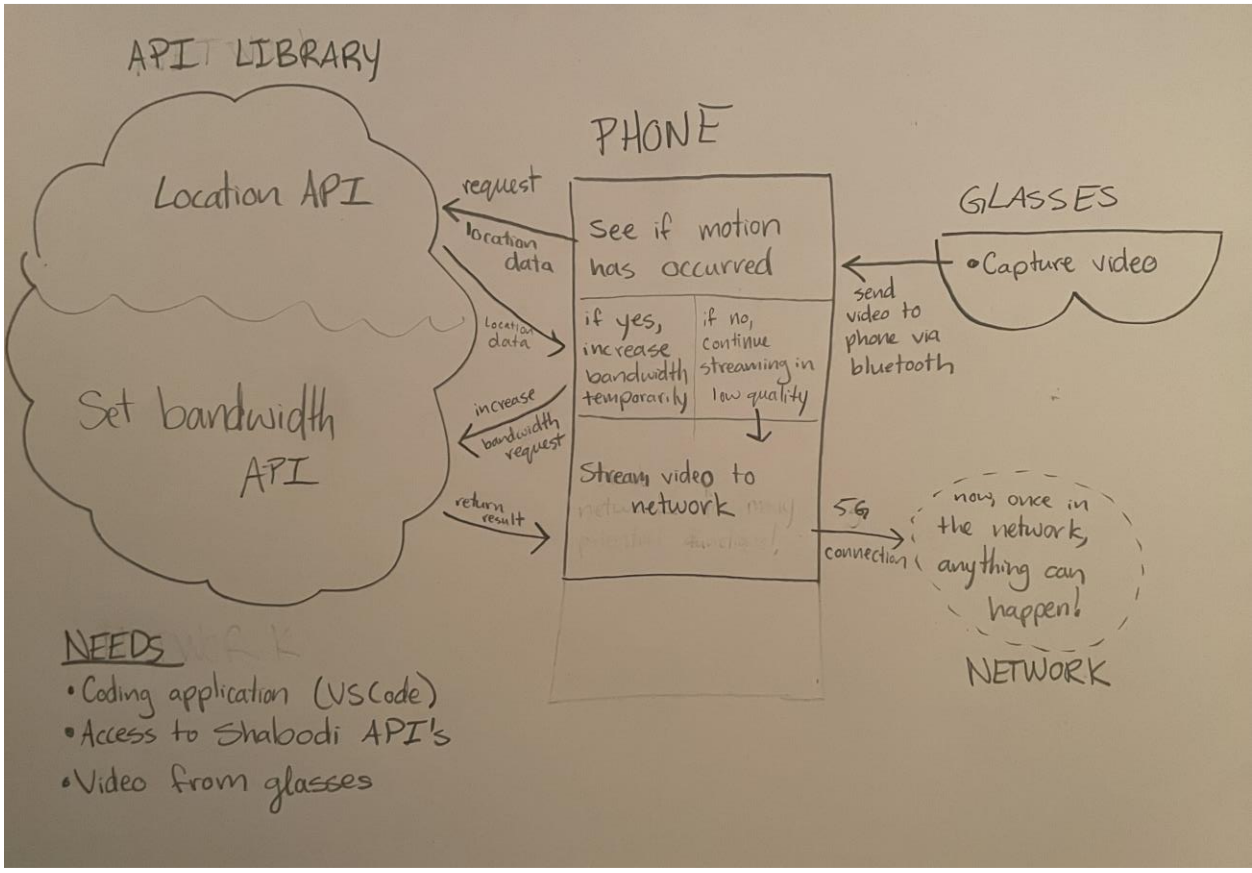
Deliverable E

Members: Cadence Greer, Westley Martin-Root, Adeife Olomola, Charla McEachran

Design Drawing:



Plan and Schedule:

Task	Description	Start Date	End Date	Project Risk / Contingency	Team member
API consolidation	Consolidate the APIs needed for the project.	2024-10-27	2024-10-28	Risk: Different APIs might not work well together. Contingency: Check API guidelines early	Cadence

				and plan some time for troubleshooting.	
API requirements	Decide what information should be gathered from each API	2024-10-27	2024-10-30	Risk: We might not get all the info we need from the APIs. Contingency: Double-check with the team on data needs before finalizing.	Westley
API testing	Test all APIs separately using a python IDE	2024-10- 30	2024-11-3	Risk: Some APIs might not behave as expected. Contingency: Have backup API keys (used to identify an application or user in a software) and allow extra time for testing.	Cadence
API consolidation / App	Once happy with the behaviour of each of the API pulls, start to consolidate the APIs into one code. Transfer them to the Sandbox.	2024-11-3	2024-11-6	Risk: Combining APIs could make the app slow. Contingency: Test APIs individually for speed and adjust as needed.	Westley
Output user interface set up	Set up the application audio interface from the application to the individual. Set up any visual lights to alert users.	2024-11-3	2024-11-6	Risk: Sound or lights might not work properly on all devices. Contingency: Test on different devices and plan backup alerts if needed.	Charla, Cadence.
Input user interface set up	Set up the application to receive audio input.	2024-11-3	2024-11-6	Risk: The app might not pick up audio accurately. Contingency: Allow for manual input as a backup.	Westley Adeife

Application Synthesis	Compile the user interface with the API background pulled information.	2024-11-6	2024-11-10	Risk: The user interface might not work smoothly with the APIs. Contingency: Test small parts of the interface as they're built.	Cadence
Functional application Testing	Testing application for functionality.	2024-11-10	2024-11-14	Risk: Some bugs might delay the project. Contingency: Test key functions often and keep time for fixes.	Charla
Application consolidation	Find ways to consolidate the application without sacrificing the functionality.	2024-11-14	2024-11-16	Risk: Simplifying the app might remove needed features. Contingency: Make sure important features are kept during consolidation.	Adeife
Functional application Testing	Testing application for functionality	2024-11-16	2024-11-20	Risk: Some bugs might be missed if testing is rushed. Contingency: Test each function carefully and plan for retesting.	Charla
Front end application work / product refining	Design front end of application	2024-11-20	Design Day	Risk: The design might not be user-friendly. Contingency: Get feedback from users and adjust as needed.	Cadence /Westley

Bill Of Materials

Material	Purpose	Estimated Cost	Link
Vaseline	To simulate visual impairment in our physical model (will	$5.49 + 13HST% =6.20	https://www.loblaws.ca/healing-jelly-original-100-pure-petroleum-

	be smeared on glasses)		jelly/p/2018430400 1_EA?source=nspt
Safety Glasses	To simulate visual impairment in physical model	$0 (already owned by Cadence)	https://www.amazon.ca/Goggles-Glasses-Protective-Construction-Prescription/dp/B08QG5C47F

Equipment List

Software/Hardware/ APIs	Reasoning for equipment
Sandbox	This will be the basis for the NetWare application.
Visual Studio Code	Python IDE can be used for testing code while not in the Shabodi sandbox.
Colormind.io	AI colour palate software. Will help to establish some simple visuals for the application.

Prototyping Test Plan:

Test #1 – Design Concept: Latency/Response Times

Reason for Prototype	Performance Measurement
Evaluation Criteria/Determine Measurables	Testing the response times of the glasses in their identification of something and the time it takes communicating that to the user. We would like to measure latency.
Level of Prototype	High Fidelity Focused
Kind of Prototype	Analytical
Metrics	Metrics measured by a ping test. Time it takes for information to travel from source to destination. Milliseconds.
Test Description	Specifically we will test the latency of our code. We want as little delay as possible in transferring information so we will be looking for less than 20ms.
Analysis Method	We will test by running a series of ping tests at varying distances and also by looking at our internet connection type.
Notes	We will have to find a way to keep latency consistent. For the safety of the user and for functionality of the glasses we want the lowest ping possible and we want that to be true for wherever the glasses are.

Why is this the best model choice for your stated test objective?	An analytical model is the best choice for our test objective because it will provide quantifiable data that we can improve upon by looking at the individual variables that impact latency. As latency is something that can be easily measured with no cost, an analytical model seems the most practical and will provide the most useful information for this test.

Test #2 – Design Concept: Testing Motion Events Detection

Reason for Prototype	Communication (between device and network)
Evaluation Criteria/Determine Measurables	Testing whether motion events are detected by the device and can be handled by our code. If code is triggered by a motion event the test was successful.
Level of Prototype	High Fidelity Focused
Kind of Prototype	Analytical/Physical
Metrics	Metrics measured by a simple fail or pass. We are not measuring distance as the test, but will be using specific distances in our process.
Test Description	Specifically we are testing our code to see that it works with a device and accurately detects motion events using the location information from the location API. Using the provided APIs motion detection should be a fairly simple process and should pass the test.
Analysis Method	We will test by holding a device and walking certain distances from a machine running our code to see that the machine still recognizes motion events at varying distances.
Notes	This test overall checks the functionality of our code and the feasibility of using this code in a pair of smart glasses.
Why is this the best model choice for your stated test objective?	An analytical model is the best choice for our test objective because it will provide useful feedback on whether or not the code written will be effective in completing our goal of guiding the user. Testing values in the code has little repercussion. The physical portion of this model includes the device that we will use to communicate with the code, in tandem with the analytical bit of the model this physical piece can feed the code information from a real-world demonstration rather than an entirely simulated one.

Test #3 – Design Concept: Effect of Bandwidth on the Code

Reason for Prototype	Performance Measurement

Evaluation Criteria/Determine Measurables	With this concept we're testing how well the code runs and can display information using different bandwidths. We want to increase bandwidth during motion events and decrease when not in motion.
Level of Prototype	High Fidelity Focused
Kind of Prototype	Analytical
Metrics	Speed: bits per second
Test Description	Specifically we will test the functionality of our code using varying specified bandwidth values to simulate the experience the user would have. In specifying the bandwidth we will be able to control this variable during different events in the code.
Analysis Method	We will test by running the code with the specified bandwidth values or there are speed tests available online that could be utilized for the code. A number of speeds will be chosen and multiple tests will be run at each of these speeds.
Notes	We are making sure that changing the bandwidth variable still allows the code to function as we intended and provides us with satisfactory visuals.
Why is this the best model choice for your stated test objective?	An analytical model is the best choice for our test objective because simply changing variables in code is cost effective and the best way to determine what happens to the results when this unique variable is changed. In the code all variables are controlled, so the analytical model provides a controlled environment where testing can be specific and consistent.

Test #4 – Design Concept: Streaming Glasses Visuals

Reason for Prototype	Learning/Understanding
Evaluation Criteria/Determine Measurables	Testing the visuals being seen by the "glasses" and streaming those to the device running code allows the code to be up to date with what the user is seeing and experiencing. This allows it to be informed of any changing variables or information it should provide.
Level of Prototype	High Fidelity Comprehensive
Kind of Prototype	Physical/Visual
Metrics	Metrics measured by code's accurate identification of things such as distances: metres.
Test Description	We will test the code's ability to translate visuals to values to input to the code. This may be a difficult process requiring a number of prototypes, but overall it will provide more information on the user experience.
Analysis Method	We will test by holding a phone and streaming the visuals that the phone is seeing to the device running the code. We will walk

	certain distances to see if the code recognizes values from the visuals.
Notes	Screenshare/screenplay may be used. Specific apps designed for measurement may be used. Accuracy will be a concern.
Why is this the best model choice for your stated test objective?	A physical model that also happens to use visuals is the best model choice for this test objective because the project is heavily focused on identifying and quantifying things from the visuals the glasses see. Modelling this gives the developers a better idea of the user experience and helps them learning about the capabilities of the code in a real-world situation.

Trello Link:

https://trello.com/invite/b/66f0a0dad941279b1fd56c31/ATTIc369cdeee5766f9aba25f3046a1feb529AF2B134/gng-1103-project