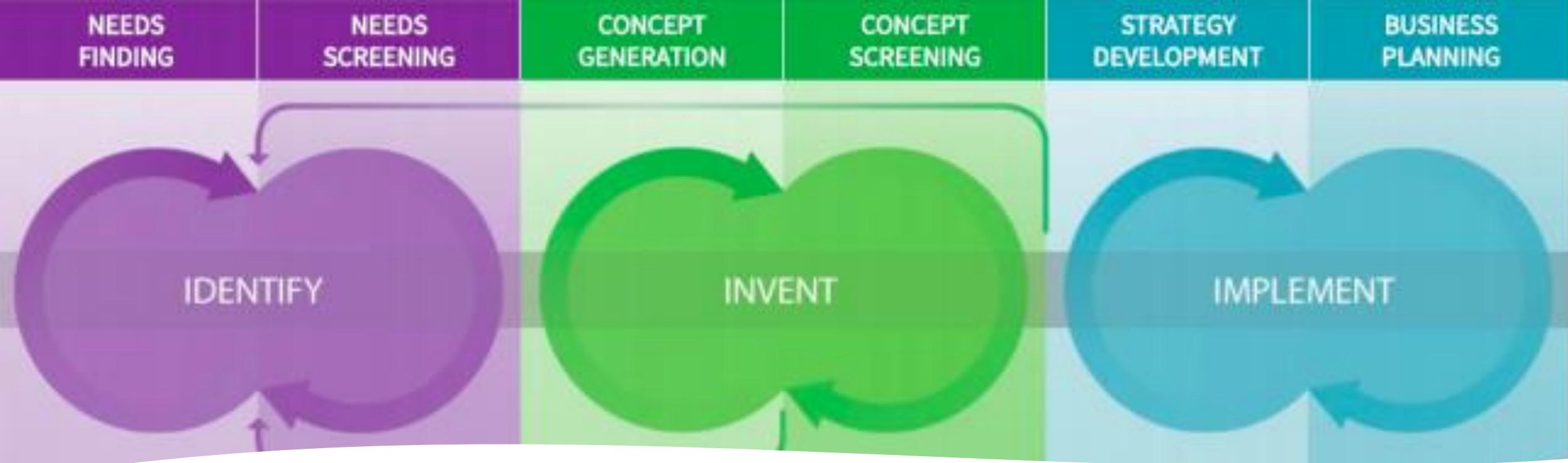




ENGINEERING DESIGN PROCESS



DEFINING ENGINEERING DESIGN

- For starters engineering design consists of the cyclical process of generating multiple creative solutions, analyzing these solutions, and implementing the best one.
- With that being said we sought to identifying our need through the problems formulated in relation to Covid-19.
- To which we then begun the generation of our concept relating to the lack thereof necessary equipment and analysis in testing for this virus.
- With these known inconsistencies within the spread of covid we sought to developing a strategy that would allow for easy and efficient testing within an individuals home.

NEEDS FINDING/SCREENING



In determining our need statement it was vital for us to understand the problem to which we saw as being improper opening and facilitation of social distancing measures.



With this partners and I sought to focusing on the monitorization of the virus prior to inadequate opening.



We also pursued the notion of who is and/or was primarily affected by the spread of this pandemic.

NEED STATEMENTS

01

A method to create efficient analysis of those infected with the Covid-19 virus.

02

A method to lower the spread of Covid-19 virus within all age ranges.

03

A method to prevent the reoccurrence of the coronavirus outbreak.

CONCEPT GENERATION/SCREENING

- Throughout this process my team and I **brainstormed** new ideas in tackling our problem while covering our design needs. In the midst of this we realized some ideas worked whereas some didn't.
- With our problem formulation in mind as well as our designated needs, my peers and I begun generating concepts based around the following.

Replacing mercury
thermometers with
thermographic
cameras.

WEEK 1

Creating a device
that would monitor
temperature
fluctuation within
potential covid
patients

WEEK 2

Switching gears to
implementing an application
that would detect an
individual's symptoms and
exposure to the virus. Keeping
track of spread

WEEK 3

Finalizing main
design blueprint.
Assigning different
roles to each group
member.

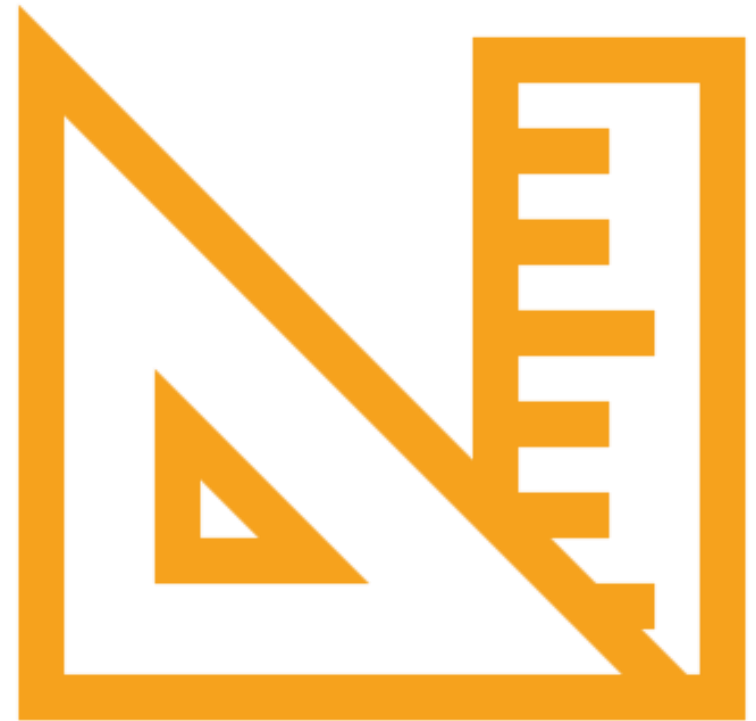
WEEK 4

STRATEGY DEVELOPMENT/PLANNING

In part of developing a strategy and planning for an outcome it was vital that we implemented solution(s).

In doing so not only did we marginalize on our own **business model** but we also examined **alternatives** that may reign as necessary for our problem as well.

To which we later compare against each other in a decision matrix identifying strengths and weaknesses in each.



BUSINESS MODEL

- We seek to developing a mobile application entitled “covidGo” that will allow users to input feedback in regards to symptoms and/or concerns pertaining to the covid-19 virus.
- In doing so researchers will be able to analyze and monitor the spread of asymptomatic patients vs. symptomatic patients in exposed environments



DESIGN IMPLEMENTATION

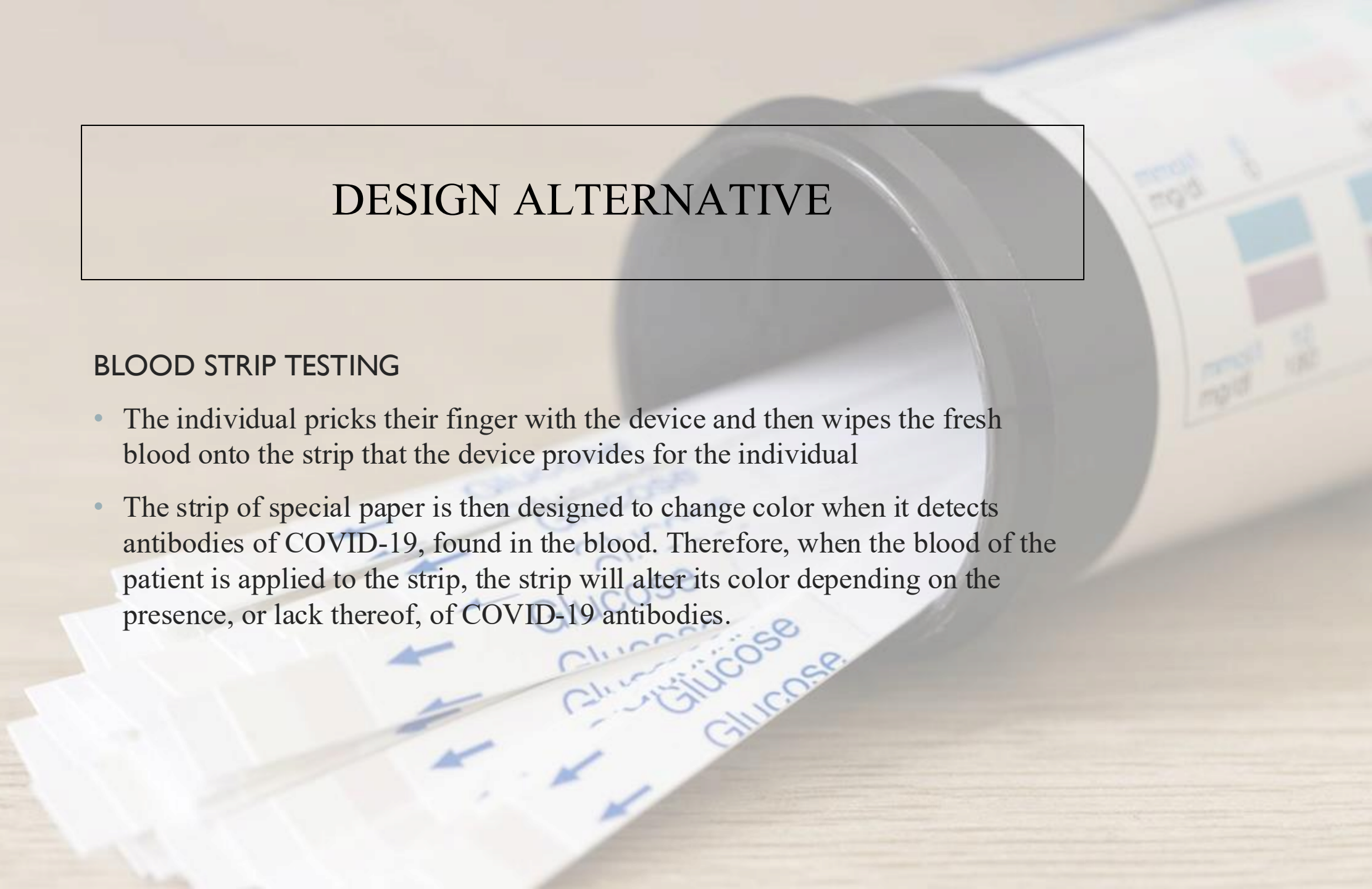
- In order for this to be a successful application we must incorporate the following:
 - Various coding through software and other graphic programs to ensure this application will be able to detect and monitor an individuals symptoms and/or concerns.
 - Will also include features that will allow the user to both track and log input pertaining to health.
 - We also hope to incorporate notification settings to alert individual of social distancing measures and precautions.



DESIGN ALTERNATIVE

BLOOD STRIP TESTING

- The individual pricks their finger with the device and then wipes the fresh blood onto the strip that the device provides for the individual
- The strip of special paper is then designed to change color when it detects antibodies of COVID-19, found in the blood. Therefore, when the blood of the patient is applied to the strip, the strip will alter its color depending on the presence, or lack thereof, of COVID-19 antibodies.



DESIGN ALTERNATIVE

BLOOD KIT TESTING

- The blood kit testing design will function as people that are having symptoms will submit their blood/fluids to be tested for COVID-19. People would have to request the kit to be mailed to them.
- Resources that are needed would be a form for people to submit their information as well as a package with proper extraction and storage for the transportation of fluids.



DESIGN ALTERNATIVE

SYMPTOMS SCREENING

- The design function for this alternative application would be to screen each individual with symptoms of the virus using digital and/or thermal cameras to monitor temperatures amidst those exposed to the Covid 19 virus.
- Different from our original model this application will be used solely for travel.



DECISION MATRIX

- In determining which design alternative would be the most effective and conclusive to both our problems and needs we established a decision matrix that would help us do so.
- In this matrix we compare means of durability, performance, reliability, aesthetics, and even efficiency to identify which is the best alternative.

HOW THIS WORKS

- The design is awarded a 1 if it is more important than another design.
- The design is awarded a 0 if it is less important than another
- Designs receive 1/2 if they match a tie. We then total each row and/or column to find each design's ranking

Decision Matrix (continued)

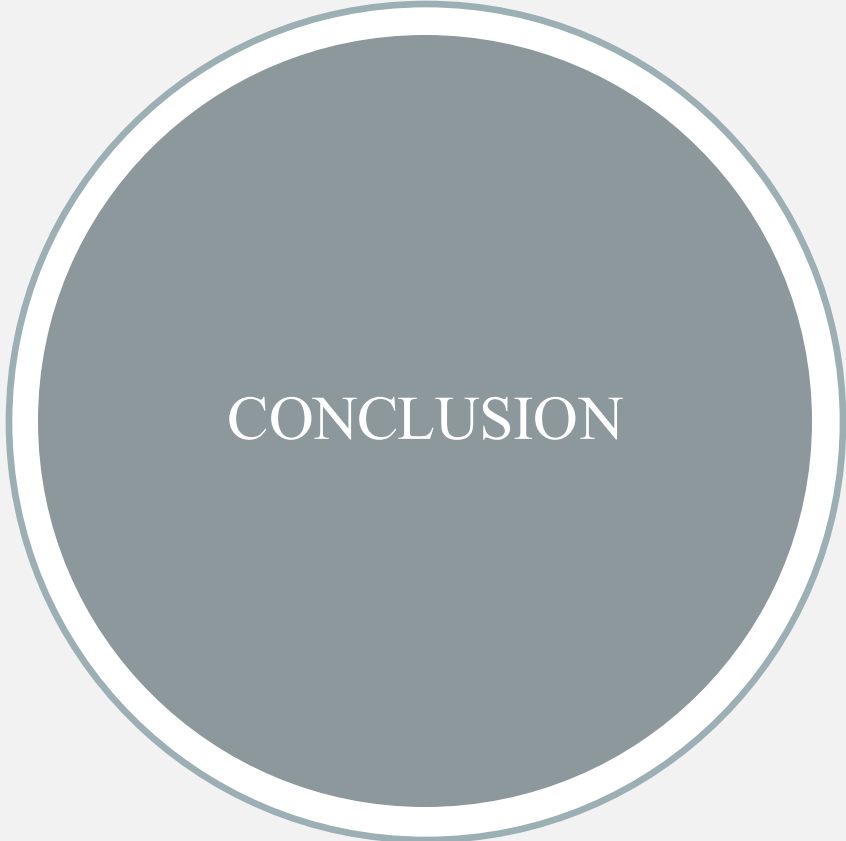
	Efficiency	Durability	Cost	Performance	Aesthetics	Reliability		Total				Final Weight
Weight	2.00	1.00	2.00	2.00	2.00	2.00						
Blood Strip Test	8	4	8	6	6	1		33				62
Blood Kit Testing	5	8	9	1	1	1		25				42
"covidGo" application	9	1	1	9	9	9		38				75
Symptoms Screening	3	1	8	9	4	3		27				55

RECOMMENDATIONS

Some implementation issues we discovered pertained to privacy as we struggled with determining questions that would be feasible to ask users in a respectable manner.



With that being said with more time we would look closer into the realm of comfortability amidst user and CPU as we explore ways to getting customers to engage in questionnaires and interaction with researchers to successfully track the spread of covid in communities



CONCLUSION

- Prior to identifying the problem, understanding the need, and facilitating a solution we realized that our design will not cure and/or kill the spread of Covid-19. But it will allow for easier monitoring of those who may have been or may be exposed to such pathogens.
- With that being said this app will ultimately narrow down on areas of dense populations with infected person(s) both detected and undetected allowing researchers to focus in on specific groups at a time.
- Allowing for users to report such concerns and/or symptoms on the go or even in the comfort of one's home without risking one's health and/or the health of others.

THANK YOU