

# Project 3

Kelsey Nelsen

14.3 Innovation Tools & Techniques

SD.6600.20.W21

5.2.2021



Image Source: Kenrick Mills via Unsplash

# CONTEXT

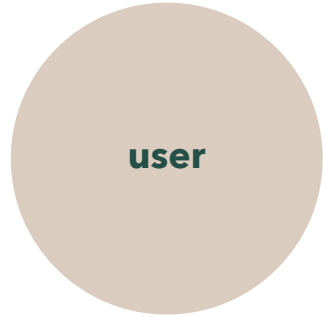


In early 2020, with the beginning of the global pandemic, the concept of travel took a dramatic shift. The airline industry took a big hit, according to an article by the Wall Street Journal, "travel is one-third of what it used to be." Yet, in that same article, it was reported that "global CO2 emissions fell by 8.8% globally."<sup>1</sup>

While some remain unphased, many are thinking differently about what it means to travel; in regard to climate, pollution, health, and safety. How will travel look beyond COVID-19? Will we plan a vacation as we would have pre-pandemic? How do we travel *smarter*? How do we travel *sustainably*?

These are some of the questions I will explore throughout this project using systems thinking and my experiences traveling prior to 2020.

Image Source: the Digital Marketing Collaboration via Unsplash



**user**

*Travel enthusiast:* someone who thrives off adventure, new experiences, culinary exploration, and culture, Often traveling with a budget in mind, but willing to splurge on food or a once in a lifetime experience.

A *travel enthusiast* is likely to seek connections with locals, may speak or learn the native language, and appreciate the local cuisine.



**need**

**A new way to experience, engage and enjoy the beauty of the world while fostering sustainability, creating connections, and staying safe/healthy.**

Image Source: Jan Kopriva via Unsplash



**challenge**

As we try to navigate our pandemic-ridden world, those who have grown accustomed to the luxury of travel may be itching for their next adventure. What lies ahead in our post-pandemic world regarding safety, sustainability, and travel?

# DESIGN THINKING

Design Thinking is a process in which we focus on human-centered design by understanding the user, challenging assumptions, and redefining problems.<sup>3</sup>

Creating a successful product or service relies heavily on the user. If we do not consider the user, our products and services are likely to fall short. Let's explore the 6 steps involved:

## EMPATHIZE

Understand your user

## DEFINE

What is the issue you are trying to solve for?

## IDEATE

Brainstorm!

## PROTOTYPE

Create examples of your ideas to present to others

## TEST

How does the prototype work? Share with users and compile feedback

## IMPLEMENT

Get to work!



# EMPATHIZE

## Personal Experience

I am a *travel enthusiast*. I have a deep desire to connect with people around the world. I love experiencing new places, particularly the beauty and contrast of our natural environment and the architecture of large cities.

I have studied abroad in Spain and lived in the Dominican Republic for a summer as a youth leader for VISIONS Service Adventures. In my 20's I had a goal to spend my birthday in a new place every year. One year it was Colombia, then the South of France, and then Brazil for the World Cup.

As I've gotten older, my desire to travel has only increased, an incessantly growing list of places:

- Oaxaca
- Morocco
- Ecuador
- Turkey
- Etc.

Before the pandemic began to shut down borders last spring, I had two flights booked, one for Napa, CA and another to visit friends in Argentina. It wasn't long before we realized we would be cancelling both.

I began to reflect more deeply on my most recent travels. In 2019, I visited friends in Oakland, CA in January, celebrated a friends wedding in Austin, TX in February, traveled to Mexico City in April and then a month later spent three weeks in Southeast Asia.

What was it about each of these trips that stood out to me the most? In Oakland it was connecting with my best friends (who are also my choice travel companions) in Big Sur, in Austin it was eating amazing barbeque and reconnecting with the two women I worked with in the DR, in Mexico City it was connecting over the incredible food, meeting my high school pen pal, and the breathtaking pyramids, in Southeast Asia it was the breathtaking scenery, cultural history, and amazing cuisine.

The time I spent in Southeast Asia was incredible, but also made me question a what it means to be a "tourist." In Thailand, I was alarmed to hear about the "attractions" that violated human and animal rights. I also took notice of all of the pollution: styrofoam washing up on the beach in Phuket, the littered streets in Siem Reap, and the polluted waters of Ha Long Bay (I actually got an infection in my foot from the water in the Bay). There is so much going wrong here, well into the 21<sup>st</sup> century, I couldn't help feeling helpless and angry.

**It made me wonder about what I could do, on an individual level, while traveling to ensure I respect the the people, their culture, and the local ecology.**

*That* is the foundation of this exploration.

# PERSONA

## #1

### Amelia

At 27, Amelia is a nurse at a local hospital in St. Paul, Minnesota. Before starting her career, she taught English for two years through an exchange program in Peru. She has been back in Minnesota now for three years. When she isn't working, Amelia loves spending time with her friends, painting, and running along the Mississippi River.

Amelia loves to travel, she has loved traveling since she was young, likely because she would take a vacation every year with her parents and younger sister. Now that she is on her own, Amelia takes two domestic trips and one international vacation annually.

As a nurse, she had the opportunity to aid on a surgical mission last summer, but due to the COVID-19 pandemic, this trip was delayed. While really bummed about this, she has thought a lot about how the pandemic will affect travel and safety moving forward. She also has been considering the types of travel she prefers and hopes to make more intentional choices to connect and help people on her next trip, whenever that may be.



# PERSONA

## #2

### Alex

A teacher at Highland Park Elementary School, Alex has been feeling unsatisfied with his job during the pandemic. So much more time is being spent lesson planning and it's been difficult teaching remotely. He loves working with kids, but he is not getting the fulfillment from teaching like he used to.

Due to the pandemic, Alex has had a lot of time to consider career alternatives. He spends a lot of time in his kitchen when he's not lesson planning or doing virtual workouts through his gym. Alex also loves to travel and has a friend living in Mexico City who has offered to connect him a local restaurant as soon as he can book a flight.

Alex is mindful of the food he purchases, especially while adhering to his diet for his weight training program. Eating cleaner has inspired him to learn more about the seasonality and origin of his food. That makes him wonder, "how far did this avocado travel for me to eat it?"



# DEFINE

## THE PROBLEM.

CO2 emissions, waste (single-use plastics, food waste, etc.), energy and water use...

### A World in Flight

According to a 2019 article from The Guardian, "At the heart of the predicament is the fact that the airlines operate on very small profit margins, making their money through volume. This means that the growth of the industry is essential, yet this very growth is the chief obstacle in halting the environmental impact."<sup>5</sup>

Tourism accounts for 8% of global greenhouse gas emissions with transportation being the number one source.<sup>7</sup>

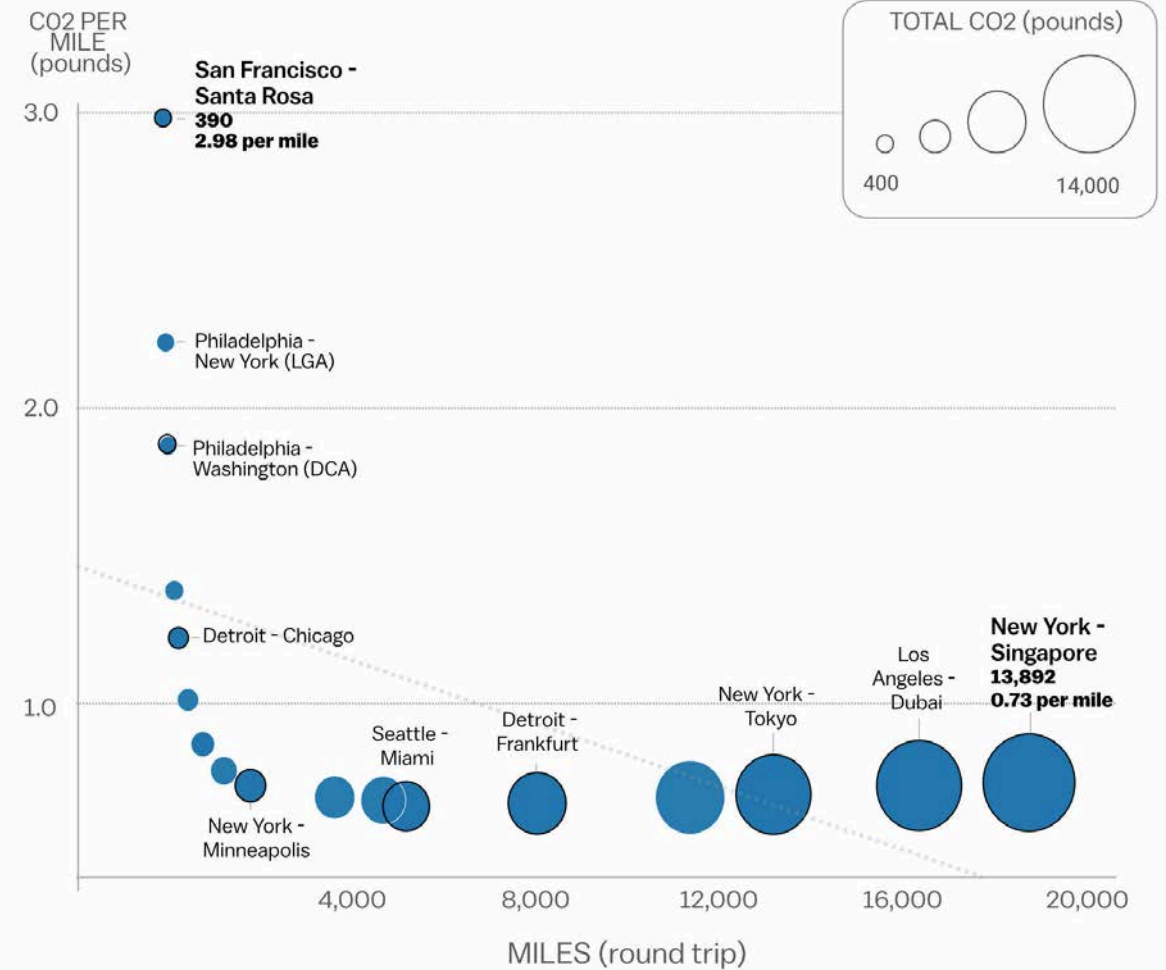
### The Impact

As noted in Vox, shorter flights have a larger footprint. In the chart to the right, you can see the greenhouse gas emissions created by a passenger in economy seating. As you can assume, the impact is greater for someone flying first class as their seat takes up more space and has a greater weight than the economy seating. On short flights, nearly 25% of fuel is used at take-off, according to the same article.<sup>6</sup>

This same article is full of great bits about flight-shaming and how a cultural shift in travel tendencies could change the industry, particularly in young (Gen Z) travelers. I plan to explore this more in the coming weeks

## Shorter flights are less efficient, but longer flights have a larger carbon footprint

Pounds of greenhouse gas emissions per passenger flying economy class



Source: Green Car Congress





# IDEATE

## IDEA.

*Net Zero* travel.

Encourage traveling in a manner that encompasses many aspects that we've encountered throughout the pandemic: need for health/safety, sustainable choices that are better for the earth, creating an impact by *giving back*, and encouraging connection through shared experiences.

Exploration through the 5 W's and an H:

## WHO.

Travel enthusiasts who are eco-conscious, passionate about people and culture, and want to challenge the status quo.

## WHAT.

It is unlikely that air travel will be replaced any time soon, but what are some other ways travel can change to offset those emissions and create more life-long meaning with these experiences?

Ideas: Use an [emissions calculator](#). Travel *longer*.

## WHEN.

As soon as vaccines are available to travelers and those in their desired destinations.

## WHERE.

Locally, domestically, & globally.

## WHY.

The concept of travel has changed with the invisible threat of COVID-19. On top of that, fewer flights have brought to light a reduction in CO2 emissions, but will society revert to the same habits when it comes to travel?

## HOW.

A new service and/or "idea hub" for travelers who aim to achieve carbon neutrality while traveling. *Reframe* what it means to travel.

# LOTUS BLOSSOM TECHNIQUE

Used in brainstorming, the Lotus Blossom Technique is based on a centralized idea and the user works to expand their thought in an outward pattern. Invented in Japan by Yasuo Matsumura, this technique encourages the user to completely explore an idea before moving on to development.<sup>2</sup> In this example "Net Zero Travel" is the area of interest I am exploring. I'm taking into consideration related topics from *transportation*, to *lodging*, to *cultural differences*.

		Connect with the locals
	Activities/Service	What is this place known for?
"Excursions"	Research ahead of time	Learn about local ecology

Research local economy	Resources	
Local eco-minded guide	Network of eco-minded businesses	Connect with travelers who have visited before

International travel only on the most direct route	Research in advance - how does this place interact w/ earth?	
Keep it domestic	Destination	
Travel locally	Somewhere known for eco-tourism	Backpacking

		Take a class
	Cultural Differences	Connect with a local family
Ask questions	Culture share	Volunteer

Activities/Service	Resources	Destination
Cultural Differences	Net Zero Travel	Transportation
Food	Gear	Lodging

Spend more time in one destination	Book direct flights only	Take public transportation
Travel to walkable cities	Transportation	Rent an electric car
Bicycles	Fly less	Utilizing ride-share to destination

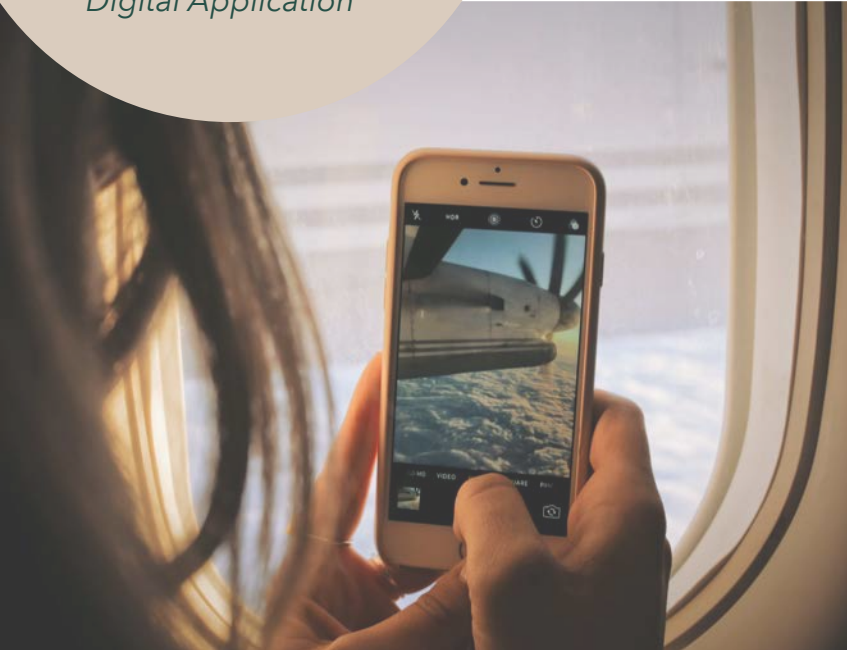
Stay somewhere with a kitchen to prepare own food	Dine with a local family	Dine at restaurants making local cuisine
No fast food	Food	Purchase from local markets
Consider more vegetarian dishes	Offer your services in exchange for food	Prepare snacks to avoid impulsive dining

Travel clothing that can be worn in multiple ways	Convertible travel bag	Zero waste kit
Take "fashion" out of the equation	Gear	Ideas about how to pack light
Travel gear exchange program		Earth-friendly soaps and body products

Eco-lodging	Stay in budget lodging, i.e. hostels	
Stay with a local family	Lodging	
Couchsurfing	Air BnB	

# PROTOTYPE

Digital Application



A digital application will provide *travel enthusiasts* with the toolkit they need to map out their goal-based travel itinerary.

The user will begin by creating a profile. This profile will include basic information about their travel style and will eventually sync their interests with goal-based activities once they start planning their next adventure.

In its initial phase, this digital toolkit will focus on providing suggestions to the traveler for them to offset their emissions based on their origin and destination of travel. There will be an element of gamification incentivizing offsets and calculating a fully net zero trip.

Future iterations may include a more interactive platform where users share travel advice and tips for sustainability, leave reviews, and connect with a personal travel advisor.

# BIOMIMICRY

Lenses: Form



## ***Strategy from Nature: Adapt to Conditions***

*Birds evaluate external threats, their previous success, and the success of others in determining where and how to build their nests.*

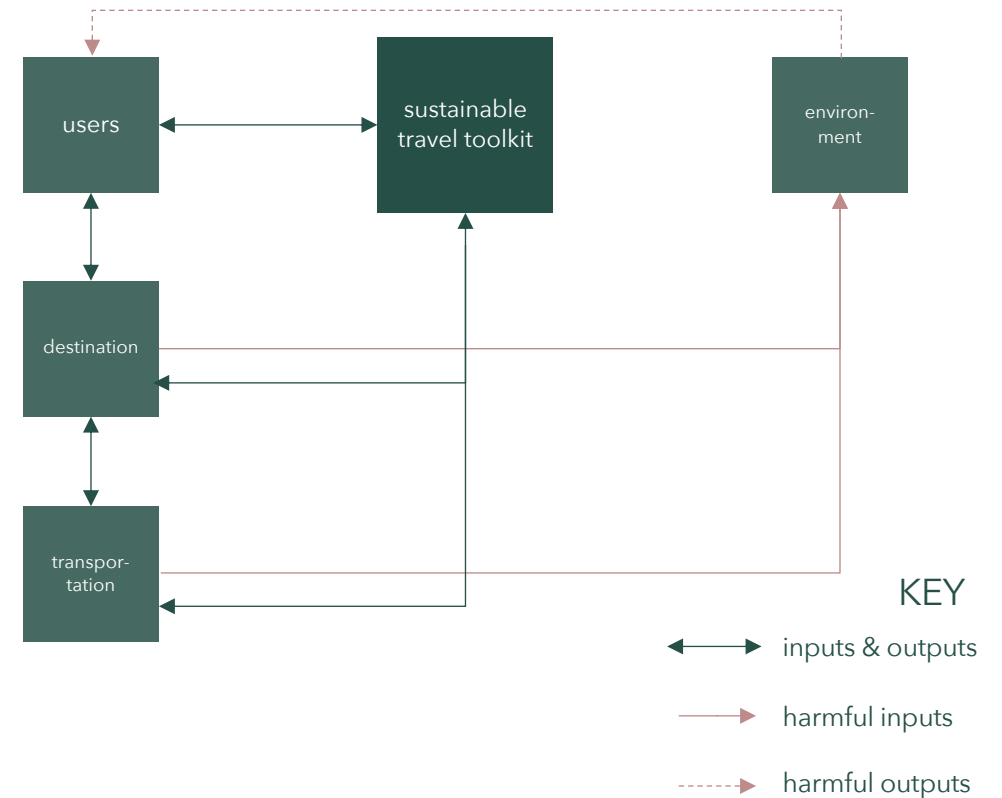
Commonly, birds of the same species build their nests in similar locations, yet studies have shown nest site selection may change depending on weather, predators, past success and what other birds are doing.

So how does this relate to the Sustainable Travel Toolkit? Nest-building is a “carefully considered and constantly adapting endeavor,” as is travel. As we continue to adapt to changing conditions, we must learn from past mistakes and develop new methodologies to move forward successfully as a species in order to maintain our sense of happiness, adventure, and fostering cross-cultural relationships while protecting our environment.

## FORM

The initial form of my project will be that of an interface where a user will learn about their impact on the environment through their travel choices. Thus, the form will be people > environment.

The **user** makes decisions regarding their trip details, for example their choice of **destination**. This choice influences the type of **transportation** used, resulting in further impacts on the **environment**. Through these choices, the *Sustainable Travel Toolkit* assesses the impact and provides data to the user regarding their overall impact (in it's initial form in regard to CO2 emissions).



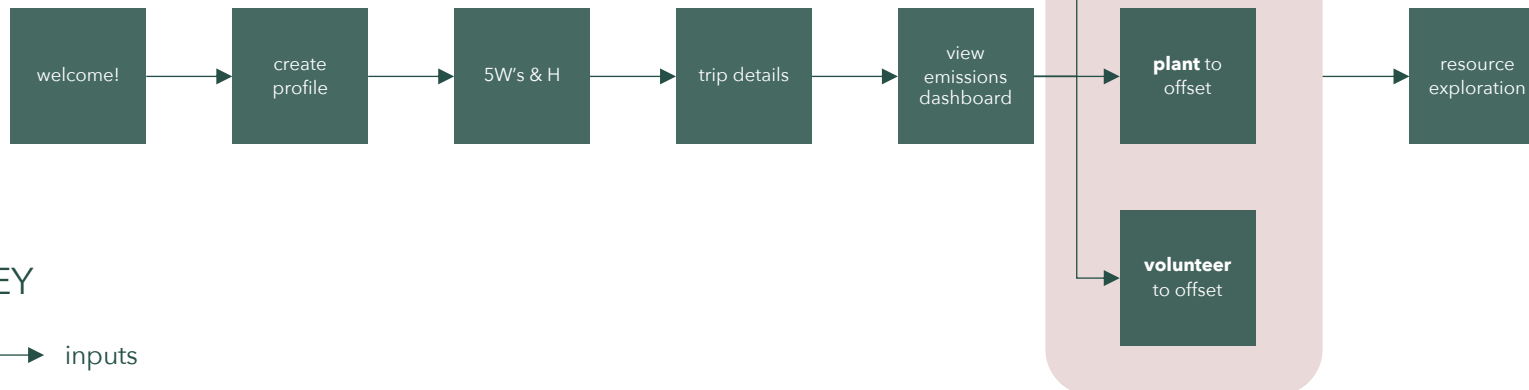
# BIOMIMICRY

Lenses: Process



## PROCESS

The *process* illustrates the user's path through the digital application resulting in an understanding of their impact through emissions and gaining suggested ways to offset them. The methods for offsetting vary, but it is encouraged to choose more than one, especially if traveling on a budget or long distances. Selecting different methods of transportation are also encouraged, particularly those without consumption of fossil fuels.



## KEY

→ inputs

### ***Strategy from Nature: Encourage Biodiversity***

*Marigold flowers emit limonene, which protects tomatoes by repelling whiteflies.*

It is unlikely that a single user will elect to choose one method for off-setting their emissions from travel, this relates to the practice of *monoculture* in agriculture is the process of planting only one type of crop. The problem that arises with monoculture is that pests may easily transfer from one plant to the other if there is no defense, which could cause big problems for the farmer as there is no biodiversity.

Biodiversity is important to ensure the livelihood of all species. In nature, there are distinct volatile plant compounds that are emitted to repel insects that may prey on other plants. It is recommended that a careful mix of plants are incorporated to agriculture to mitigate the risk of falling prey to a pest that could destroy an entire crop and reduce the need for pesticides.

# INNOVATION TYPE

## Using Radar Charts

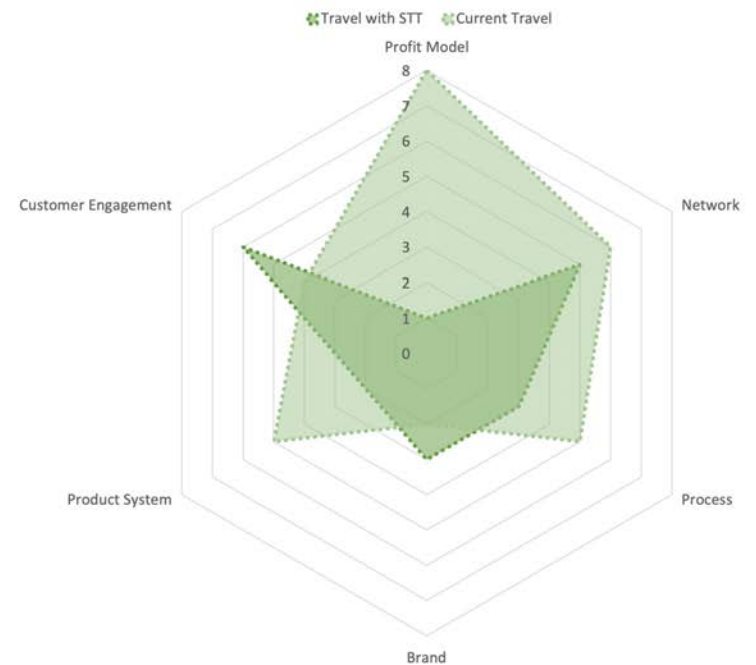
The purpose of my project is to develop a tool where users will be able to seek sustainable solutions for travel. They will discover ways to offset their emission, connect with their destination in more meaningful ways, and become connected to a community of like-minded people.

Using radar charts, I am considering the impact of this **service\*** by comparing travel with and without the Sustainable Travel Toolkit.

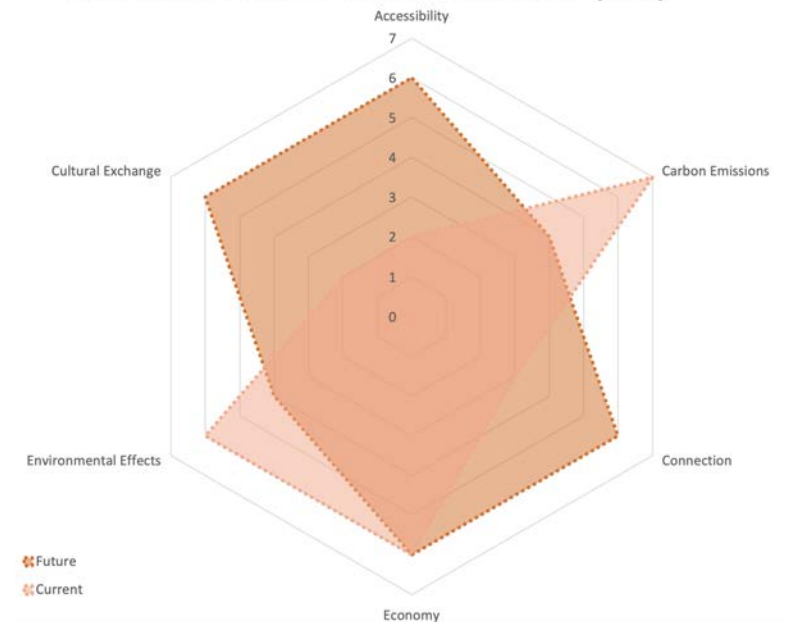
*\*How you support and amplify the value of your offerings*

The travel industry in its current form is heavily profit driven. With the focus shifting to environmentalism and connection after a year of isolation due to the pandemic, the SST will drive customer engagement and a growth in network. Eventually this will evolve the brand and, while profit is not the focus, it would generate some revenue in order to reinvest in continuous improvement.

### RADAR CHART OF TRAVEL WITH AND WITHOUT SUSTAINABLE TRAVEL TOOLKIT (STT)



### RADAR CHART OF CURRENT TRAVEL AND FUTURE TRAVEL WITH THE SUSTAINABLE TRAVEL TOOLKIT (STT)



# MINIMUM VIABLE PROTOTYPE

An MVP in this exploration will solve for creating a sustainable travel itinerary, while in a very basic form. To be a successful in this, this plan outlines what it will take to develop a digital application that must be user friendly, visual, and give the user the resources needed to create their own sustainable travel itinerary.

The creation of a minimum viable prototype will occur after and in conjunction with Project 2 and will be tested for future development. This will be a mockup of a digital application.

[Link to Digital App Prototype](#)



# PROTOTYPE

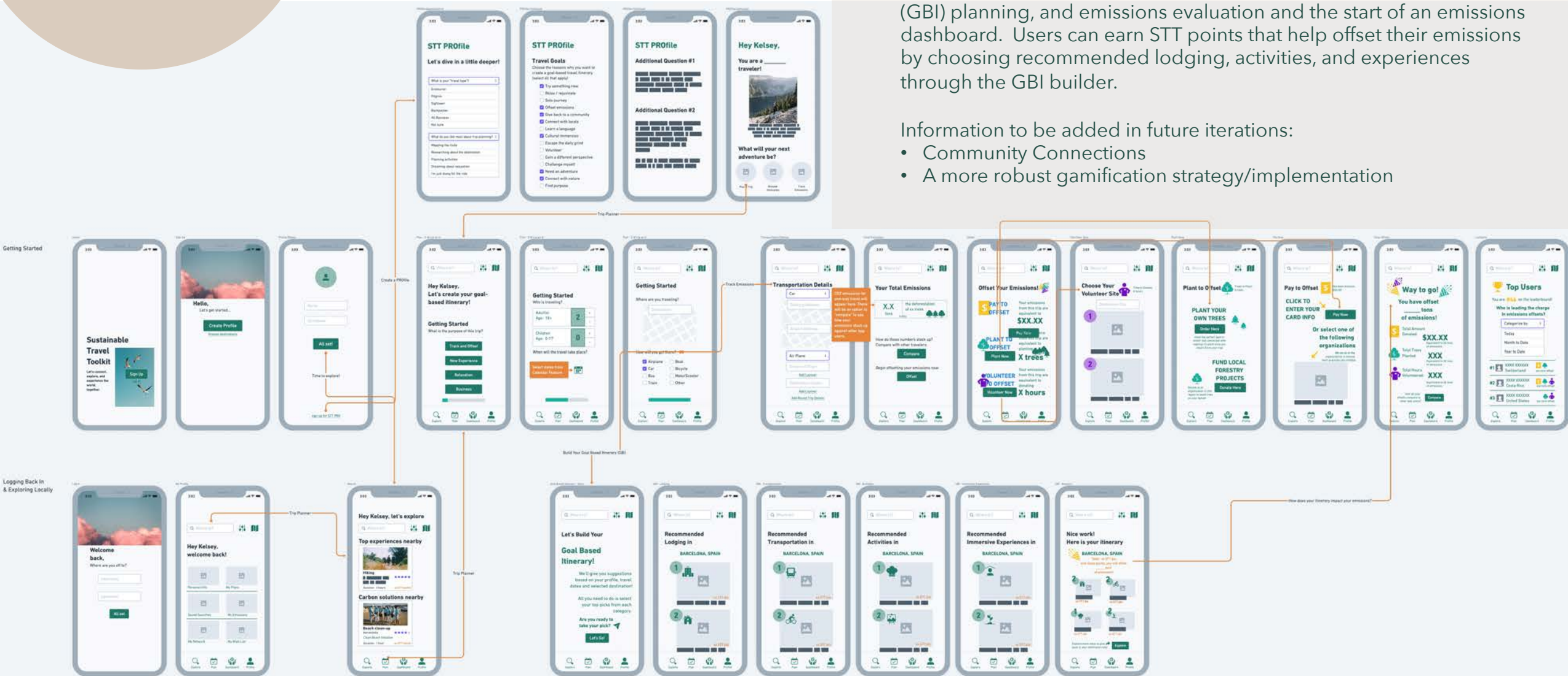
Wireframe

I created the Digital Application wireframe in Whimsical and then transferred the information into InVision for a clickable experience.

It's current state includes profile creation, an option for an advance profile (paid version, details not yet defined), Goal Based Itinerary (GBI) planning, and emissions evaluation and the start of an emissions dashboard. Users can earn STT points that help offset their emissions by choosing recommended lodging, activities, and experiences through the GBI builder.

Information to be added in future iterations:

- Community Connections
- A more robust gamification strategy/implementation



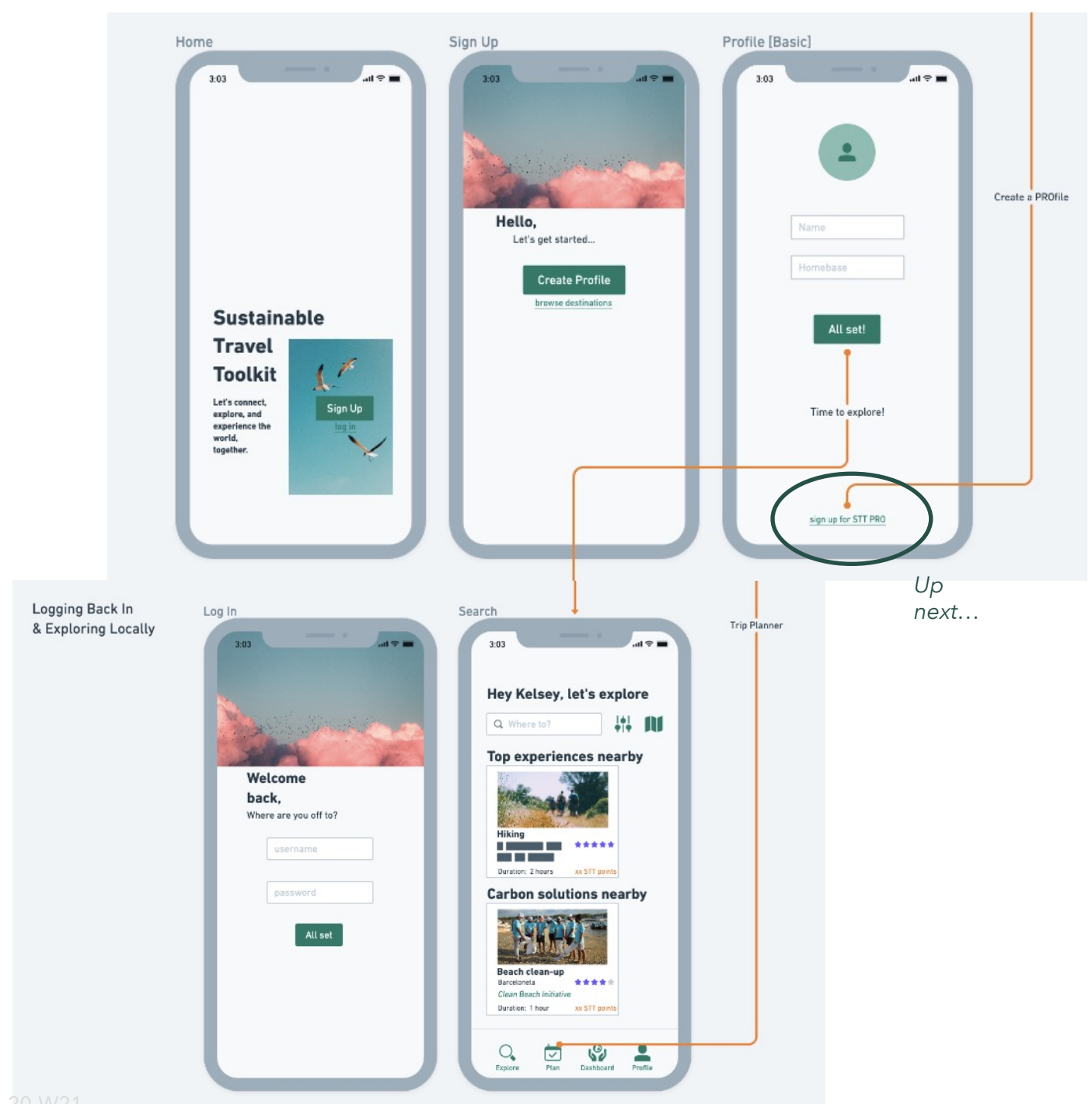


# PROTOTYPE

Home Screen & Getting Started

To begin, the user will create a profile. This profile will allow them to develop a goal-based itinerary for their trip. They may opt for the [Basic] profile which comes with the free version of the product, or the PROfile which is a paid version that allows them to create a more detailed profile based on their travel type. The PROfile will ultimately provide a more customized and robust travel-planning service.

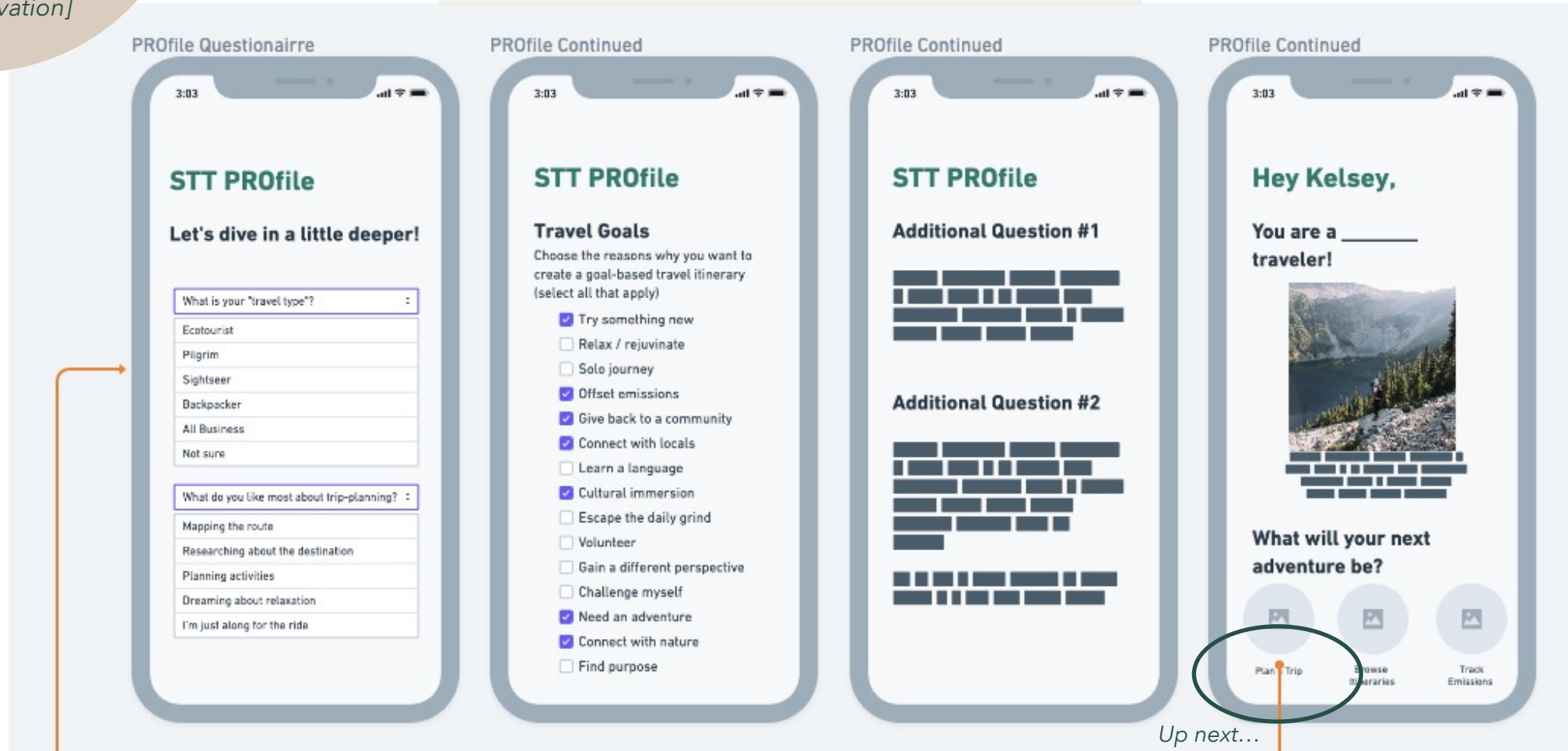
The home screen for returning users with a basic profile is to the right. The user will sign in and be routed to the home screen where they will first be presented with local experiences. The user will select "plan" at the bottom of the screen to see a screen with additional options. We'll look at that later.



# APP PROTOTYPE

PROfile Creation  
[Future Innovation]

Paid subscribers will be able to create a customized profile that will give them access to more detailed planning tools and exclusive promotions.



Up next...

# APP PROTOTYPE

5 W's and an H

Here, the user will fill out a survey regarding the details of their trip, as explored through the 5 W's and an H. From here, they will move on to their emissions dashboard. The information there will be populated based on the answers to their questions here.

**Who** is traveling?

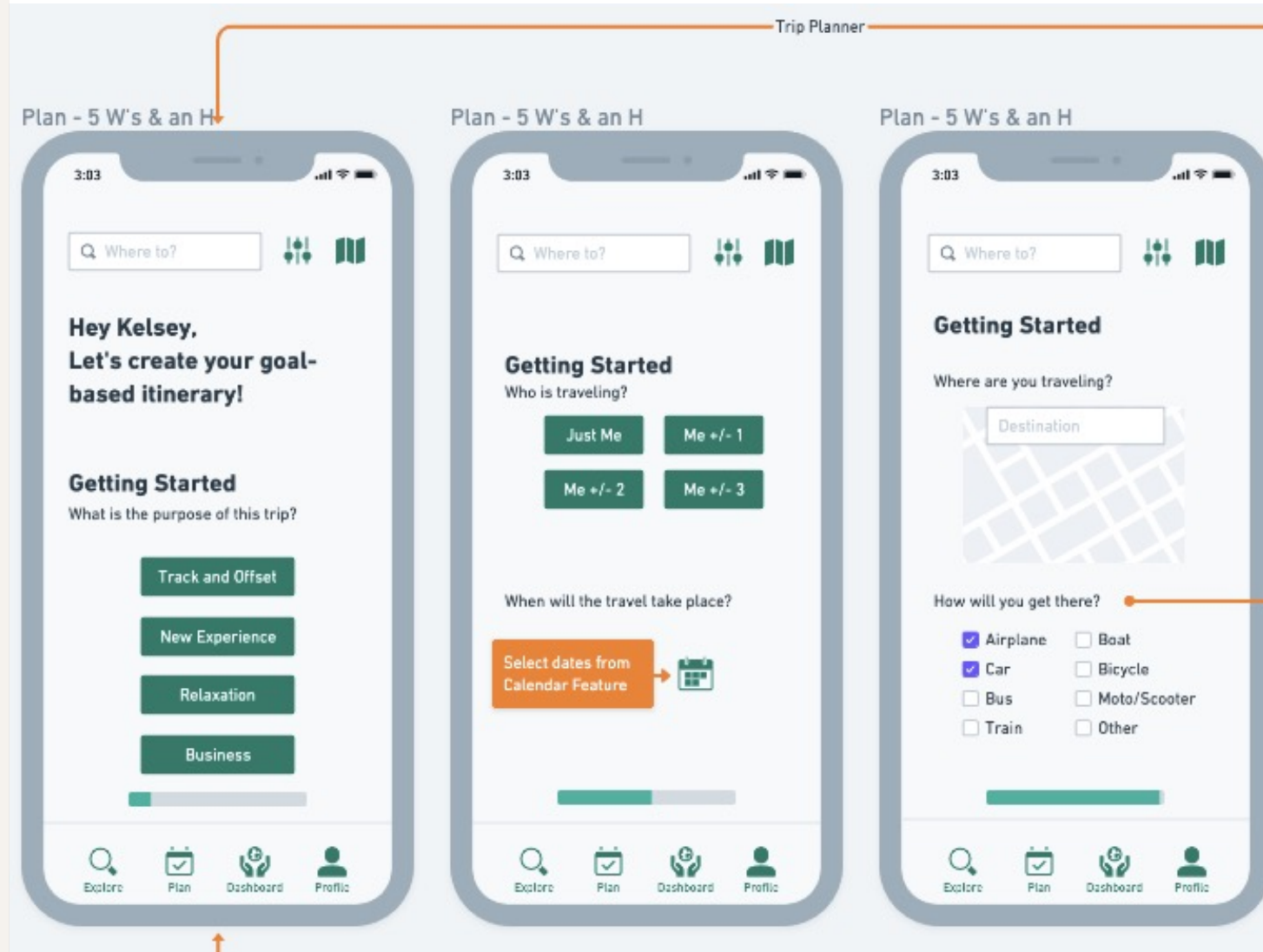
**What** is the purpose of the itinerary?

**When** will the travel take place?

**Where** are you going?

**Why** is based on "GOALS" on the previous page

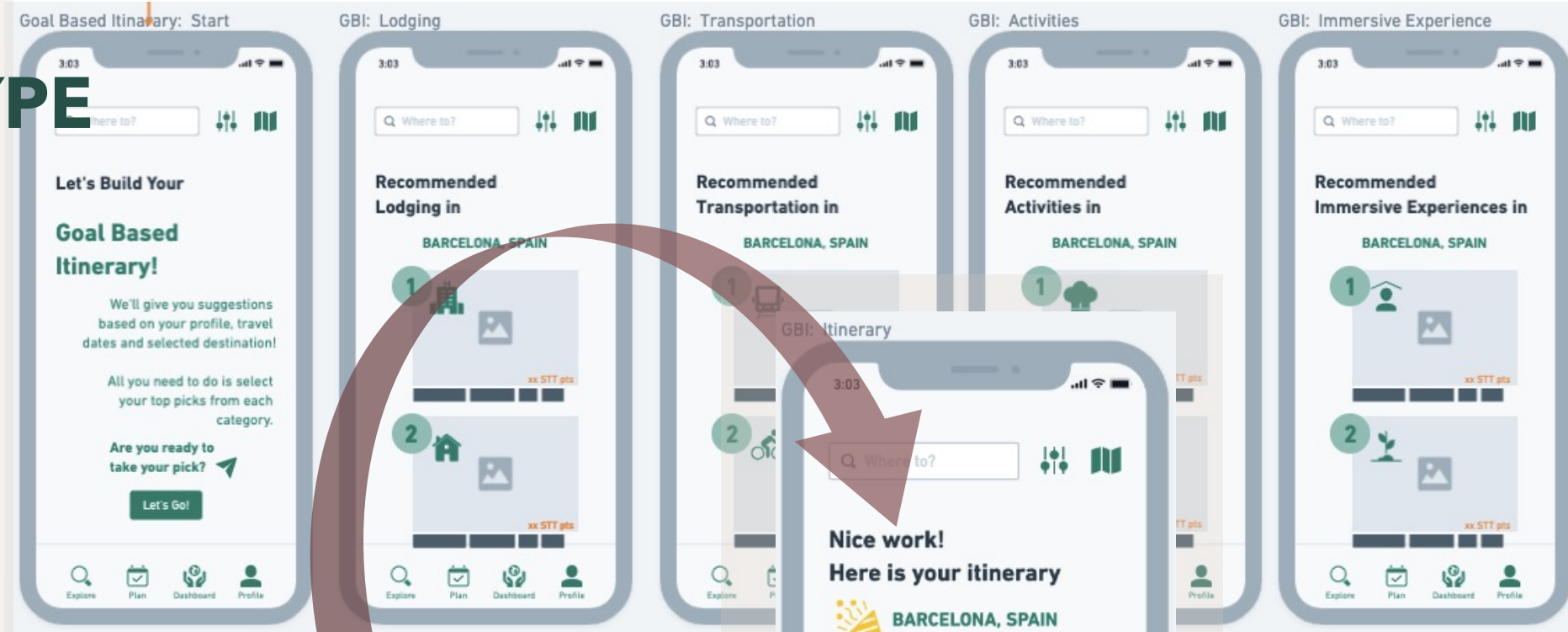
**How** will you get there?



# APP PROTOTYPE

Goal Based Itinerary (GBI)

In this wireframe series you will see how a user would be presented with options for building a Goal Based Itinerary based on their planned destination.



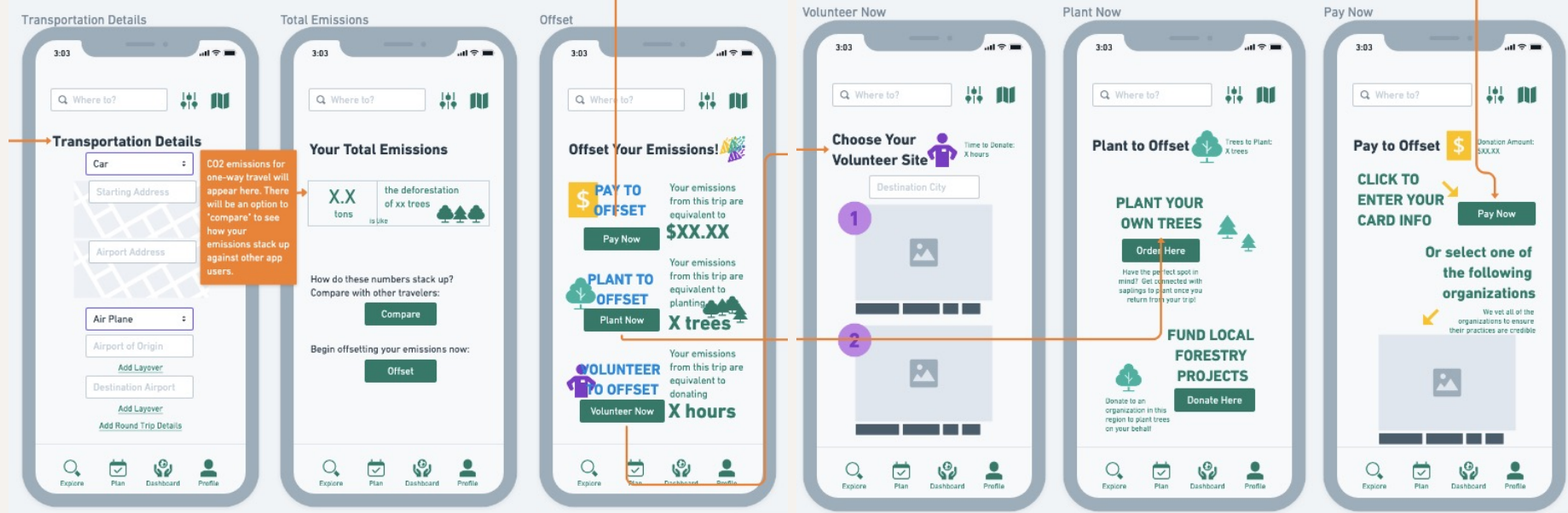
This resulting screen totals the number of STT points and assesses the impact on emissions offsets. The user may then choose other ways to offset their emissions (pp. 12), view their emissions dashboard (pp. 13), and see how their efforts to offset emissions compare to other users (pp. 13).



# APP PROTOTYPE

Transportation & Emissions  
Dashboard

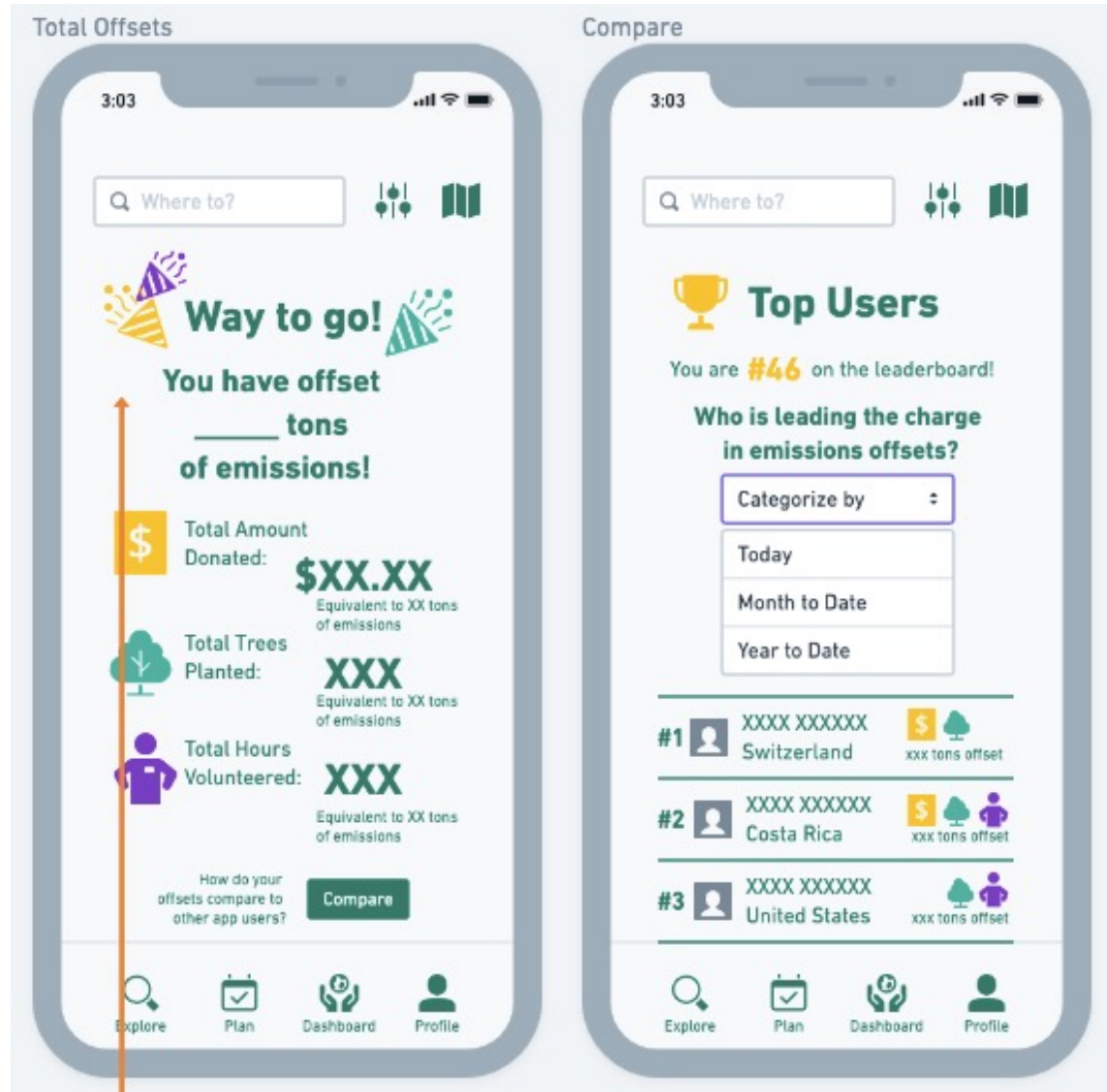
The user will enter their travel details here for a detailed page of total emissions from each stage of travel. The user will then have the option to compare their emissions to other users, see how their "STT points" compare, and select "offset" to discover ways they can immediately work to offset these emissions.



# APP PROTOTYPE

Transportation & Emissions  
Dashboard

From the previous screens, the user may now view their emissions dashboard (left) and opt to view the current top users. Users are ranked by offset emissions over the past day, month, or year and each user will see how they rank within this scroll-able screen. (Note: in the InVision prototype you cannot scroll).



# FURTHER EXPLORATION

Using TRIZ

TRIZ, Theory of Inventive Problem Solving, is a list of design solutions encouraging users to consider alternatives, map their ideas, and find solutions to any problem.

In application, I will use this set of principles to take a closer look at the function of the Sustainable Travel Toolkit. As a reminder, the primary and secondary functions are:

## **Primary Function**

*Provide information and the tools needed to offset carbon emissions while encouraging connection.*

## **Secondary Function**

*Inspire mindful travel through connection with nature and culture of a destination.*

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## Preliminary Anti-Action

*"If it will be necessary to perform an action with both harmful and useful effects, this action should be replaced with anti-actions to control harmful effects"*

Consider alternate means of transportation other than air travel (i.e. train or boat) and/or understand the impact of chosen transportation and offset carbon emissions through the three options offered by the app (pay, plant, volunteer). By offering a more robust service that provides additional resources for the user, the value of the STT will add even more value.

- Add tab to explore alternate transportation methods to the destination
- Provide resources assessing current political climate of the destination
- Share pollution statistics of the destination

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## Continuity of Useful Action

*"Carry on work continuously; make all parts of an object work at full load or optimum efficiency, at all time."*

The application will need to continuously update and provide useful resources to the user. This may be accomplished through a location feature, so they are given the most relevant resources for the next stop along their adventure. Continuous use will also contribute to more feedback and recommendations which will allow the app to update for current trends and newness, providing the user a unique and fresh experience each time they log in.

- Add a location services for the most relevant information based on the user's locale
  - The more the user engages with the application, the more valuable the services they would experience

23

## Feedback

*"Introduce feedback (referring back, cross-checking) to improve a process or action"*

Take time to listen to the users. What is working well? What needs some attention? Are there additional features that would be useful? Are any current features unnecessary?

Feedback is essential for the app to stay relevant and build a sustainability-focused travel community. This user generated content will further strengthen the role that the STT plays in creating sustainable travel plans while encouraging connections within the community.

- A discussion board could be a way to bring users together and ask engaging questions
- Offering star-ratings could encourage those to opt into more carbon-offsetting possibilities
- Gamification could drive uniqueness and allow the user community to become more creative in the development of their Goal-Based Itinerary

# FURTHER EXPLORATION

Using TRIZ

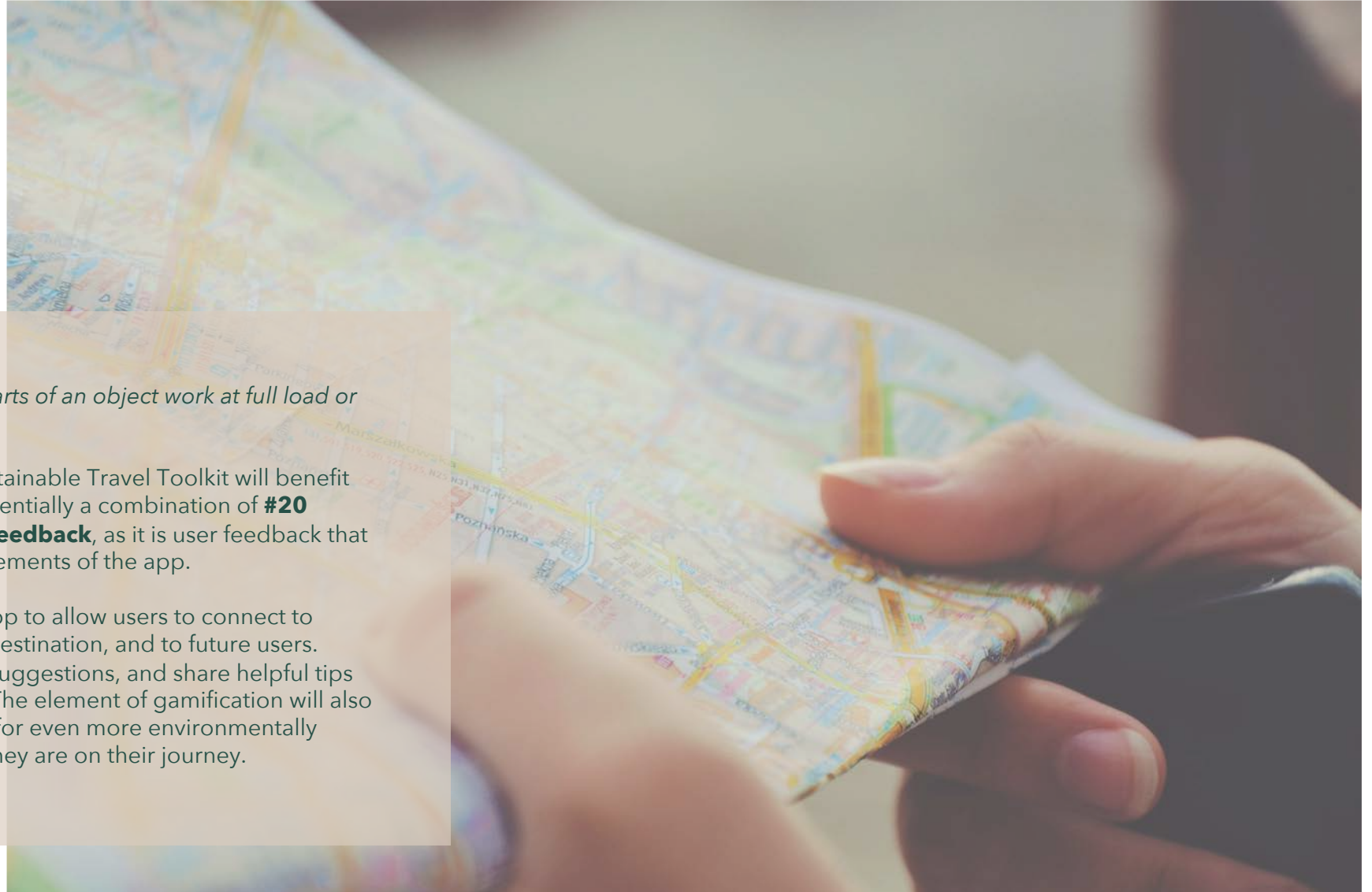
20

## Continuity of Useful Action

*"Carry on work continuously; make all parts of an object work at full load or optimum efficiency, at all time."*

To make the robust application, the Sustainable Travel Toolkit will benefit greatly from user interaction. This is essentially a combination of **#20 continuity of useful action** and **#23 - feedback**, as it is user feedback that will allow for the the continuous improvements of the app.

I will add a location feature within the app to allow users to connect to other users who have visited the same destination, and to future users. They will be able to provide feedback, suggestions, and share helpful tips to create a more valuable experience. The element of gamification will also be at play here, allowing users to strive for even more environmentally friendly and impactful measures while they are on their journey.



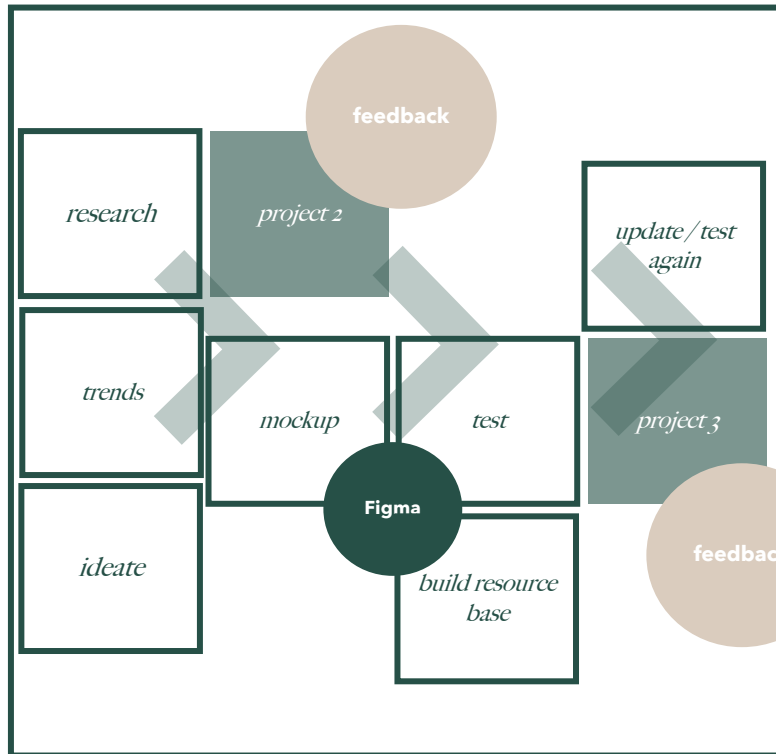


# PROTOTYPE PROJECT PLAN

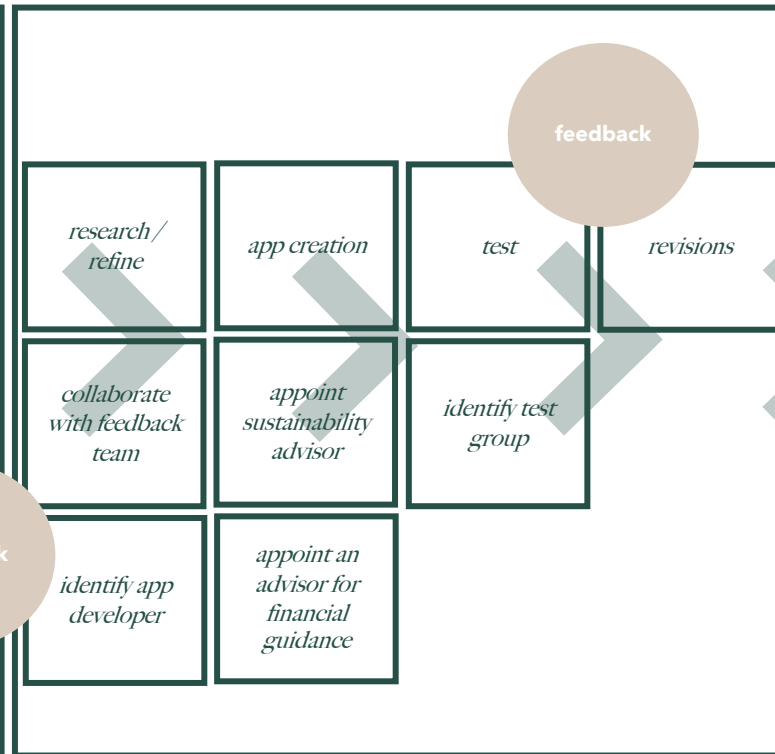
Following this plan through the coming weeks and months, the prototype will evolve from MVP to functioning digital app. By the end of week 15, I will have a completed prototype created through Whimsical & InVision, which is what you saw on the previous slides.

With the evolution of the prototype, we will follow and view screens as a user creates an itinerary and a plan for offsetting emissions using their goal-based toolkit.

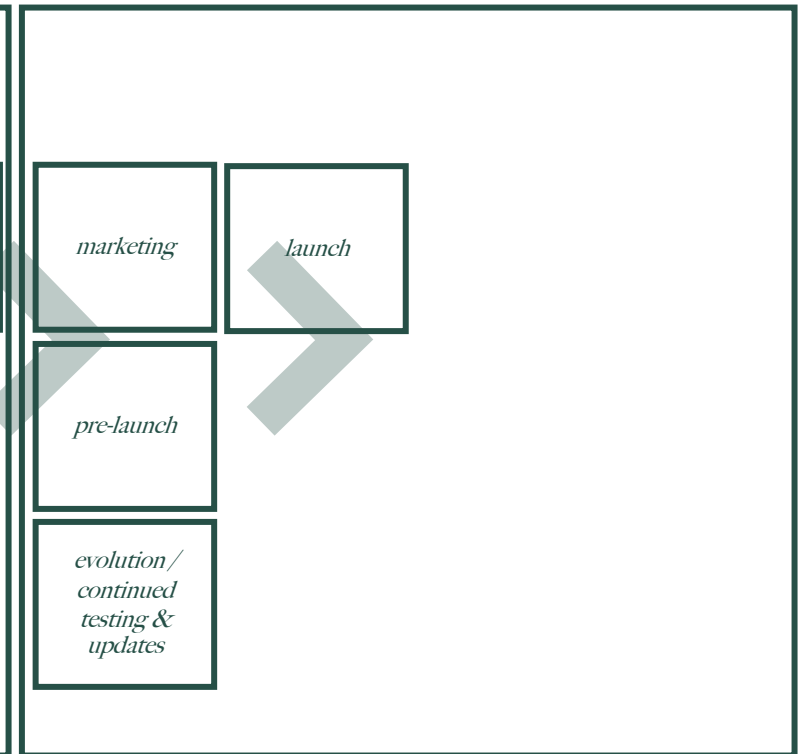
## SPRING 2021 | PHASE 1



## SUMMER/AUTUMN 2021



## WINTER 2021/2022



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