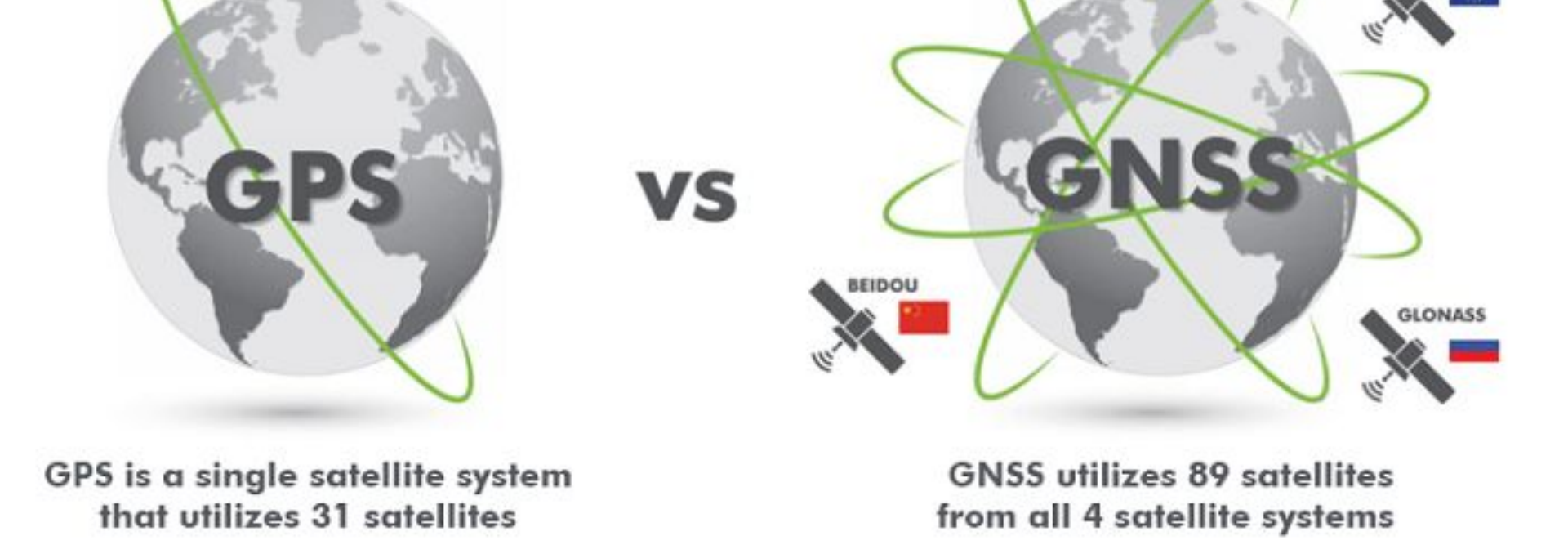
LocatAR

WHY?


GPS
vs
GNSS
BEIDOU
GLONASS
GPS is a single satellite system
that utilizes 31 satellites
GNSS utilizes 89 satellites
from all 4 satellite systems

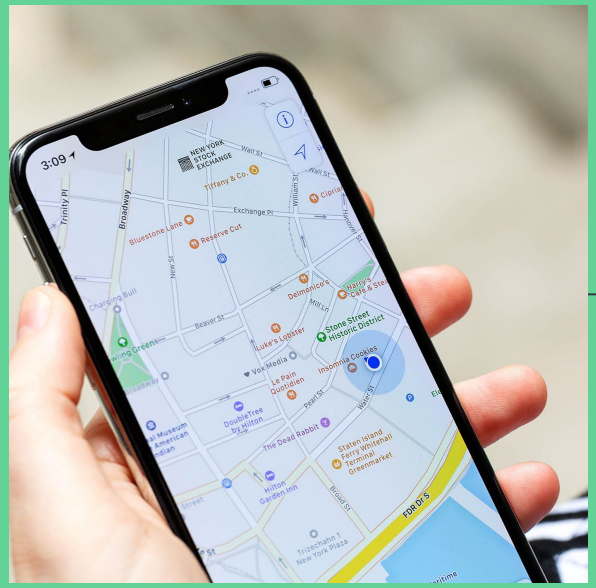
GPS vs GNSS

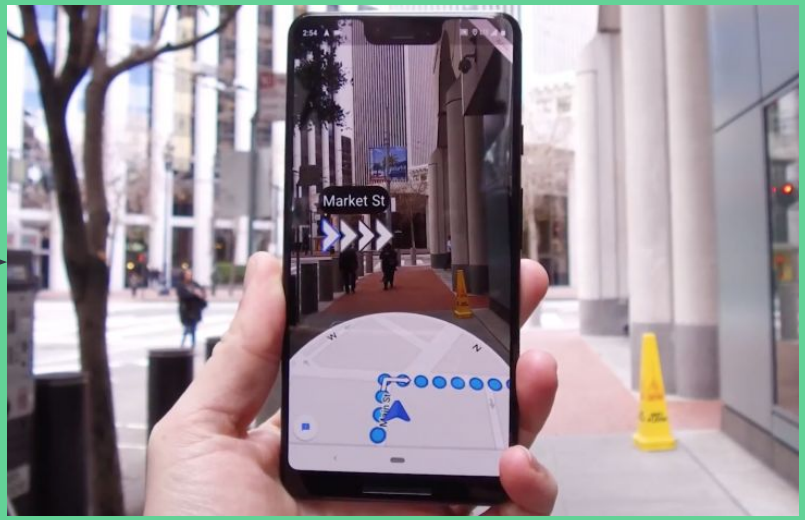
Better Location Accuracy

Using various techniques to reduce errors in location

We use several methods to reduce location error:

1) Choosing satellites with the strongest signals
2) Using more constellations and multiple frequencies
3) Combining GNSS location with Dead Reckoning





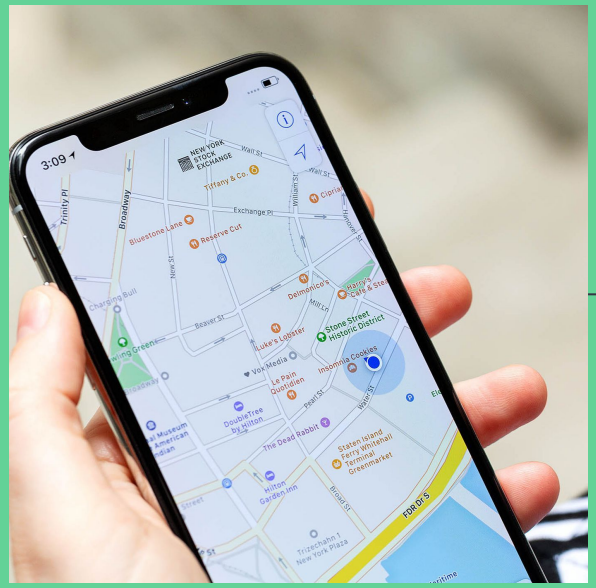
Maps with GPS

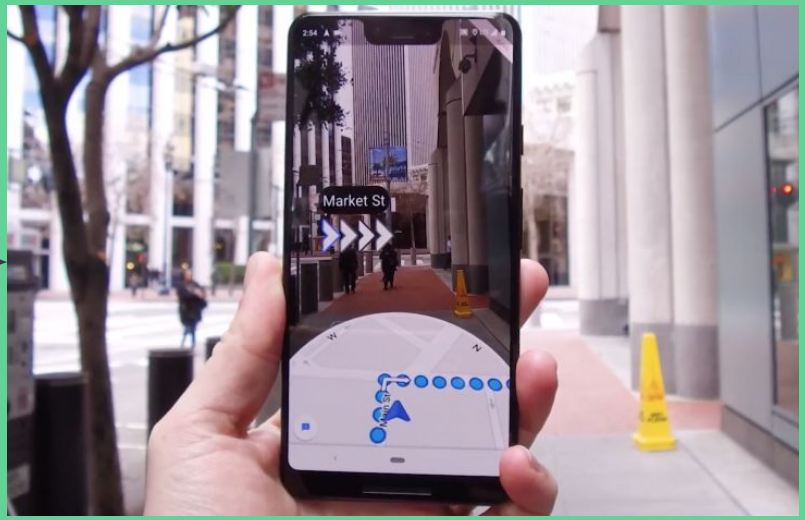
Visual Positioning System

WHAT?

What does LocatAR do?

1. LocatAR is a VPS (Visual positioning system) which helps visually impaired people navigate both indoors and outdoors using vibrational feedback, as well as taking maps one step further for normal users.
2. To get location accurately regardless of where a person is, we use a combination of GNSS and Pedestrian Dead Reckoning.
3. Using Augmented Reality, we can map our indoor environments and then provide better navigation inside the house for the visually impaired. This can also help normal users navigate large spaces like malls and other venues accurately.



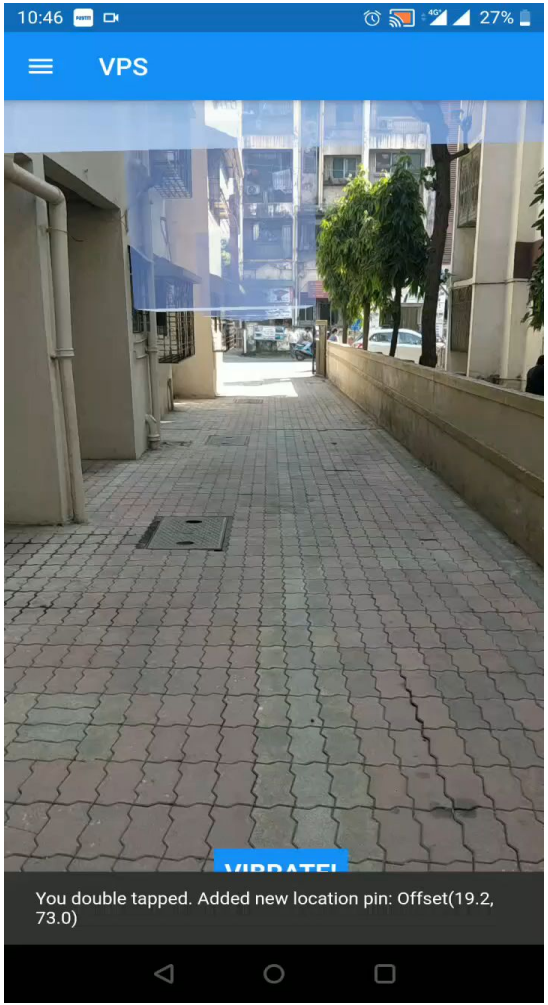


Maps with GPS

Visual Positioning System

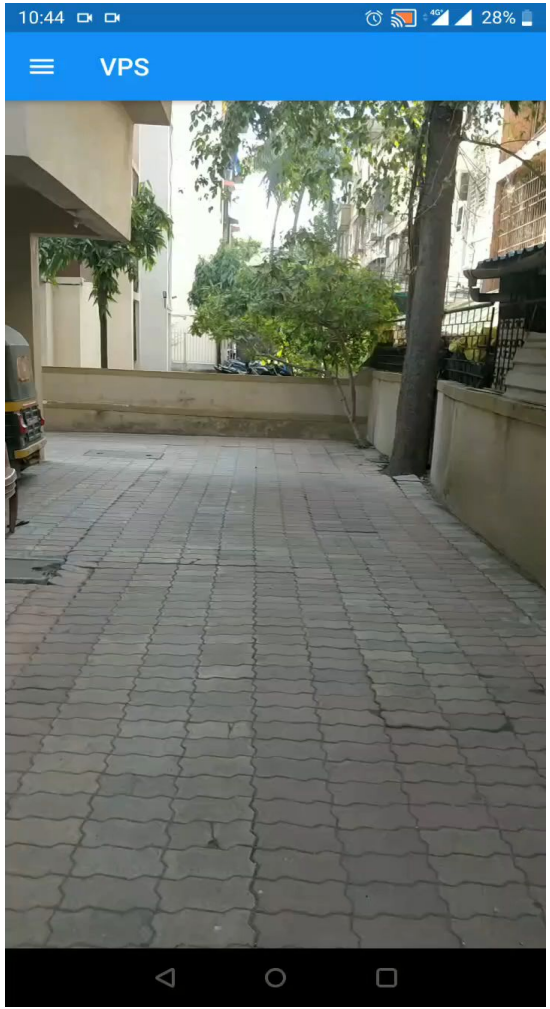
- Mapping the route
- Creating the route
- Indoor Navigation using predefined routes

- Outdoor Navigation



SOS

- The app includes gestures for notifying contacts and police about emergencies.
- Phone snatching is detected via bluetooth (if connected device disconnects



SOS

- The phone auto-detects falls using phone sensors and reports location to a server if the timer is not cancelled.

Future Scope in advancement of Project

- Step and Depth detection of surfaces
- Predefined routes for venues
- Sharing and crowdsourcing of routes for Navigation

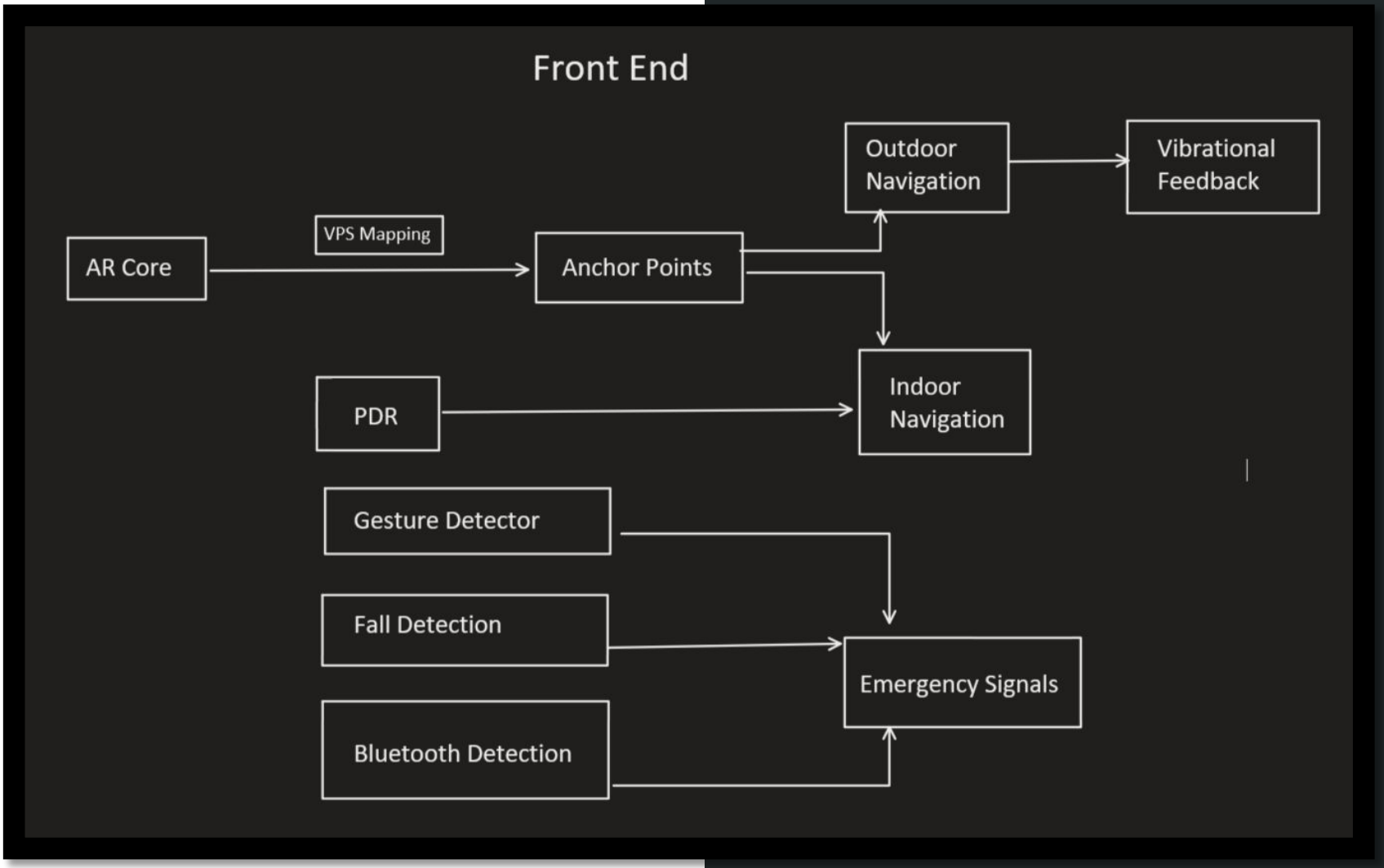
Social Distancing

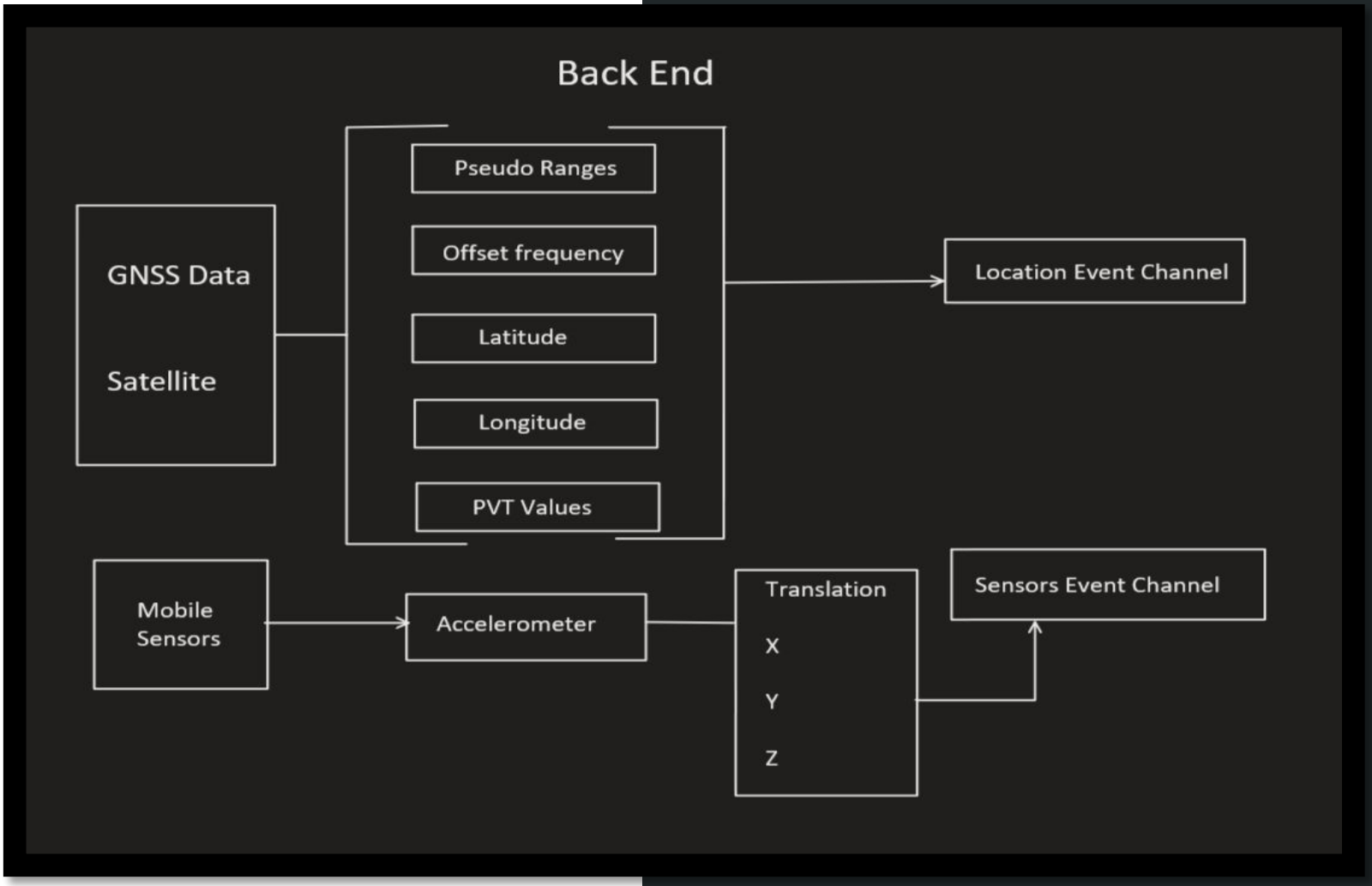
Maintain your distance,
regardless of your challenges

Future Scope

Uses a trifecta of Bluetooth, WiFi and audio to ensure safe distance between users.

HOW?


Front End
Outdoor Navigation
Vibrational Feedback
VPS Mapping
AR Core
Anchor Points
PDR
Indoor Navigation
Gesture Detector
Fall Detection
Emergency Signals
Bluetooth Detection


Back End
GNSS Data
Satellite
Pseudo Ranges
Offset frequency
Latitude
Longitude
PVT Values
Location Event Channel
Mobile Sensors
Accelerometer
Translation
X
Y
Z
Sensors Event Channel

Tech Stack

ARCore for AR implementation

Flutter UI toolkit for cross-platform development

Firebase for data persistence and caching

Android for fetching and calculating location