

Design Portfolio

Lloyd Armstrong

Contents

01



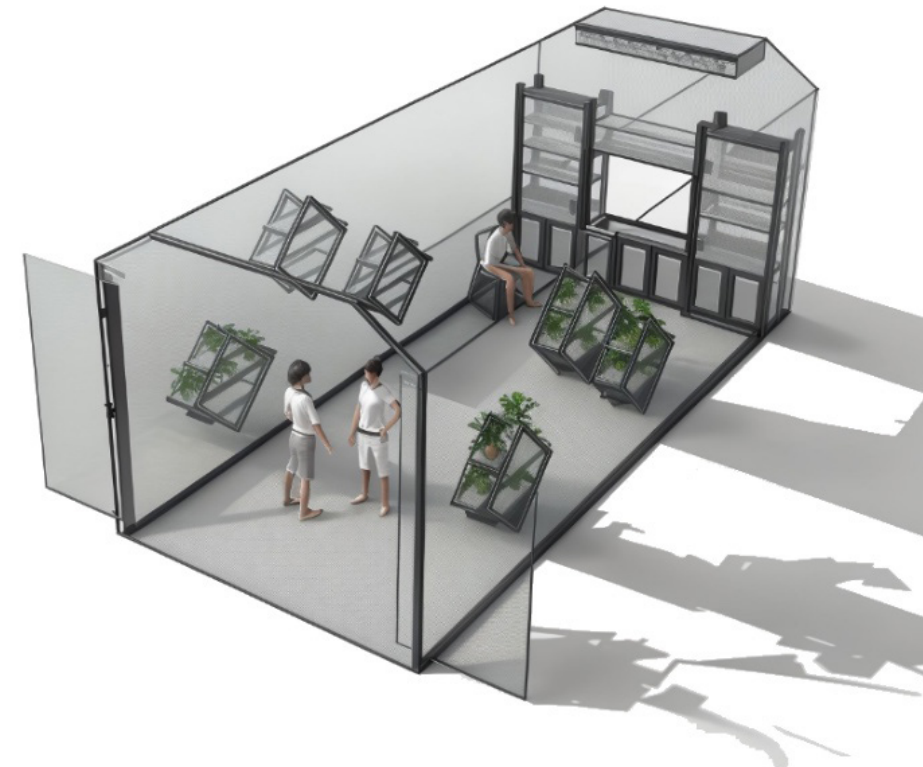
GUARDIAN

02



**RURAL
ROOTS**

03



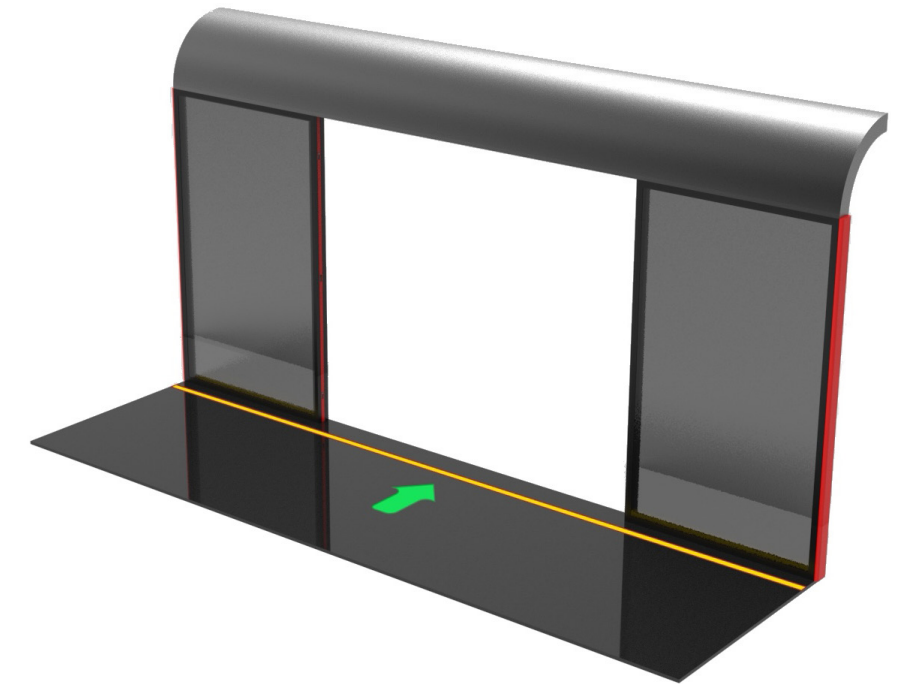
**GREEN
POD**

04



**POT
LIFT**

05



**SWIFT
PASS**

Hello I'm Lloyd,

I am a creative individual, focused on discovering practical solutions for everyday challenges. My dedication to achieving the highest standards motivates me to consistently deliver top-quality results across all my undertakings. Supported by a keen sense of social awareness and strong communication abilities, I excel in executing tasks and presentations that consistently yield positive outcomes.



Education

BA Industrial Design

2022 - Current
LOUGHBOROUGH
UNIVERSITY

A-Level Qualifications

A, A, B
2020 - 2022
BRYANSTON SCHOOL

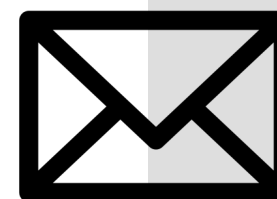
Contact



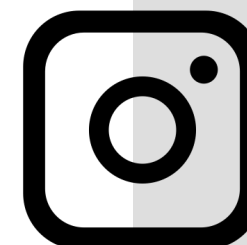
+447518905155



25 Curzon Street, Loughborough



Lloydjohnarmstrong@icloud.com

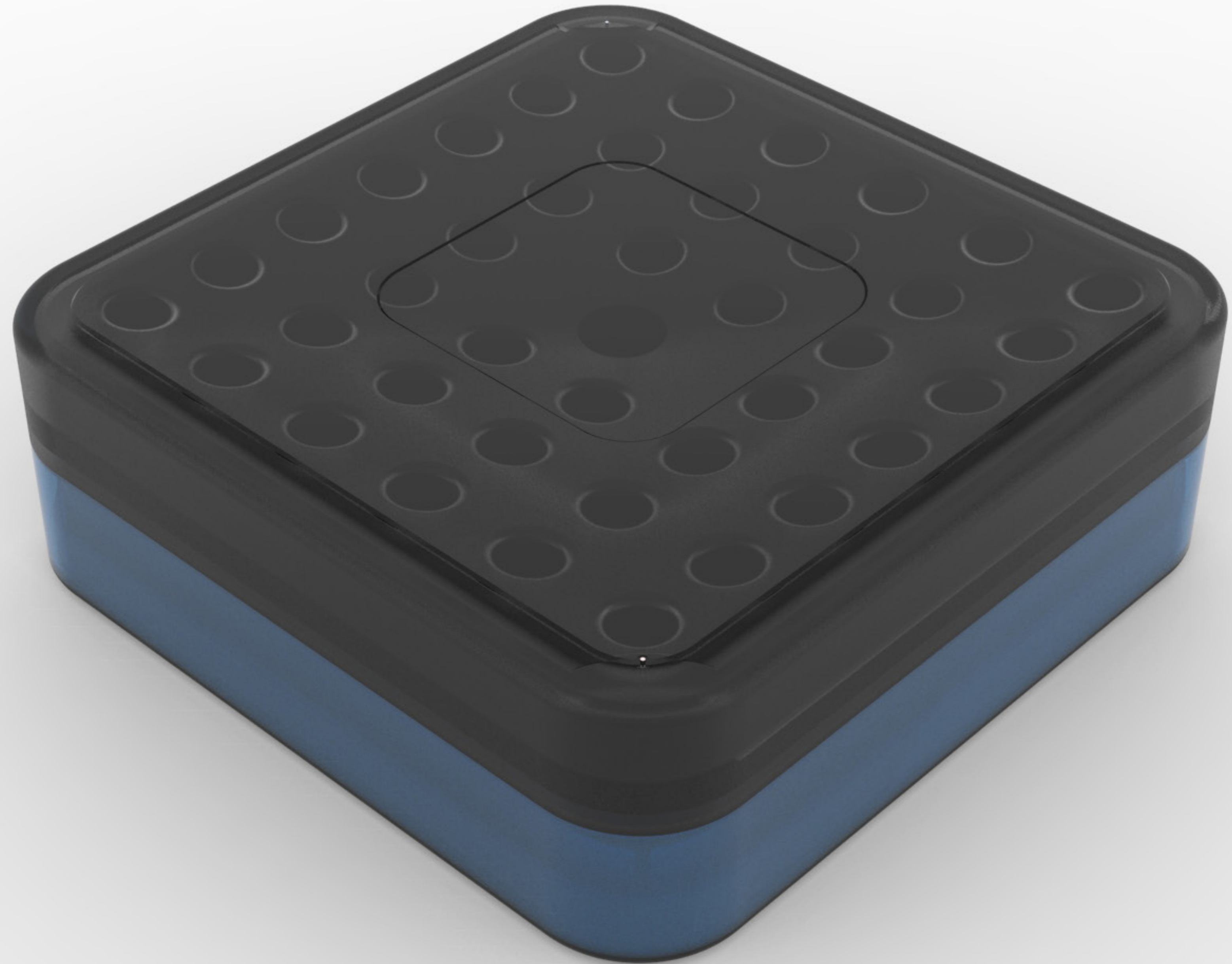


dddesignla

01

Guardian

Guardian is a project I worked on for a month at university and was created to combat food insecurity within low-income-countries



The Problem

783 million people face a lack of access to clean water, **40% residing in sub-Saharan Africa**. Over 320 million people endure the absence of safe drinking water.

Opportunity Statement

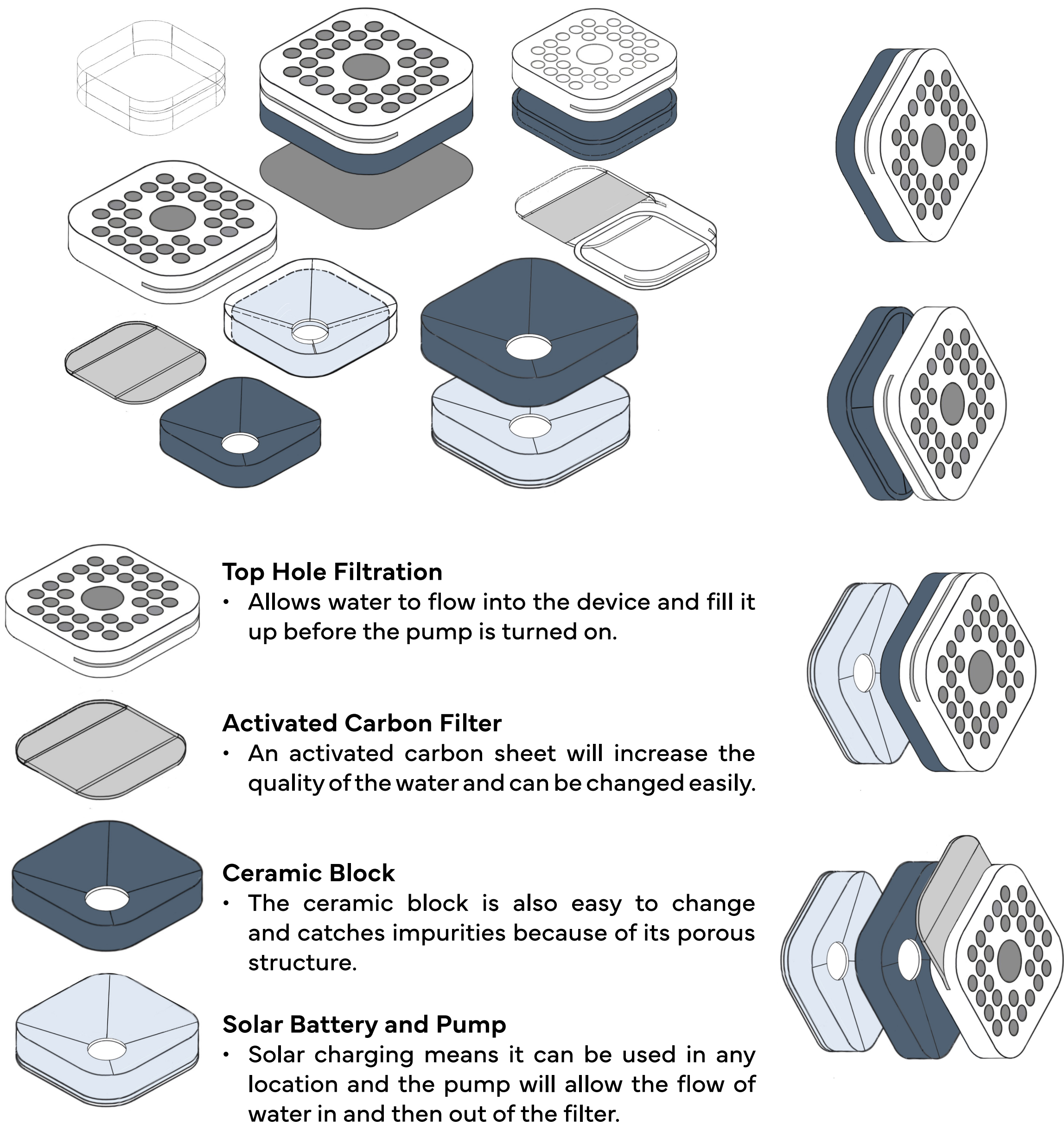
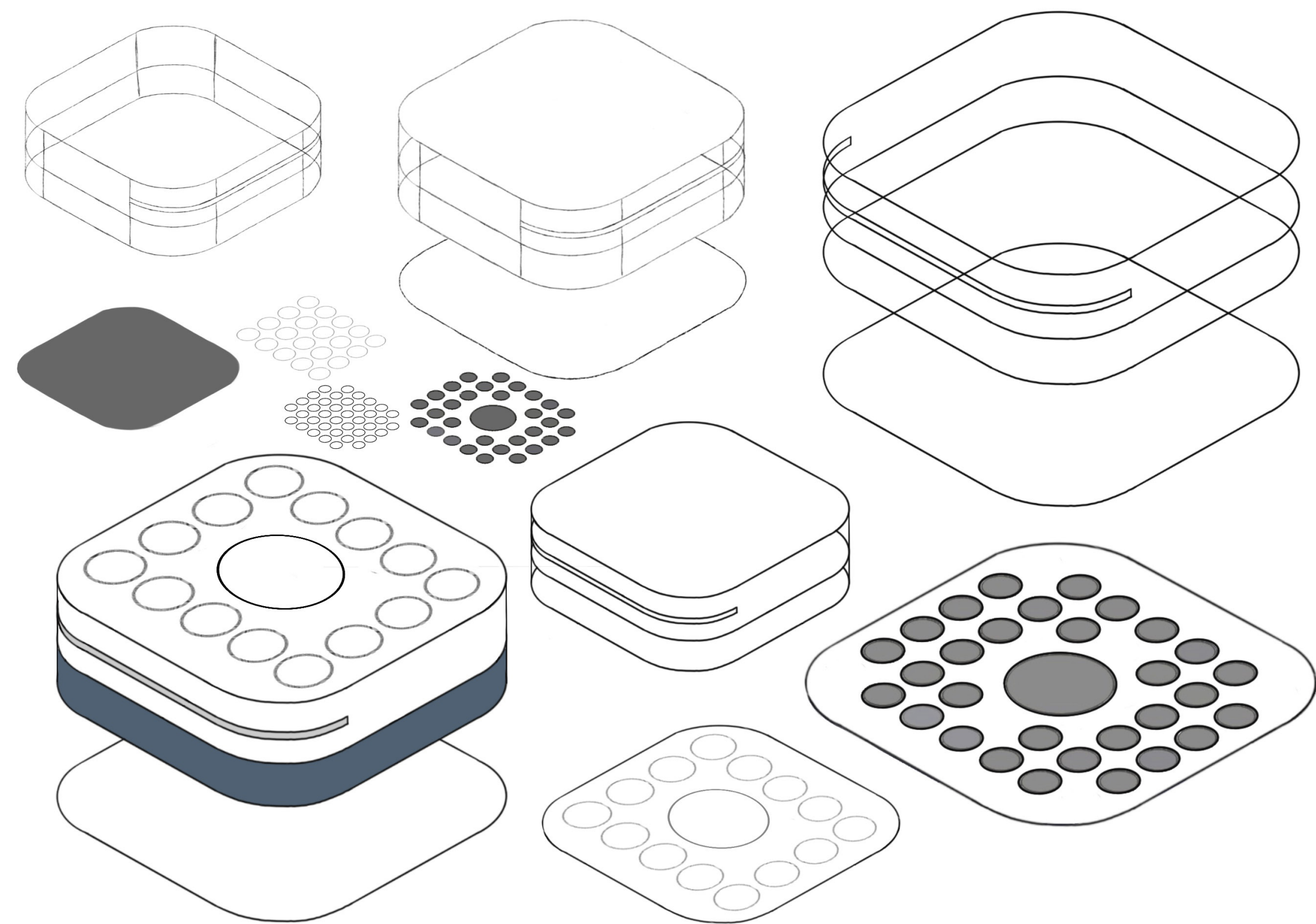
Our product is for individuals in sub-Saharan Africa who lack access to clean water for consumption and sanitation.



- **Cleaner water** would actually alleviate significant issues related to **food insecurity** and **poor food quality**. The issues related to the use of contaminated water within **agricultural practices** directly influence **crop yields** and the **health of livestock**.
- **Waterborne disease**, which affects both **crops** and **animals**, is a result of the use of dirty water in farming. This further reduces the **quality** and **quantity** of the **food produced**.
- **Cleaner water** is essential for **sanitation, preparation** and the reduction of **disease** within the food industry. Without taking into account the issues that arise from **direct consumption** of this contaminated water.
- **Improving the water quality** will also hold significant implications on the spread of human diseases such as **cholera** and **typhoid**. These health issues strain communities and reduce the chances of infrastructure being developed within the **education sector**.
- By Prioritizing **cleaner water**, Sub-Saharan Africa's **subsistence farming industry** will be **rid of disease** and create a foundation for **sustainability** within agricultural practices on small and large scales.

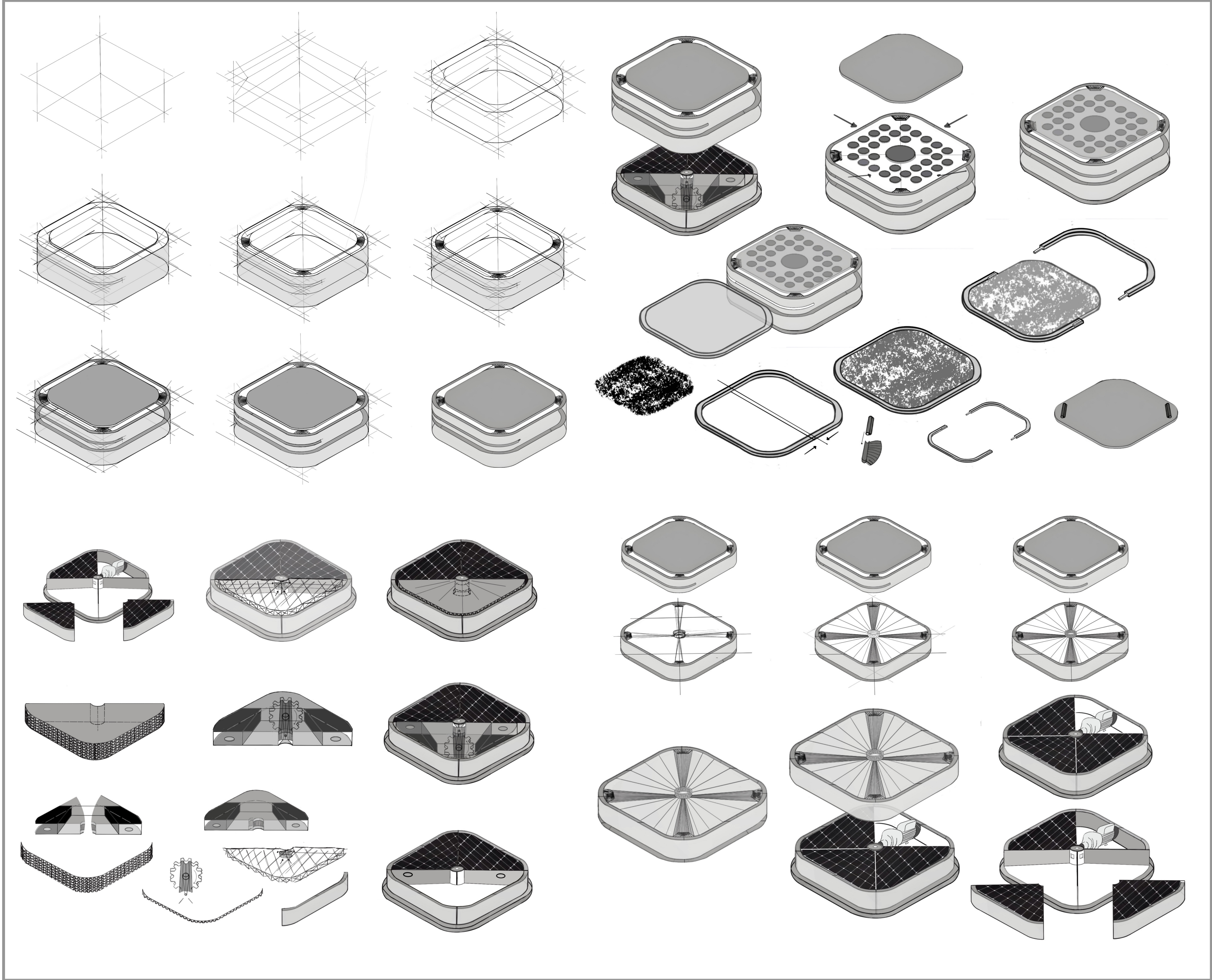
Concept Development

The concept will encapsulate a solar-powered pump, sucking water through the multiple filtration layers and delivering the water out of the bottom of the device and into a hose pipe, transferring the water to another container.



**Infill & Carbon
Tray**

**Ceramic Block
& Battery**

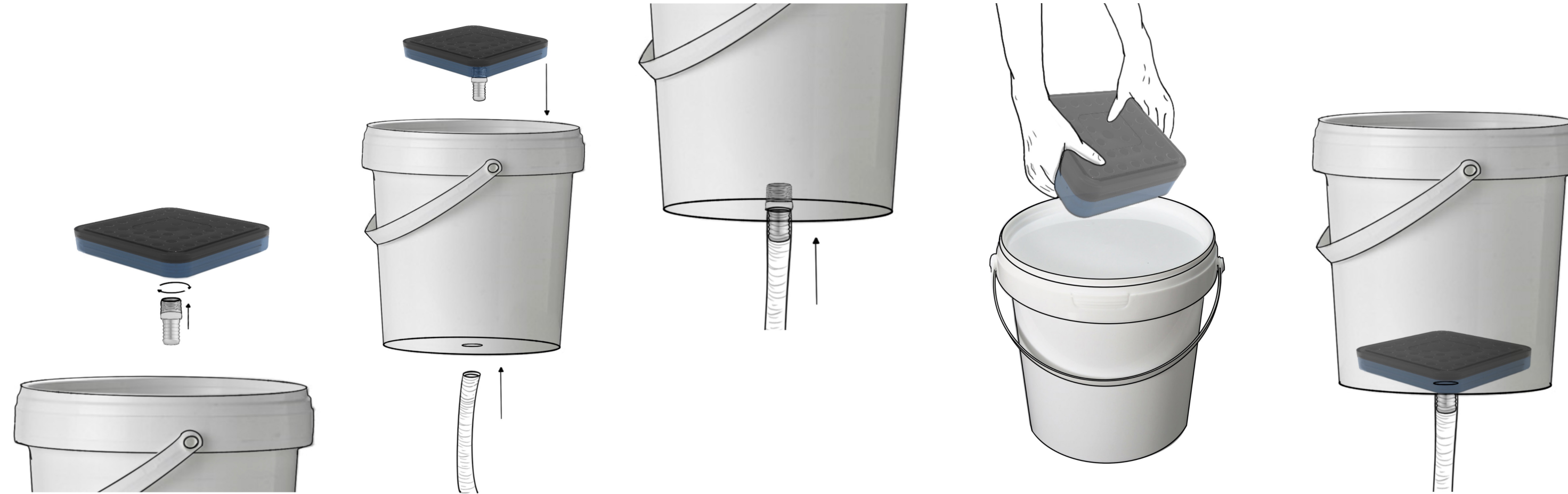


Form

Water Pump

Set Up

- First screwing the hose connector into the base of the filter.
- Then push the hose through the hole on the base of the bucket and connect the hose to the filter.
- Place the filter at the base of the bucket, making sure to pull the excess hose through.
- Allow the filling process to occur, resulting in the automatic activation of the filter, which then results in clean water exiting the system through the hose.



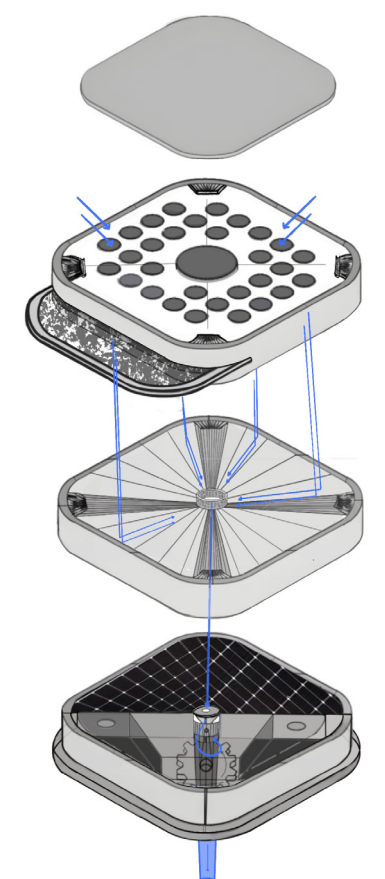
Exploded Process



Model



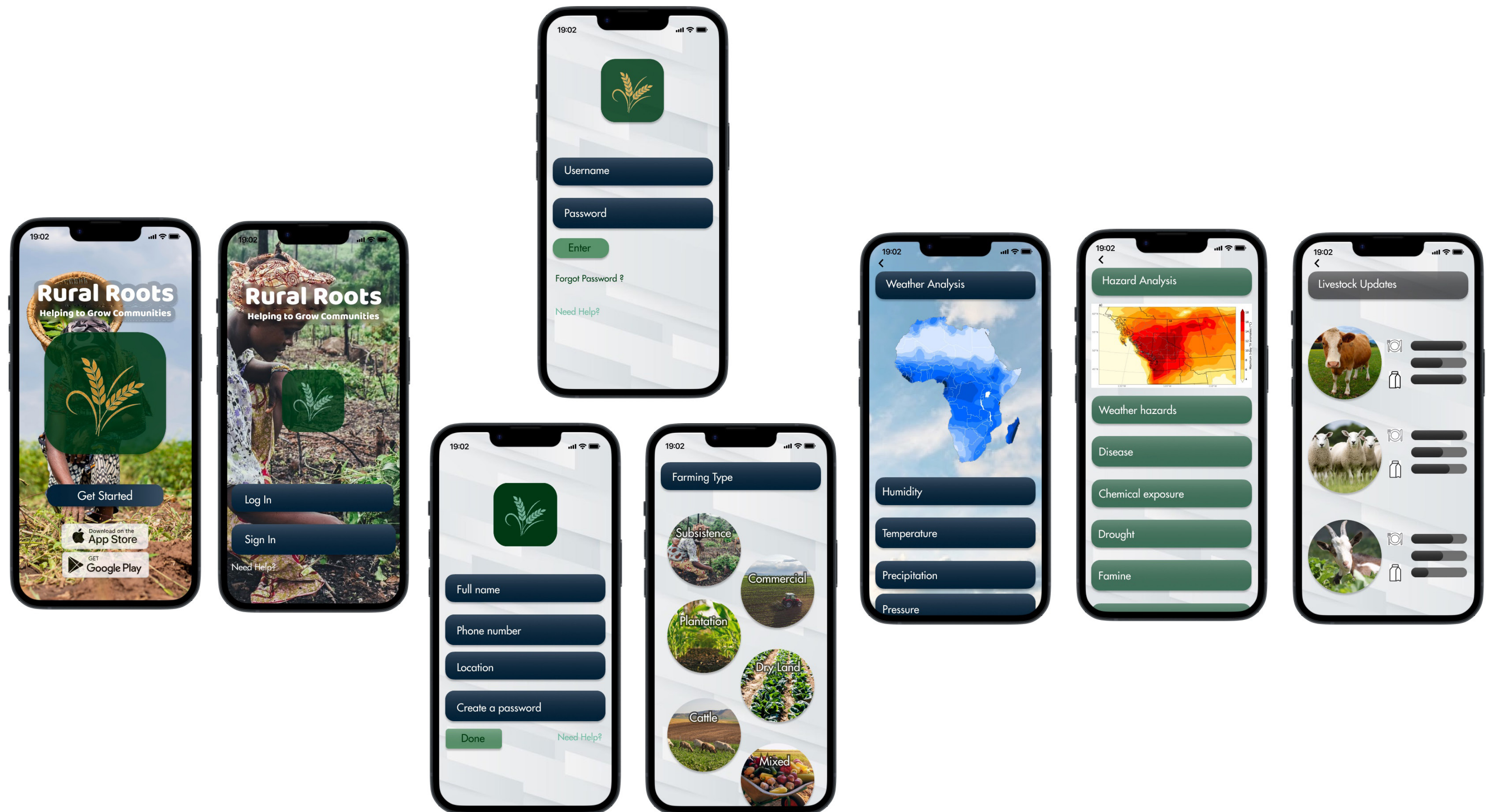
Flow



02

Rural Roots

An app for farmers, which offers insights based on past trends for farming conditions, live weather alerts, natural hazards, livestock updates, and educational content on potential diseases in the area





In the past, farmers in Africa experienced good farming conditions and convenient access to distribution networks.



Environmental issues and rural to urban migration are impacting the land, leading to increased aridity.



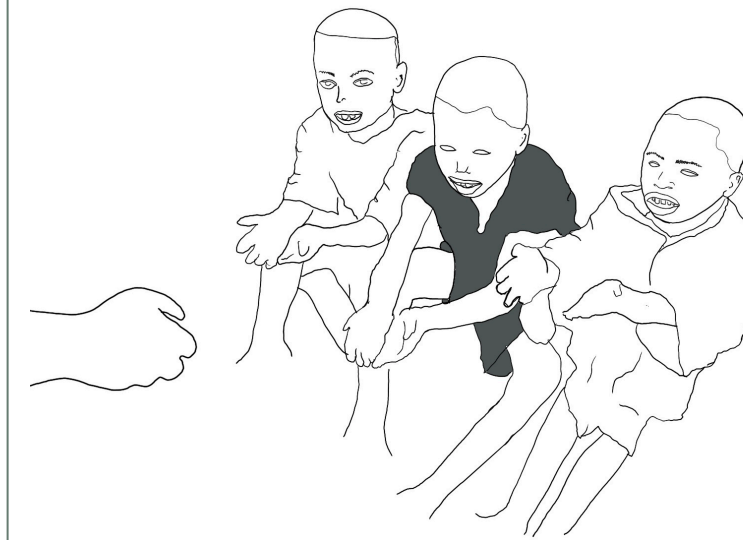
Crop yields are then significantly affected, resulting in a shift towards subsistence farming and the relocation of many.



The decline of the area and well-being of the people, which is a result of the lack of yields as well as the reduction of the community.



Malnutrition and immigration within the community, causes further decline of the area. The spiral of decline effect.



Rural areas become vacant and stripped of natural resources, leaving arid, soil polluted areas.



Persona

Site Map

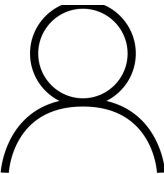
Farming in Sub-Saharan Africa



Age Group: 25 -35 Years old

Occupation: Subsistence Farmer

Location: Sub-Saharan Africa

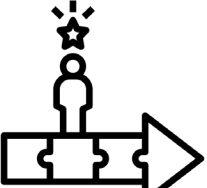


Background

Many villages used to have access to high levels of crop each year. Due to a lack of modern farming techniques and climate variability the land has become more contaminated. Due to this farmers are struggling to produce enough food to create an income and support the community (subsistence farming).


Experience Goals

- Adequate food supply for their community without the need to use external food sources.
- To be able to support their family financially.
- See their crop yield bring positive change to their community and quality of living.
- To be able to gain sales within their village.




Pain Points

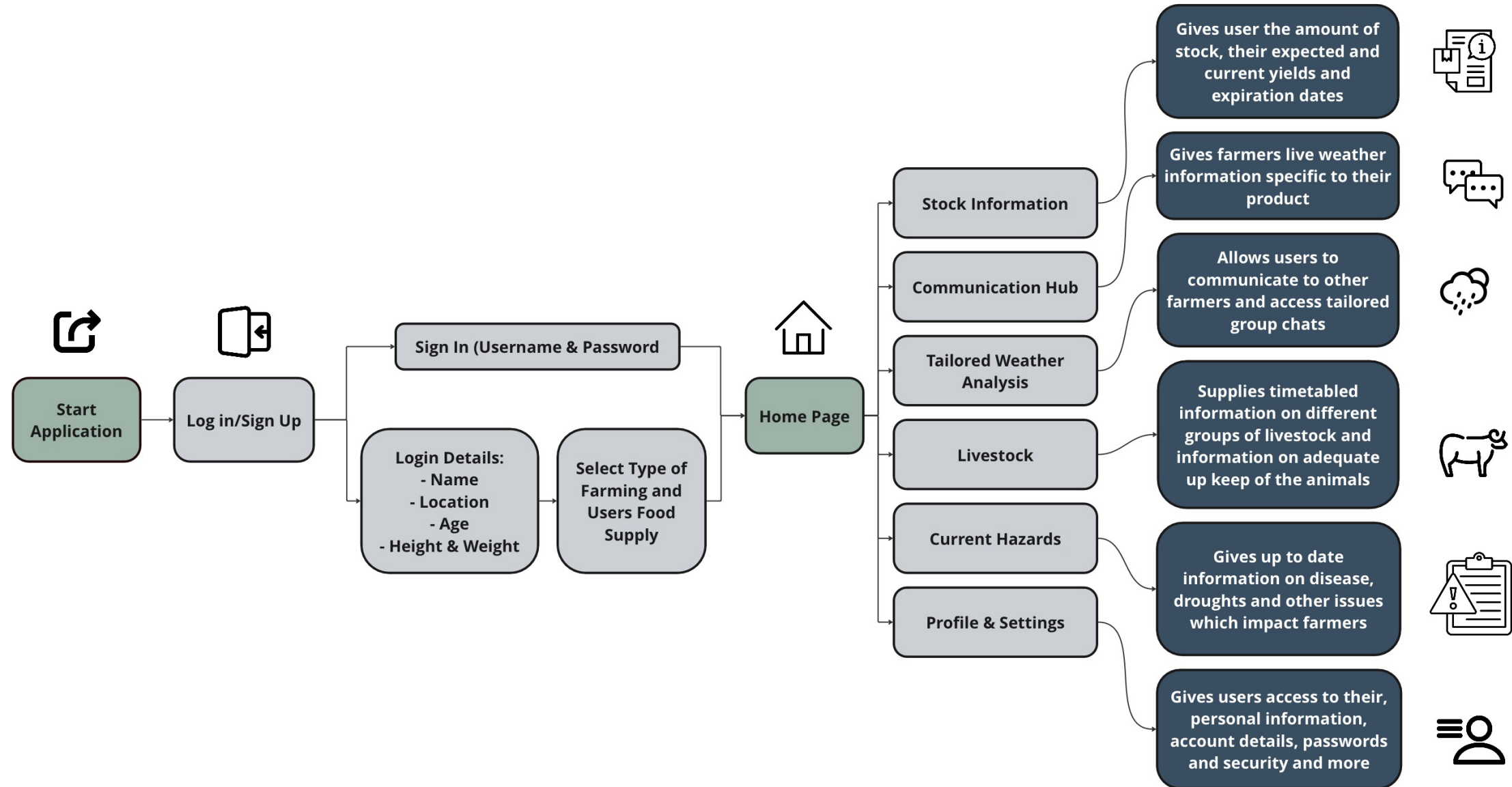
- Most crops are seasonal and it’s difficult to access distribution channels due to a lack of infrastructure.
- Wide range of ecosystems, including semi-arid lands and tropical forests so large variety of techniques.



Task Goals

- Want to be able to produce steady yields all year round no matter the changes in environment.
- Steady income throughout the year.
- Want their community to have a nutritionally adequate

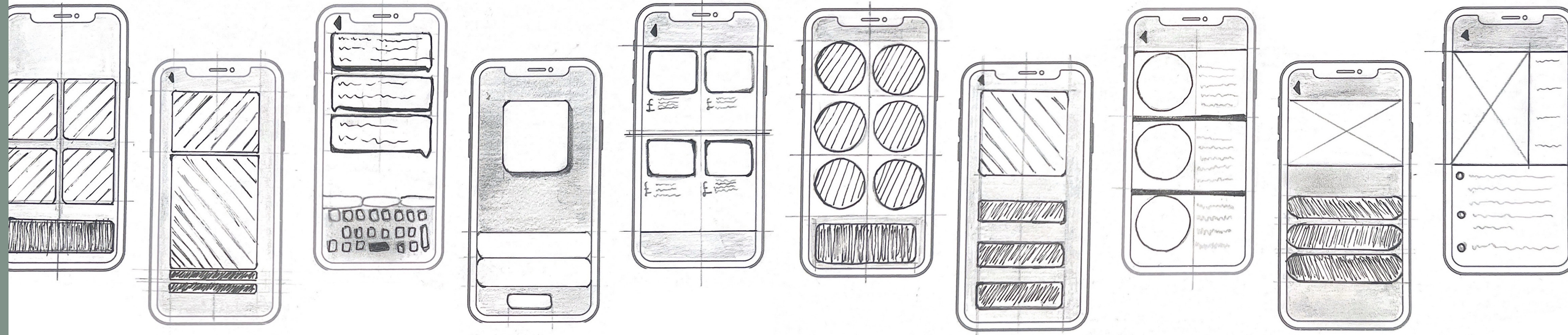




The use of a site map was helpful for the intial planning as it provided a framework that I could easily amend. The planning came after finding the need for increased education for those within the informal sector of work was noticeable. Many farmers lack the knowledge and proper equipment to give them the best possible chance to increase their yields, this site map illustrates the 6 current page ideas. Further ideation will be development through the use of wireframing, using the site map as a reference.

Initial Ideation

Wireframing and initial brand development

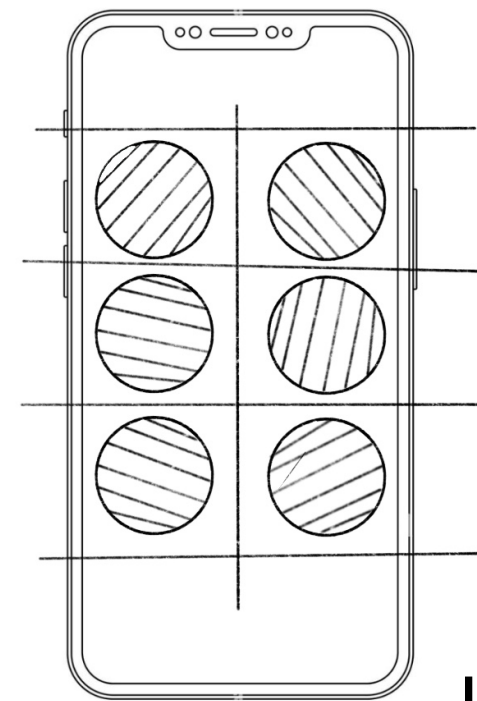


Menu

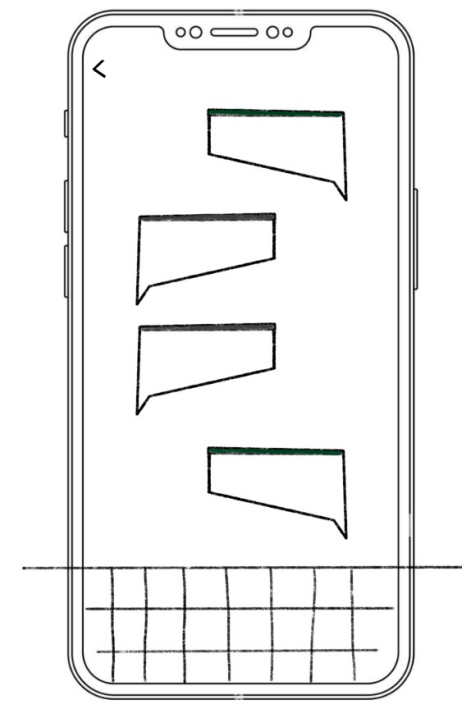
The menu page will show the options on the different pages, illustrated as high-quality pictures, making the app universal and removing any language barrier.

The communication page will be similar to that of the markets leading apps, making it easy to understand. Giving farmers channels to trade from rural areas.

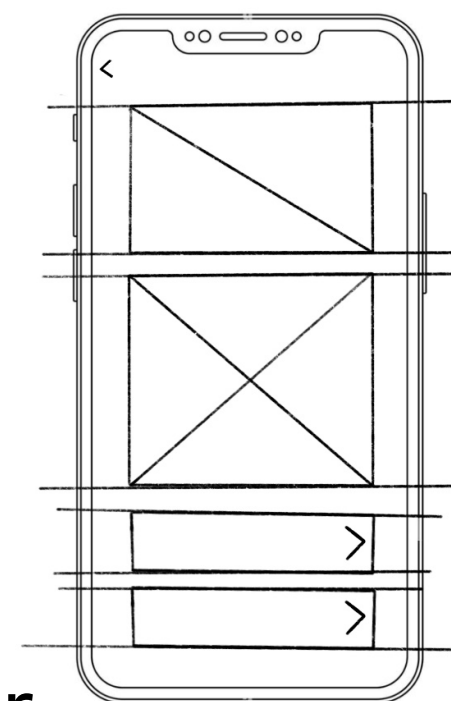
The layout for the livestock information will give users current information on their livestock input. Supplying food notifications and helpful information.



Communication



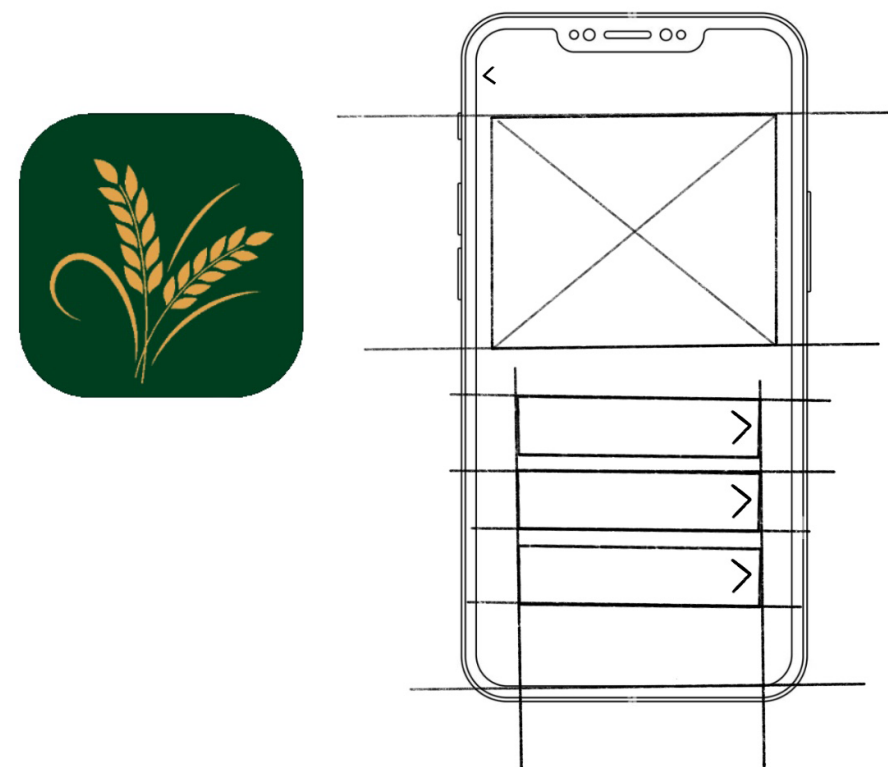
Livestock



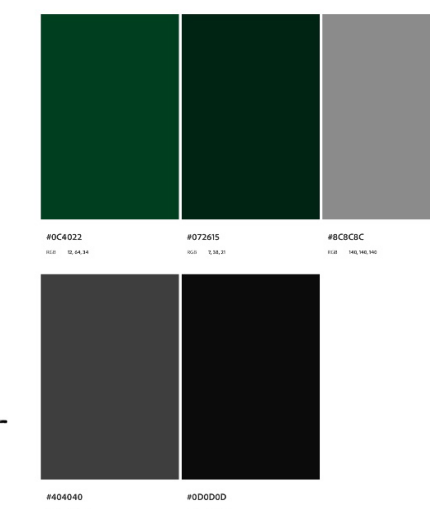
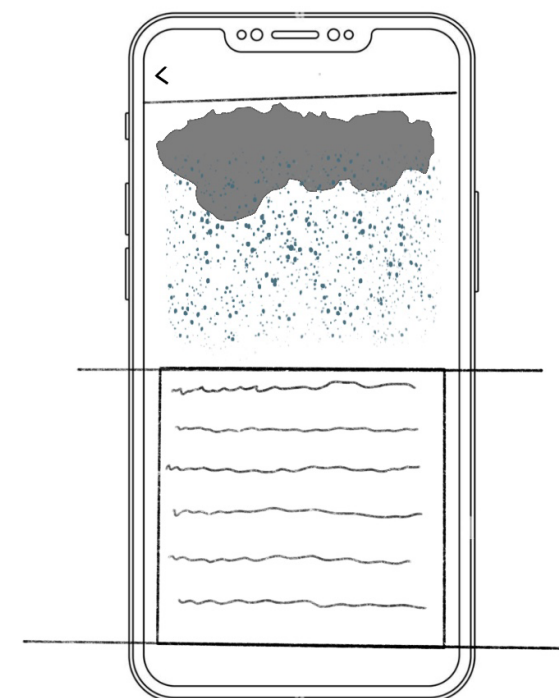
The hazard menu opens onto any current hazards, users can then open specific hazards within their area at that moment or in the future. This will supply farmers with current issues.

The weather page will be tailored for individual farmers, giving unique weather information, custom to their required crop inputs. This will supply the best times to farm.

Hazards



Weather



For the branding of the application I featured wheat and used greens and greys as I believe it illustrates the beginning of a greener, better future for the user.

Final Development

User Flow



03

GreenPod

This is a portable environment which supplies an area for subsistence farming that is capable of withstanding harsh weather conditions. The design will have the feature to be open or closed. This environment is automatically adjusted for the optimal growth of the plants inside



Boards

Mood



Form

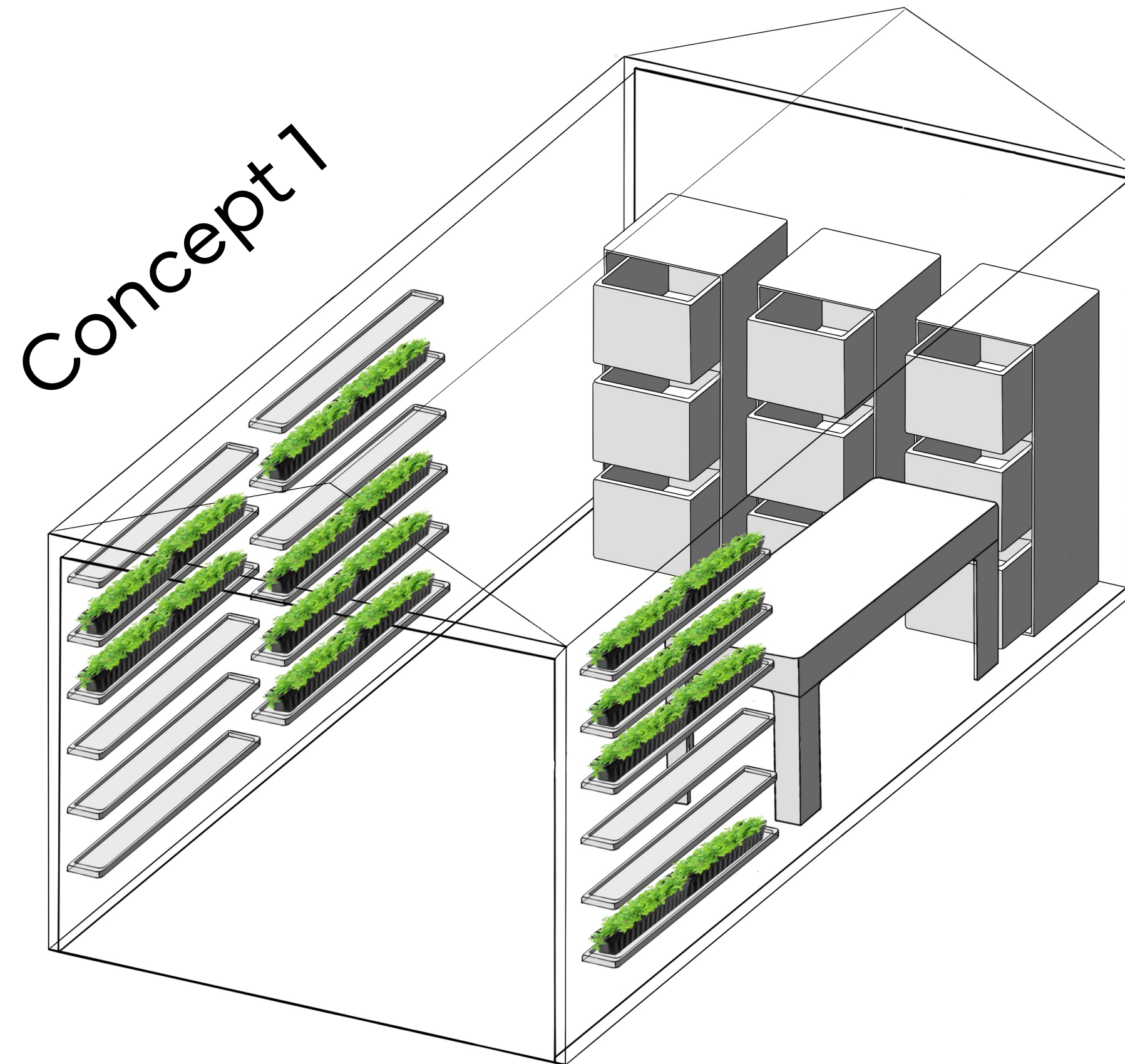


Initial Concepts

Concept 1 minimizes early crop deaths and allows for plant growth in any environment, including harsh conditions like droughts. This innovation allows for increased farming resilience, and ensures a food supply and reduces malnourishment.

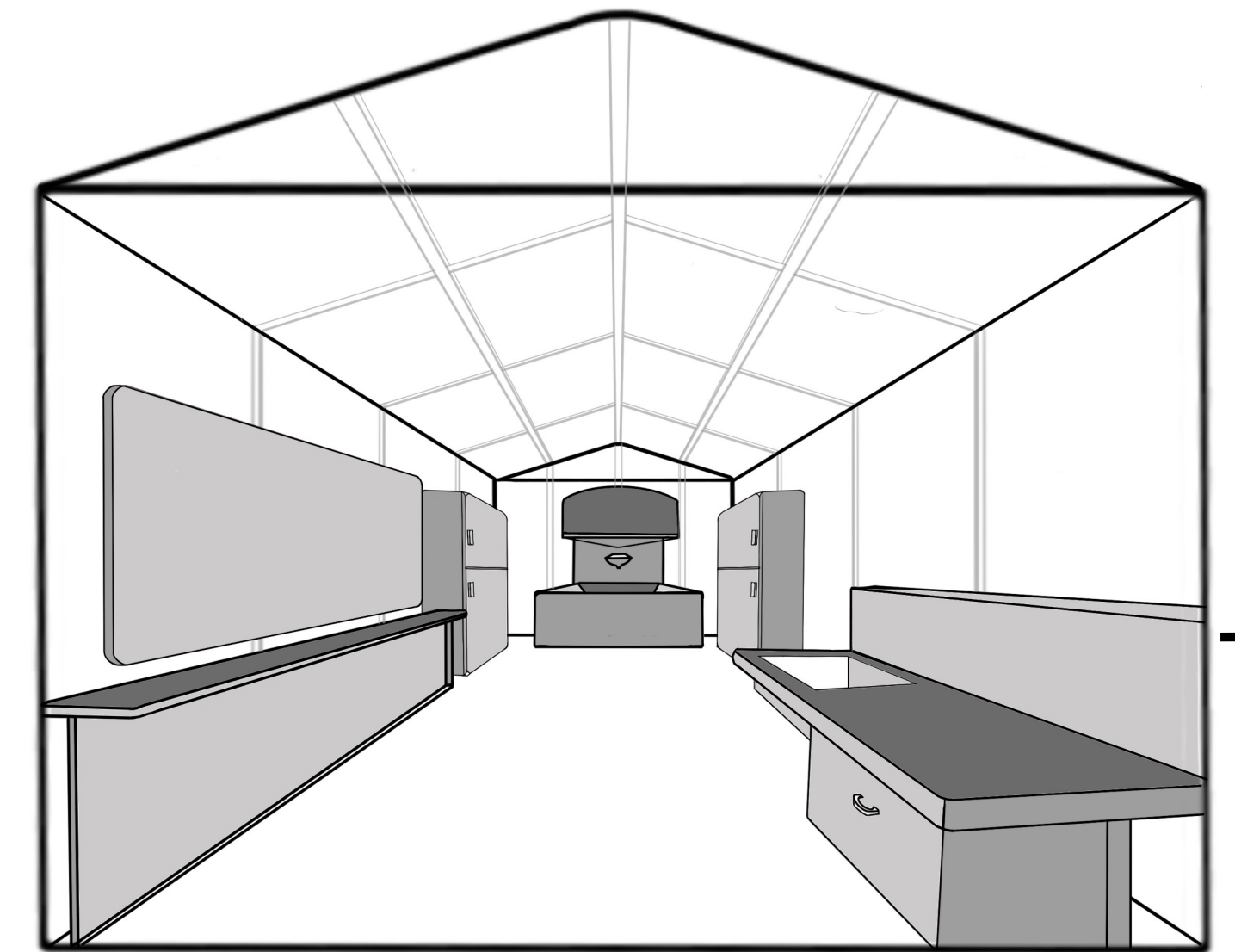
Concept 2 boosts trade for subsistence farmers by using convenient grain dispensers, allowing remote selling. Its design supports produce storage in bad conditions and serves as a multifunctional space for tools and information when produce is not sold.

Concept 3 supplies farmers with an area to house their tools. This design uses help from a charity which supplies tools within Sub-Saharan Africa, meaning the use of proper equipment will be available, allowing for increased yields.

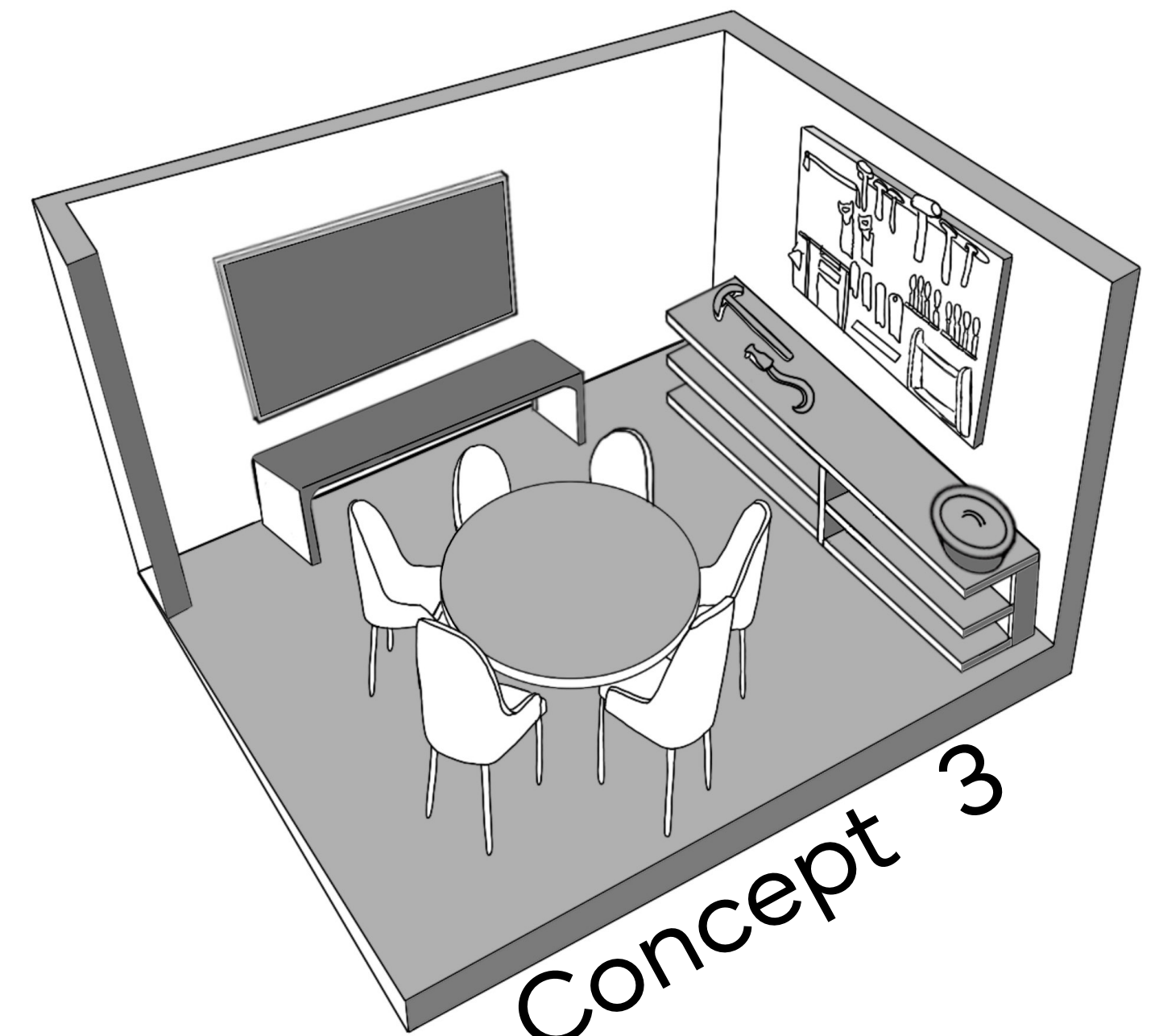


Concept 1

Concept 1 would be an effective design if it housed an area for plant growth and incubation. When researching the idea of a pop-up, or easy-build storage area's for concept 3, I thought the design could be effective for housing an environment for plants. All that would be required is air conditioning, access to clean water, an environment that can be open or closed.

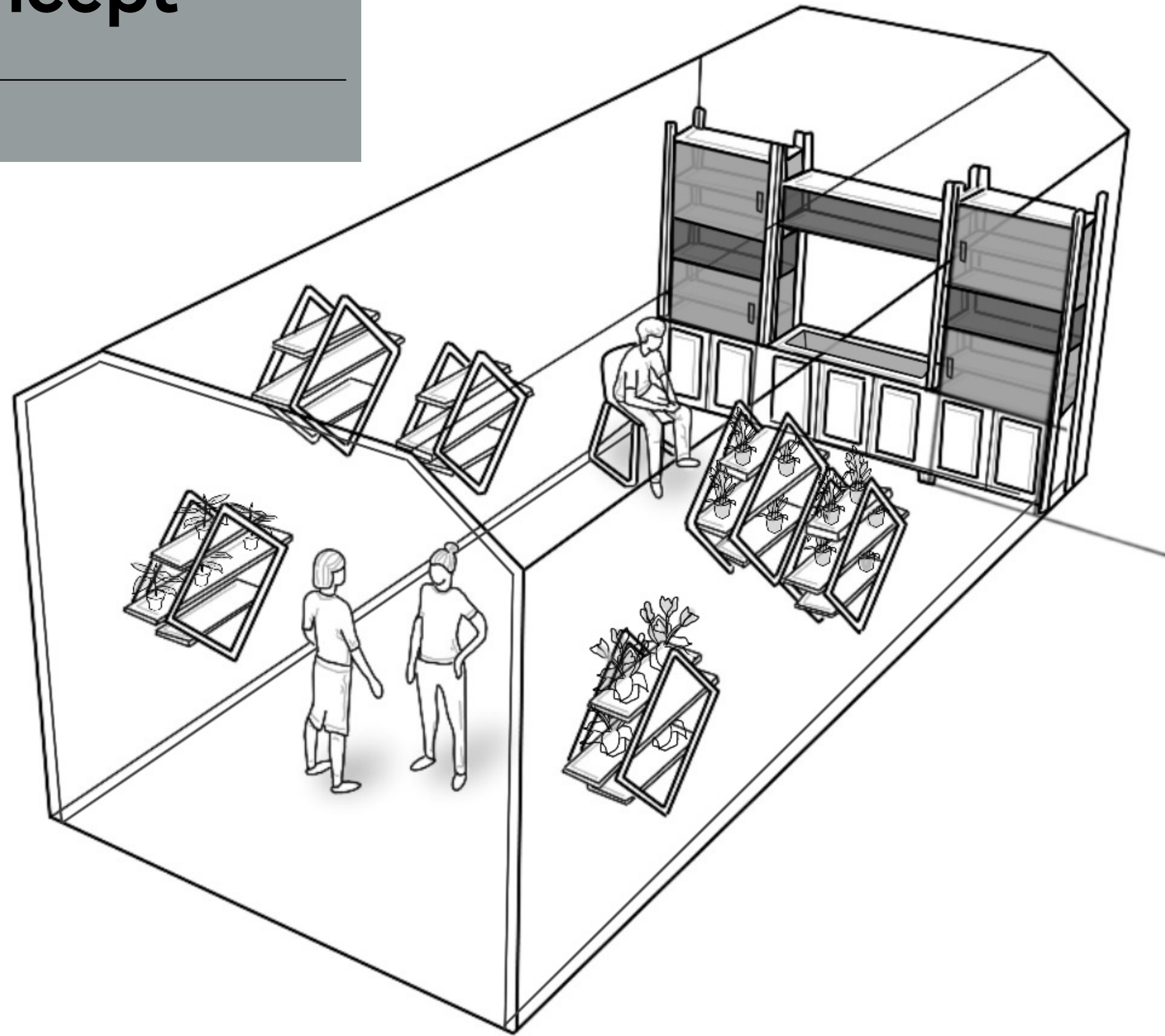


Concept 2



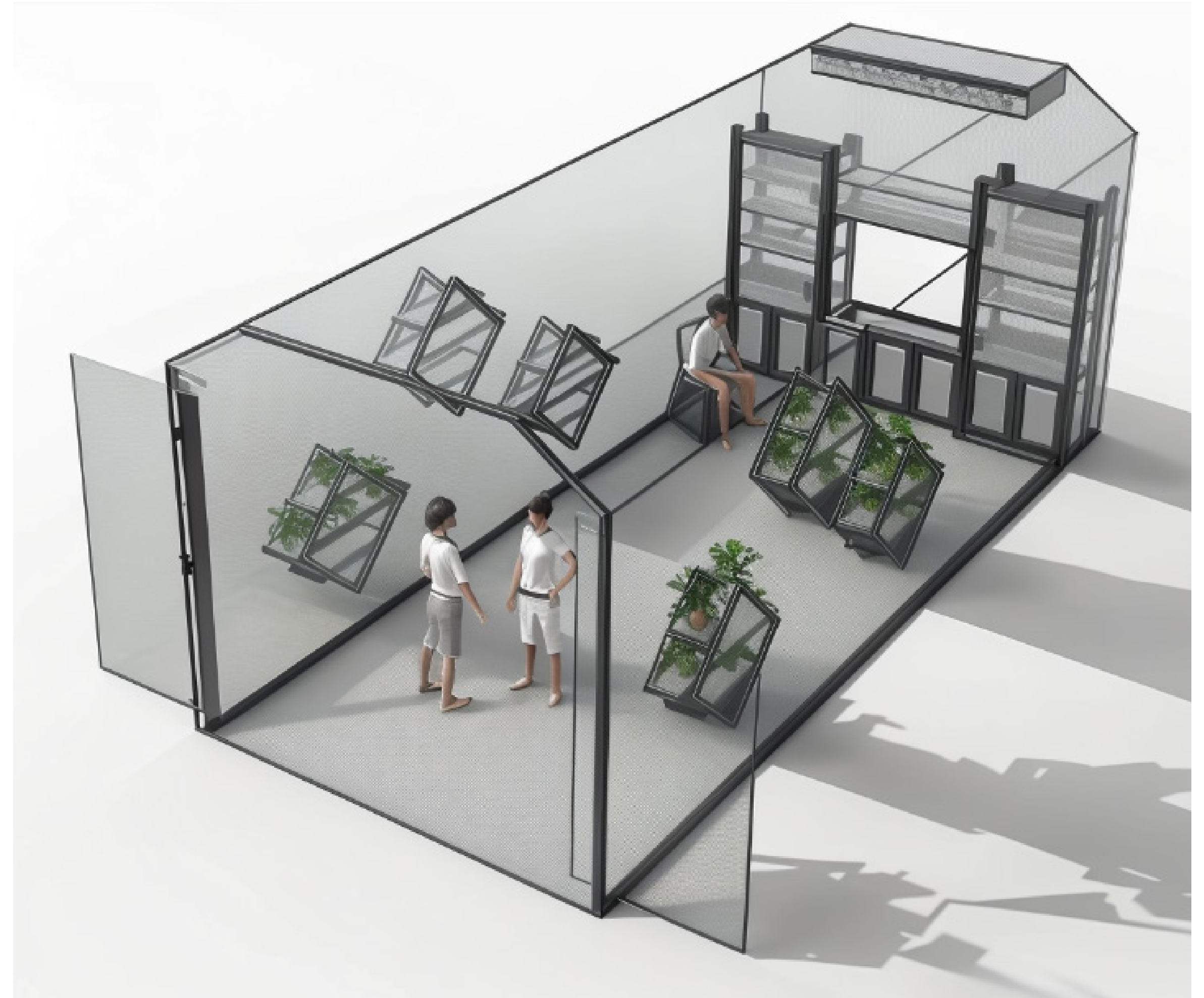
Concept 3

Final Concept



I gained inspiration to use an octagonal cylinder for the envelope but then found that the two lower faces were not effective for the structure. I decided to remove these. Leaving a design that allows horizontal modular connections, supplying the possibility for increasing the size of the growing hub.

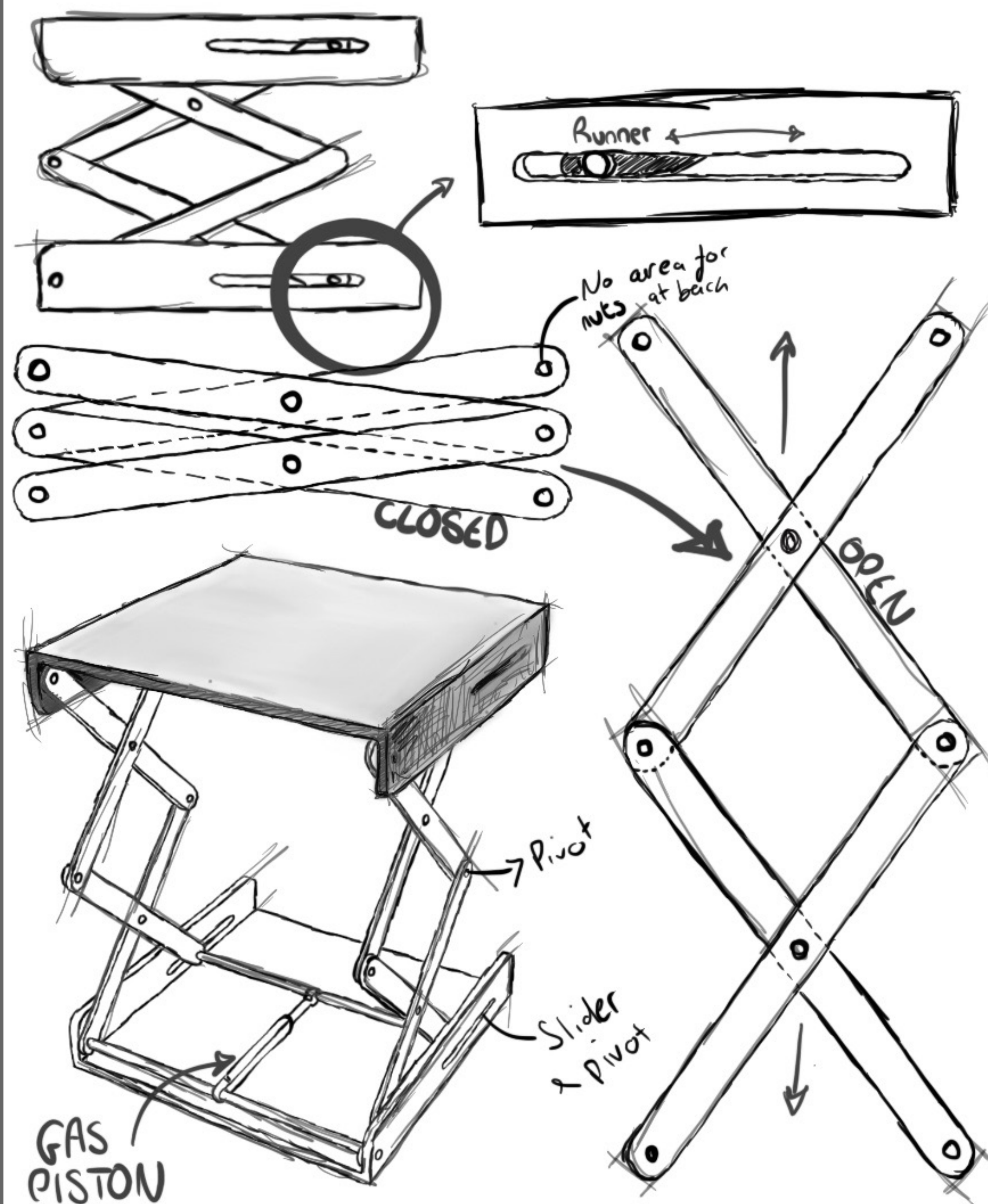
This environment uses a steel frame, as illustrated by the thickness of the walls. This will then be filled using recyclable raw materials like expanded polystyrene. This will allow for a rigid but secure structure. The base of the environment could either be left open, allowing enclosed farming whilst using the natural soil or just closed using further recyclable. The temperature can be altered, however when the environment it will be automatically altered using sensor vents.



04

PotLift

The pot lift allows for elderly individuals to carrying out the lesiure activity of gardening. Supplying a way to lift pot's onto the user's work bench and allow potting without the need for heavy lifting.

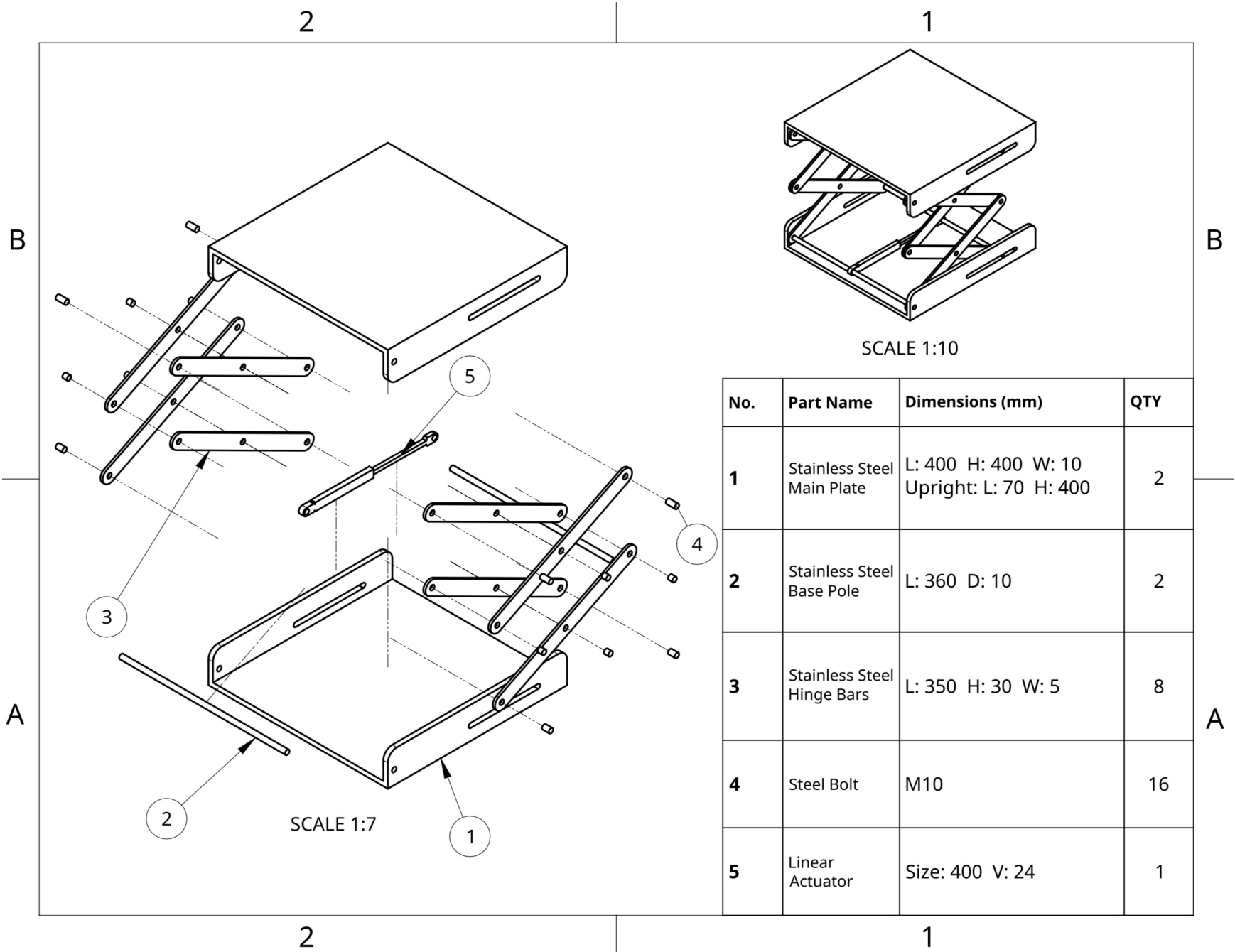


The Problem

Over 50% of individuals who use gardening as a leisure activity are over the age of 55.



As the poeple age, giving up gardening can often become a necessity due to health issues. Gardening offers physical and mental health benefits for these people, like gentle exercise, exposure to sunlight, and interaction. This loss not only results in a reduction in happiness and purpose but also reduces their physical fitness. Therefore, I set out to design a product to allow for elderly people to pot on work bench’s without the need of assistance when lifting.



**Final
Prototype**



Prototype In Use



05

SwiftPass

SwiftPass is a system that uses contactless gates which automatically register a user as they enter and exit the London tube, taking their fare from their primary payment method on their phone without the requirement for tapping or inserting cards



The Problem

The environmental pressures has led to a surge in public transportation usage. Due to high costs of new cars and electricity, personal vehicle use has dropped by a quarter. As a result, public transport is strained, causing long queues at barriers and extended commuting times. There's also been a rising issue of fare evasion on the tube.



The tube is used by **50 million people a day**.

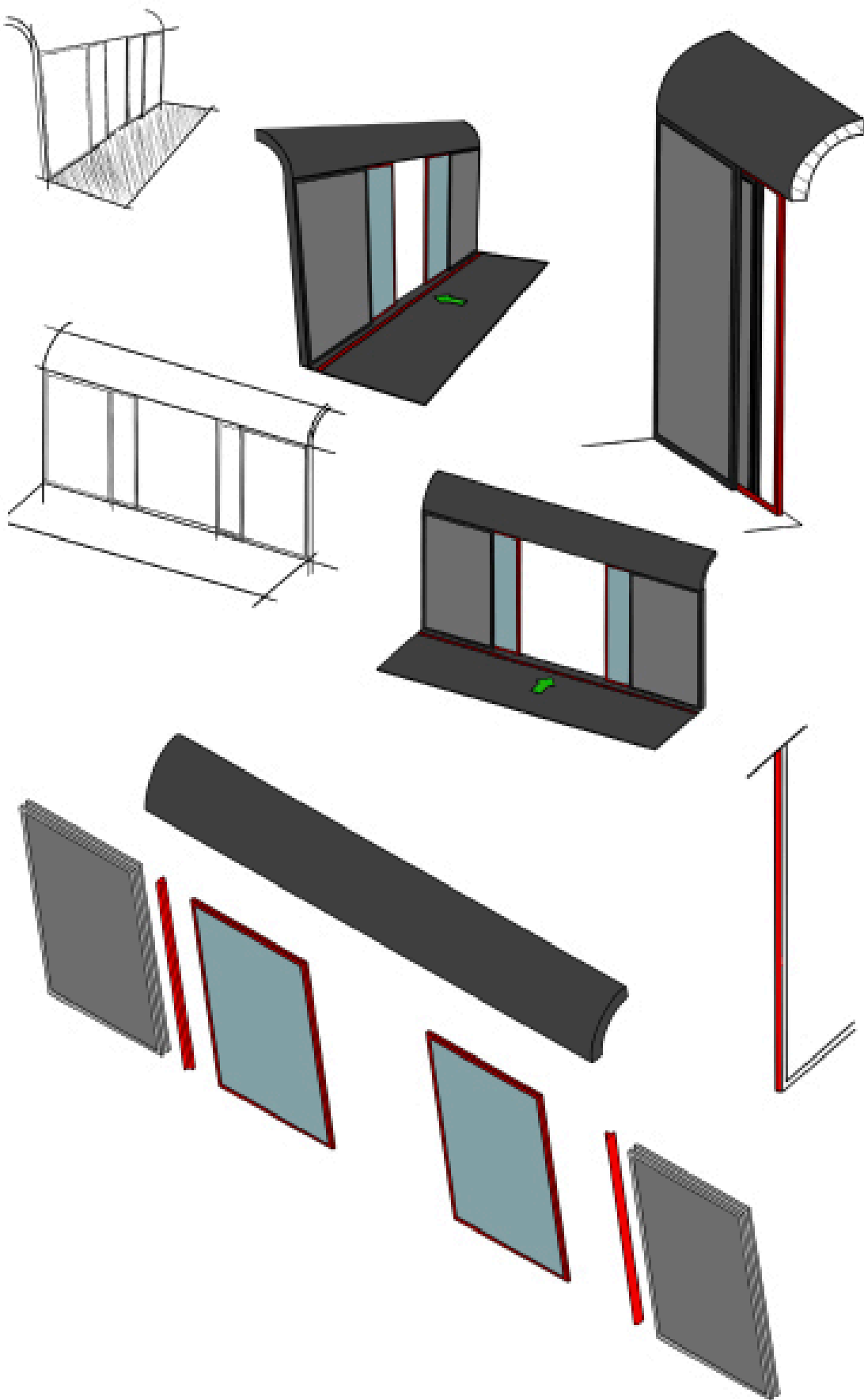
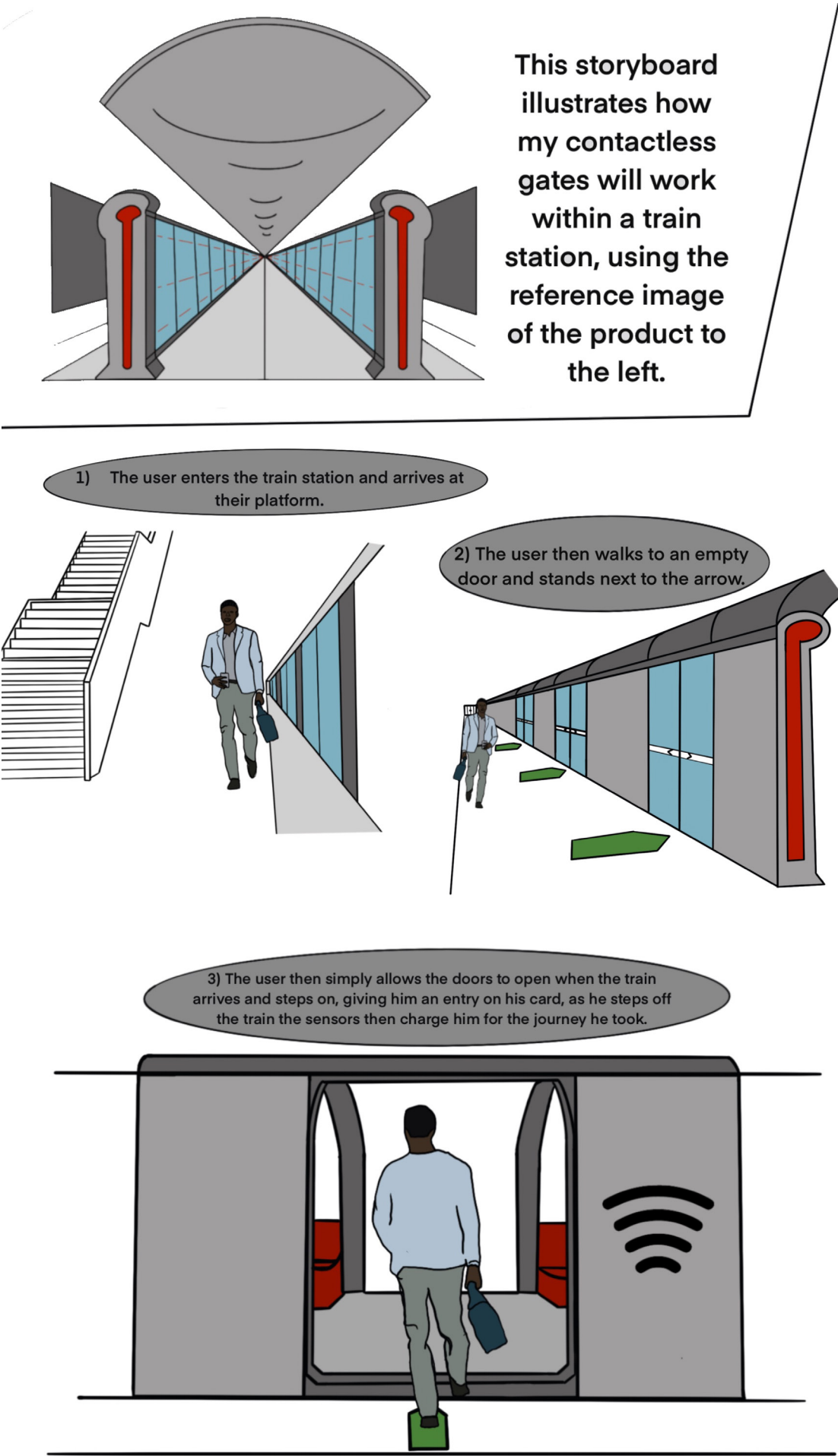
98% of people own a smartphone.

Tube barriers result in **longer commuting times** for everyone.

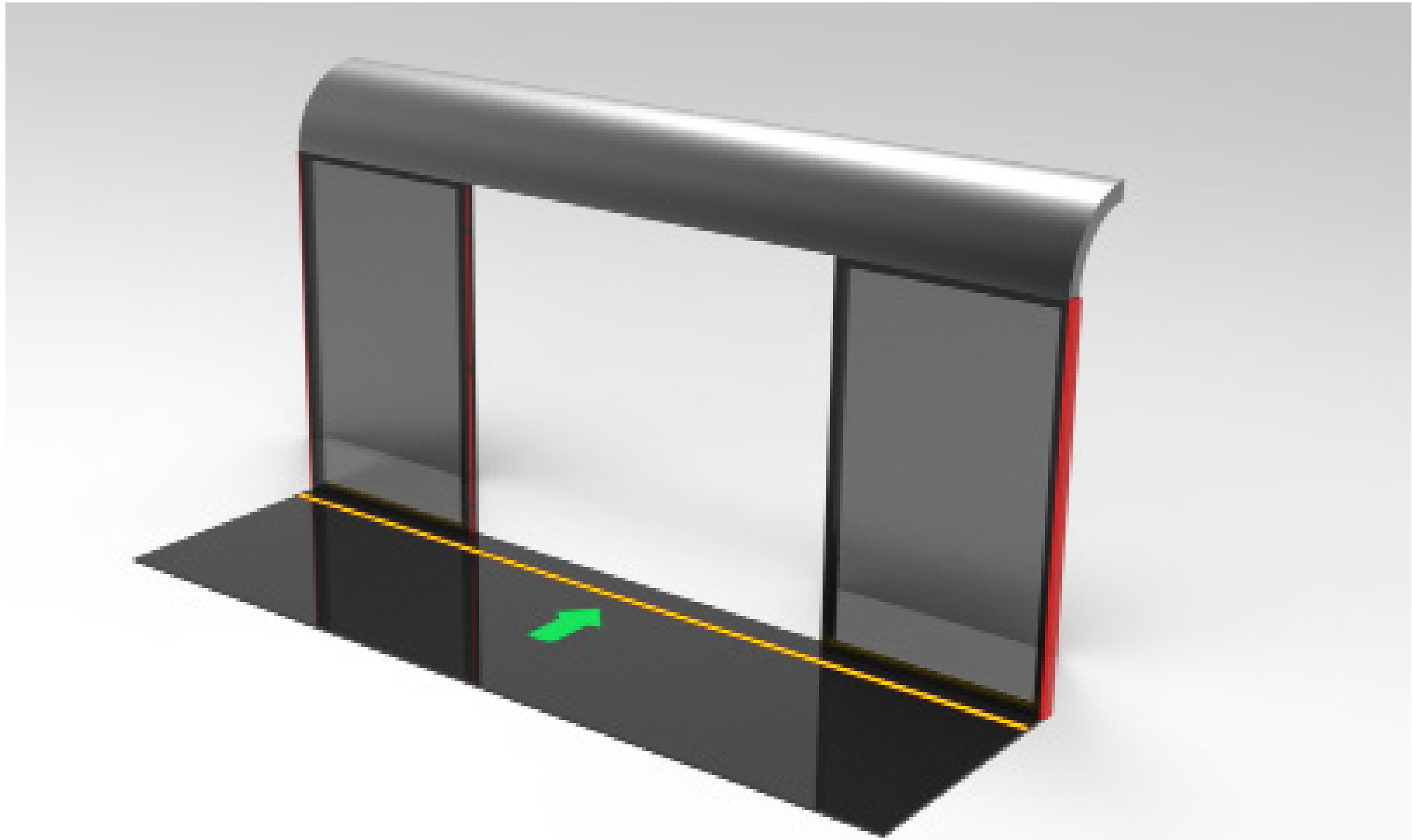
By reducing your commuting **times twice** a day, **4 minutes** each journey, **2 days** are saved each year.

Concept Development

This solution is advanced contactless gates which enable seamless boarding without prepaid tickets or card tapping. The system autonomously charges the fare, enhancing efficiency and eliminating queues. This innovation reduces journey durations by up to 15 minutes, enhances safety, and offers a hassle-free transportation experience for all.



SWIFT PASS



UX Concept



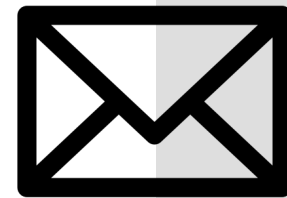
Contact



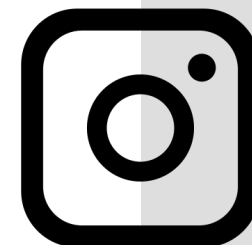
+447518905155



25 Curzon Street, Loughborough



Lloydjohnarmstrong@icloud.com



dddesignla