ClimateLens

“Our solution will deliver location tailored Augmented Reality climate change disasters to ignite users to fight against climate change, and provide resources and information for them to actively participate.”

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Table of Contents

Introduction

We envision our product, ClimateLens, will motivate educators, activists, and concerned citizens to be more environmentally conscious. We strive to make a more environmentally aware population to acknowledge urgency of climate change and make an effort to slow the effects of climate change.
As of now there exists no central hub to keep track of all environmental causes and/or solutions one would want to support. We will deliver an application that offers centralized access to resources for involvement and activism in addressing climate change through AR simulations and localized calls to action. ClimateLens will also serve as a personal tracker of current organizations (i.e., petitions) and solutions that users are moved by. To kick start our product our short term goal aims to bring a working prototype to showcase the potential of our product and conduct user research to enhance the product.

Hypothesis: have all of the information there, don't make people feel overwhelmed. They can understand all of it. They know the call to action and understand the impact. Feel like there will be some change as a result of their call to action.
Complete one cycle of evaluation and feedback by the end of the quarter.
Have some very strong evidence: find it very "engaging", "fresh", something else, etc.

Lean Canvas

<table>
<tr>
<td rowspan="2">Problem
Lack of awareness about the effects of climate change. Lack of urgency to combat this change.

Existing Alternatives
- Existing online climate change information hubs.
- After Ice
- #climate</td>
<td>Solution
Deliver location based - information about climate change and examples of future climate change disasters tailored to the user.</td>
<td rowspan="2">Unique Value Proposition
We create user tailored AR visualizations of imminent climate change disasters to call indifferent users to action and supply them with the resources to participate in the fight against climate change.</td>
<td>Unfair Advantage
User location specific AR climate change simulations and a centralized hub for climate change information and resources.</td>
<td rowspan="2">Customer Segments
- Persons unaware of climate change
- Persons aware of, but indifferent to climate change
- Educational organizations
- Pro-sustainability organizations

Early Adopters
- Pro-sustainability organizations
-Eco-friendly and sustainable persons</td>
</tr>
<tr>
<td>Key Metrics
Petition Signatures
Teaming up with climate change organizations to:
- Spread awareness about the app
- Gather funding
- Create an active community</td>
<td>Channels
- Climate change organizations
- Pro-sustainability organizations
- Sustainability expos and conventions
- Government support</td>
</tr>
</table>

Cost Structure	**Revenue Streams**
- Cost to develop basic AR application - Cost to set-up geographical hotspots to host AR visualizations - Cost of wages for staff and team - Cost to advertise and market our application through our channels	- Support from sustainability organizations - Support from government institutions - Funds from advertising space for sustainability organizations and events - Donations

Additional Notes for Lean Canvas

- What characteristics of your early adopters make them valuable to the product development?
    - Proactive: they are already driven enough to participate in the fight against climate change or are eco-conscious. Therefore they already have the ability to take matters into their own hands and likely endorse the application to new users.
    - Alert/Conscious: they are willingly to embrace the tools and knowledge offered by the application and put them to full use.
    - Educators: many have a background in education and have the skills necessary to enlighten users in an effective manner about climate change as well as the application, similar to proactivity.
- Why are your channels effective in reaching your targeted early adopters?
    - Note: Defining specific channels for our product can be very difficult because it is not about making people aware of the topic since it is already so prominent but having people take action.

    - Our application is based around motivating users, creating a community, and giving them the tools to fight against climate change. This easily translates to our main channel that is
    -
- How do the listed key metrics provide accurate evaluation of your product's success?
    - Petition signatures serves as a great measure of our product's success because we can constantly track the positive/negative trend of user activity. Furthermore they will track actual user engagement in application rather than just measuring whether the app is downloaded.
    - Teaming up with organizations will measure our establishment as a community and the long-term sustainability of the project.

Value Proposition Canvas

Product

Gain Creators - Positive Emotions - Better Lifestyles - Help make the adoption of climate change movement easier and more motivating	**Product Features** - AR visualizations of climate change disasters, tailored to user locations based upon hotspots - Introductory information about climate change - Resource hub for links and information about climate change organizations and how to get involved - Tips for a more sustainable lifestyle - Pledging process for users to commit to combating climate change, can share with friends
Pain Relievers - Visualize the effects - Keep the information brief, digestible - Make the visuals relevant and tailored to the location of the user	

Customer

Needs & Goals - Understand the urgency and effects of climate change - Learn how climate climate will uniquely affect their region and climate - Learn how to participate in the fight against climate change	**Tasks** - Understand what the effects of climate are - Understand how climate change affects their geographical region and climate - Understand the gravity and urgency of climate change - Learn how to start combating climate change Learn how to access and gain more knowledge about climate change
Pains - Learning and reading is boring - Takes too much time - Information doesn't feel relevant to user - Effects seem abstract, intangible	

Additional Notes for Value Proposition Canvas

- What customer pain does each product pain reliever address (and how, if not obvious)
    - Visualizing the effects relieves the abstractness and intangibility of climate change.
    - Keeping the information brief relieves the boringness of reading and reduces the amount of time.
    - Making the information and visuals tailored to the user's location makes the information feel relevant to the user.
- What customer gain does each product gain creator address (and how, if not obvious)
    - Positive emotions motivates users to participate and engage.
    - Better lifestyles motivates users to live healthier and happier lives.
    - Making the adoption of climate change easier gives users a sense of fulfilment

3 × 3 × 3 Goals

Three Week

- Goals: We aim to have an MVP with basic AR functionality for a single hotspot, pledging and liking functionality
- Minimum Success Criteria: 25 unique signatures/pledges
- Assessment Plans: requirements checking
- Agenda: building MVP app and user testing
- Main Risks: wasting too much time developing unnecessary functionality and aspects of the app.
- Results: a basic MVP with core functionality, but no AR hotspot.

Three Month

- Goals: To add social media and community functionality and create 50 hotspots in unique locations around california. Also to test thi s basic functional application with beta testers.
- Minimum Success Criteria: Achieving 1,500 pledges and reaching a cooperative agreement with a local climate change organization.
- Assessment Plans: user testing and signature count
- Agenda: develop the AR hotspots and continue forward with user testing and analysis on beta testers
- Main Risks: development difficulties with implementing AR feature, producing enough marketing to acquire 2,500 signatures
- Progress: working MVP

Three Year

- Goals: To have a fully functional and usable application and have partnerships with sustainability organizations nationwide, and an active user community.
- Minimum Success Criteria: To have financial sustainability with a coalition of climate change partners, active online community of activists.
- Assessment Plans: evaluate partnerships with other organizations and user testing analysis
- Agenda: reach out to climate change and pro-sustainability organizations
- Main Risks: inability to form partnerships with organizations and losing our main channels and financial stability

Research

Research Method 1: Persona

Depicting Our Audience

Method Summary:

A persona is a representation of a type of customer. It helps answer the question “who are we designing to?”, aligning our strategy and goals to specific user groups. Creating a persona of our target group will help us cater our application to them, ultimately helping us achieve our minimum success criteria.

Research Design/Implementation:

A persona was created with the following sections:

- Basic details
- Motivation
- Interests
    - Subjects and topics the user is interested in
- Story
    - Details the actions and decisions they make on a daily basis

Data Collection:

The persona helps us understand our target audience, allowing us to cater out application to that user group. By creating an application that aligns with that group's goals helps us reach our minimum success criteria much more easily than if we were to cater to multiple groups.

Analysis:

Based on our persona, we will need to publicize our application through social media since that will be the easiest way to reach out to our target group. We will also need to provide local volunteering options since our users might be new to the area, or unaware of existing local organizations. Doing the research for the user will help connect them to a volunteer organization since making users do the research themselves will cause them to lose motivation.

Findings:

Name: Matthew Aldrich | **Age:** 20 | **Sex:** Male

Occupation:

- Transfer student at University of California, Irvine majoring in environmental policy

Motivation:

- Has a desire to make a difference on climate change but is unsure about what he can do since he is new to the area.

Interests:

- Volunteering
- Environmental Policy
- Augmented/Virtual Reality
- Energy Conservation
- Application Development

A day in his life:
Matthew attends school to learn as much as he can about environmental policy but doesn't want that to be his only source of education. Before transfering into UCI, he volunteered at local organizations in Florida helping plant trees and clean trash off the beaches. Since he is new to the area, he wants to find out ways he can help and possibly land a job after graduation since he plans to stay.
On his free time, he likes to play games and experience them in Virtual Reality. He used to play Pokemon GO but due to its dying user base and load of school work, he has stopped.

Research Method 2: User Journey Map

Capturing the User Experience

Method Summary:

A User Journey Map maps the flow of a user's steps through an entire experience. It helps break down a user journey into component parts to gain insights into problems that may be present or opportunities for innovation.

Research Design/Implementation:

The research was conducted in the following order:

Step 1: Generate a list of all the activities

- Activities are actions users take to reach the final destination

Step 2: Cluster related specific activities into higher-level activities

- Clustering activities helps divide the entire process into sub-processes

Step 3: Show activity clusters as nodes on a timeline

- Represent high-level activities as nodes and place them on a timeline as a flowchart
- List the related specific activities under each of these nodes.
- Show arrows connecting the nodes to show the flow direction.
- If needed, include arrows showing feedback loops.

Step 4: Call out problems and pain-points

Data Collection:

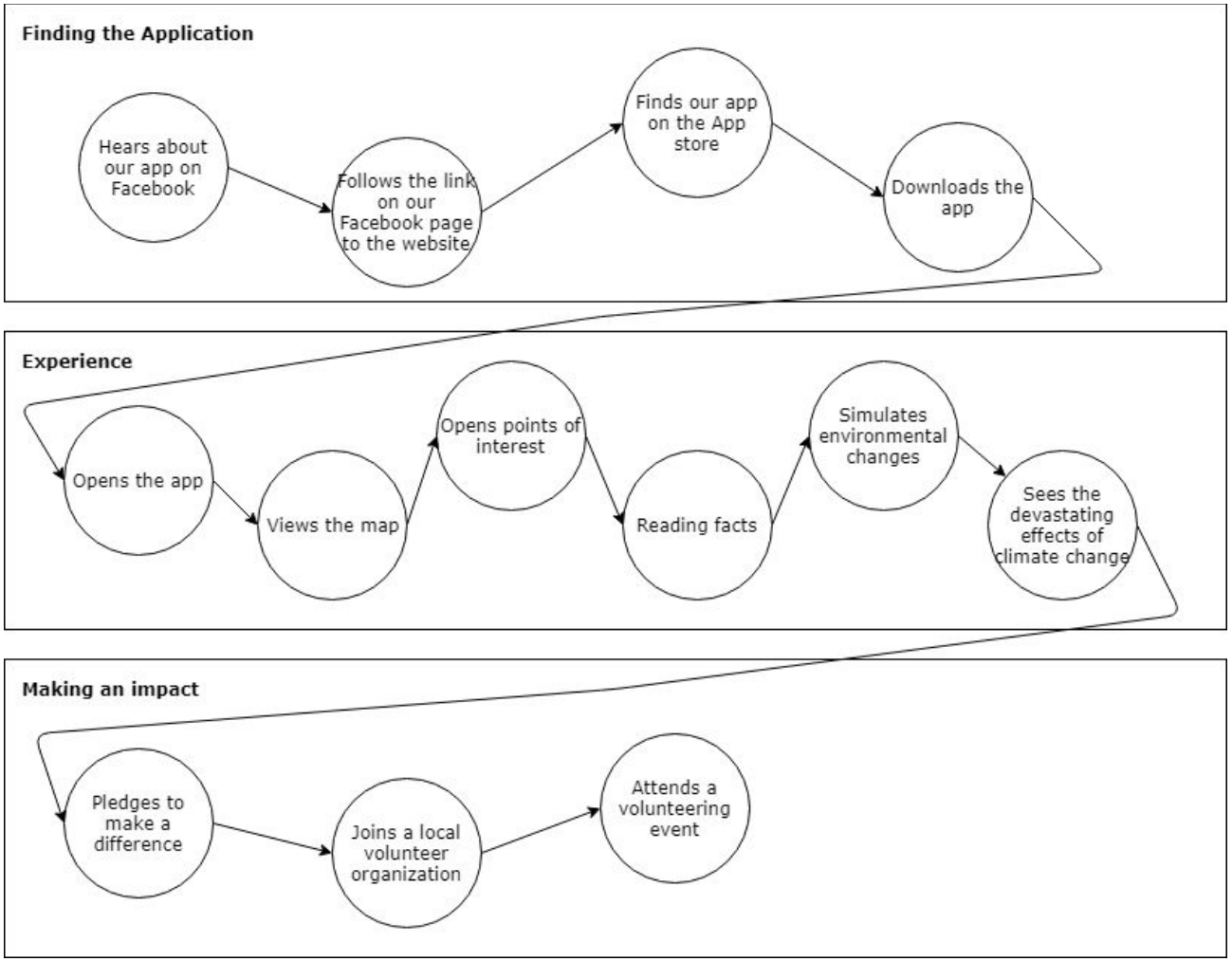
The resulting diagram helped us understand the entire process a user might take from hearing about our application to joining a nature conservancy organization and volunteering there. The process was split into three sections: finding

the application, experience, and making an impact. Finding the application details how the user might hear about our application and downloading it. Experience is what is provided in the application, making the user want to join a volunteer organization. Making an impact is the process of joining a volunteer organization and going to the first volunteer event.

Analysis:

Based on the results of the diagram, it is clear that our group will need to focus on two aspects: publicizing our application and providing the user with an experience that will motivate them to make a difference. We believe that a website will help publicize our application and providing the user with an AR experience of how the climate might affect our planet will proe to help those two aspects. We also think it is possible to cut out the entire experience cluster if the user is already motivated enough and can skip directly to making a pledge. In that case, an application won't be necessary so we will create a pledging option on our website, and possibly provide volunteer opportunities there as well.

Findings:


Finding the Application
Hears about our app on Facebook
Follows the link on our Facebook page to the website
Finds our app on the App store
Downloads the app
Experience
Opens the app
Views the map
Opens points of interest
Reading facts
Simulates environmental changes
Sees the devastating effects of climate change
Making an impact
Pledges to make a difference
Joins a local volunteer organization
Attends a volunteering event

Research Method 3: ERAF Systems Diagram

Clarifying Entity Relationships

Method Summary:

The ERAF Systems Diagram helps visualize the relationships within a system by listing out and placing entities, relationships, flows and attributes relative to one another.

Research Design/Implementation:

The research was conducted in the following order:

Step 1: Identify entities of the system

- Nature Conservancy Organizations
- People
- Government
- Industries that cause pollution
- Wildlife/Nature

Step 2: Define relations and flows among entities

- Mono-directional flows: relationships that flow from one entity to another
- Bi-directional flows: relationships that flow from both entities to each other

Step 3: Define attributes of entities

- Characteristics
- Descriptions
- Motivations

Step 4: Refine the network diagram

Step 5: Analyze the diagram

- Look for gaps, disconnects, missing components

Step 6: Discuss the diagram and extract insights

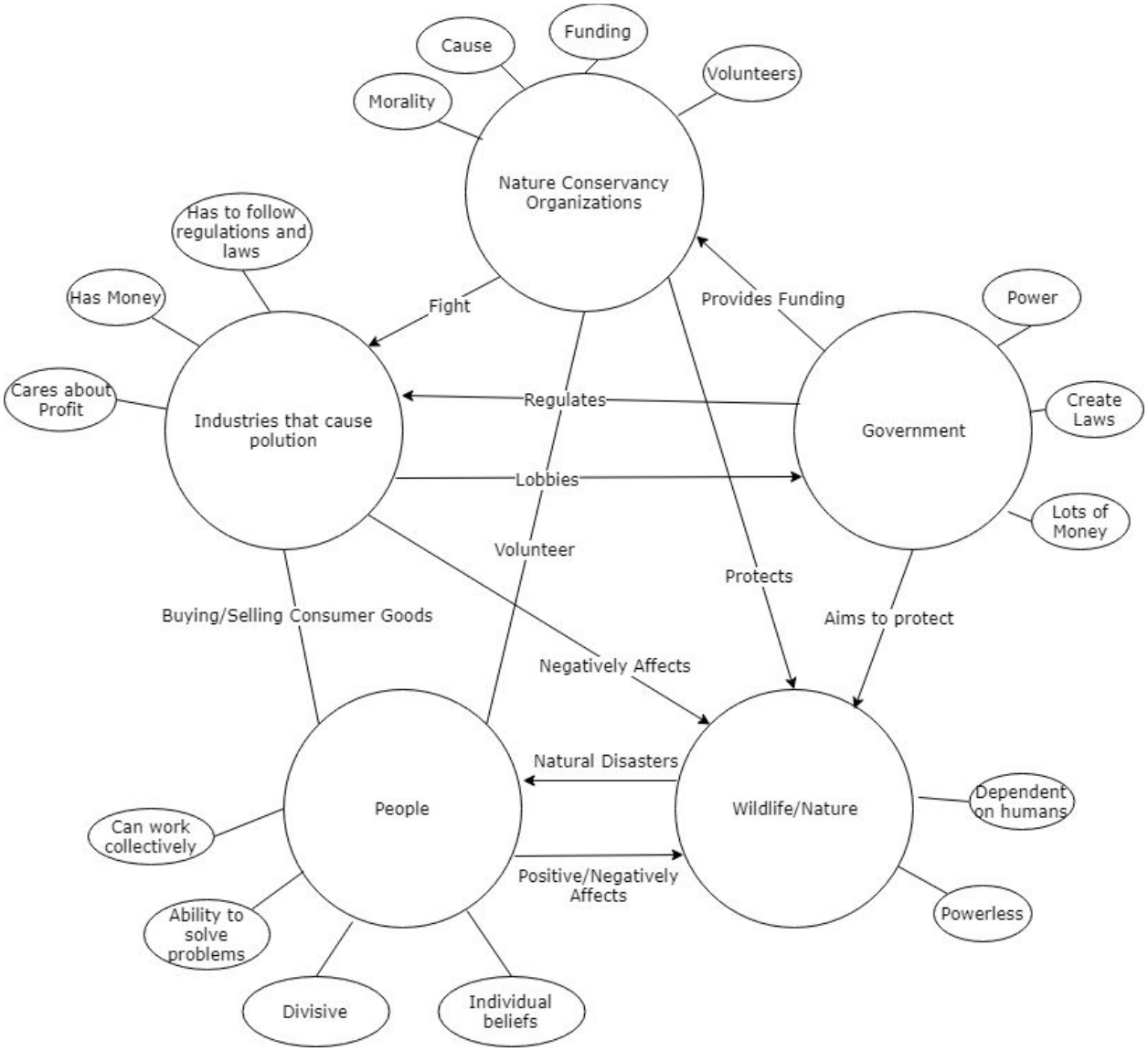
Data Collection:

The resulting diagram helped us understand how the entire system operated with each of the entities. There are gaps in certain areas, such as between the government and people, but are outside the bounds of our project. There are also many one-way relationships, especially with wildlife.

Analysis:

Wildlife in the entire system has the most one-way relationships going to it, showing that it is relatively powerless when it comes to interacting with the rest of the system, which is an obvious but important consideration we need to take. We also noticed that there are many political complications in our system such as government regulations and lobbyists from corporations and industries, and have ultimately decided that it is best to stay away from these two entities, as meddling with them will result in further complications and make it difficult for us to achieve our MVP. We want to focus solely on improving the relationship between people and nature, by using nature conservancy organizations to bridge the gap.

Findings:


Cause
Funding
Volunteers
Morality
Nature Conservancy Organizations
Has to follow regulations and laws
Has Money
Fight
Provides Funding
Power
Cares about Profit
Industries that cause polution
Regulates
Government
Create Laws
Lobbies
Lots of Money
Volunteer
Protects
Buying/Selling Consumer Goods
Aims to protect
Negatively Affects
Natural Disasters
People
Wildlife/Nature
Dependent on humans
Can work collectively
Positive/Negatively Affects
Ability to solve problems
Powerless
Divisive
Individual beliefs

Research Method 4: Competitive Analysis

Comparison To Competitors

Method Summary:

A competitive analysis takes a look at other products in the market that are similar to ours and evaluates what features each product has.

Research Design/Implementation:

Two other products; #climate and After ice were researched in the analysis.

Data Collection:

The resulting data helps us understand where our product lies in the market. By seeing what features other products have, we can see what is available in the market and where our product will lie.

Analysis:

#climate is mostly a social media platform where climate enthusiasts can talk amongst each other. It is mostly used as a call to action or message amplification platform. It does not provide any AR or convincing experience.
After ice is a purely AR application, with the ability to change the sea level to see how submerged you would be, but that is it. It doesn't provide any call to action.
Since we are aiming to be a centralized hub, we will try and incorporate as many features as we can instead of choosing a middle ground.

Findings:

	Climate Lens	#climate	After ice
Augmented Reality	✓		✓
Call to Action	✓	✓	
Conversation		✓	
Volunteer opportunities	✓		
Pledge tracking	✓		

Prototype

Goal:
To include the basic functionalities of our proposed application as well as functionalities we may incorporate in the future that help fulfill our value proposition.

Summary:
In this prototype we have included the 3 main screens a user can access via the menu bar at the bottom. The *Participate* screen we decided would be the center for searching for new information or new ways to get involved. The *Map* screen and the AR screen that proceeds it will be where we would initialize the incorporation of AR technology. The *My Pledges* is where users track pledges they have favorited and would like to keep track of. We also have a short tutorial and welcome screen in this prototype.

Link: https://invis.io/5TFPRNTDWN8

Assessment:
Based on the functions we decided to include in our product as well as ideas from our competitive analysis, the first step was to make sure the basic functionalities are included in the prototype. They also need to be easily accessible to users using the app, which will be tested in user testing. The next goal is to make sure that moving in between the different functionalities of the application flows well and leaves little confusion for a user. Lastly, the design of the functionalities must follow our value proposition and fulfill the proper needs we set to fulfill for our users. In terms of

functionalities we chose to incorporate only the necessary ones to keep the application minimalistic and not bombard the user with too much information. The functionalities originally were only to view an AR view of their current location, however further expanded to be to include the *Participate* and the *My Pledges* screens to adapt to the needs of the user. We really focused on creating value to the cause, and therefore our application.

Data Collection:
Initially the competitive analysis allowed us to incorporate all the features of our competitors together in our application. The competitors lacked either one feature or another and thus we were inspired to create a central hub where the user can do it all; from connecting with other organizations to physically viewing the impact of climate change VR.

From testing we also changed our menu many times until this final one was easiest and most understandable for the user. Originally our menu was only a side menu however it didn't provide easy acess to the other pages and was not neccessary four our more simple application.

Analysis and results: [How did you analyze the data? What were the findings?]
The *My Pledges* screen we realized would be one of the most important screens that would help attain user retention. Through analysis we realized we needed to provide incentive therefore we completely revised this screen in the final iteration. The current screen was inspired by bullet journal habit tracker. In which people use to track their daily good and bad habits. Via this habit tracker inspired calendar we created a place for our users to see the goals they have achieved and provide incentive for them to continue doing so.

Another important aspect we incorporated was the tutorial pages. When further analyzing the product we realized users were being thrown into our application with no prior knowledge of it, therefore they were not aware how to use

the various screens. Due to this, we've added some tutorials screens at the beginning to explain some of the logistics. However these are not yet fully developed.

Originally the 1st screen a user sees would be the map application, however we changed it to be the participate screen instead. We felt that the map screen lacked information for the user to get a grasp of the app and was not a good starting point so we changed it.

Lessons Learned:

From this final iteration and all preceding ones we realized the importance of user retention and how we should go about to attain it. It took many iterations to get to one we were satisfied with, however we still could continue to develop it. The findings we found greatly influenced our change our agenda to focus on not only introducing people to climate change but also helping them get involved.

MVP Visual Design and Specifications

Product Hypothesis: Creating an intuitive and attractive app that allows users to both become aware of climate change and act to help.

Implication: It is critical to develop the product to help those looking to help the world. Not only will the application help those in the activist society but we also hope to introduce people to climate change. Climate change affects the entire world and introducing people to it would help not only the community but overall the world.

Evaluation

- Metrics: Minimalist design, Easy-to-use interface
- Data Collection: We collected the rate at which we could successfully get to one page to make sure our interface was easy-to-use.
- Assessment Plan: We planned to assess if we followed our metrics by continually testing our design ourselves and following user testing results. We were also inspired by other application such as Pinterest and Facebook for some aspects.

Design

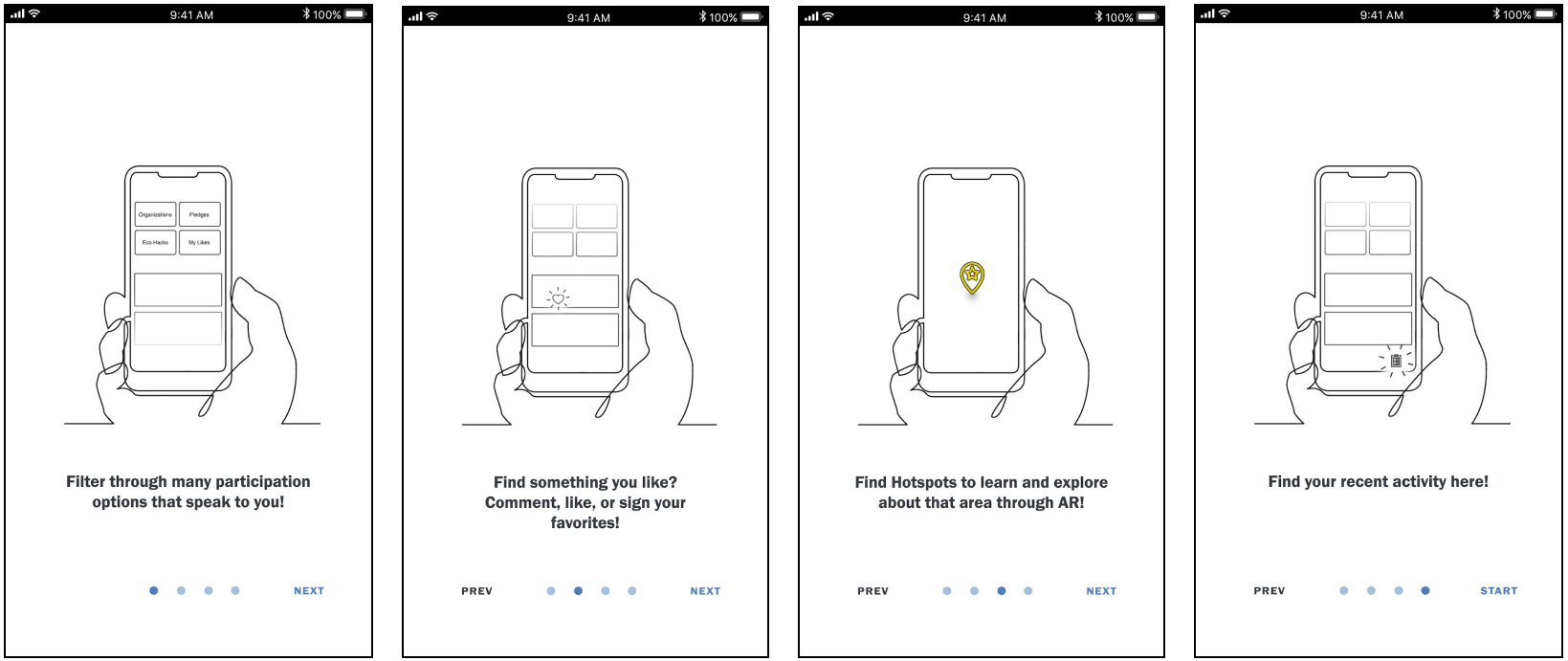
I. Color Palette

A color palette was one of the first aesthetic design decisions made. The color scheme was drawn from an image of ice caps with mountains in the background. This was the initial color palette we chose to work with, but for future development, we plan to add another accent color that can add freshness and more liveliness to the theme.

II. ClimateLens Logo

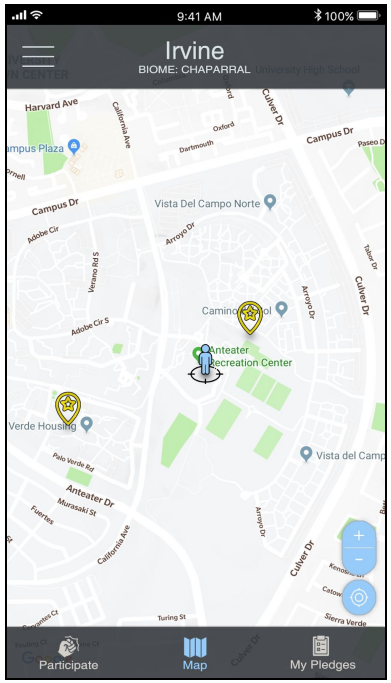
The idea behind the logo was to incorporate the AR functionality and the environmental aspects of ClimateLens while utilizing the chosen color palette. We ended up having a globe, representing the environmental activism, within the center of aperture blades, representing the AR feature.

III. Onboarding



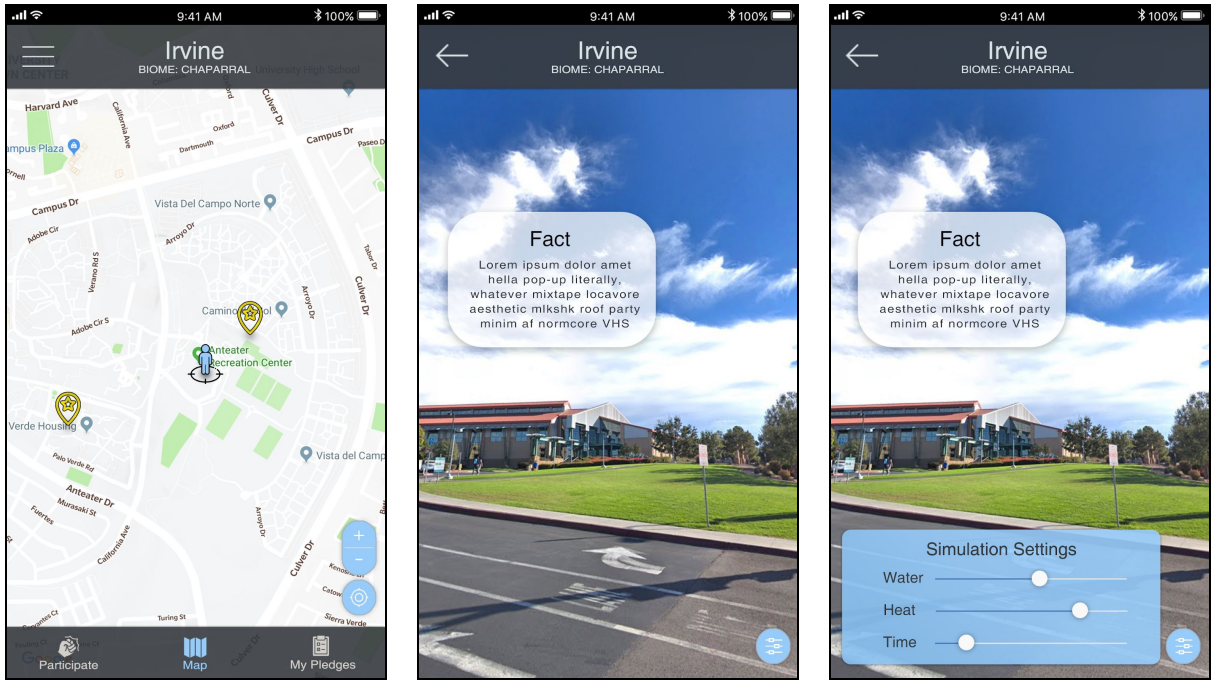
In order to help the users understand the basic functionality of the application in a simple way we kept the tutorial screens simplistic with minimal color. These onboarding screens aimed to give users the general idea, but not go into detail.

IV. App Navigation



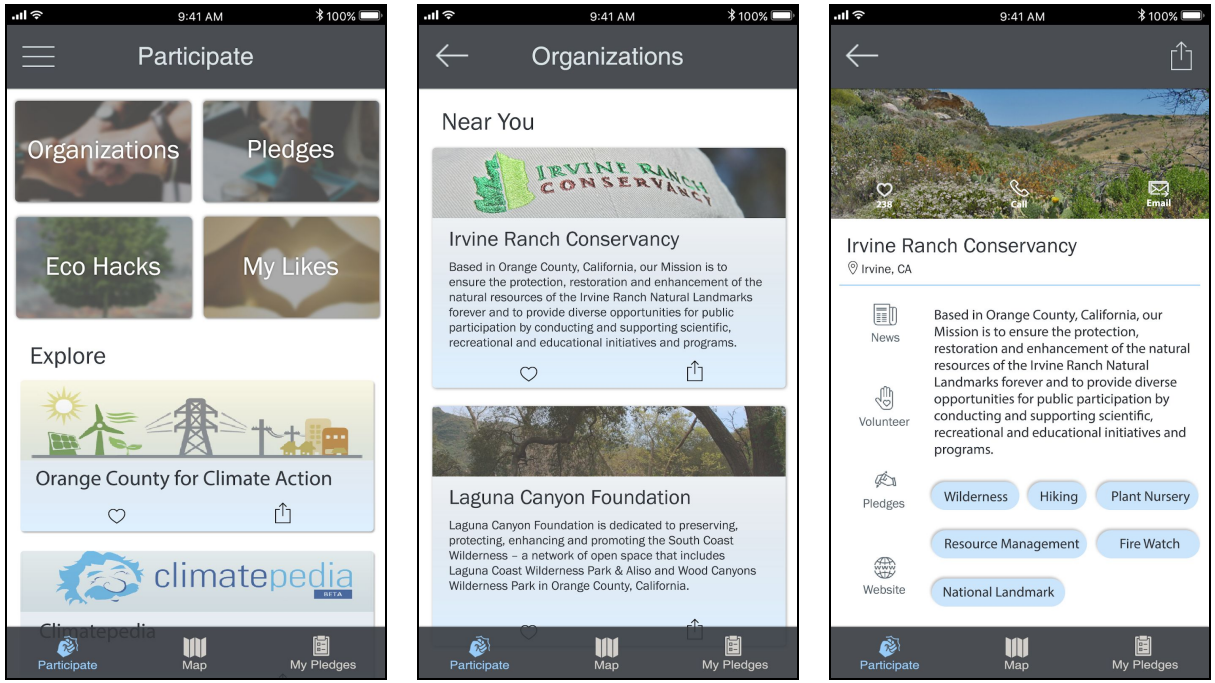
Bottom navigation bar was made to keep the pages organized and categorized. We chose to go with this type of nav bar because we were inspired by facebook's navigation bar and decided it was easy-to-use and many knew how to use this type of nav bar.

V. AR



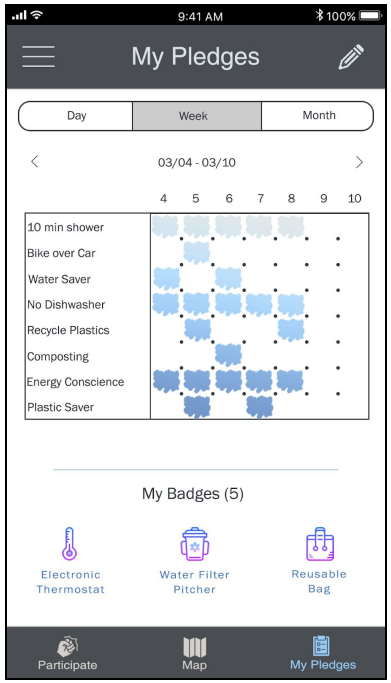
The ar screens were meant to be the highlight of our application. The screens are mainly meant to display the map and the user's current location view. Due to that we attempted to create buttons and pop-ups as little as possible to not distract the user away from the main functionality.

VI. Participation Section



In the end, these participation screen became a main function and we focused on creating the best user experience for it. It went through many iterations and decided to follow a facebook style here as well, using cards to show each organization and pledge. For one specific organization we tried not to show too much information and only provide links to that organizations official bios, website, etc. We did this to encourage the user to not only use our application but also encourage them to be active in their community via other organizations.

VII. My Pledges Section



The my pledges section changed drastically from our first iteration. We believe it still has a long way to go however the general idea was to incorporate bullet journal habit trackers to track a users' pledges. Some pledges are a one time thing so we created badges to help them keep track of which they've achieved and which they haven't.

Specifications

Anchored throughout the application are the top and bottom navigation bars. On the top bar, the icon on the far left would either be the main menu button or the return button. If the page requires further functionality, a button is placed on the far right of the top bar for page specific buttons needed. The title header for the current view of the app would be at the center of the top bar. The bottom bar contains buttons for the three main views of the application: “Participation,” “Map,” and “My Pledges.” The current view in use would be highlighted with the accent color.

Implementation Documentation

Implementation Plan

Given the nature of the technology that we are going to use, Augmented Reality, our product will be a mobile application. This will be most convenient since we would like to utilize cameras of mobile phones. As our future plans for the app heavily involve the use of ARKit for future AR components, ClimateLens will be developed in iOS and we will be using Swift for its implementation. Because our application is an iOS application, using Xcode and simulating the application during development on our machines is a quick and easy way to test our system and make sure that it works.

Technical Description

Based off of the prototypes and design assets created by the team, we have used Swift storyboarding to develop the functioning app in swift. The MVP was developed on Xcode in Swift, using MapKit and many other standard Swift components. Secondly, we implemented the of routing button actions through the Navigation Controller and Tab Bar Controller to produce a functioning and navigable app. The participation page was coded to programmatically display information about local organizations. While dynamic loading of local organizations was put on hold due to feasibility constraints, future development plans include dynamically updated organizations lists that respond to the users actual location, rather than a limited implementation that only displays organizations for our pilot location. The development process also involved changes such as pivoting from an attempt to use Google Maps API towards using Apple's native MapKit as well as challenges stemming from collaborating over seperate versions of Swift and Xcode. In addition, we have a promotional website made with Materialize hosted on Github that also offers a pledge feature

using Google Forms. The promotional website serves as an alternative to users who aren't as keen with using the mobile version and want a quicker but just as effective solution.

The MVP starts from a landing screen implemented as a View Controller. This page contains a view which has a background image, a logo, and a begin button. The landing screen also includes a button that redirects to an onboarding tutorial that is implemented with a page control and a scroll view, and a button named "Let's Begin!". We decided to include the onboarding tutorial after getting feedback from the professor after the second in class update. The overall concept of onboarding strives to help adapt new users to the application and give them a detailed but concise approach to utilize the product. Thus, upon clicking the "Try Tutorial" button, the user is presented with 4 screens - each screen contains the "Let's Begin!" button which allows them to navigate to the home page (Participation screen) at any time.

After the tutorial follows the home page which is implemented as the Participate Scene. On this page is also the Tab Bar Controller Scene which implements the navigation bar at the bottom of this screen. It is implemented as its own scene and is overlayed on top of the My Favorites Scene, the Map Scene, and the Participate Scene, corresponding to each of the buttons in the tab bar component.

The Participate Scene contains a table view comprised of 2 static cell sections - Categories and Explore. Both of these are implemented as Table View Controller containing 1-4 table view cells. The "Categories" cell, is a single cell that contains four buttons for each of the categories: Organization, Hacks, Pledges, and the About card. Below in the "Explore" section, each organization or site is implemented as its own Table View Cell where the content view inside holds an Image View showing a logo embedded as a button, Label components for the title and description, and buttons for Comments and Likes.

The My Favorites Scene contains a table view that contains an Organization's, a Pledges, and a Hacks section. These sections are meant to filter out call to action cards that the user has liked previously or have committed to. Inside of each are Table View Cells containing Content Views. Each of these Content Views is one "card" representing an Organization, Pledge, or Hack. Similar to in the Participate Scene, the Content Views also hold an Image View

showing a logo, Labels for the title and description, and buttons for Comments and Likes. To learn more about the application we've included an about page implemented as About Scene. This scene includes an image, a label describing the app, and a back button. In future iterations, we would like to include a link that redirects users to our promotional website.

The Map Scene is implemented using Apple's MapKit framework which allowed us to add annotations to the map to call out hotspots for users interested in triggering the augmented reality feature of the application. However, in consideration of time constraints and the skill set of the engineering team, we planned on tackling the augmented reality component of ClimateLens in 2 approaches: (1) basic application with one location without AR and (2) fully functional application with AR components. In the final MVP we went with the first approach. The augmented reality screen currently displays a stock photo, header of the user's current location (city), and a simulation table which controls the time, water, and heat levels of the overlay. Ideally, as the user pans throughout the scenery, different text bubbles would appear on the screen relating to climate change facts. Due to technical constraints, we have further segmented the development to focus the MVP on pledges and participation in order to aid our validation testing and success criteria.

In future considerations, we would like to increase the personalization of the application allowing users to save information under an account. We can use existing services like Facebook Login API to surpass having to create our own login in system. In order to separate and store user content, we can manage a database.

Latest MVP

Link: https://youtu.be/nngo7sLMZrA

Testing:

Cognitive Walkthrough

Task 1: Find out what the app is about

1. Press "Begin" on the home screen
What is the user's goal at this point? Why is it their goal? The user's goal is to continue on to the next screen so they can see the content of the app.
Are the necessary actions obviously available on the interface? (Is the action they need actually available in the interface?) The button to continue is labeled "Begin" and is the only button on the screen.
Once users see the control, will they recognize that it does what they want? (Do people recognize it's the feature they want? Is it clear that it will do what they want) Users recognized that it will take them to the next screen because it is labeled "Begin" and in order to begin using the app they will need to press it.
After the action is taken, is the feedback appropriate? Will the user understand it so they can move on to the next action with confidence? Once users pressed begin, they were shown a screen to turn on location settings for the app. This feedback is not completely appropriate because they expect to see a new screen showing the contents of the app instead of a pop-up asking to accept location settings. The user will be able to understand the situation and move on to the next

action with confidence but the feedback is not completely appropriate so it will be a better decision to ask for users to turn on their location settings for the app once they are shown the contents. Reordering so that users see the map first before seeing the location settings would be provide appropriate feedback.

2. Press "OK" to accept location settings for app
What is the user's goal at this point? Why is it their goal? The user's goal is to accept the location settings so they can use the app to its full functionality.
Are the necessary actions obviously available on the interface? (Is the action they need actually available in the interface?) The actions are obviously available on the screen because the user can select either "Don't Allow" or "OK"
Once users see the control, will they recognize that it does what they want? (Do people recognize it's the feature they want? Is it clear that it will do what they want) Users recognized it does what they want because they are only given the options to accept or decline.
After the action is taken, is the feedback appropriate? Will the user understand it so they can move on to the next action with confidence? The dialogue box disappears so the feedback is appropriate and the user will understand that their action went through and will be able to move on to the next action with confidence.

3. Select the Hamburger Menu
What is the user's goal at this point? Why is it their goal? The user's goal is to see the options they have available to them.
Are the necessary actions obviously available on the interface? (Is the action they need actually available in the interface?)

The action is obviously available on the interface, and is located in the top left corner, which is standard in most apps.
Once users see the control, will they recognize that it does what they want? (Do people recognize it's the feature they want? Is it clear that it will do what they want) Most users recognized what it does because they have previous experience seeing that the hamburger icon displays a menu. However, users who are new to apps and/or have never seen the hamburger icon will not be able to immediately recognize what it does since they are unfamiliar with the icon.
After the action is taken, is the feedback appropriate? Will the user understand it so they can move on to the next action with confidence? The feedback is appropriate because the user is presented with a menu and a list of options.

4. Select "About"
What is the user's goal at this point? Why is it their goal? The user's goal is to figure out what the app is about because they want to gain more detail on what the app can do, and also gain some background information on climate change.
Are the necessary actions obviously available on the interface? (Is the action they need actually available in the interface?) The action is obviously available on the interface because it is labeled "About".
Once users see the control, will they recognize that it does what they want? (Do people recognize it's the feature they want? Is it clear that it will do what they want) Users recognized that it does what they want because it is labeled "About" and were able to understand that it would show them what the app is about.
After the action is taken, is the feedback appropriate? Will the user understand it so they can move on to the next action with confidence? The feedback was appropriate because the new screen describes what the app is about.

Task 2: Simulate climate changes

1. Select the Map icon from the navigation bar
What is the user's goal at this point? Why is it their goal? The user's goal is to navigate to the map because the simulations are on that screen.
Are the necessary actions obviously available on the interface? (Is the action they need actually available in the interface?) The necessary action is obviously available on the interface because it is on the navigation bar.
Once users see the control, will they recognize that it does what they want? (Do people recognize it's the feature they want? Is it clear that it will do what they want) Users recognized it does what they want because it has the map icon and is labeled "Map"
After the action is taken, is the feedback appropriate? Will the user understand it so they can move on to the next action with confidence? The feedback is appropriate and understandable because they are taken to a screen with a map on it.

2. Select a Yellow Star Icon to view a point of interest
What is the user's goal at this point? Why is it their goal? The user's goal is to view a point of interest so they can simulate the environment.
Are the necessary actions obviously available on the interface? (Is the action they need actually available in the interface?) The necessary actions are obviously available on the interface because it has a star icon and is colored yellow to stand out.

Once users see the control, will they recognize that it does what they want? (Do people recognize it's the feature they want? Is it clear that it will do what they want) Users recognized what the button does because the icon has a star which signifies a point of interest and is the only selectable option on the map.
After the action is taken, is the feedback appropriate? Will the user understand it so they can move on to the next action with confidence? The feedback is appropriate because it takes them to the actual location of point of interest. The user will understand it and move on to the next action with confidence because the point of interest is titled at the top.

3. Select the Slider icon to bring up the simulation
What is the user's goal at this point? Why is it their goal? The user's goal is bring up the options to simulate the environment.
Are the necessary actions obviously available on the interface? (Is the action they need actually available in the interface?) The necessary actions are obviously available on the interface because there is a slider icon on the bottom left.
Once users see the control, will they recognize that it does what they want? (Do people recognize it's the feature they want? Is it clear that it will do what they want) The users recognized what the button does because it has sliders on the icon itself.
After the action is taken, is the feedback appropriate? Will the user understand it so they can move on to the next action with confidence? The feedback is appropriate because the user will see a few sliders pop up from the button which allows them to simulate climate change on the point of interest.

4. Tap and drag sliders to adjust various climate levels

What is the user's goal at this point? Why is it their goal? The user's goal is use the slider to see the effects of climate change on their point of interest.
Are the necessary actions obviously available on the interface? (Is the action they need actually available in the interface?) The necessary actions are obviously available on the interface because there are sliders at the bottom of the screen.
Once users see the control, will they recognize that it does what they want? (Do people recognize it's the feature they want? Is it clear that it will do what they want) Users recognized it does what they want because there are climate properties labeled with movable sliders.
After the action is taken, is the feedback appropriate? Will the user understand it so they can move on to the next action with confidence? The feedback is appropriate because the sliders changed the environment, showing the effects of the climate on the point of interest.

Task 3: See options for volunteering at a local organization

1. Select the "Participate" icon from the navigation
What is the user's goal at this point? Why is it their goal? The user's goal is to find the participation screen so they can find the organizations button.
Are the necessary actions obviously available on the interface? (Is the action they need actually available in the interface?) It is obviously available on the interface because it is in the navigation.
Once users see the control, will they recognize that it does what they want? (Do people recognize it's the feature they want? Is it clear that it will do what they want)

Users were able to recognize it does what they want because it was clearly labeled. Some users did not understand what the icon was.
After the action is taken, is the feedback appropriate? Will the user understand it so they can move on to the next action with confidence? The feedback is appropriate because the users saw that there was an organization's button they can select from the list of options.

2. Select the "Organizations" button from the list of options
What is the user's goal at this point? Why is it their goal? The user's goal is to select one of the available options so they can see how they can join the organization as a volunteer.
Are the necessary actions obviously available on the interface? (Is the action they need actually available in the interface?) The necessary actions are obviously available on the interface because there is a button labeled "Organizations" as one of the four main options.
Once users see the control, will they recognize that it does what they want? (Do people recognize it's the feature they want? Is it clear that it will do what they want) Users recognized it does what they want because it was labeled clearly.
After the action is taken, is the feedback appropriate? Will the user understand it so they can move on to the next action with confidence? After the action is taken users are taken to screen showing all the local organizations they can join so the feedback is appropriate. Users understand that list shown are the local options available to volunteer.

Task 4: View my pledges

1. Select the "My Pledges" icon from the navigation
What is the user's goal at this point? Why is it their goal? The user's goal is to view their pledges and see if they are following them properly.
Are the necessary actions obviously available on the interface? (Is the action they need actually available in the interface?) The actions are obviously available on the interface because it is located clearly in the navigation.
Once users see the control, will they recognize that it does what they want? (Do people recognize it's the feature they want? Is it clear that it will do what they want) Users are able to recognize the icon does what they want because of its icon and label.
After the action is taken, is the feedback appropriate? Will the user understand it so they can move on to the next action with confidence? After the action is taken, the feedback is appropriate because it shows the pledges the user has taken.

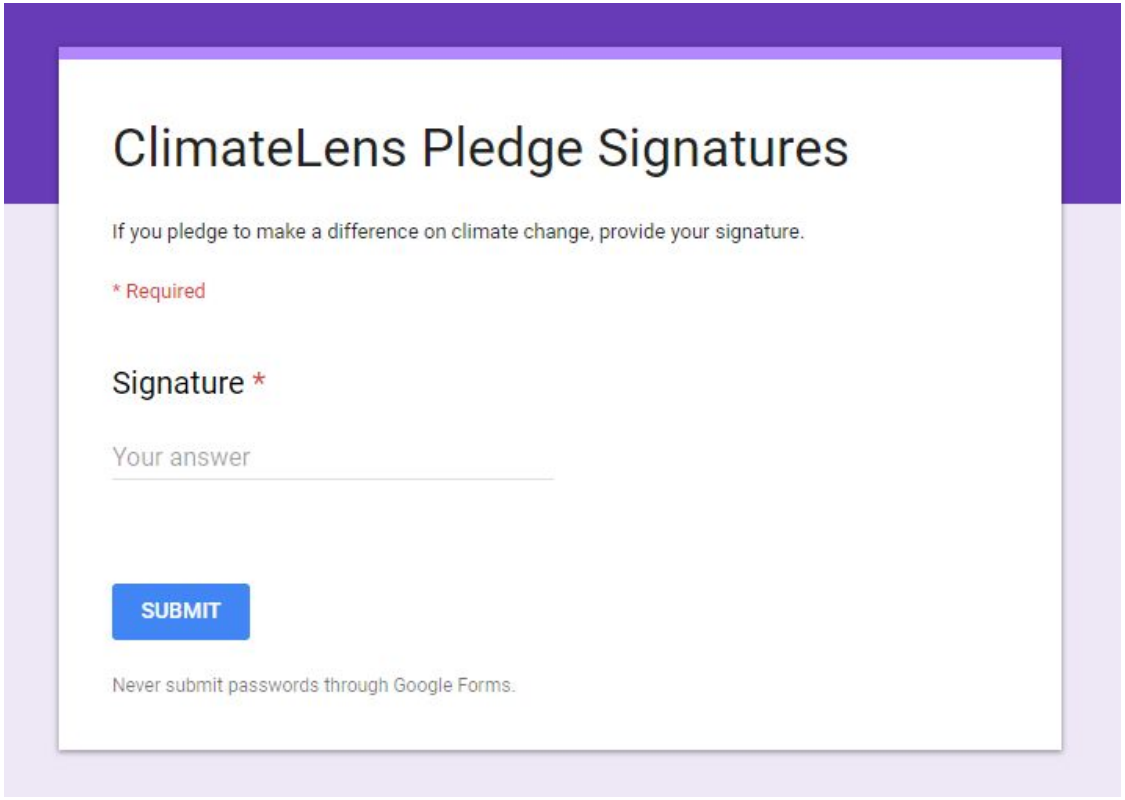
Analysis of Results:

Based on our results for the cognitive walkthrough, our system is intuitive and easy to navigate. There were a few minor issues with icons not being easily recognized for people unfamiliar with universal icons, but for the average user, all of the icons made sense. There are also labels for the navigation icons so this issue can be dismissed. The secondary goal of conducting the cognitive walkthrough was to see whether users were able to satisfy their motivations and reasons for using the application. For example, if a user wanted to use our application to experience the augmented reality, we tested to see if they were able to accomplish that. We were able to successfully satisfy each motivation users had for using our application which was: experience climate change in augmented reality,

make and track pledges, view climate related points of interest in a given area, and join local volunteer organizations. In conclusion, our application satisfies all our user's motivations that it is designed for.

Success Criteria Testing:

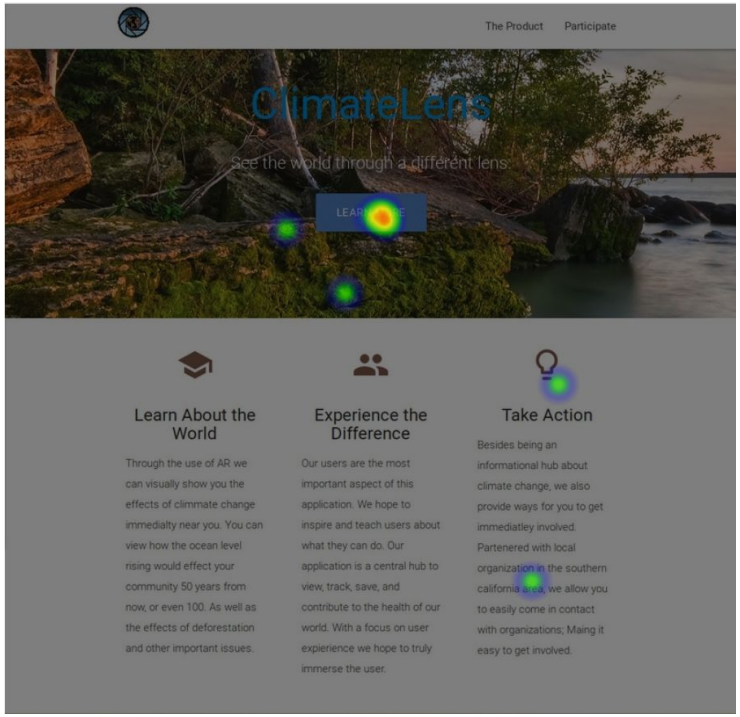
We did success criteria testing to measure if we will meet our 3 week goals by counting the number of pledges signatures we were able to receive.

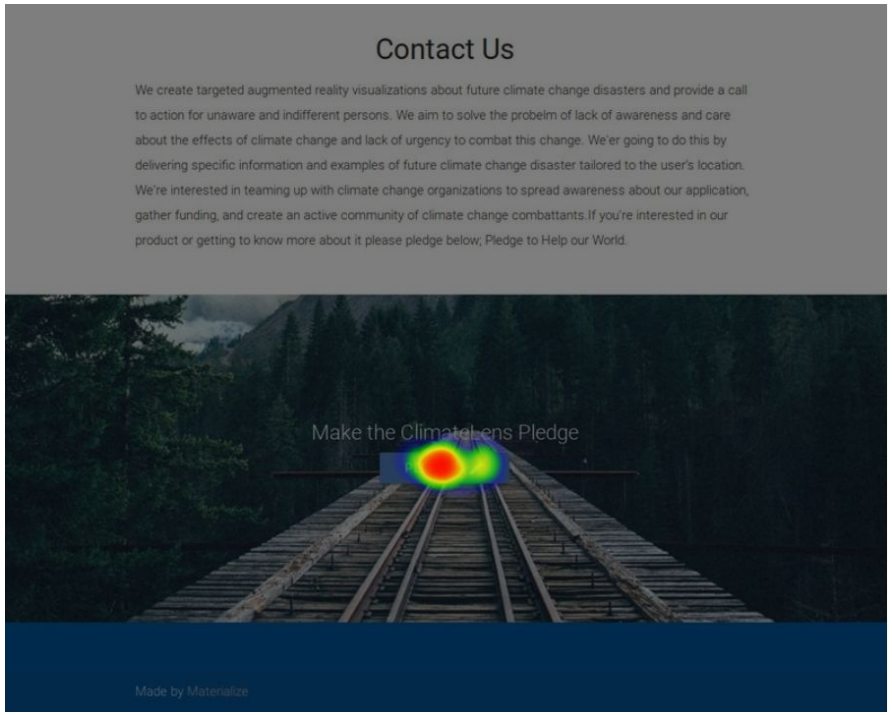


Analysis of Results:

This testing method yielded results that will let us see whether we will be able to meet our three week goals, and also helps us predict whether we can meet our three month and three year goals as well. Since we were unable to meet our 25 signatures minimum success criteria, we can predict that we will likely not meet our three month success criteria as well. Thus, we will either need to find ways to publicize our application better, or reevaluate our three month minimum success criteria. We believe that our three month success criteria is not completely unreachable but after re-evaluation and discussion, we have changed our pledge criteria for our three month goal to 1500 signatures. We will adjust our three year goal accordingly based on whether we are able to exceed or meet the new three month goal.

Homepage click test:

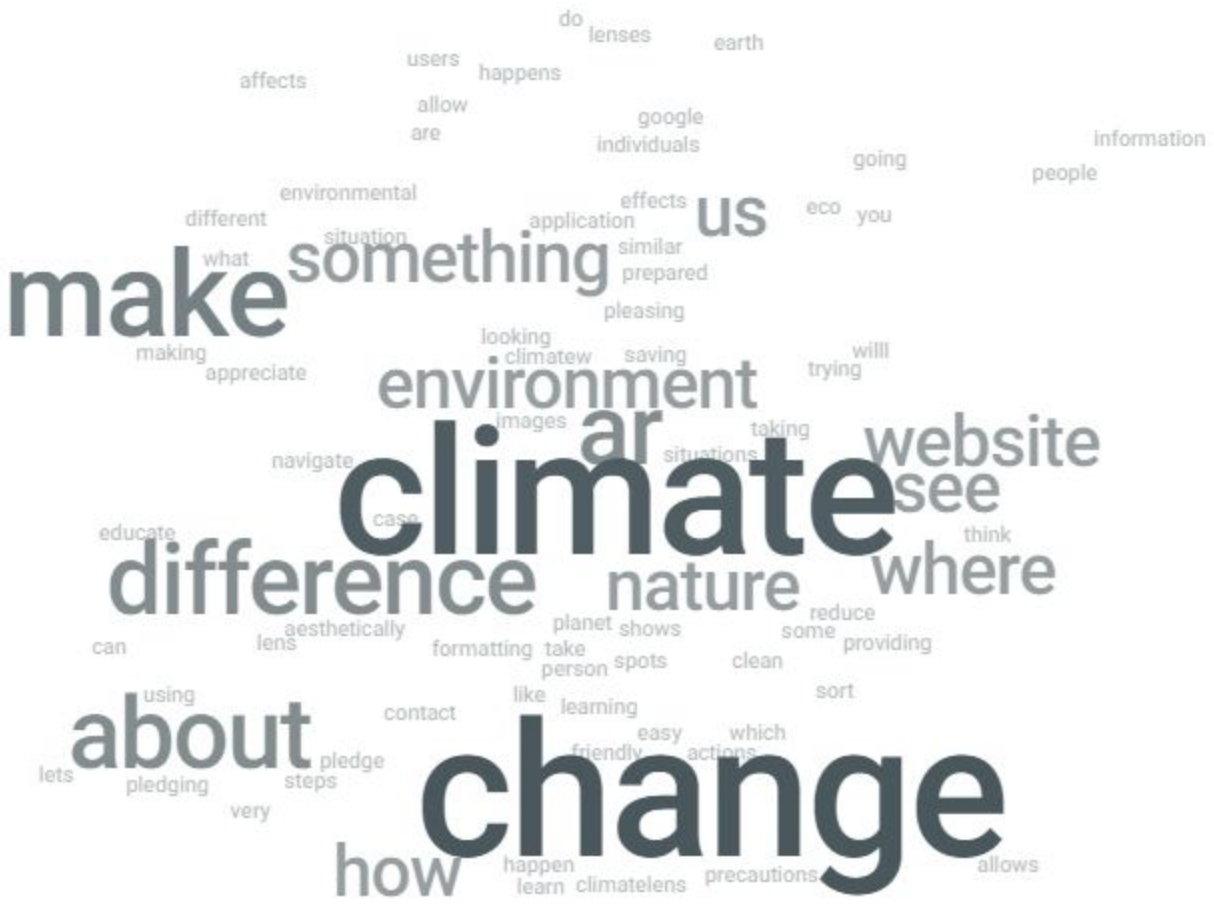




Analysis of results:

Users were asked the question: Where would you click if you pledge to make a difference? The results show most users selecting the pledge button at the bottom, where we want them to select, and the learn more button at the top. The reason users may selected learn more over the pledge button was because of the following; they wanted to learn more about our system before signing a pledge, or they did not read through the entire page. In order to get more pledge signatures, reordering the flow of the website will be necessary. We will change it so that the pledge button is at the top and get rid of the learn more button. We will make the subtitle above the button "Make a simple pledge" with the button labeled "Pledge". The button will then redirect to our current learn more page where users can learn all about climate change and how our app will help. Instead of using a direct link to google forms, we will embed an input box which will record signatures onto our current signature spreadsheet. This will make the process of making a pledge much more simple and easy, reduce confusion and increase the number of pledges we receive, allowing us to reach our pledge goal criteria more easily.

Homepage word cloud:



Analysis of results:

At the end of the previous click test, we had a question asking what users thought our website was about and based on the word cloud produced above, we can see that users understand the core concept of our website and application. Thus, no changes are necessary for the information presented, but as mentioned in the click test results, the order and we present our information needs to be redone.

Conclusion

Initially we came into the project with our focus revolving around raising awareness about climate change and motivating users to fight against it through AR. Currently our project has evolved to focusing instead about raising awareness about the urgency and giving users a communal platform to create solutions. The change of focus arrived from early user research and testing where we discovered that most users knew about climate change, but were not terribly concerned or felt disconnected. The change in focus towards a communal platform came later after we realized the futility of developing the augment reality hotspots on time for our MVP deadline and understanding the power that communities play in creating change. The validation testing was crucial in switching our focus to a community focus and highlighted the needs to solidify an identity for our project. Furthermore positive feedback from users about our local orgs screen provided additional about the potential success of focusing on the local community aspect. In the future we hope to build on this by adding more social media and community functionality such as sharing, chat rooms, or news feeds. In conclusion, ClimateLens has evolved from a gimmicky visual stimulate to a fleshed out central hub for users to start working towards a larger communal solution to climate change.

Contribution and Acknowledgement

Task	**Contributor**
Lean Canvas, Value Proposition, Vision Statement	Brett, Team

Paper Prototype	Fanny, Stephanie
Testing/Higher Fidelity Prototype	Fanny, Stephanie
User Research	Kenzo
User Testing	Kenzo
In-Class Update #1	Brett
In-Class Update #2	Brett
Implementation Details	Brooke, Kent
MVP Development	Brooke, Kent
Visual Design & Specifications	Fanny, Stephanie
3x3x3 Plan & Hypothesis	Team
Final Report	Team
Final Presentation	Brett, Team