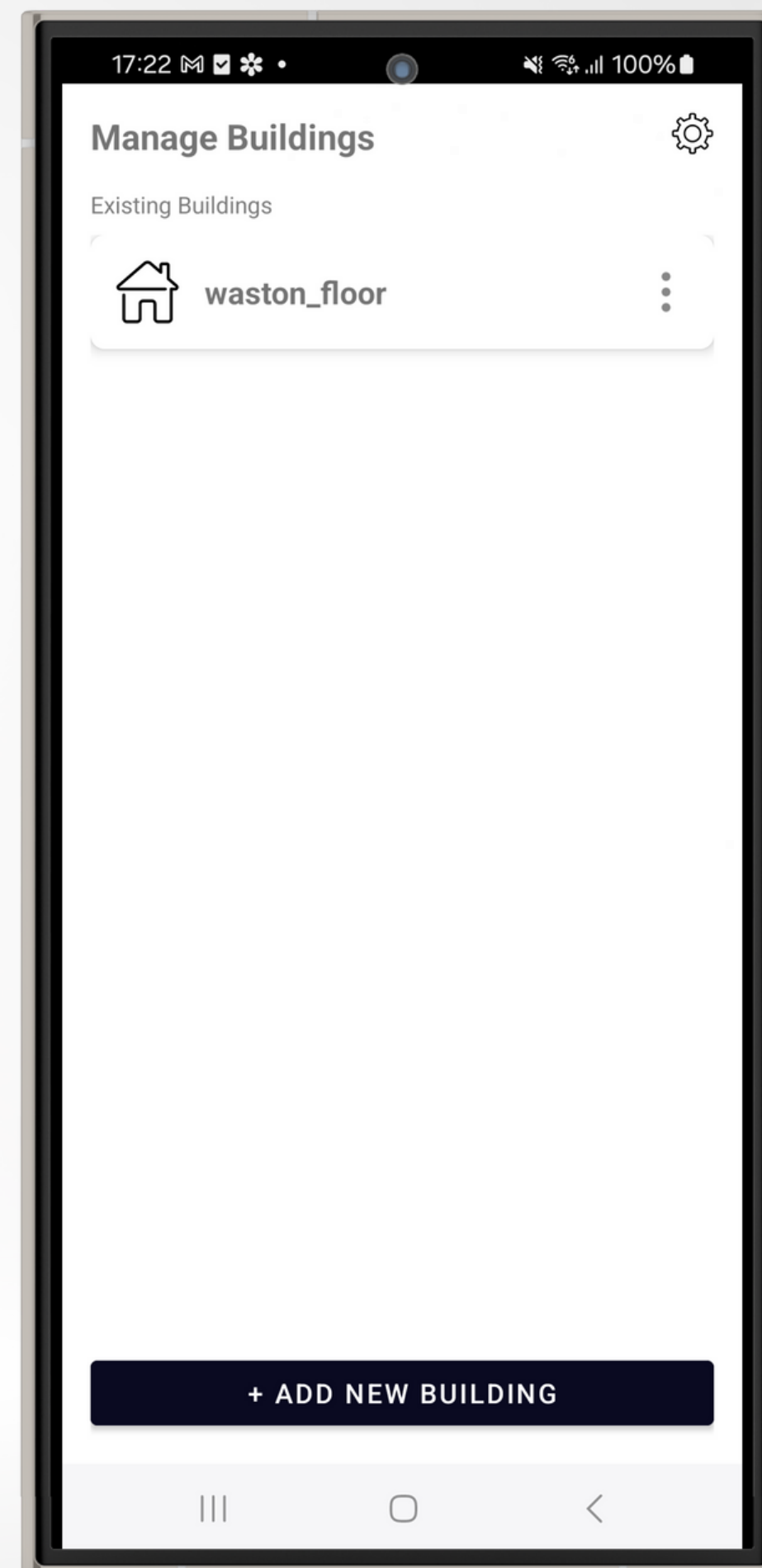


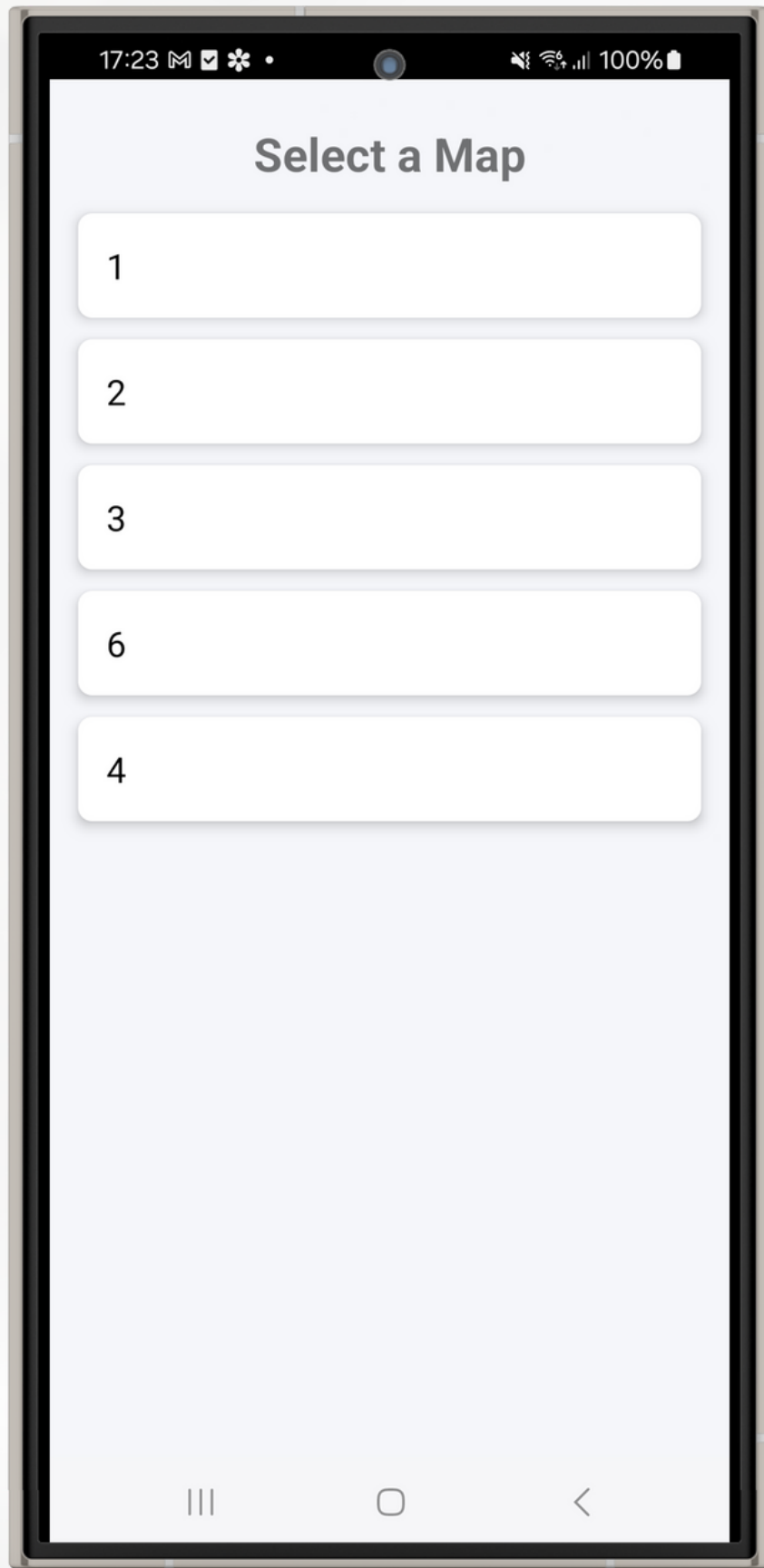
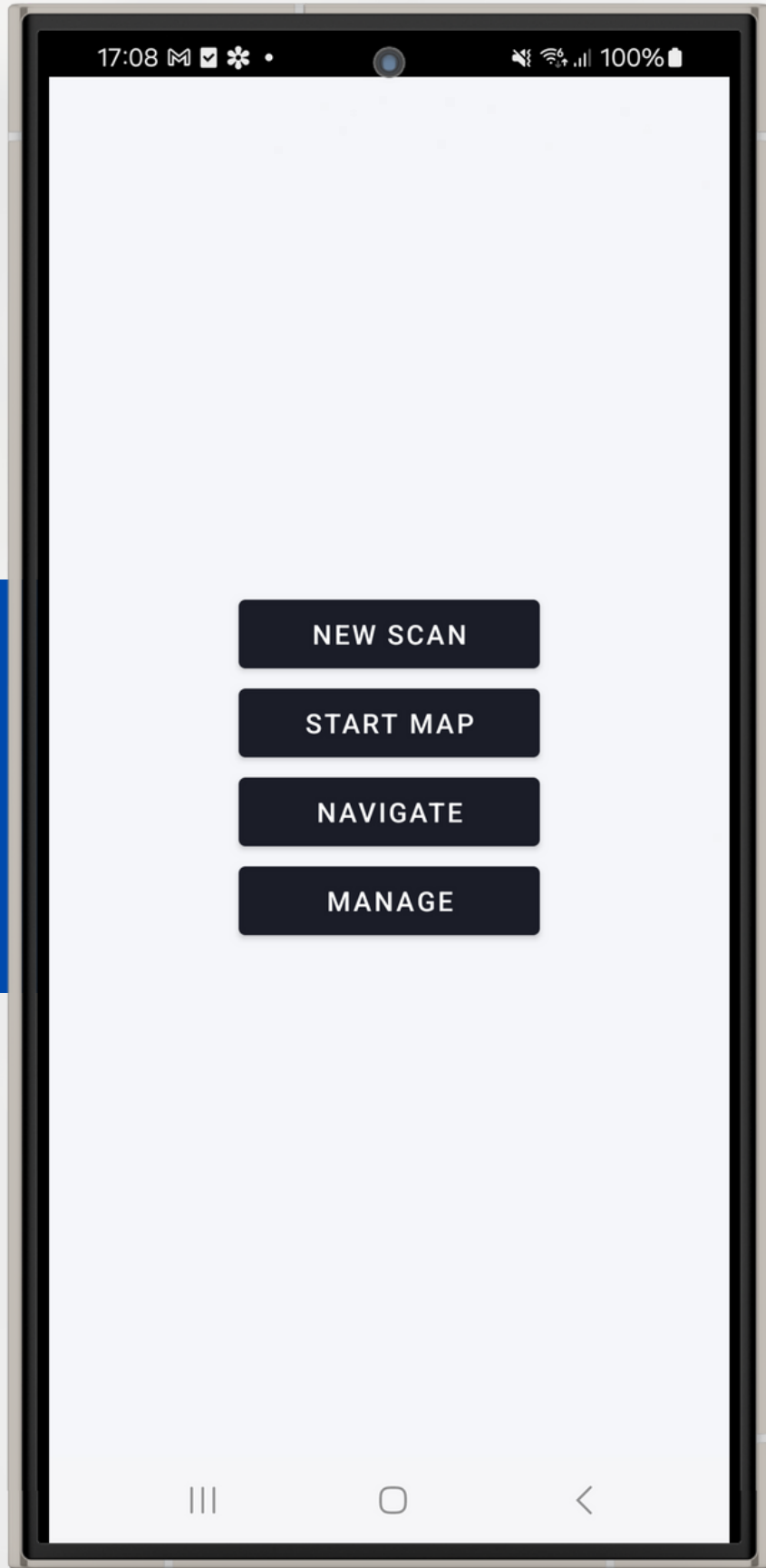


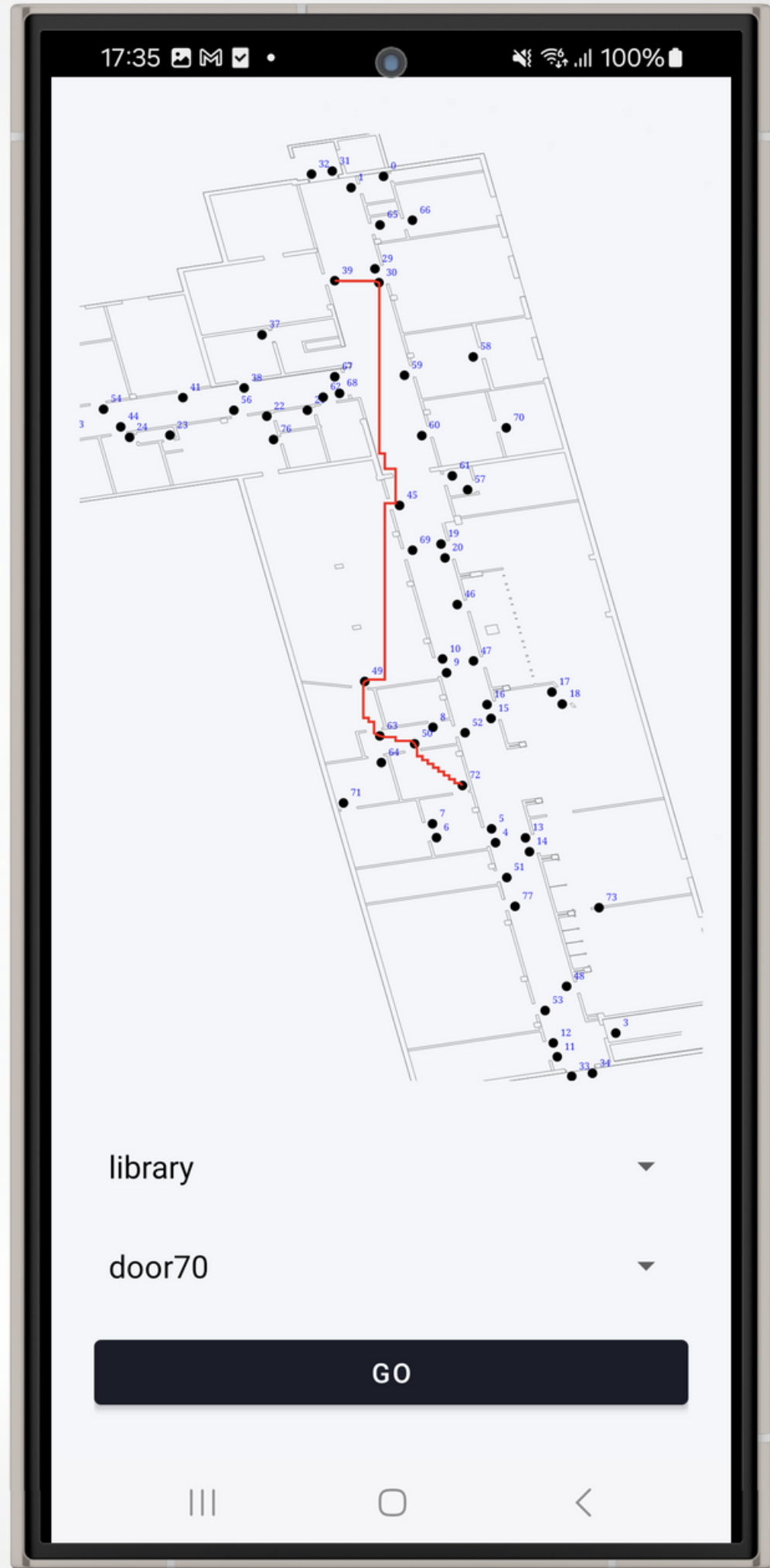
DEMO

VIDEO

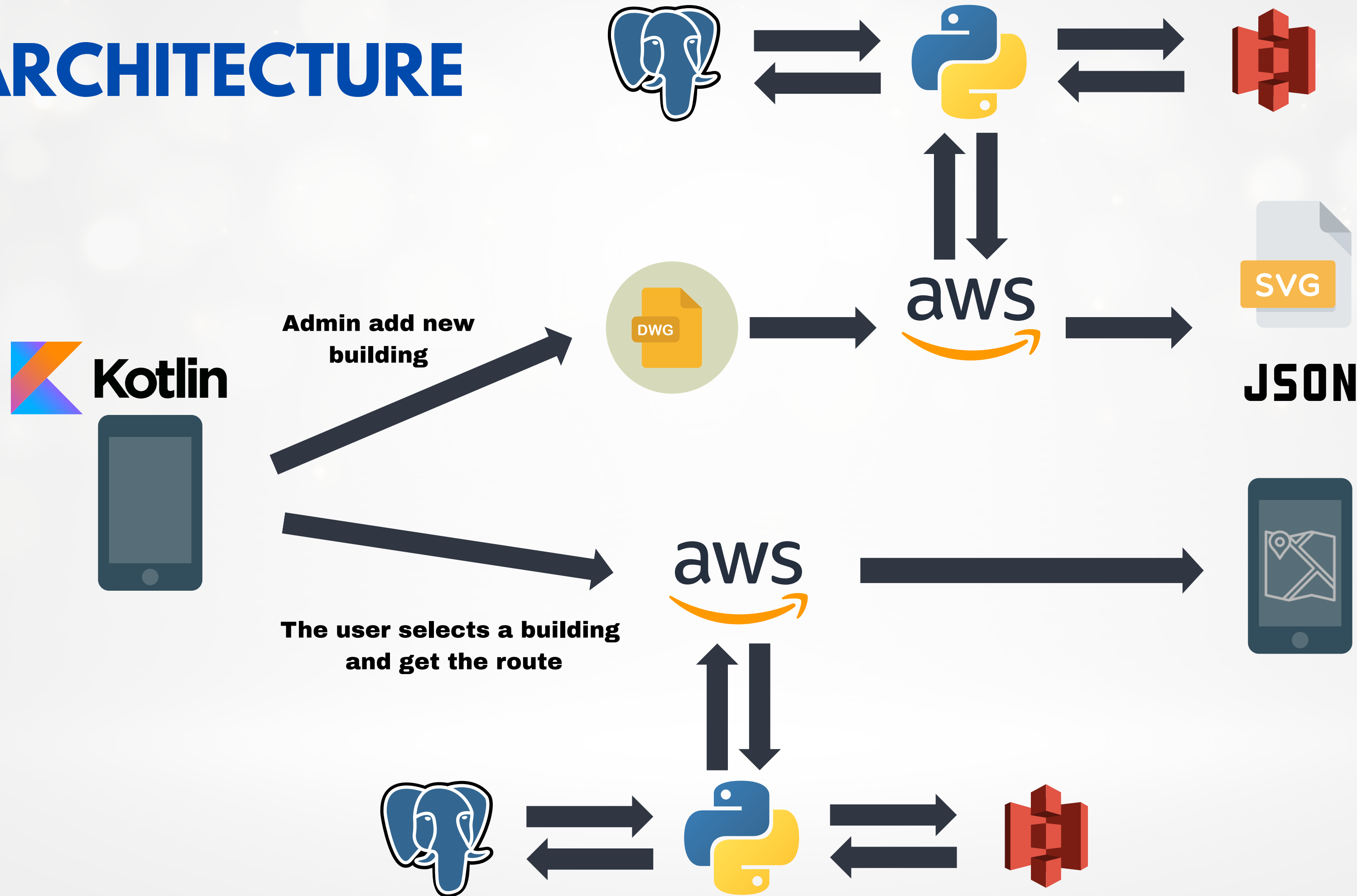








ARCHITECTURE



ARCHITECTURE

GRID GENERATION

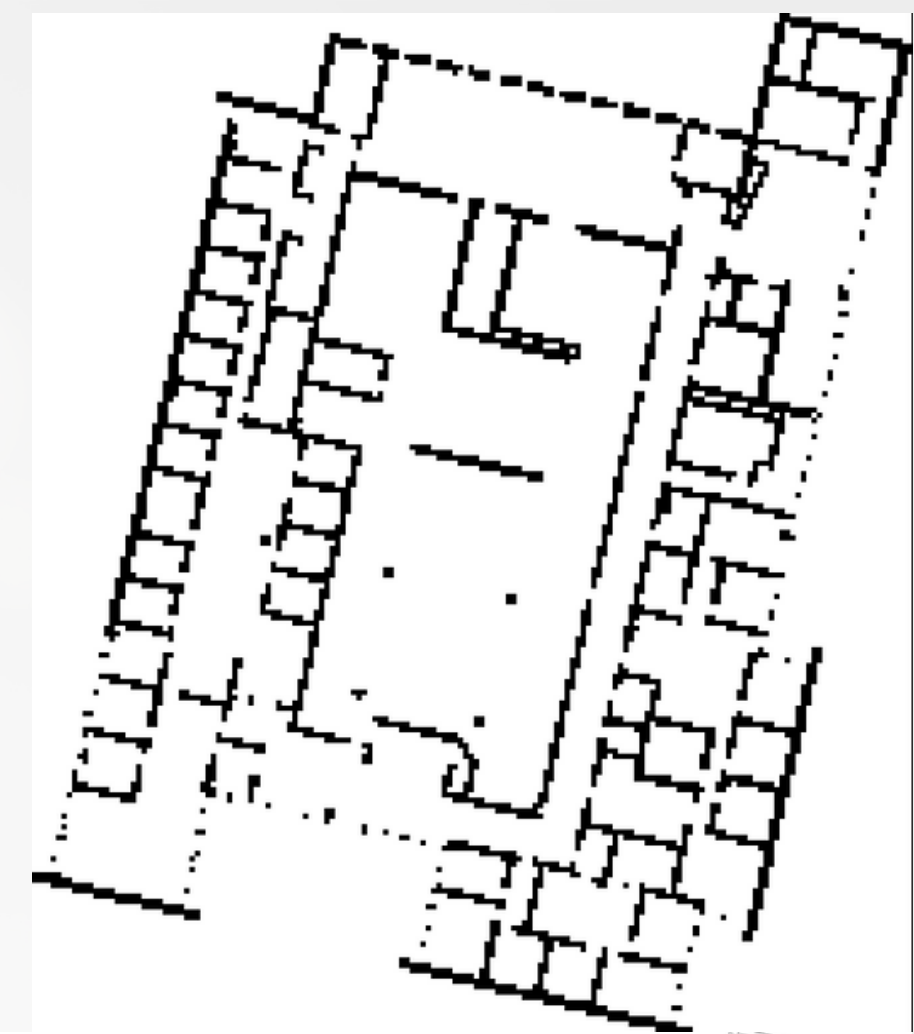
Generate a grid with fixed spacing (e.g., 10 file units intervals).

BITMAP GENERATION

Render the building layout into a bitmap aligned to the grid.

GRAPH GENERATION

For each grid point, check neighbors using the bitmap.
If both points are on walkable pixels → create an edge.



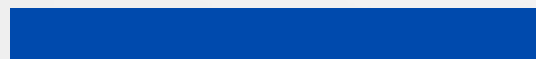
ARCHITECTURE

ROUTE FINDING

The system uses a pre-built grid graph and bitmap to find the shortest path. The A* algorithm is applied for fast and accurate route calculation. During the search, only walkable nodes determined by the bitmap are explored.

CLOUD PERSISTENCE:

After the initial generation, all data—including the graph, SVG, and metadata—is saved for future use. The PostgreSQL database stores structured information such as buildings, floors, doors, and the graph itself, while SVG files and other media are uploaded to cloud storage (aws S3) for easy access and scalability.



ALTERNATIVE SOLUTIONS

Manual indoor mapping tools.

Tools like MazeMap or Mapwize let you manually draw building maps and define routes.

Static PDF map with no information

Indoor positioning systems (IPS) using BLE beacons require manual floor mapping, hardware installation, ongoing maintenance, and battery replacement.

OUR SOLUTIONS

We offer automatic processing CAD/DWG files, generating accurate, up-to-date maps with no manual drawing required.

We provide interactive, searchable maps with dynamic routing and room selection, improving the user experience significantly.

We use existing Wi-Fi access points, avoiding hardware costs and maintenance while still enabling real-time positioning.

SUMMARY



Our project offers a scalable, automated solution for indoor navigation. A system that's cost-effective, scalable, and ready for real-world use, all using technologies already available in most buildings.

We are saving money, time, and frustration!

NEXT STEPS

Improve the UI/UX

Add Real-Time Location Tracking via WiFi

Support Multi-Floor Navigation





THANK YOU

QUESTIONS ?