



#### Problem

(From SKOPE 2.0)

- Vuforia didn't offer much documentation that could support Augmented Reality features.
- Mobile devices didn't come with tracking sensors; such as accelerometer, gyroscope, or GPS.
- Phone cameras' were not able to recognize a large target such as a building to augment on.

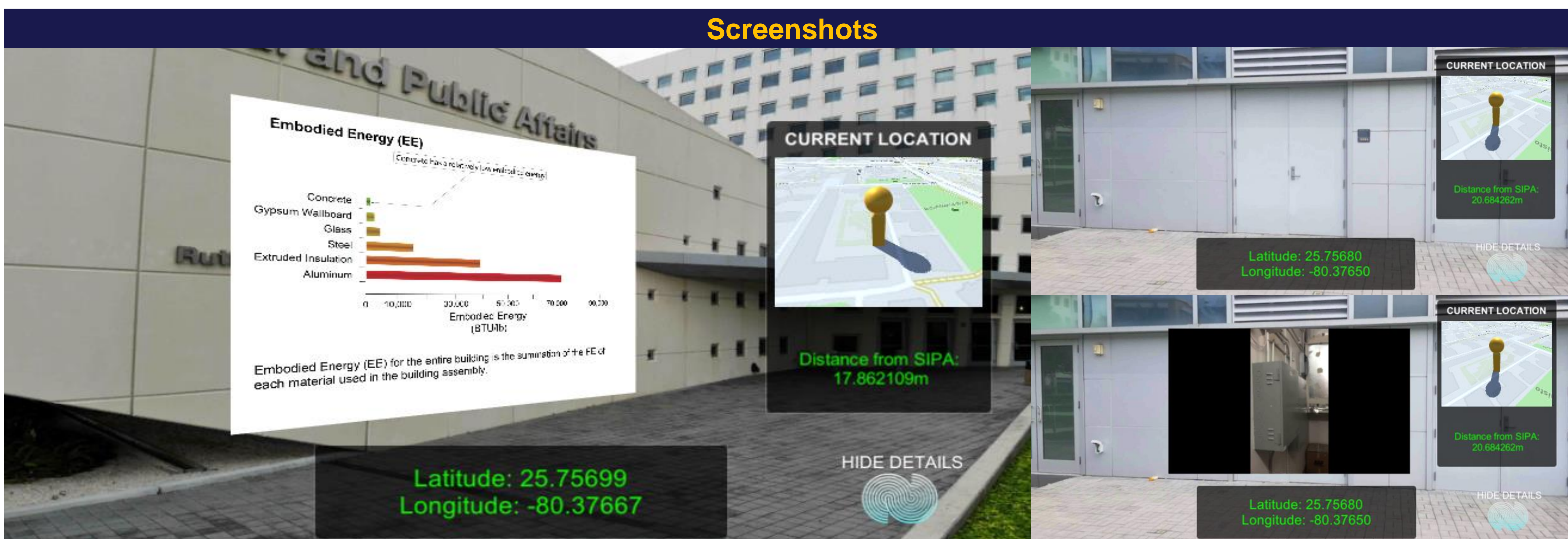
#### Requirements

- Blend Interactive digital elements into our real-world environments.
- Incorporate live tracking of user's location based on GPS sensors and Wikitude's SDK.
- Create an Object Target Collection that could recognize each surface of a building.

#### Current System

- Predefined objects are augmented on current FIU building (SIPA) based on .wto files created through Wikitude.
- Users are able to see their current location through a map that provides Live Tracking.
- Also, users can find their distance from destination target using their devices' GPS sensors.

#### Screenshots



1. On the front side of SIPA, we can augment a chart displaying the material used in the building assembly

2. An object is augmented in the mechanical room's door. It plays a video of what's behind the doors.

#### Solution

- Remove Vuforia's SDK image target recognition for Wikitude's Object Target Collection.
- Trigger GPS sensors through Unity's Scripting API | Location Service.
- Convert GPS coordinates from current location to destination target (and distance) for user orientation.
- Download Mapbox's SDK for live tracking map.

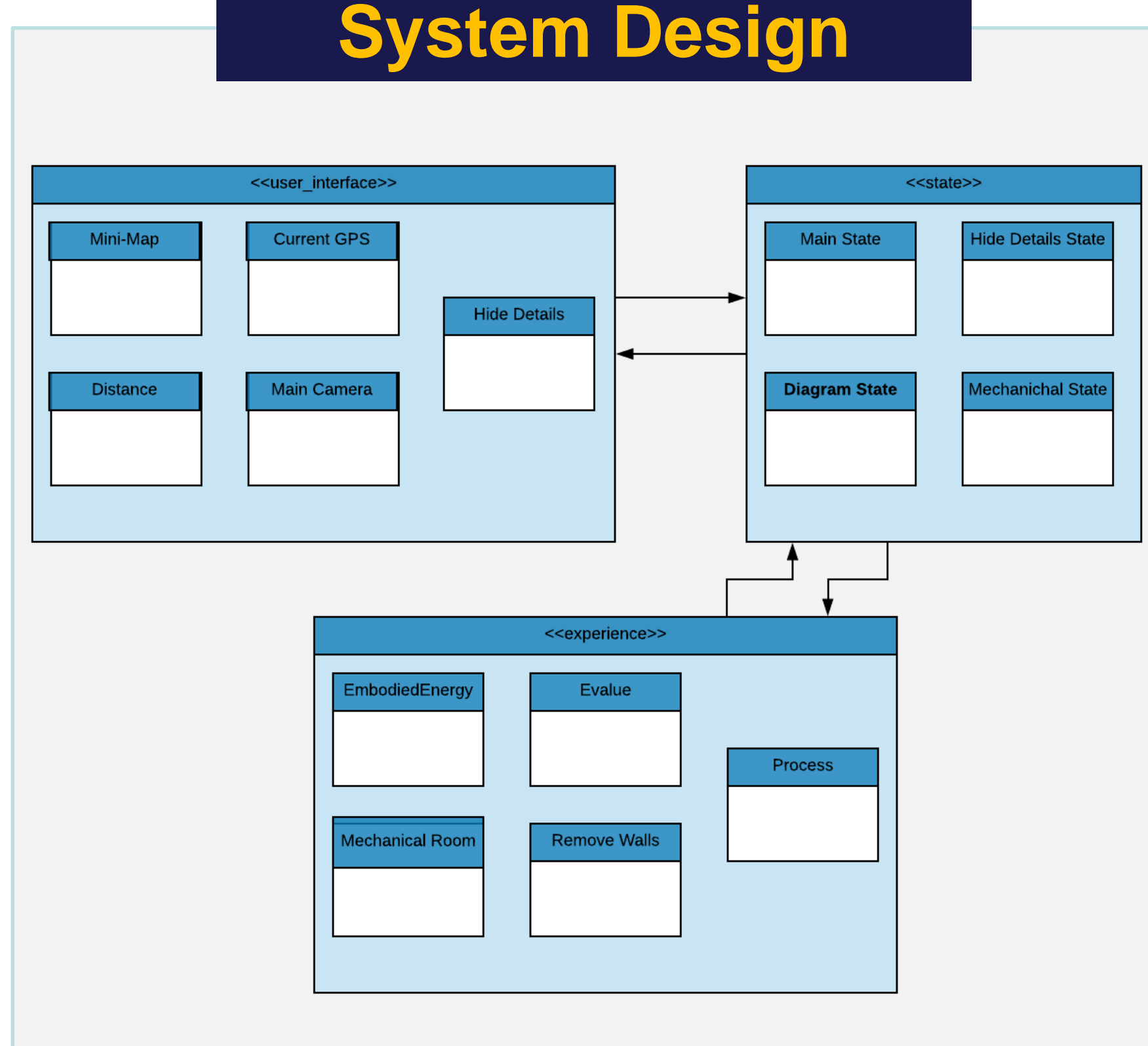
#### Verification

Test Case ID: SKOP-103	Augment Chart on the front side of SIPA
Purpose	- Display useful information related to the materials used to construct the front side of the building
Preconditions	- Information displayed as VR. - Image target used to pop 3D model
Input	- Phone's Camera (Wikitude)
Expected Output	- A chart displaying the Embodied Energy (EE) used in the entire building assembly.

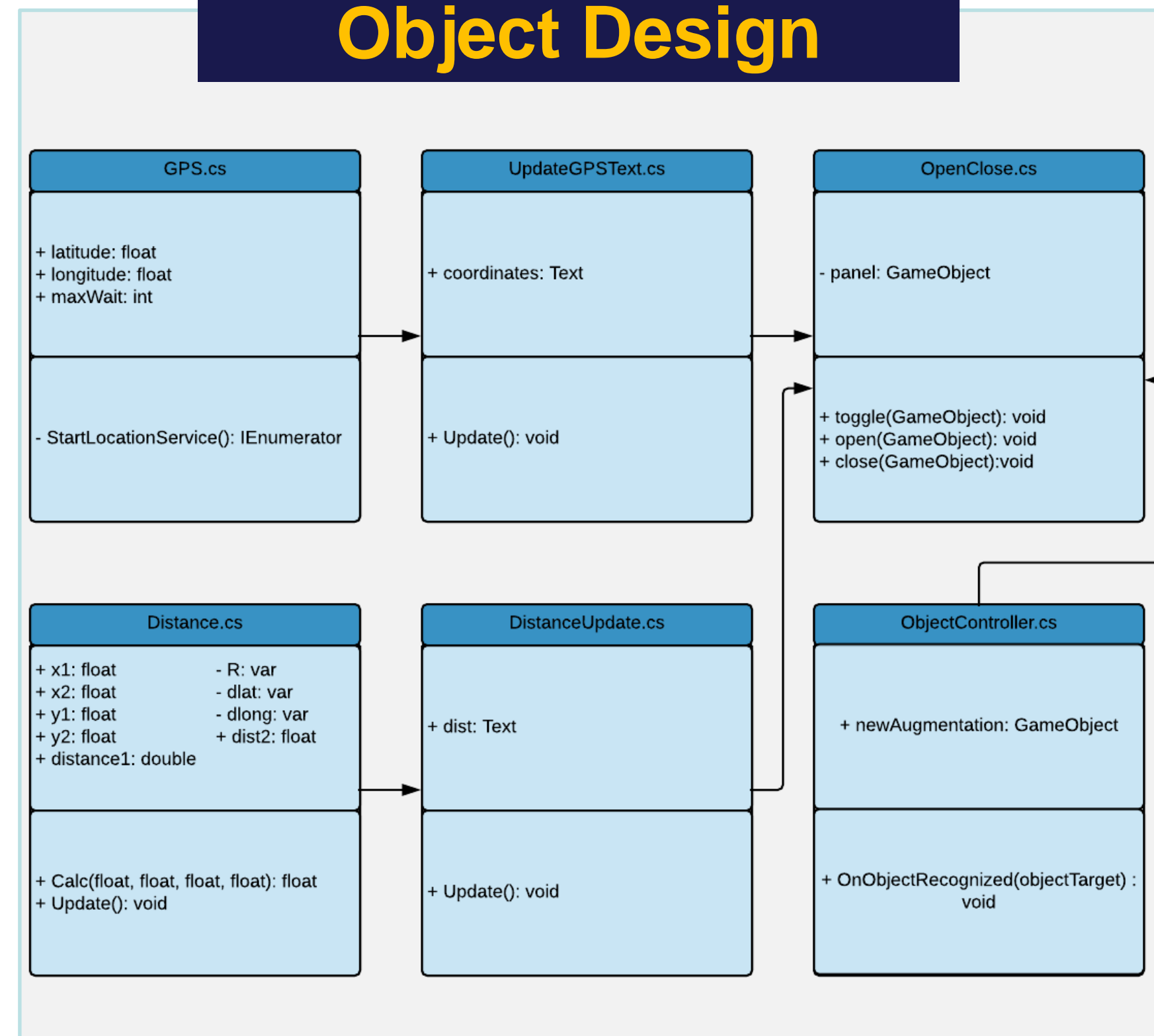
#### Implementation

- Unity 3D System's Environment
- C# Unity's Script Language
- Wikitude SDK for Object Target Augmentation
- Mapbox SDK for Map Live Tracking

#### System Design



#### Object Design



#### Summary

- There are multiple diagrams, charts, and videos for the user to interact with.
- The devices need to have the necessary sensors for the app to run properly.
- Each side of the building has its own Object Target Collection (.wto file).
- Augmentation is done on a real environment and not a single image target anymore.

#### Acknowledgement

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