

# PORTFOLIO

## INDUSTRIAL DESIGN

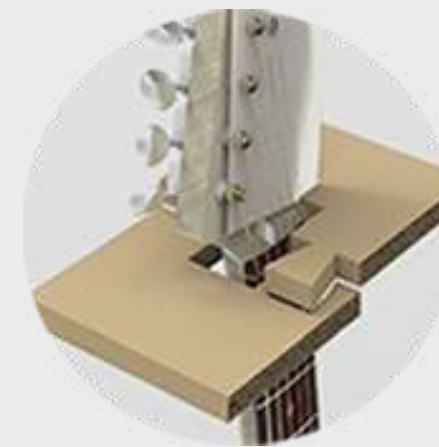
I believe in designing for both common and overlooked interaction and experiences in our daily life. I've worked on projects of diverse nature and I'm competent to add to the diversity or to further expand on previously worked areas; to design and to learn.

SHRUTIDHAR PATADIA

# SAFETONE

## BRIEF

Design an economical packaging solution that mitigates the risk of damage during low to medium impact and protects delicate areas of the guitar where wear during transit is generally observed.



Headstock



Fretboard



Guitar Body



## Research



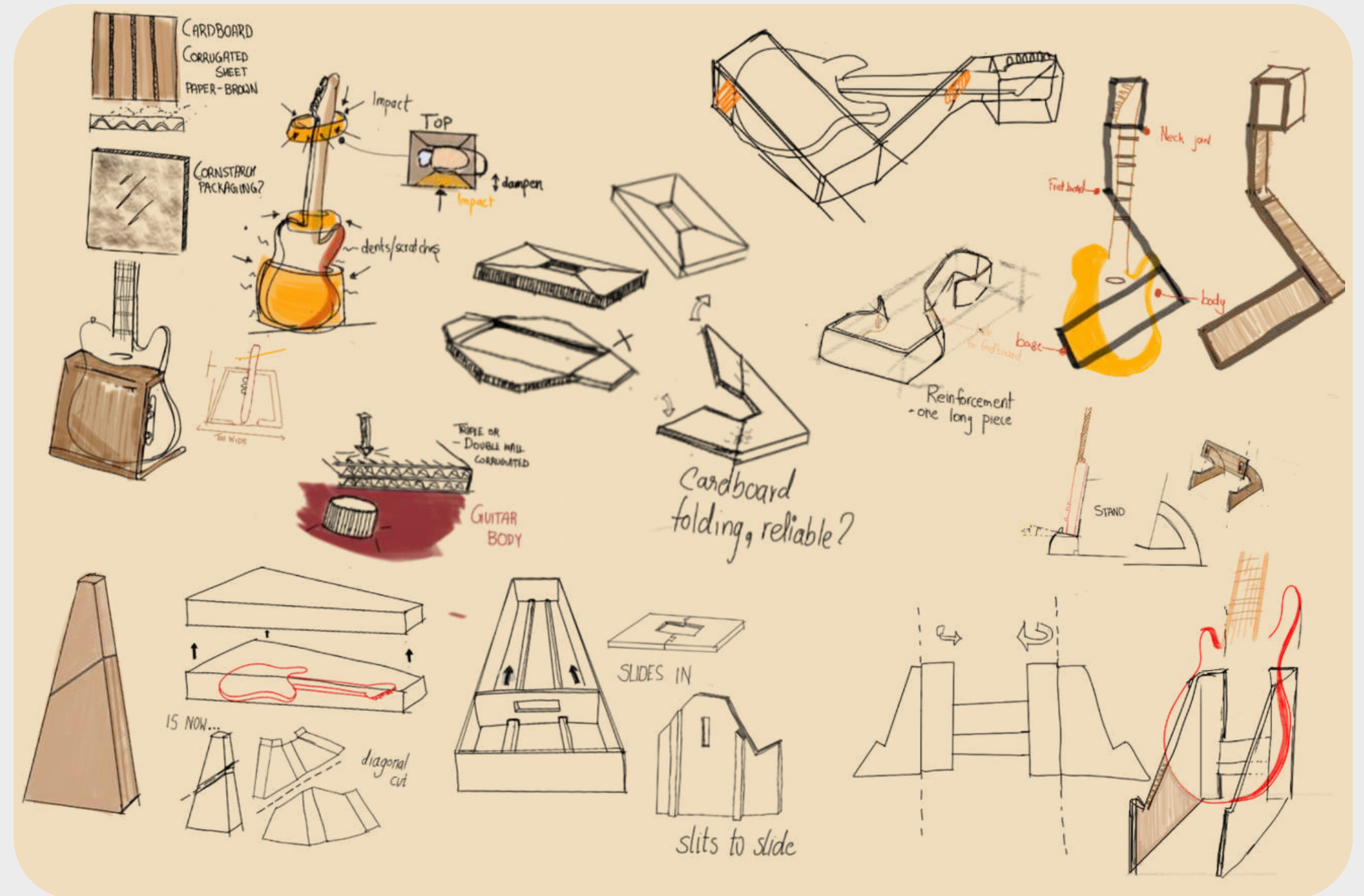
Instruments often get damaged in transit

People who buy the cheapest guitars generally do not prefer to buy accessories like the stand, which is essential in most cases.



Packaging solution used for mass-manufactured guitars that guarantee safety during transit also provides for the lack of a stand.

## Ideation

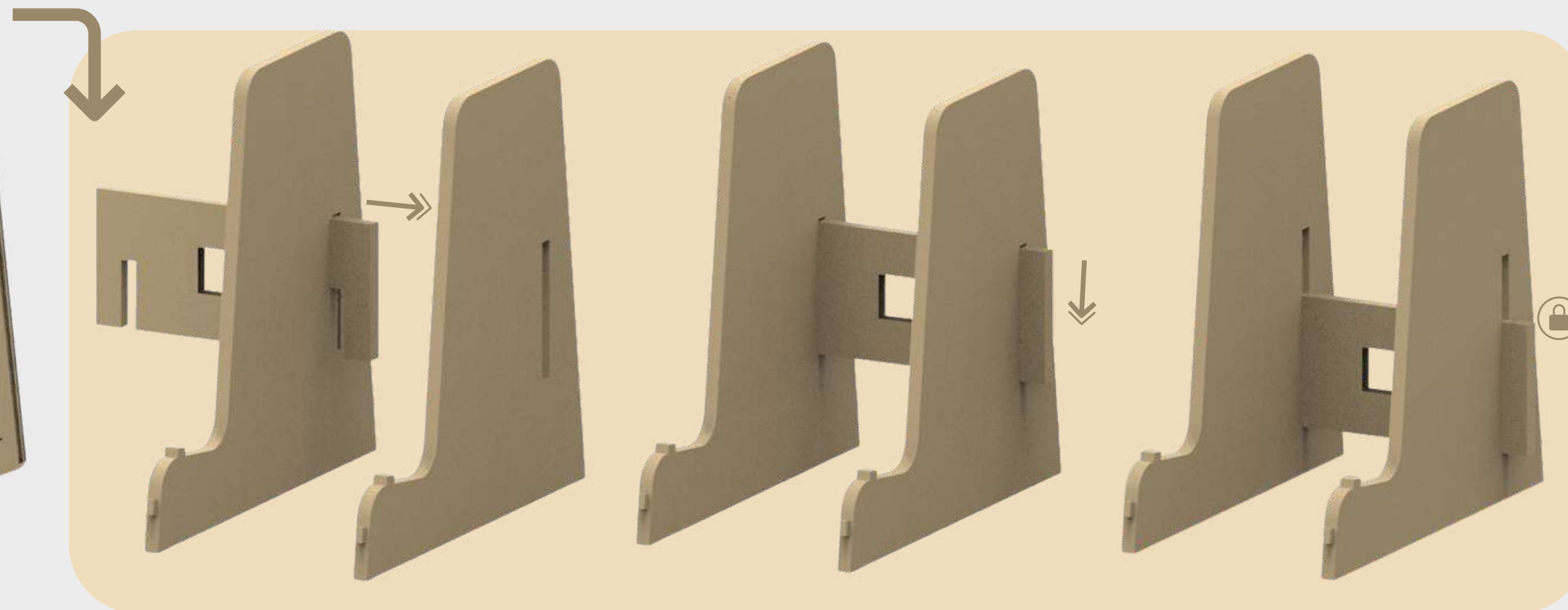




# CONCEPT



Semiotics to help guide the assembly of the stand



Assembly of the stand, from packaging

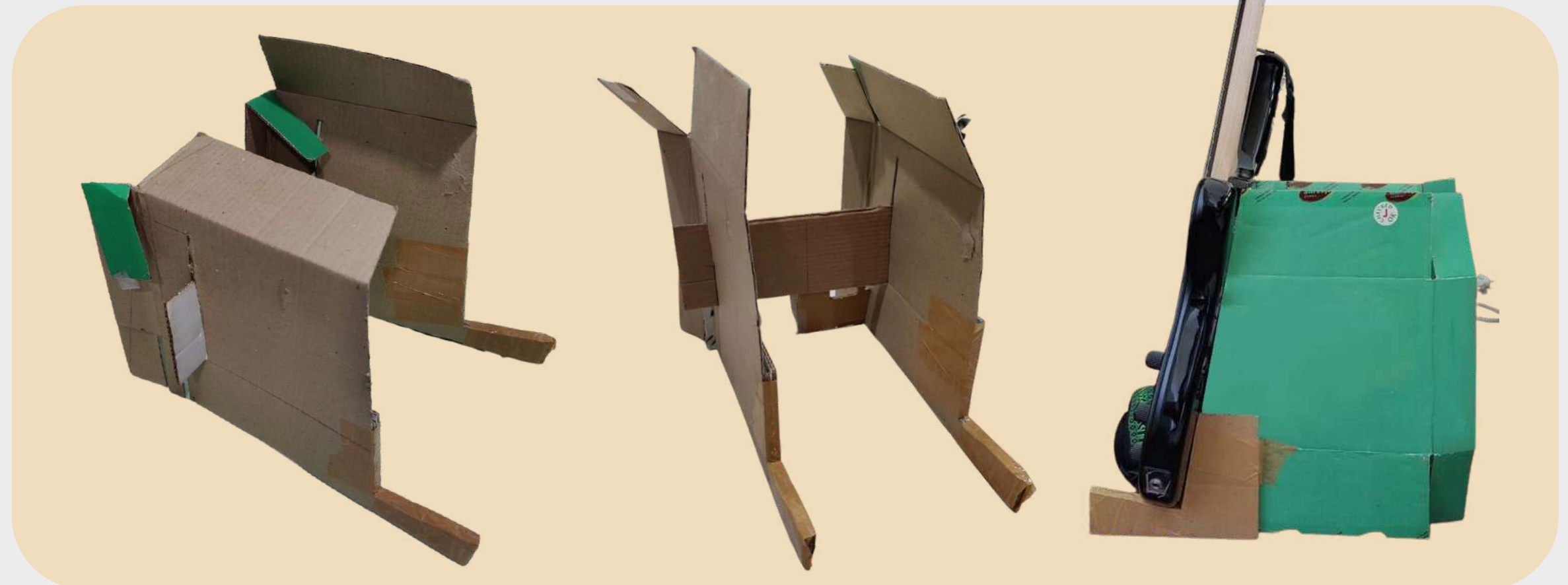


## Mockup and Testing



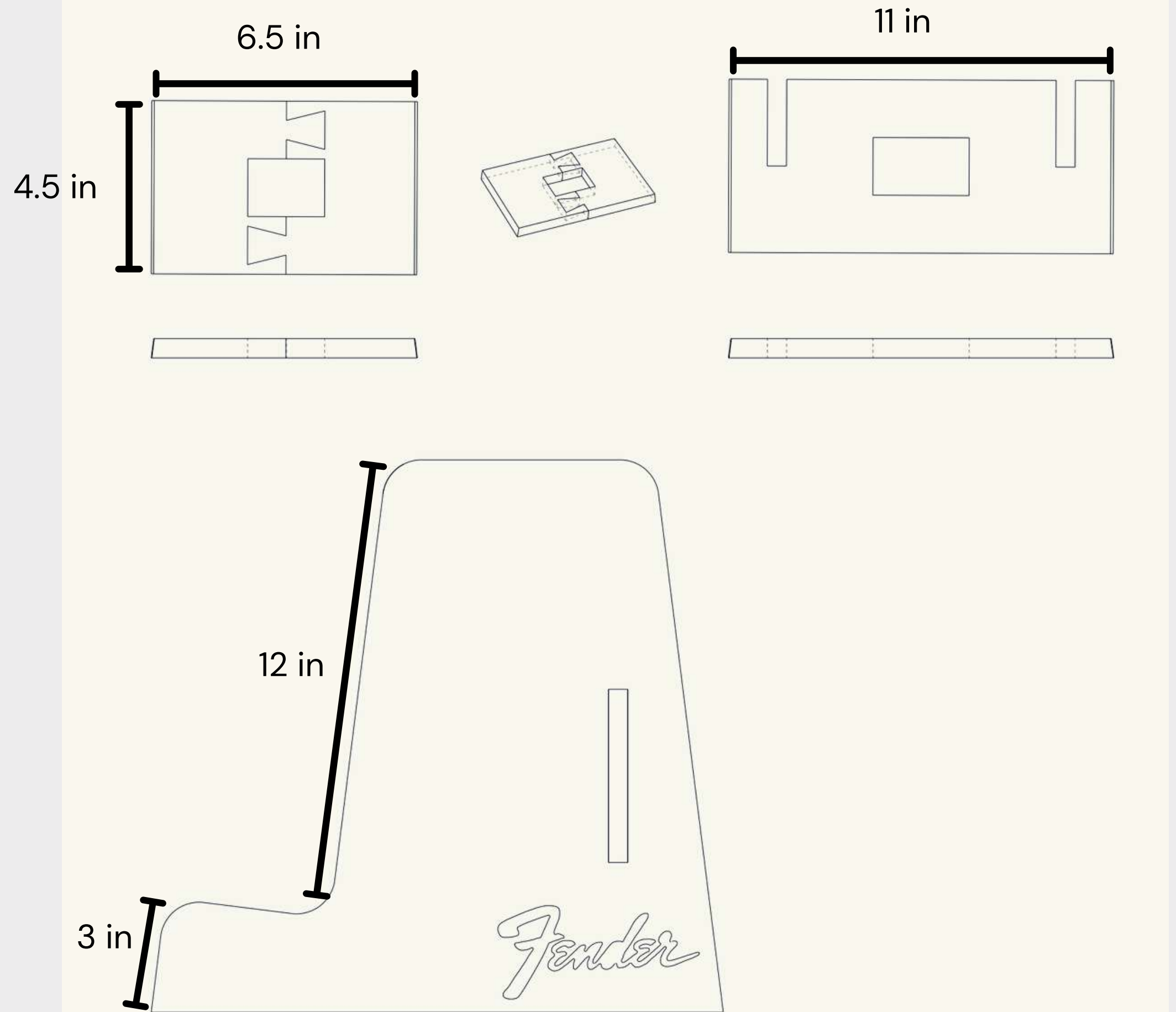
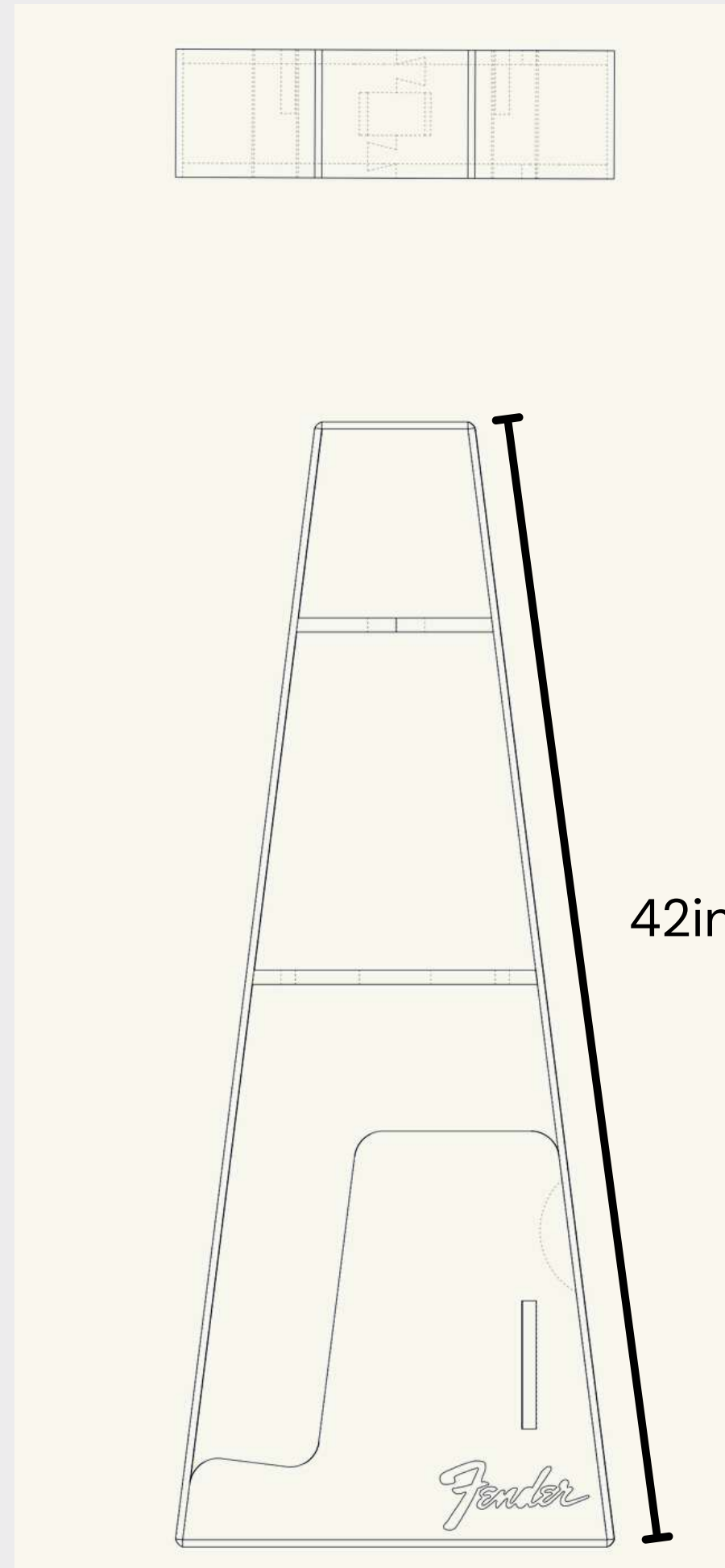
Quick mock-up as proof of concept. The joinery makes it easier for assembly

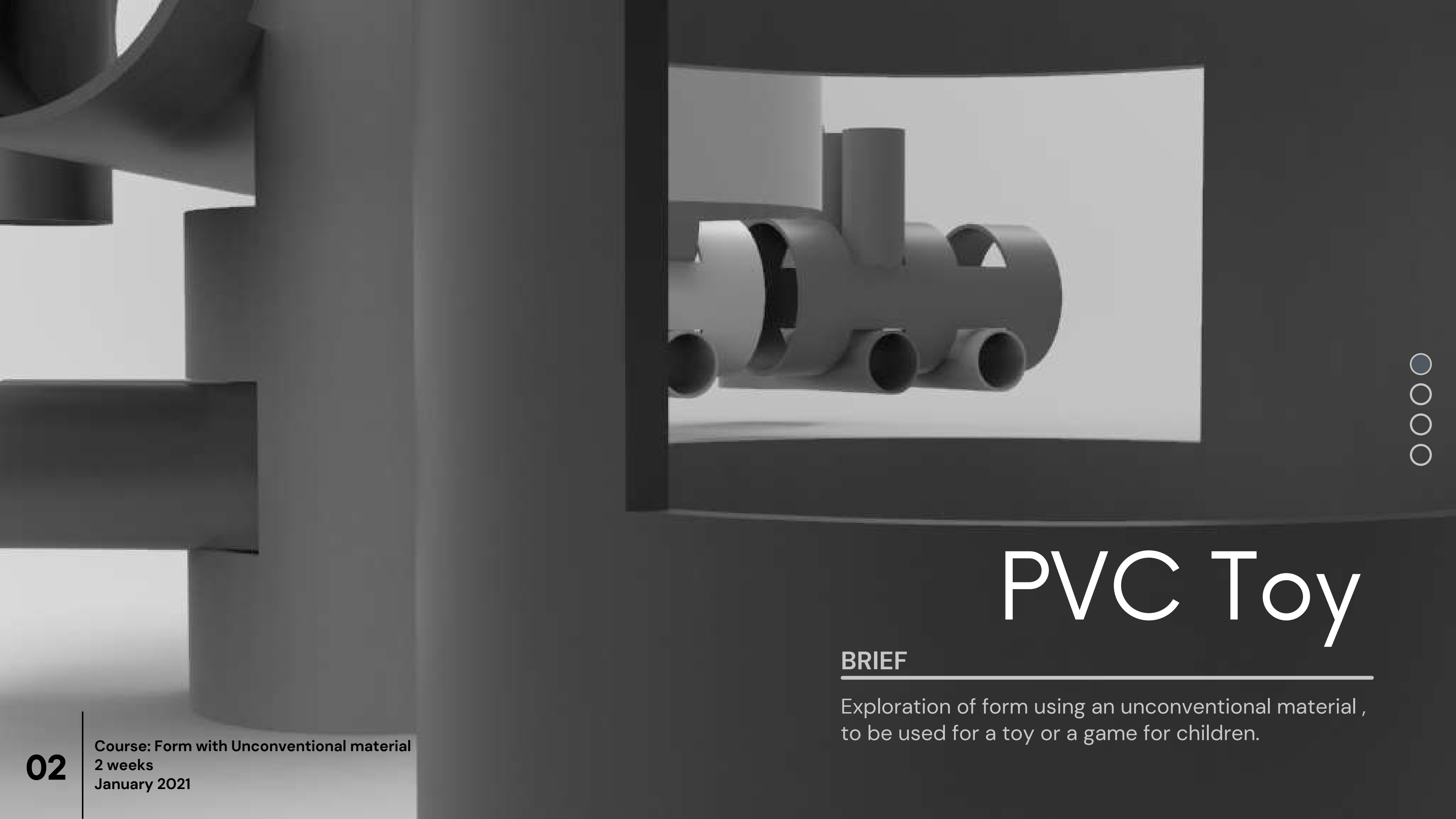
Mockup of the stand using the same parts. Put guitar to see if it takes the weight. It did.





## Dimensions





# PVC Toy

## BRIEF

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Exploration of form using an unconventional material ,  
to be used for a toy or a game for children.

# Research

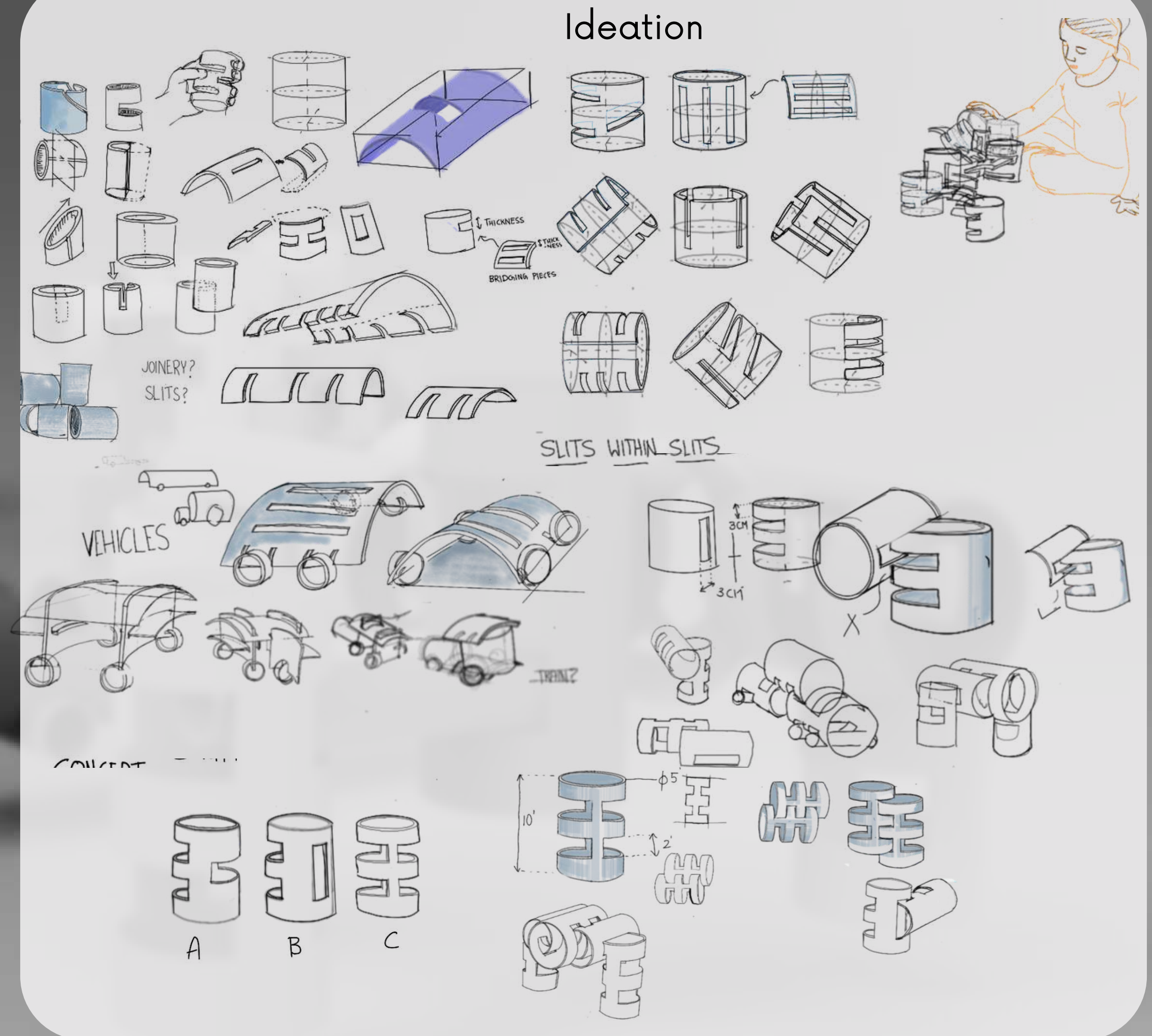


PVC pipe is a robust material and does not disintegrate even over long time periods.

Block play games are known to improve shape recognition, creative visualisation and cognitive flexibility in children.



Using the cylindrical form of a pvc pipe, block components can be worked out which can go with each other to form various shapes and forms.





## Process



Measure



Manipulate

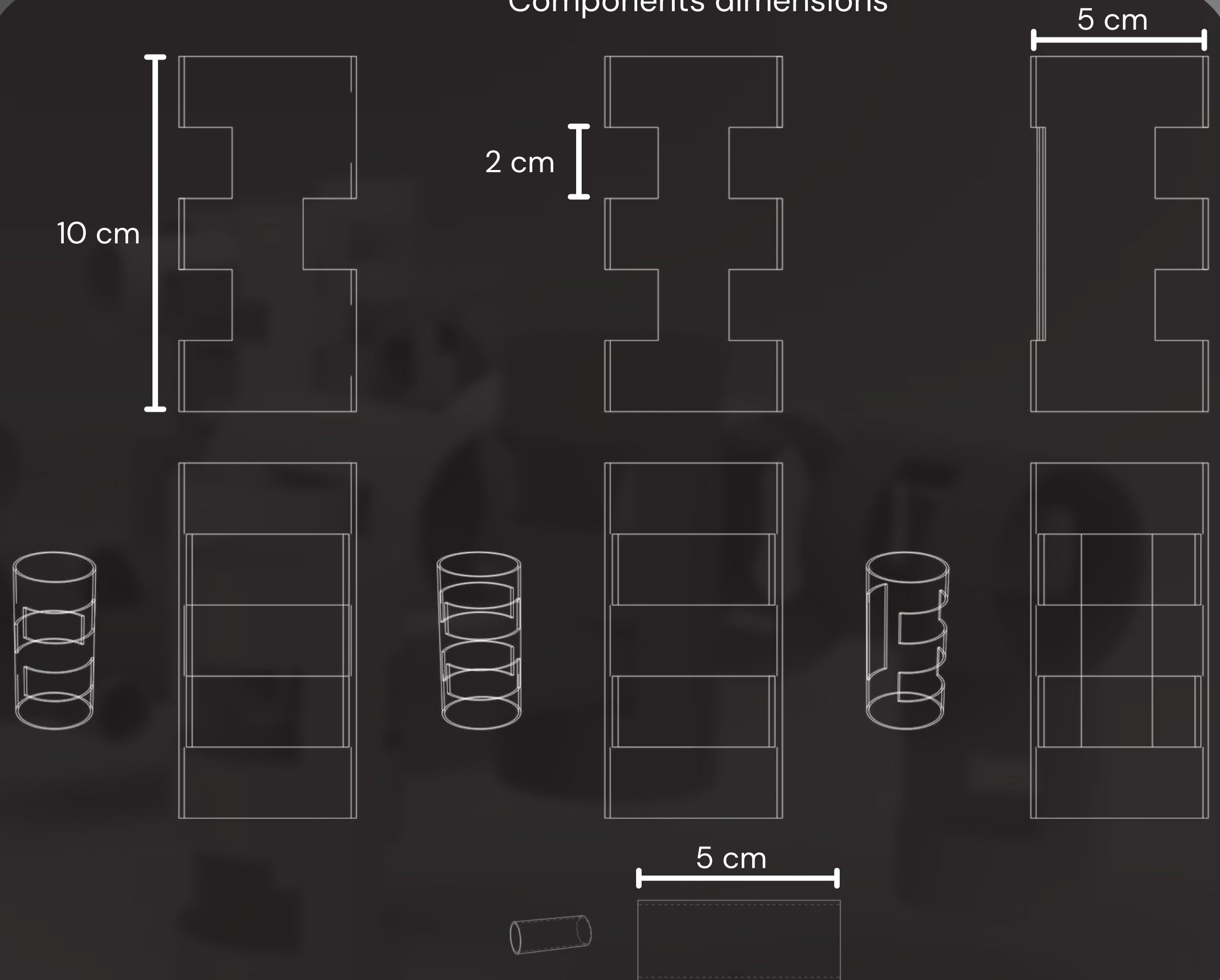


Match



Make

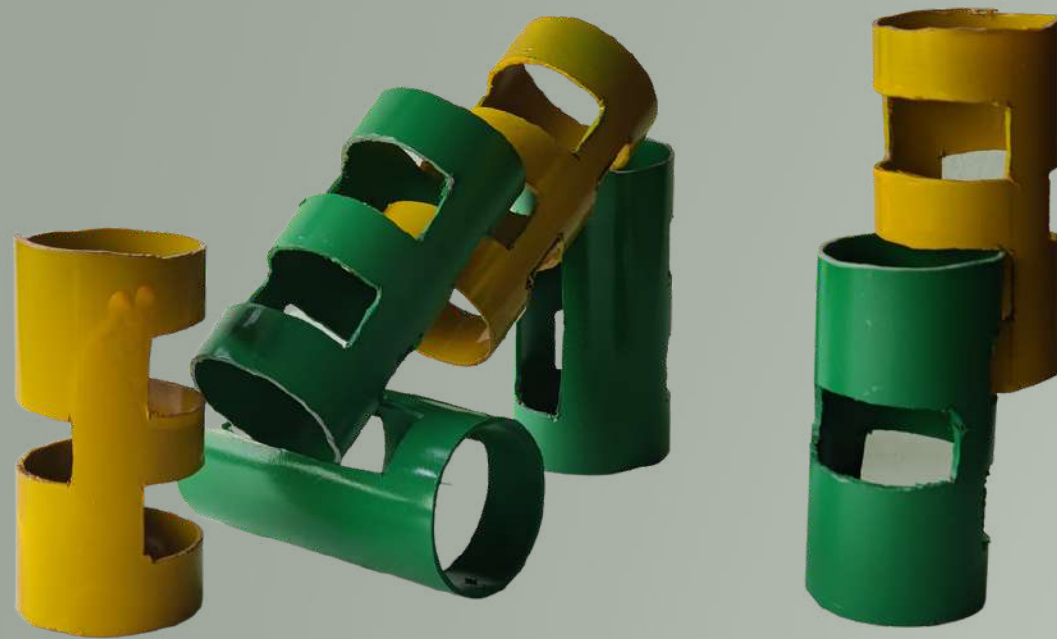
## Components dimensions



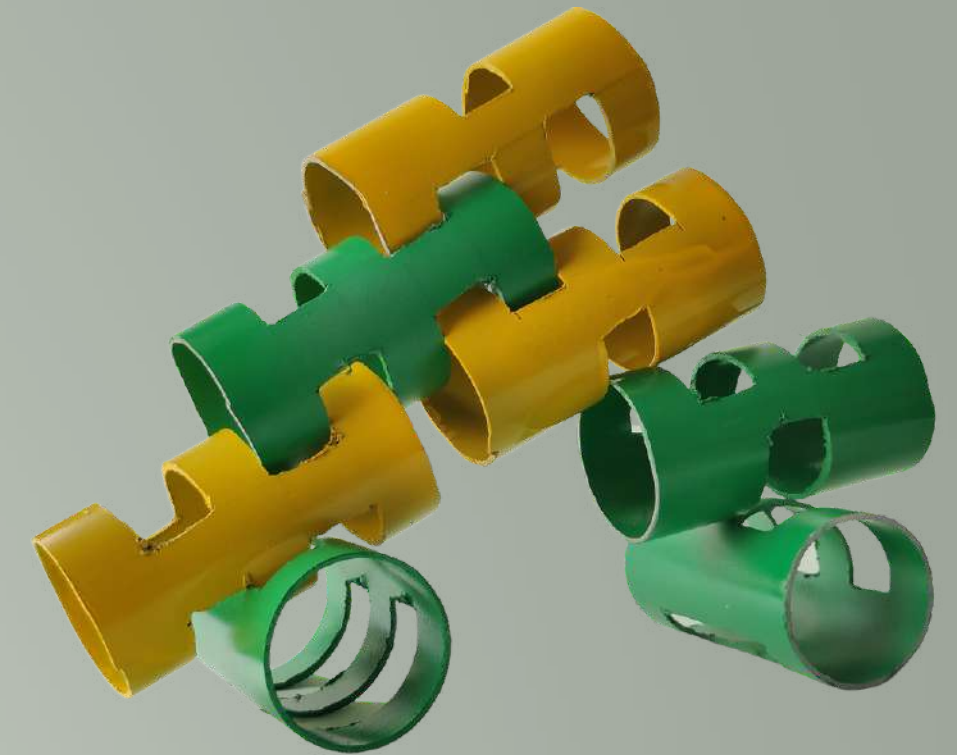
# Prototype

The game opens possibilities for children's imagination to run wild.

The PVC pipes have been coated with children friendly and toxic-free paint.



Son and father star gazing



Cannon on wheels



Hunting Party



Airplane



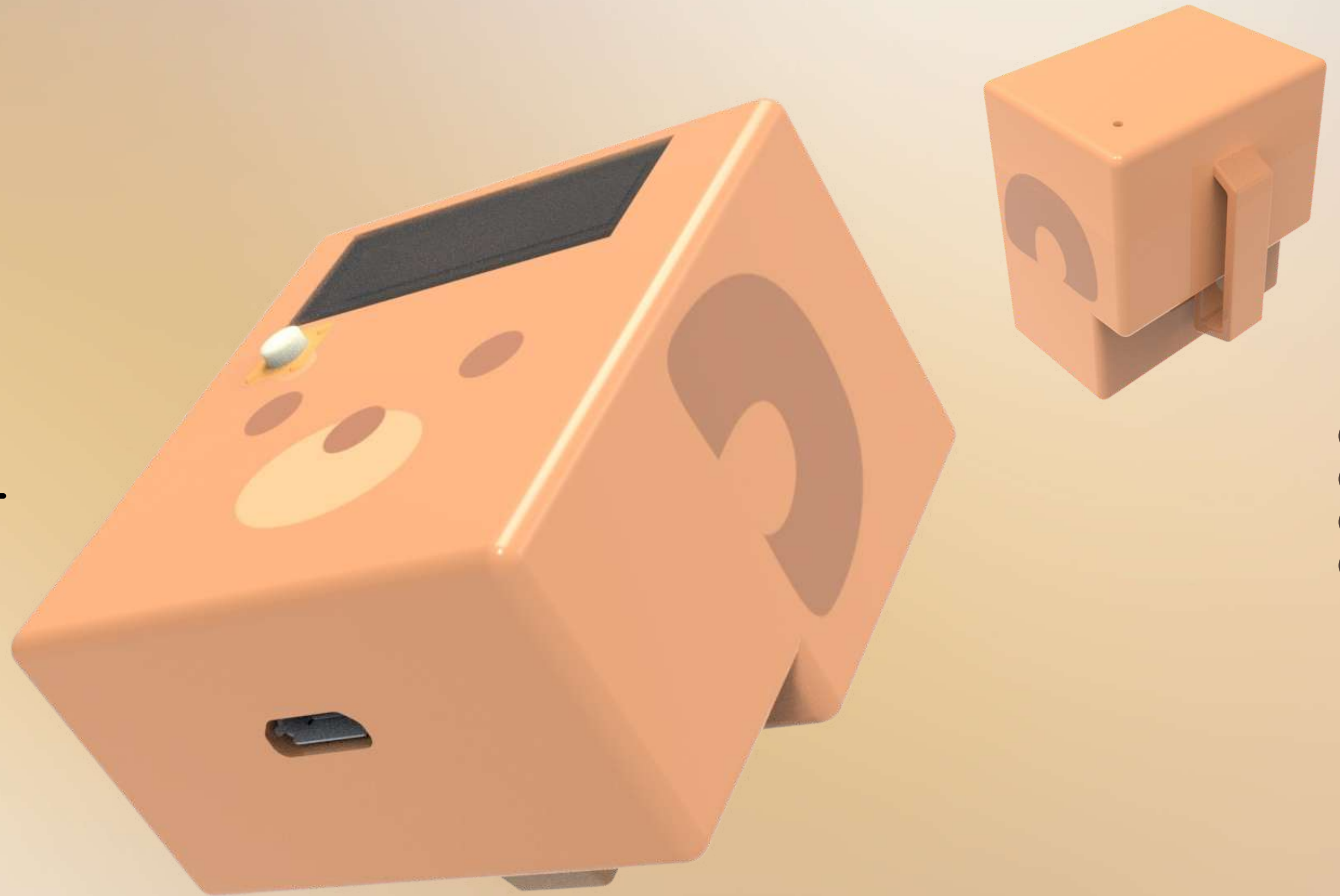
# Nearway

Children's safety and tracking device

## BRIEF

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Design a device that uses electronic elements to enhance the safety of children when they are out of their homes.



03

Course: Technically Complex Device  
5 weeks  
March 2021

Group project, my roles:  
Electronics  
Product architecture  
Arduino code  
Rendering



## Insights

Little control over child's behaviour outside the house

Working mothers cannot devote time

Young children having mobile phones is starting to become common, because of concerns regarding safety.

Leading to screen addiction at a young age that leads to problems like lower attention span

A device that is specifically catered to monitoring children, below the age of 8, without the need of having to give them mobile phones

## Research

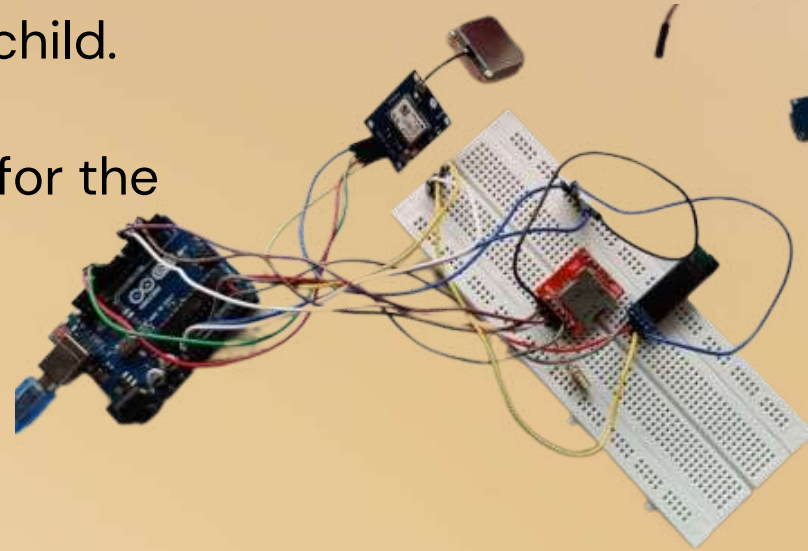




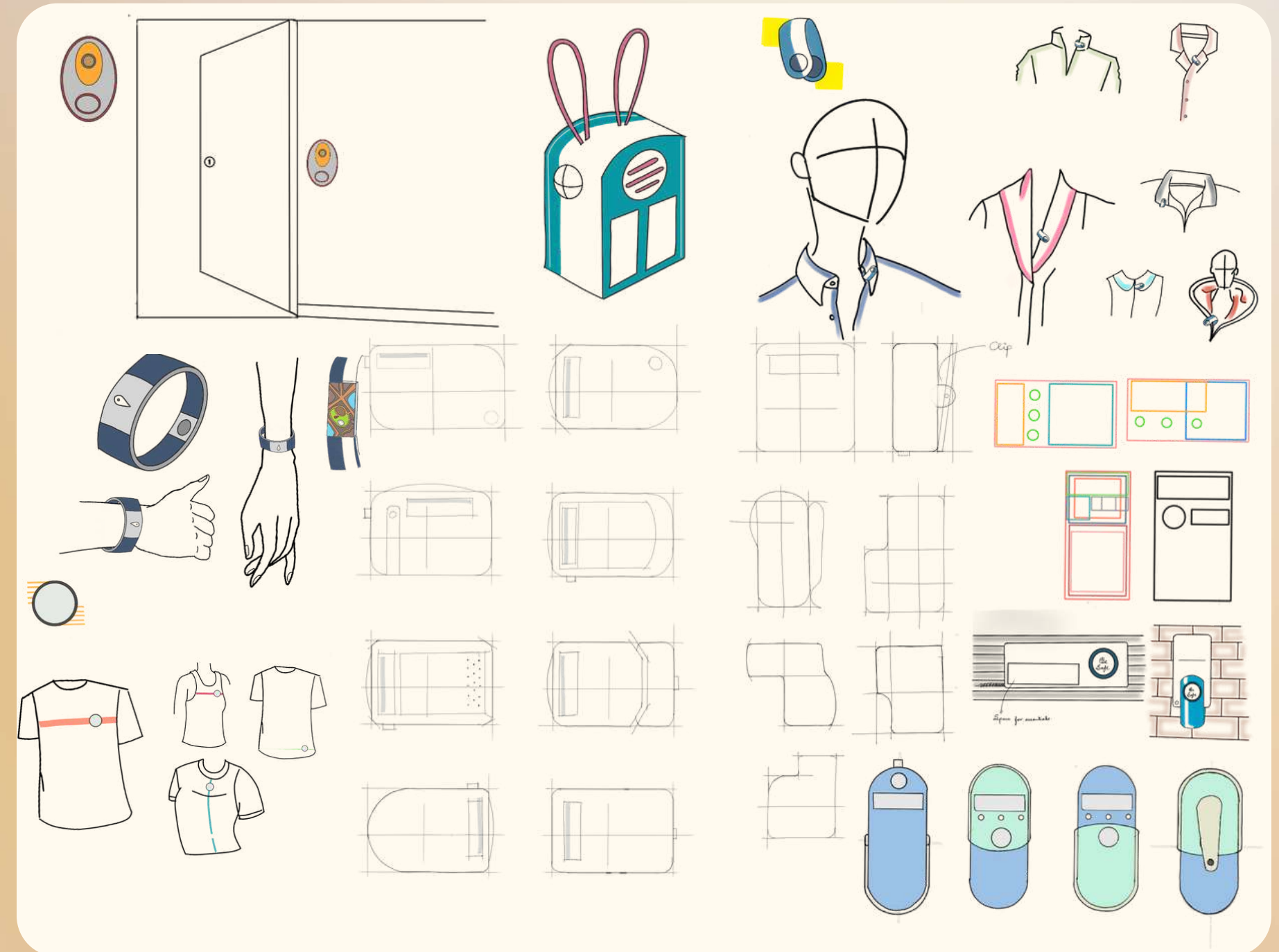
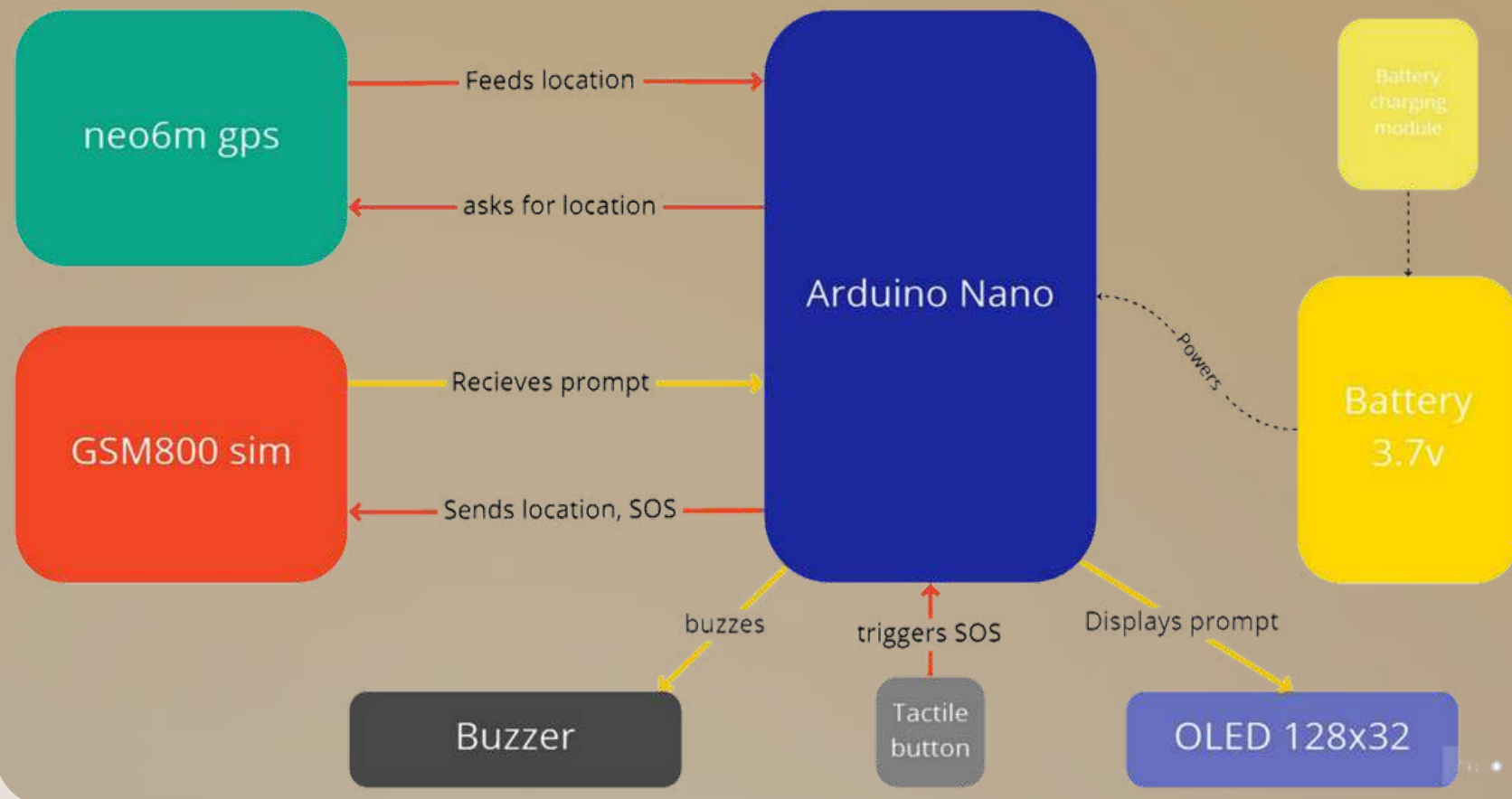
## Process

Form and wearability of device, according to the electronics to be used and according to the user i.e. the child.

The form becomes the enclosure for the electronics



### Electronics required for the ideated functions



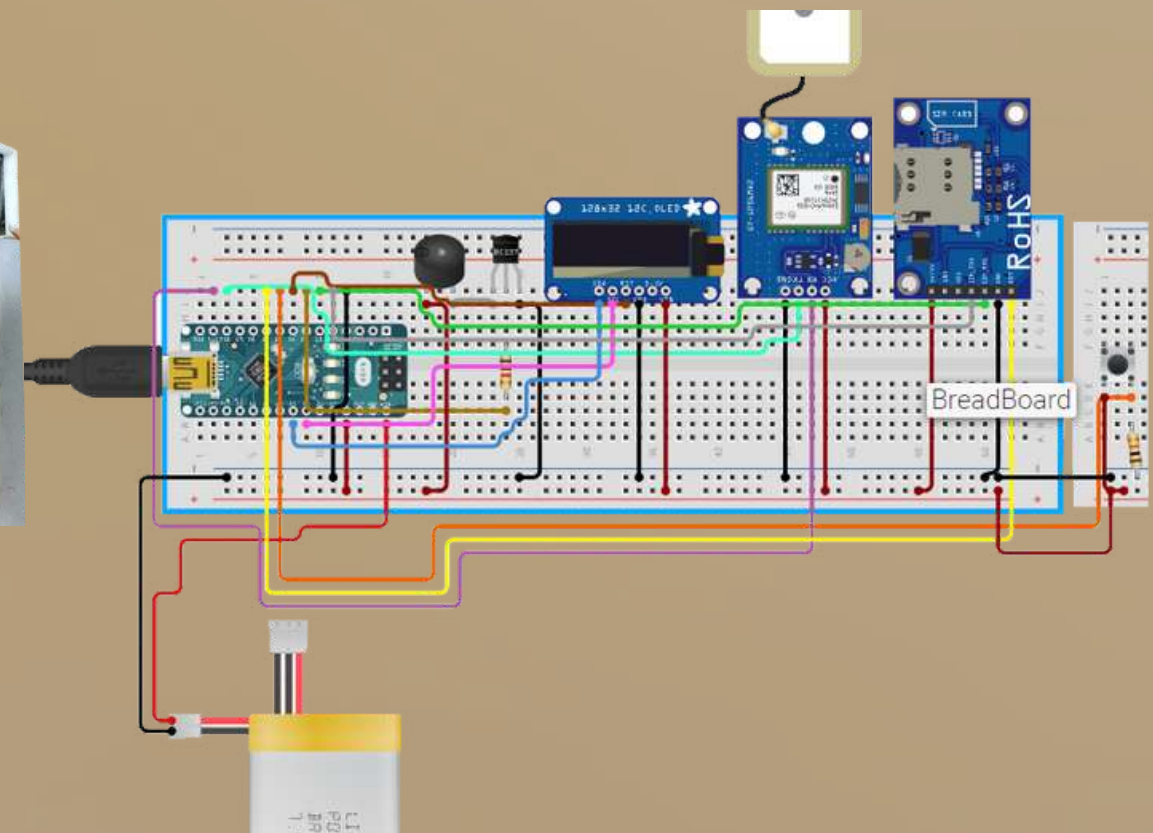
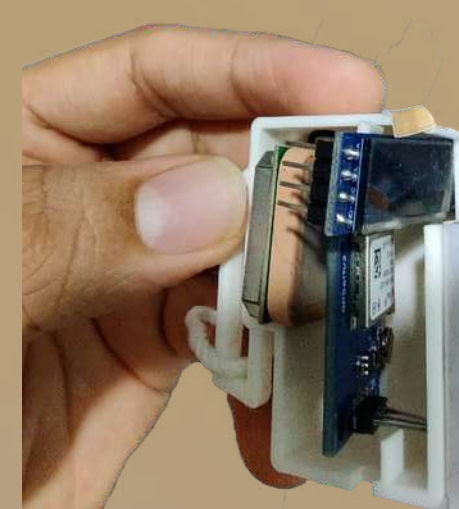
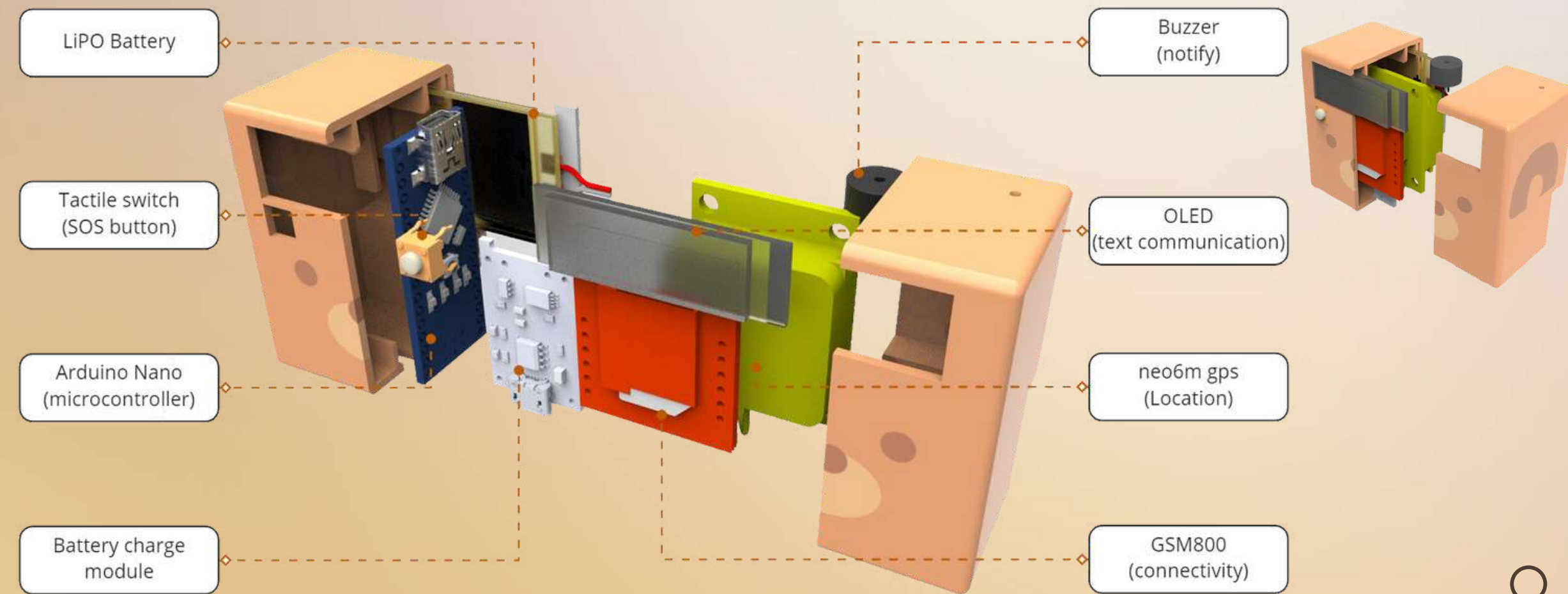


## Electronics layout

Economical and reliable components.

Operations of the device:

- Location feed at a tap of the button(parent)
- Get a prompt if the child strays too far from the area set as home(parent)
- SOS button to call for help(child)



3D printed enclosure  
according to the size of  
the components



# Raagsthal

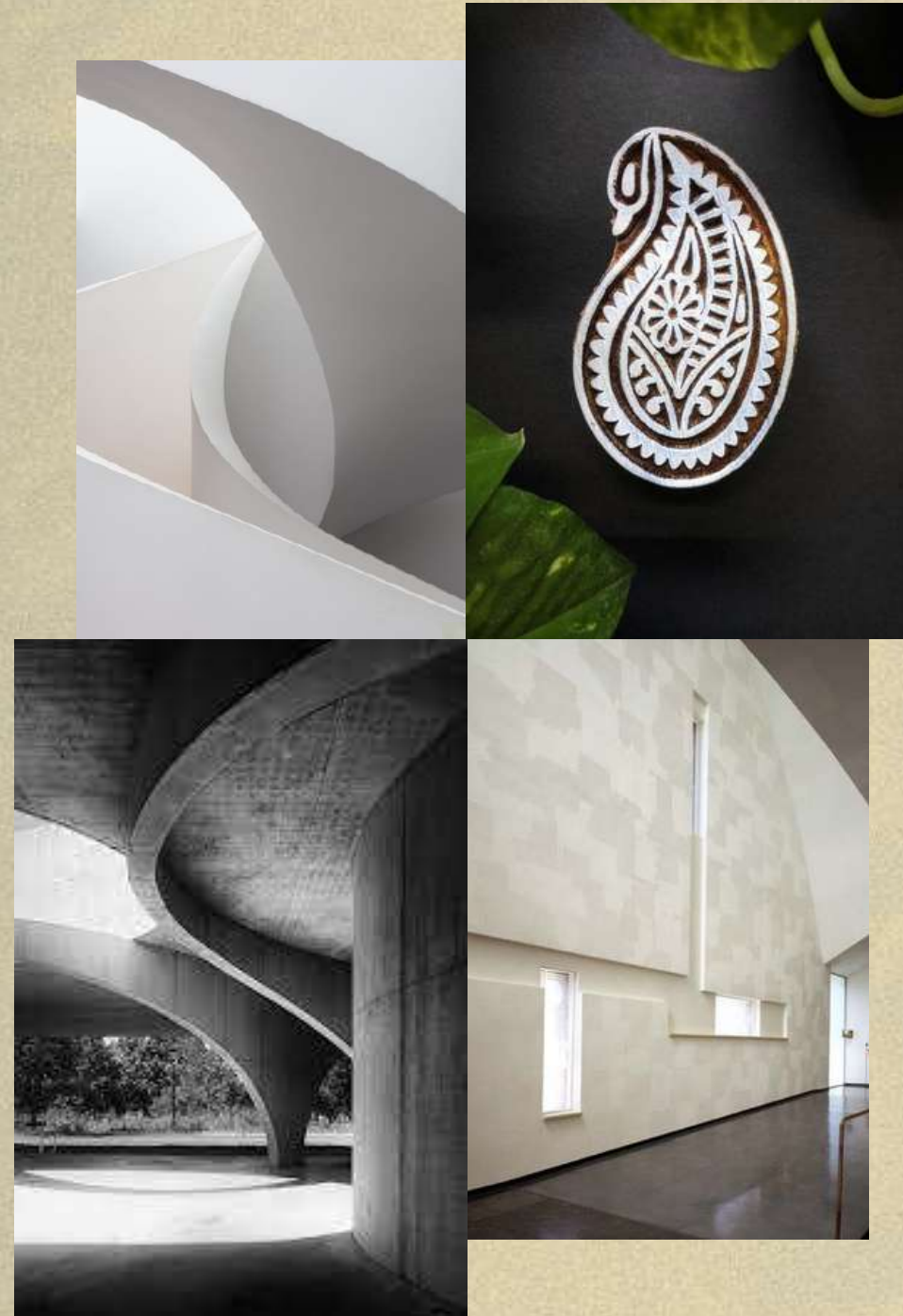
## BRIEF

Design a space for recognising and celebrating Indian Music and its virtuosos in the form of display structures within an exhibit.





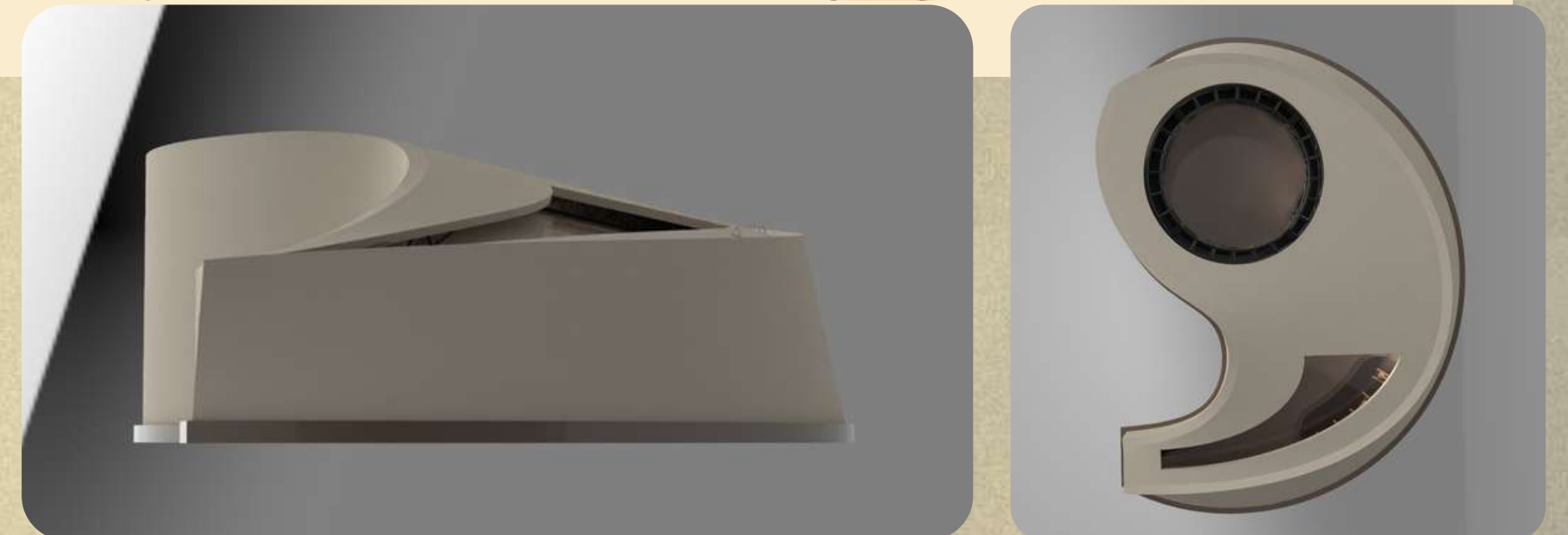
## Moodboard



## Ideation



The 'manokallam' motif stood out as 'Indian' which also shaped my chosen form, that also aligning with my concept around acoustics







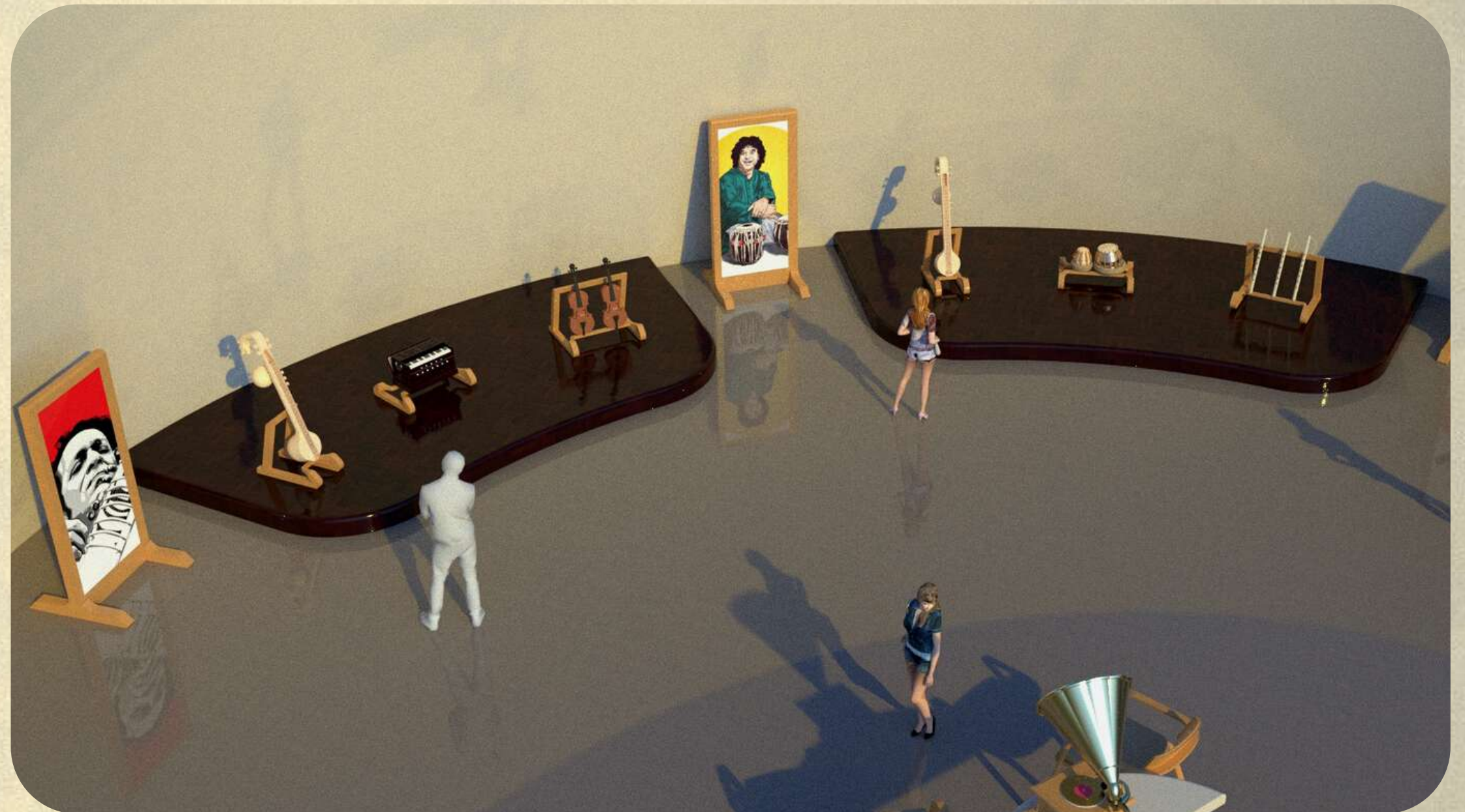
On the opposite side is a Gramophone that will play hymns of the great, that shall resonate within the space.



## Experience

Entrance from the right or the left.

One travels along the curve of the structure looking at the instruments and experiences the essence of what Indian music is about.

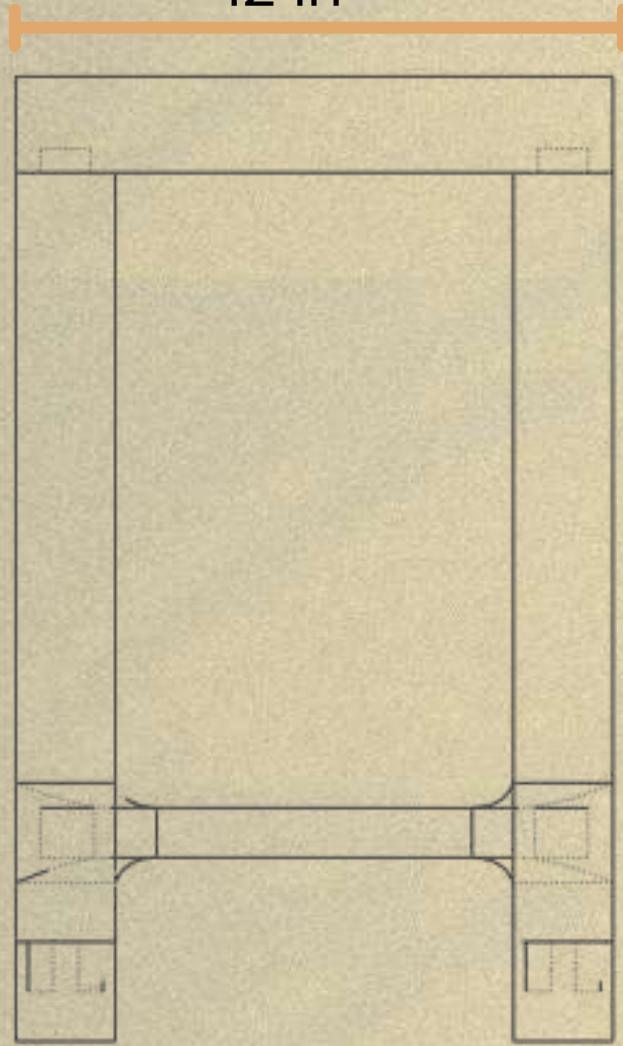




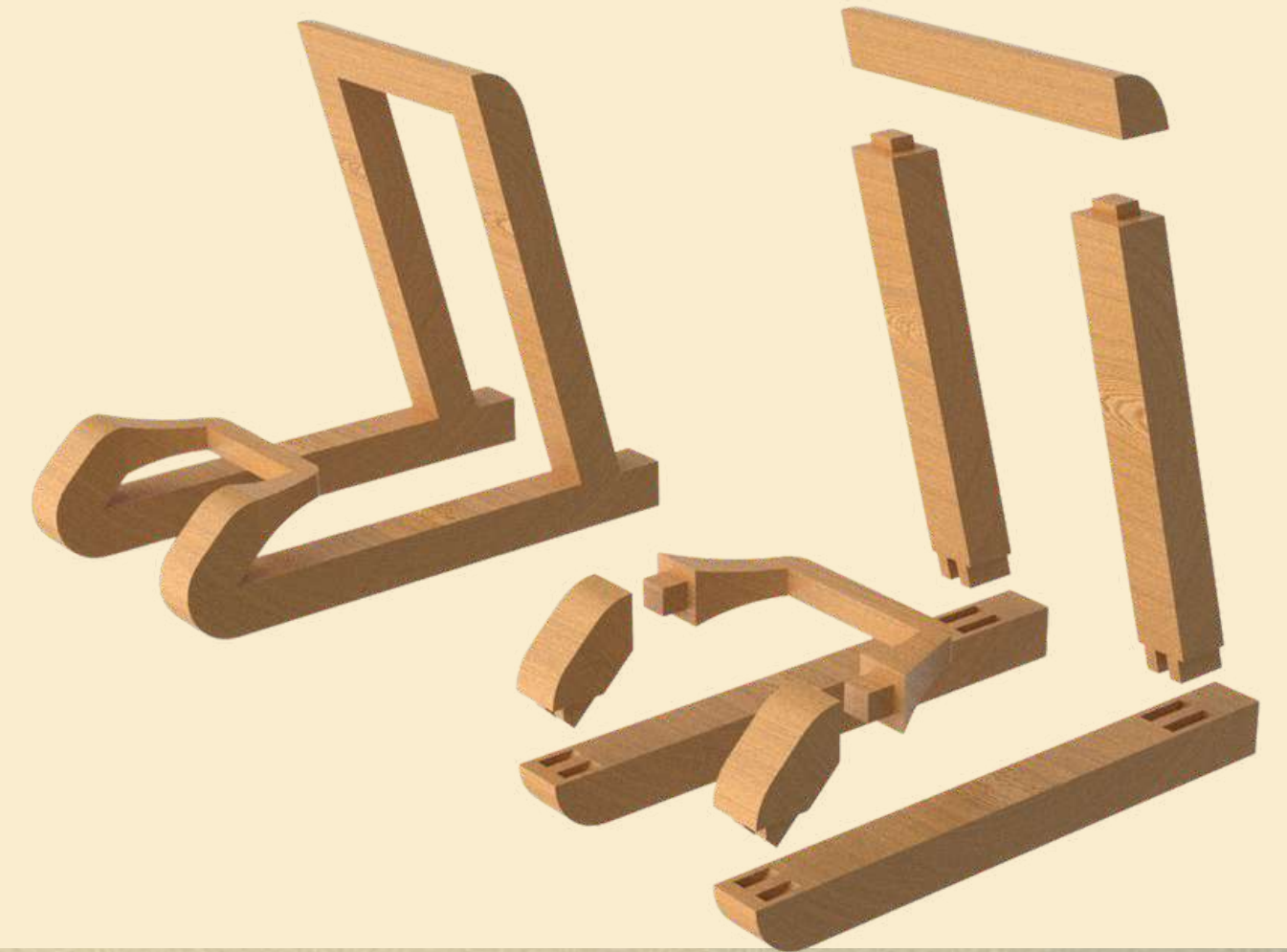
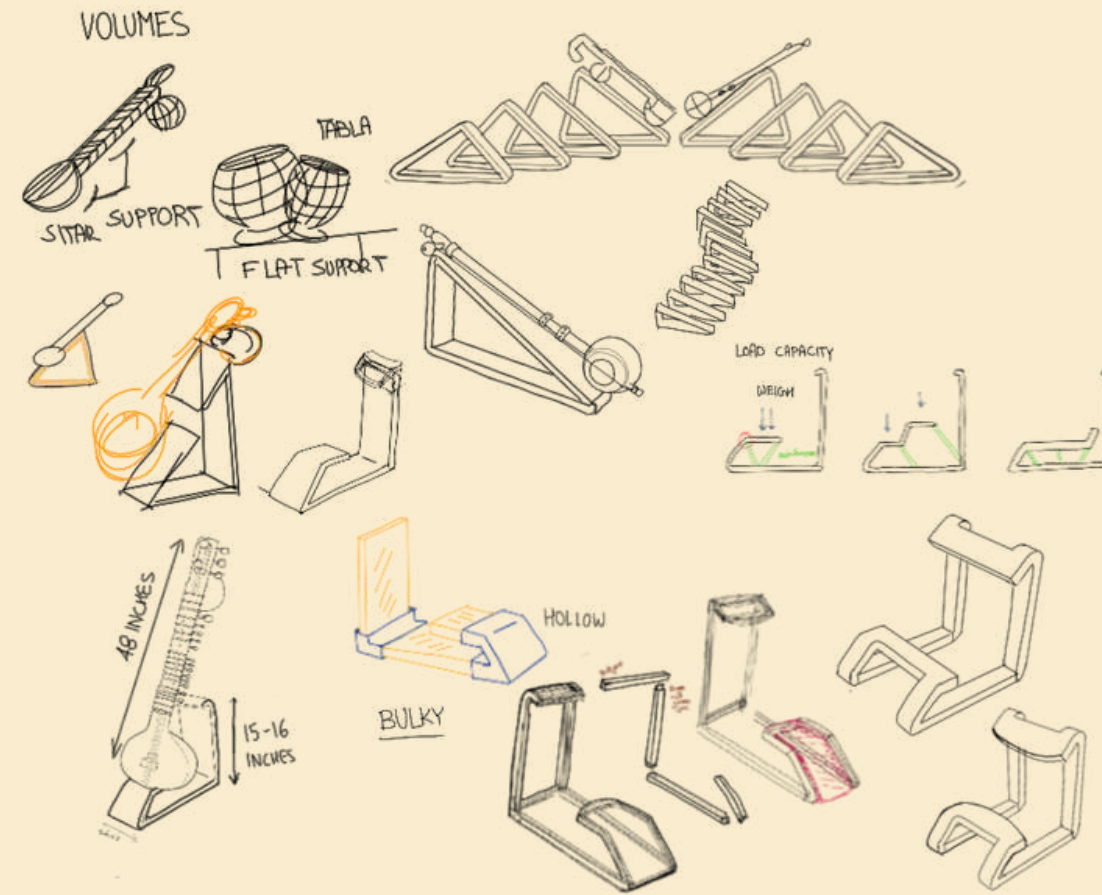
## Dimensions

12 in

21 in

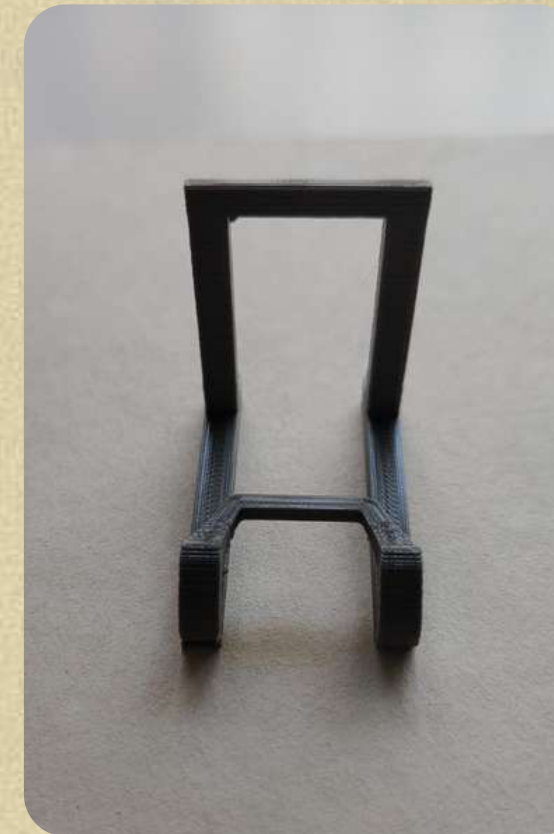
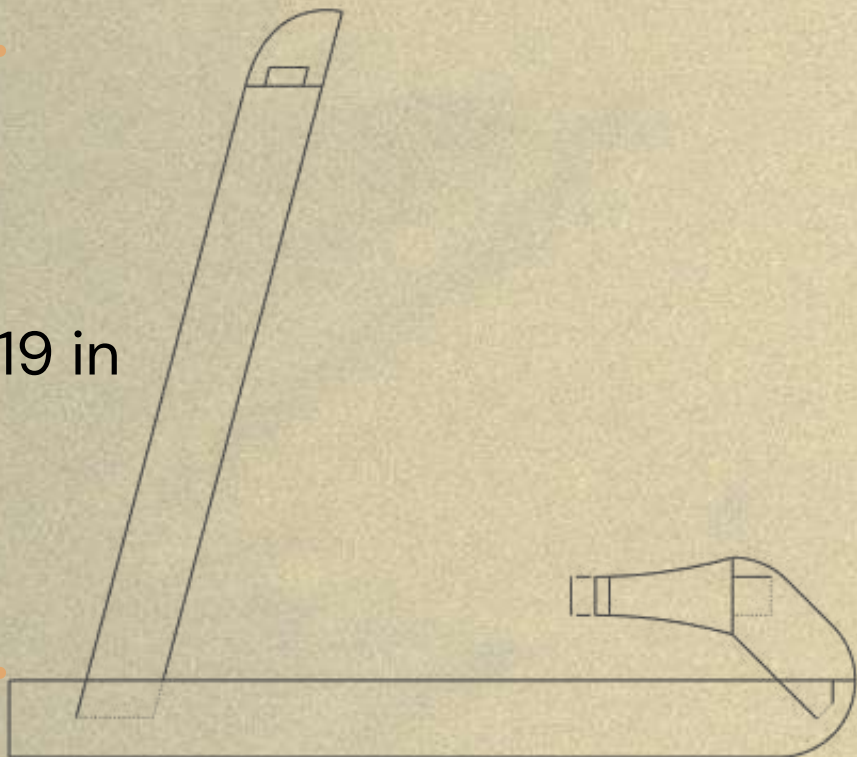


## Display structure



## 3D printed 1:12 prototype

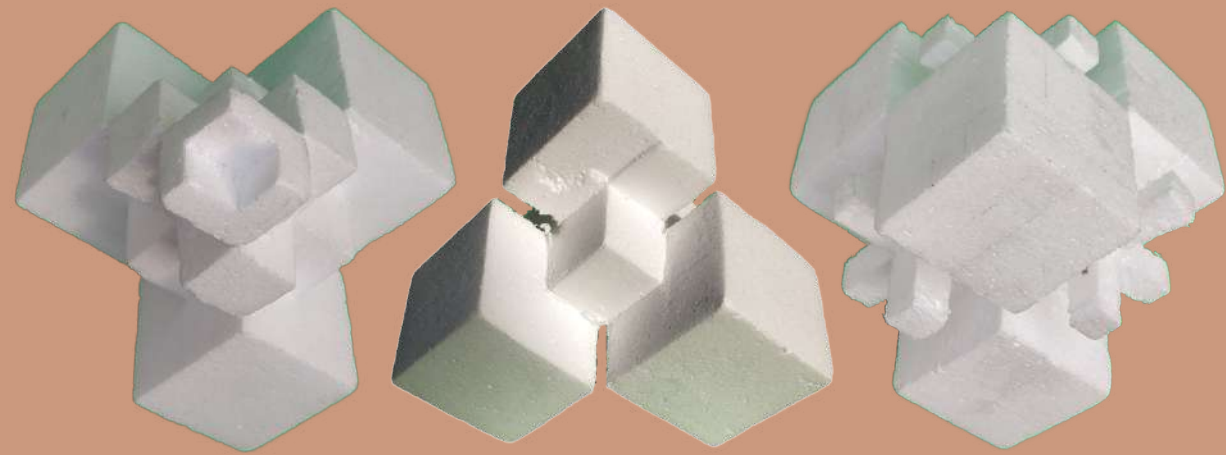
19 in











# Elements of Form

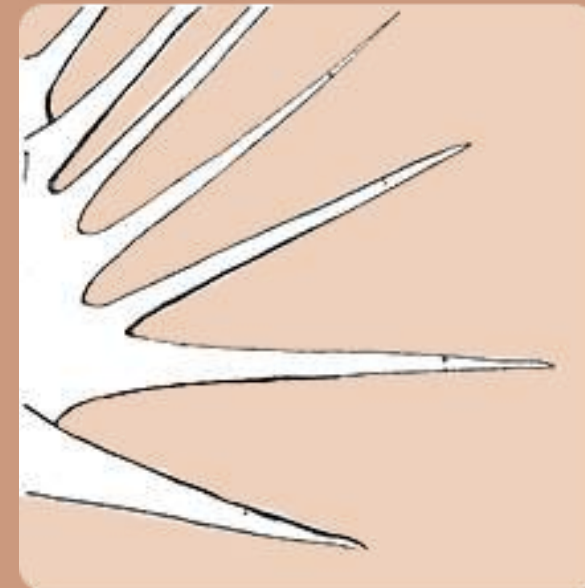
## BRIEF

Form study of a natural object, in this case, the castor bean plant, *Ricinus Communis*.

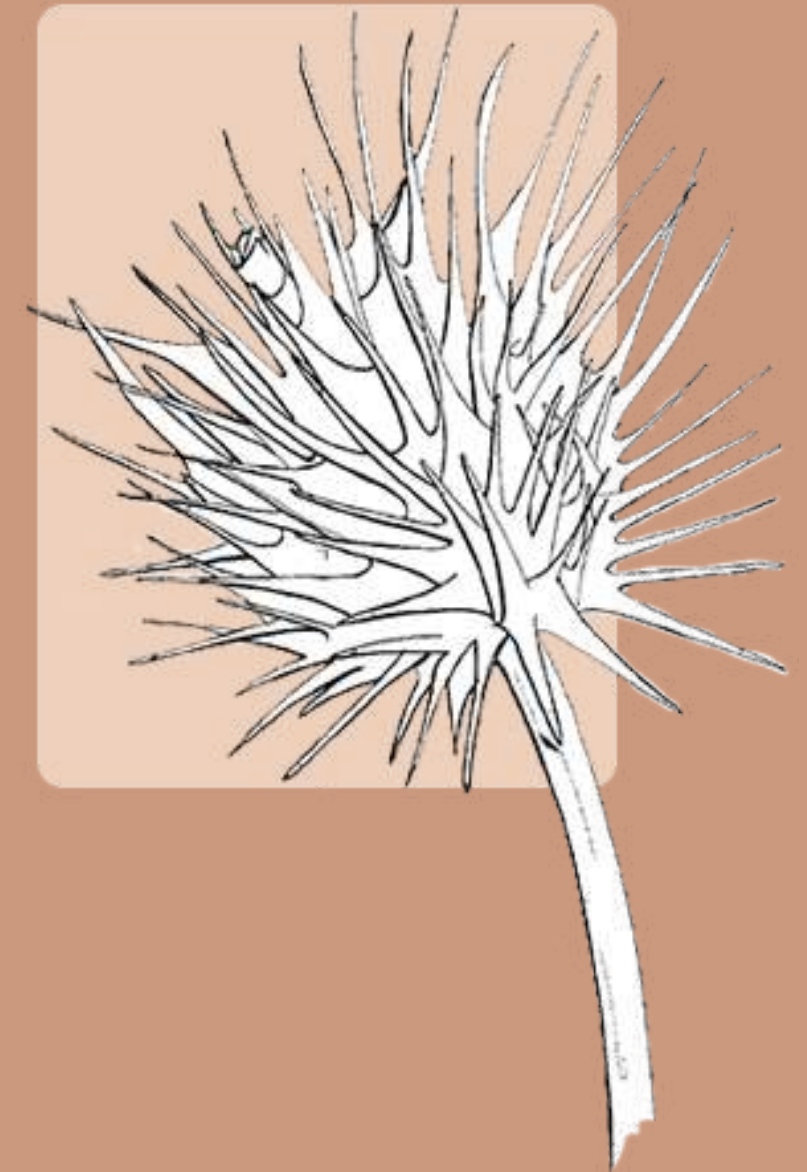
Harmony



Rhythm



Balance



A part of the flower is sketched and patterns derived from it represent attributes like balance and rhythm.



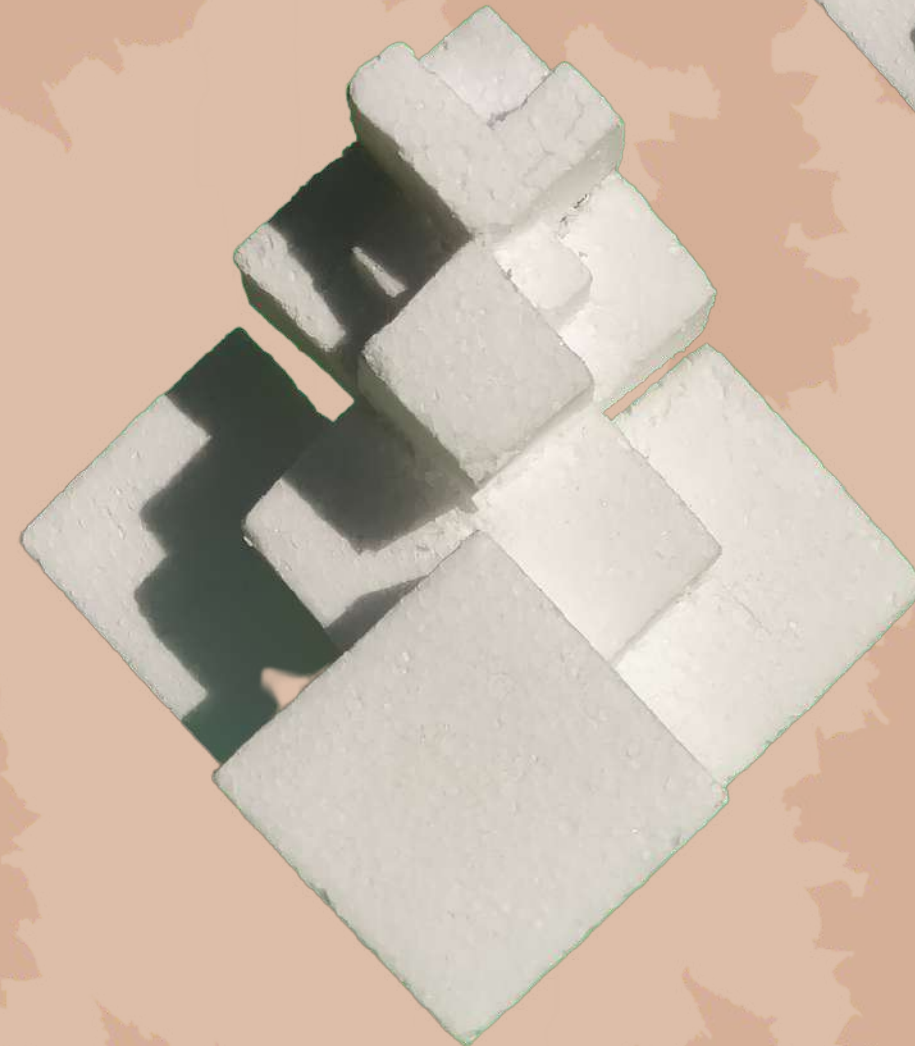


Castor Plant raceme inflorescence which gives it a triangular geometry, with the top of flower buds and bottom having mature blooming flowers and seeds.

The form is derived by removing material from a cube and breaking it down into smaller cubes. The form resembles and helps understand the inflorescence

Flower on the top represents beauty whereas the bulky fruits represent the toxicity of the ricin.

The spiky pattern is a highlight during the development of the flower





Simplification  
Association  
Stylization



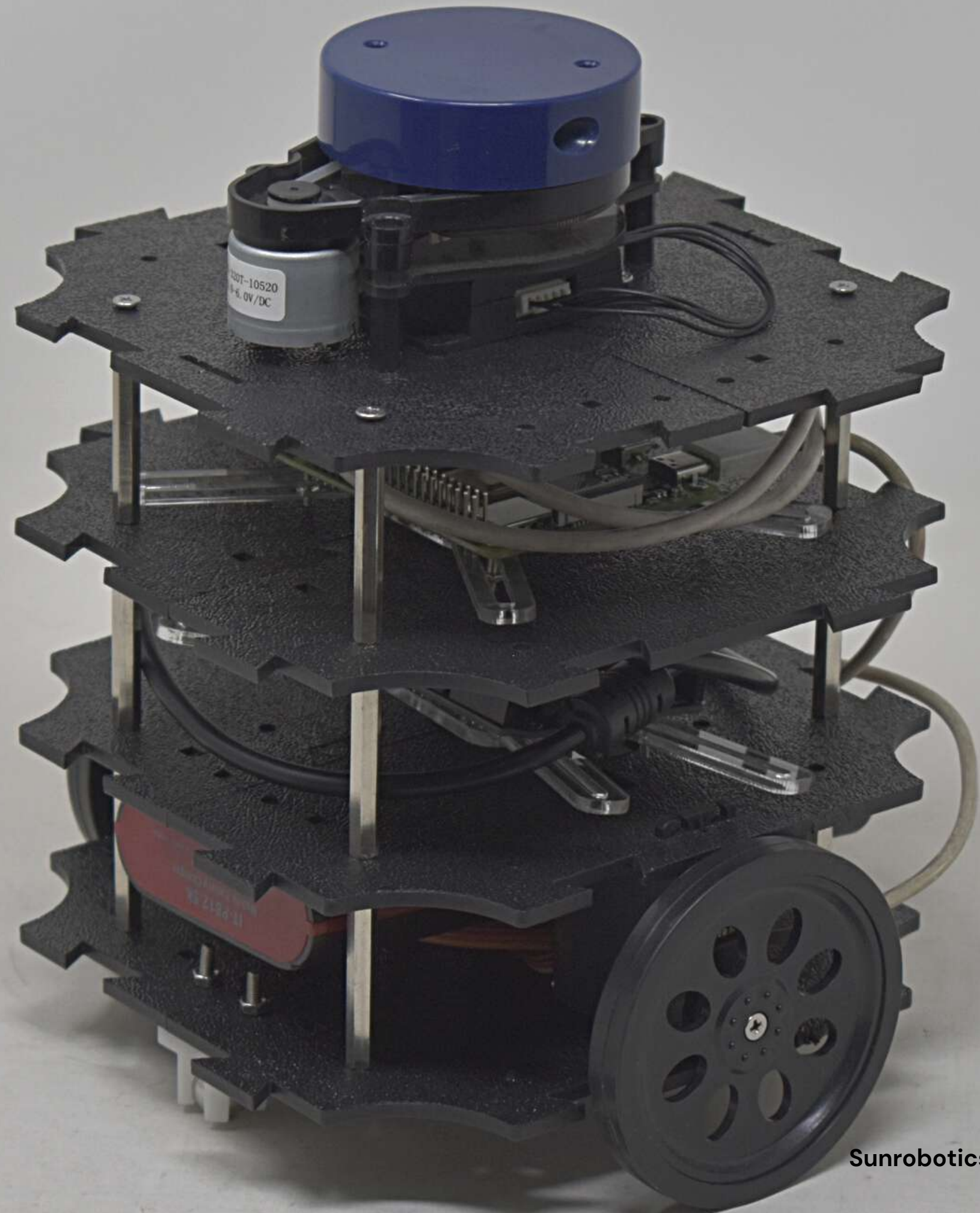


# Clorobot

## BRIEF

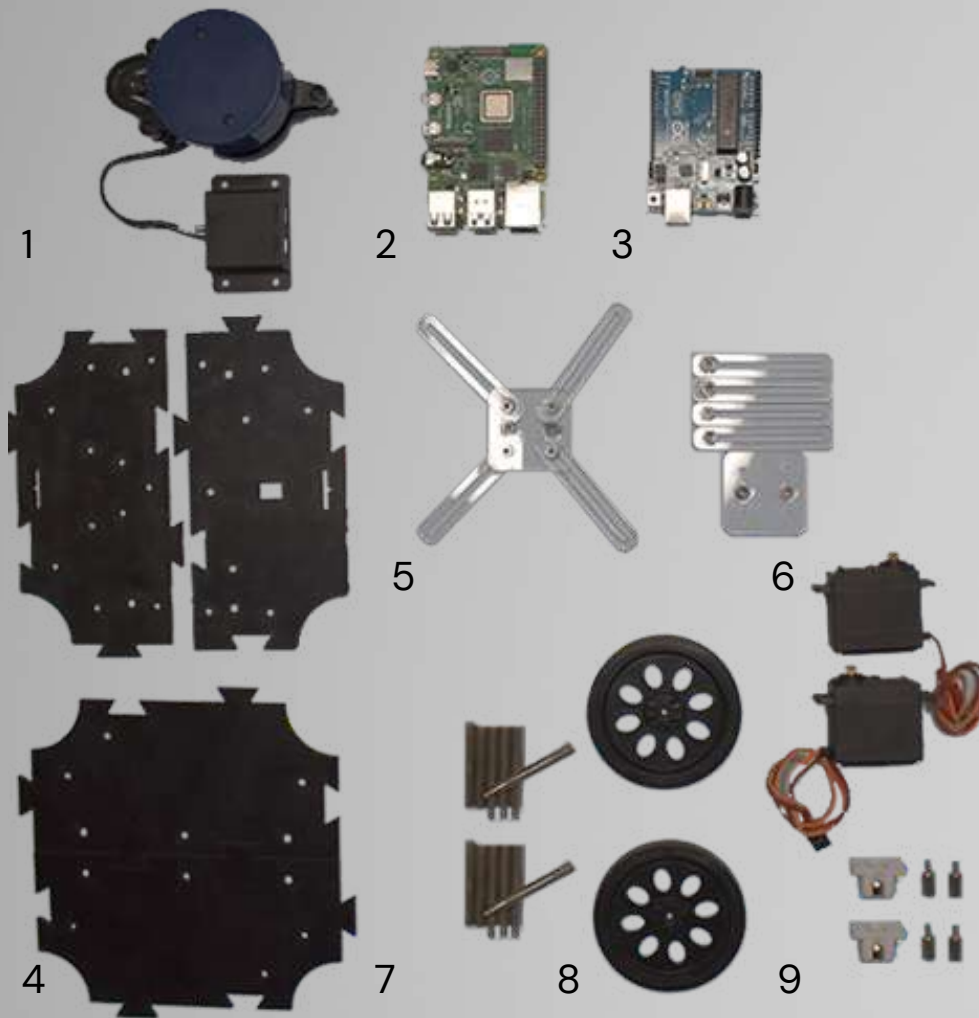
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Design a robot frame used to carry out simple robotic operations. An introduction for people to the subject of robotics and run their own programmes on software like ROS. The robot has provisions for several basic components and is easy to assemble.





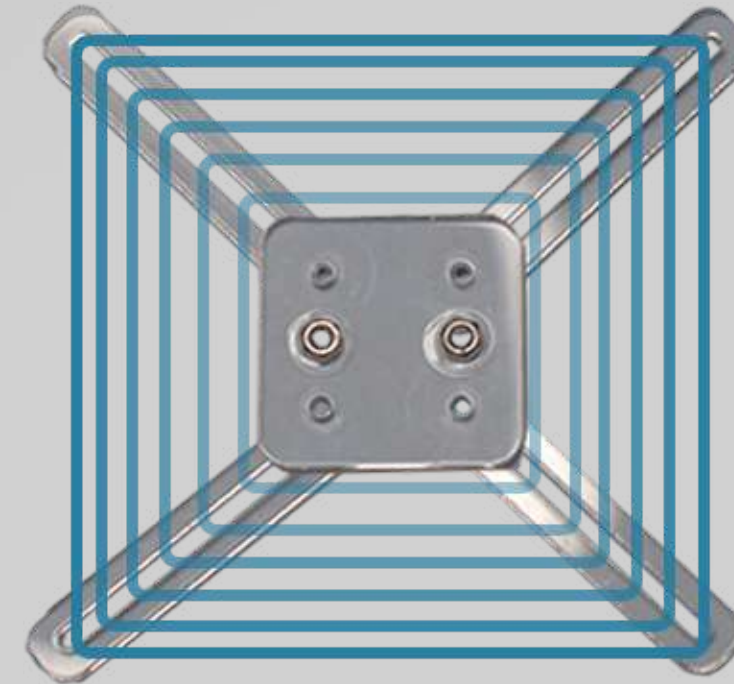
## Contents



- 1 LIDAR
- 2 Raspberry Pi
- 3 Arduino uno
- 4 Chassis plate
- 5 PCB Mount
- 6 Dynamixel 360 servo
- 7 60 mm standoff
- 8 65mm wheels
- 9 caster wheels

Microcontrollers and sensors can be any, these are the items used for demonstration.

## PCB mount



Designed to mount PCBs of any size from 5x5 cm to 15x15 cm

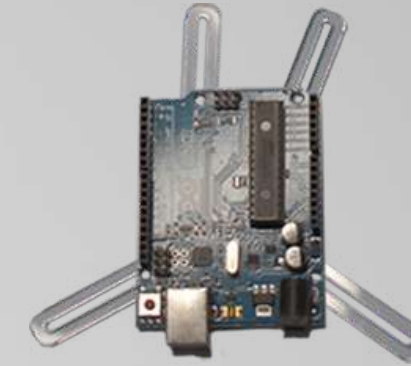
Jetson



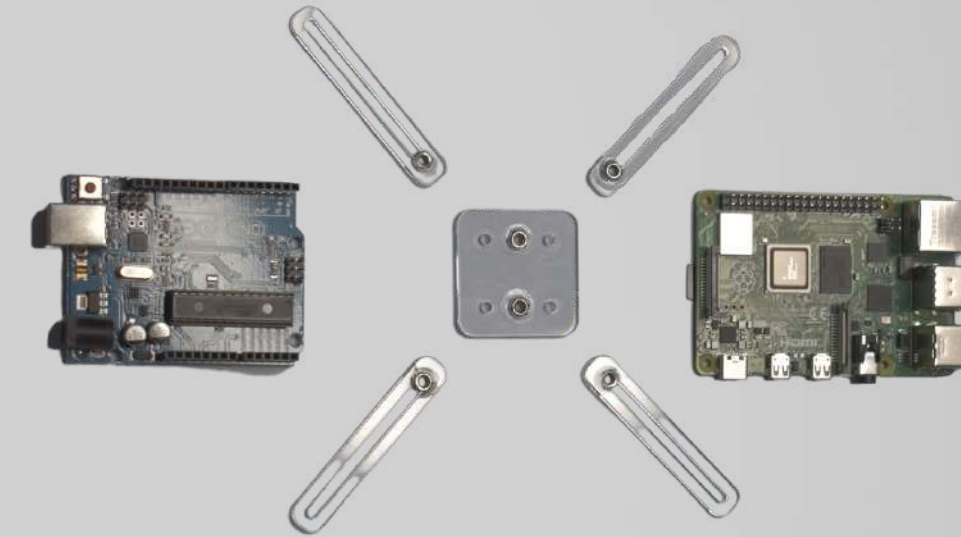
OpenCR



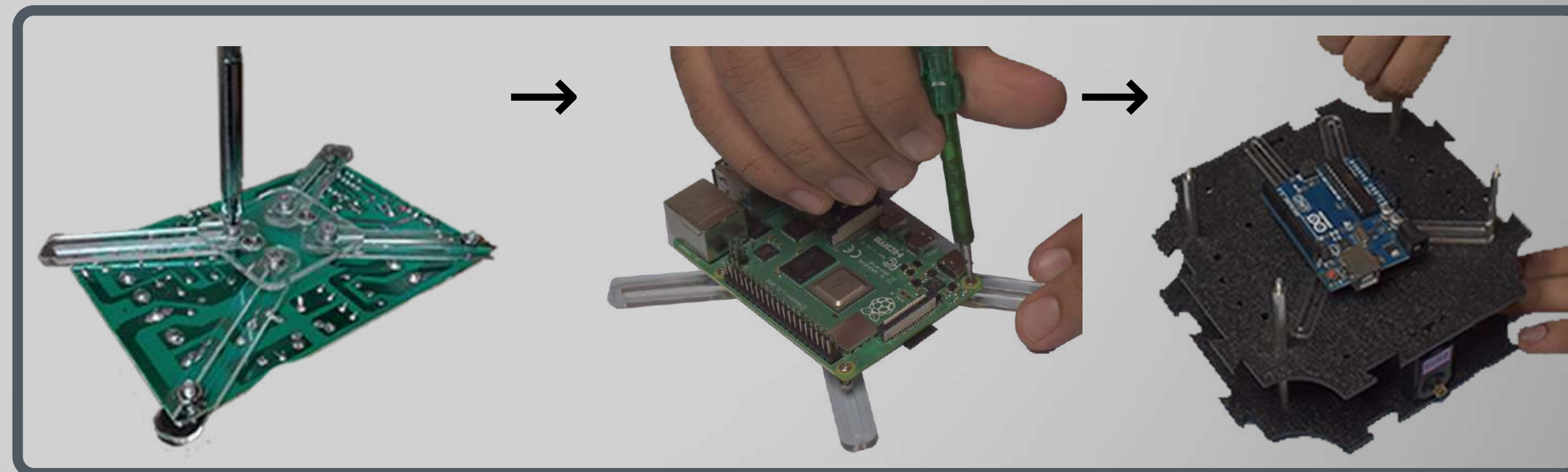
Arduino uno



Early prototype needed two sets of nuts and bolts



## Assembly



Put screws through holes of pcb, align in the bracket of the wings of the mount and then use a nut to fix it.

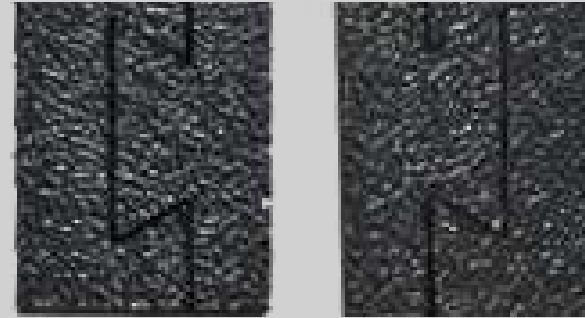


## Chassis Plates

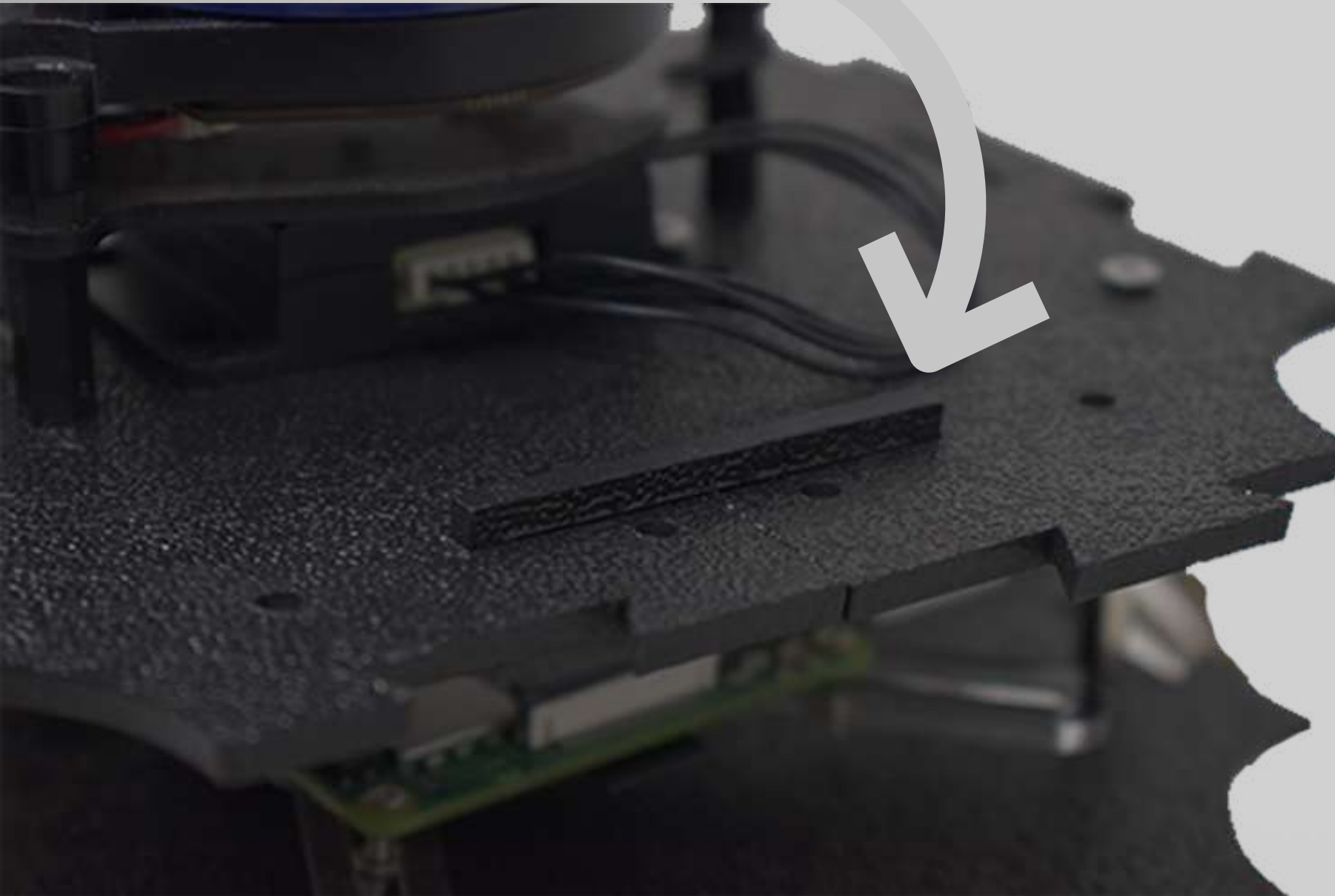
The plates for the frame were designed to

- accomodate several components
- can be laser cut
- can be scaled up as per requirememt

The bar-like piece on the left is a C shaped lock to keep chassis plates together.



The joint is to lock the plates together, the tolerance is figured out so that it snaps tightly fit.

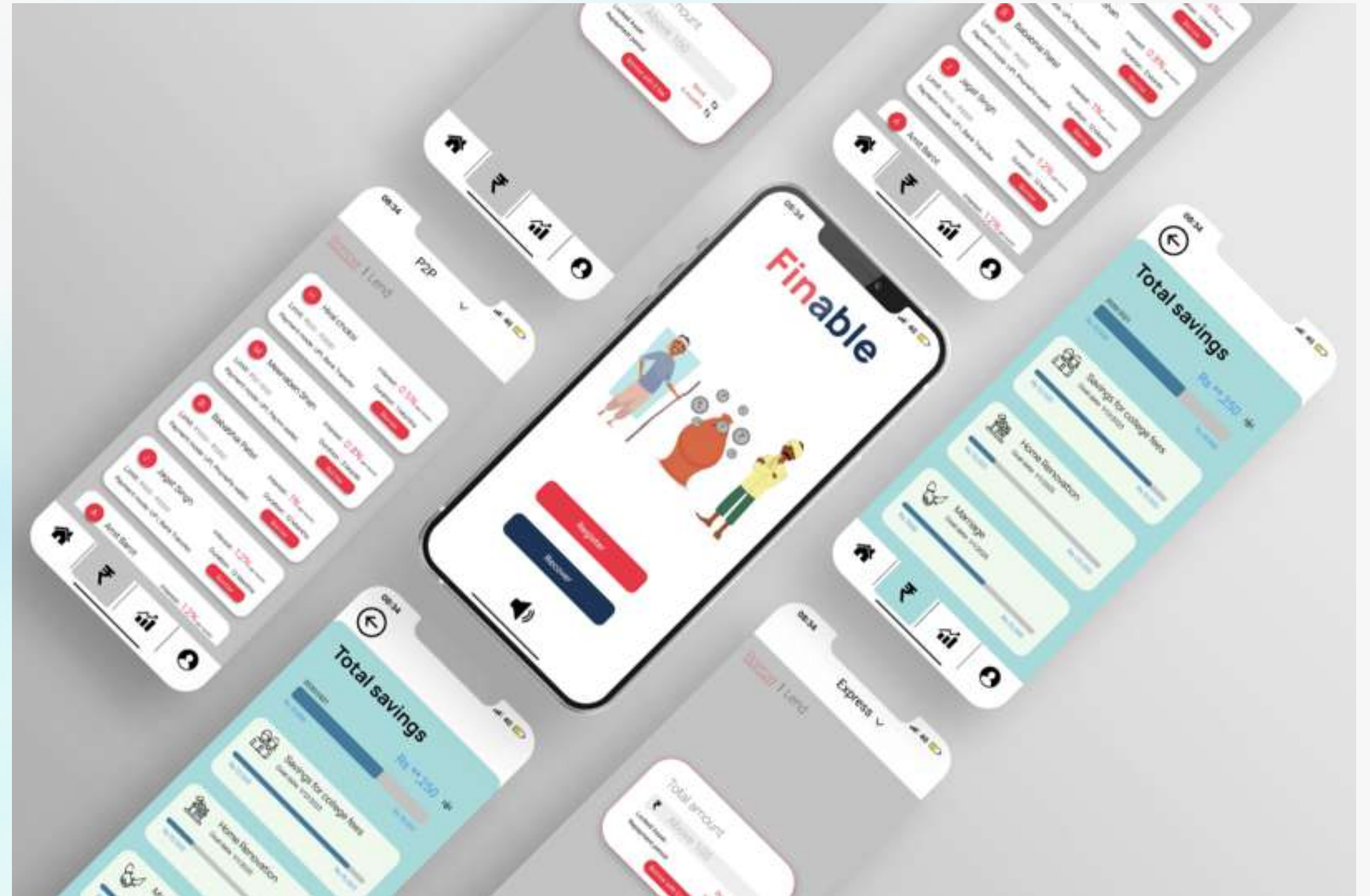




# FINABLE

## BRIEF

Design a solution at a systemic level, for a public utility, in this case, financial services for remote rural areas.





## Research

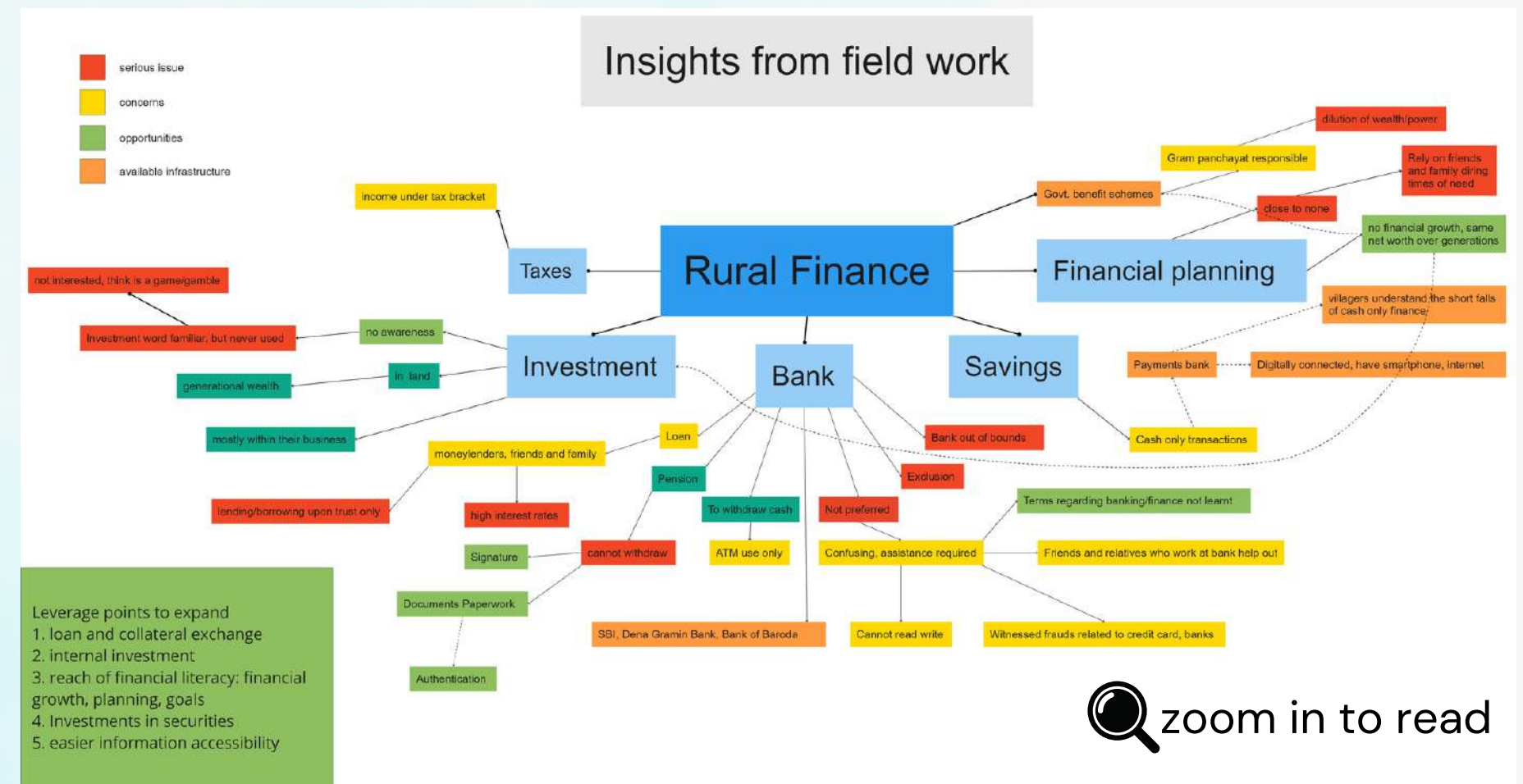
Ethnographic research with people living in remote villages as well as villages close to urban settings.

Perspective on finance as a rural person, a dire means of survival whereas awareness regarding growth and planning lacking

Traditional systems fail in terms of communication, as well as the inclusion of microfinance and low-income groups

The fintech revolution has penetrated rural areas but is still not adopted as means of daily transaction. Cash is still the primary means for money.

Case study of three historically deployed solutions – Grameen bank in Bangladesh, India, Mpesa in Africa and the ongoing Cardano Africa and Atala Prism project in Ethiopia



Vishnu, 31

Payments bank merchant



Arjun, 26

General store



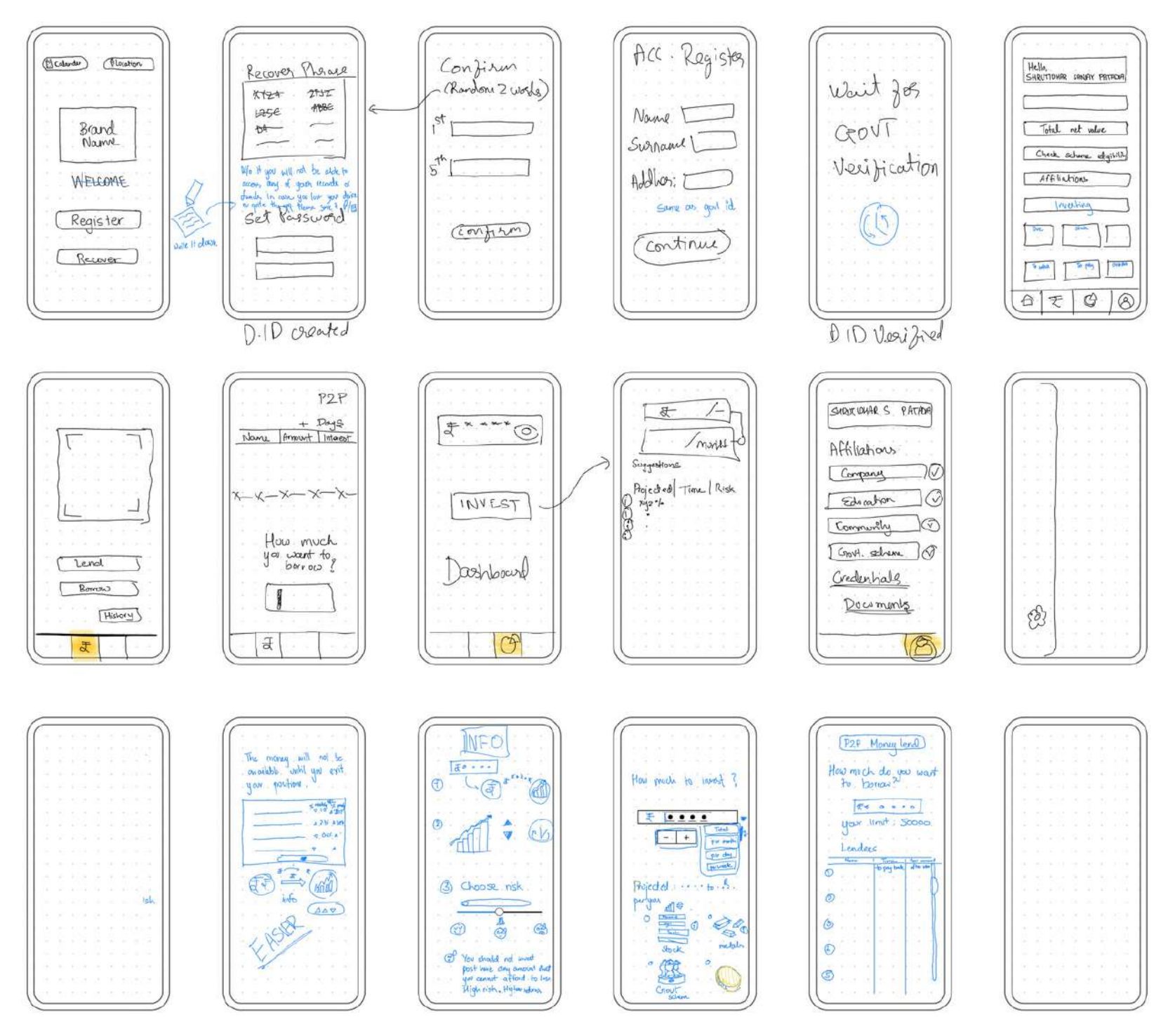
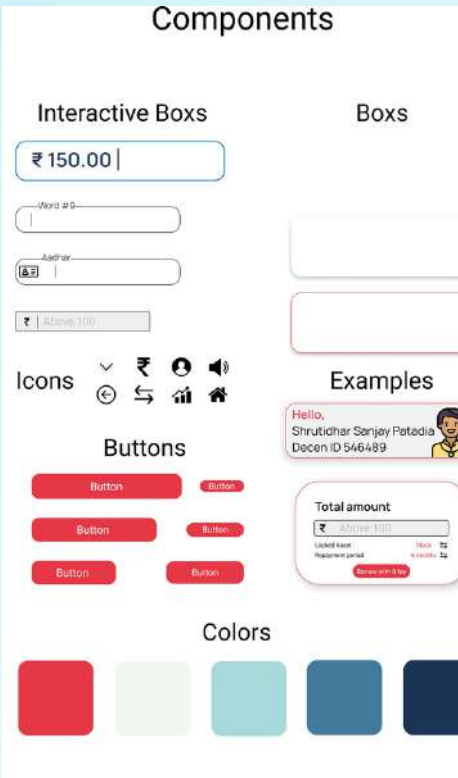
Key points from each case study

**Grameen bank**– When given a platform and loan without collateral, even the poorest groups showed steady growth and were significantly more likely to commit to their obligations to repay the loans. They need a system to grow over charity

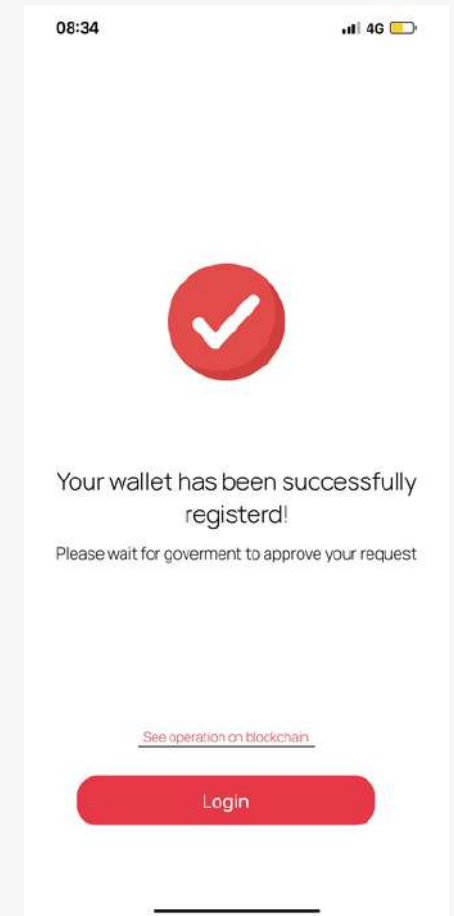
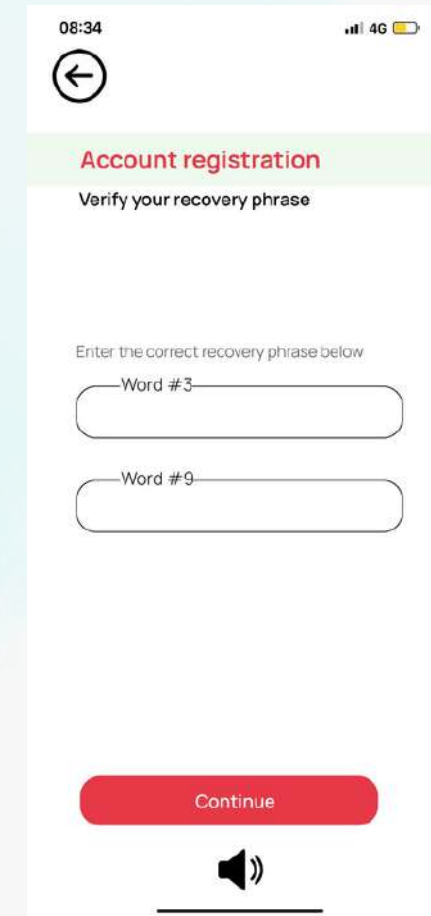
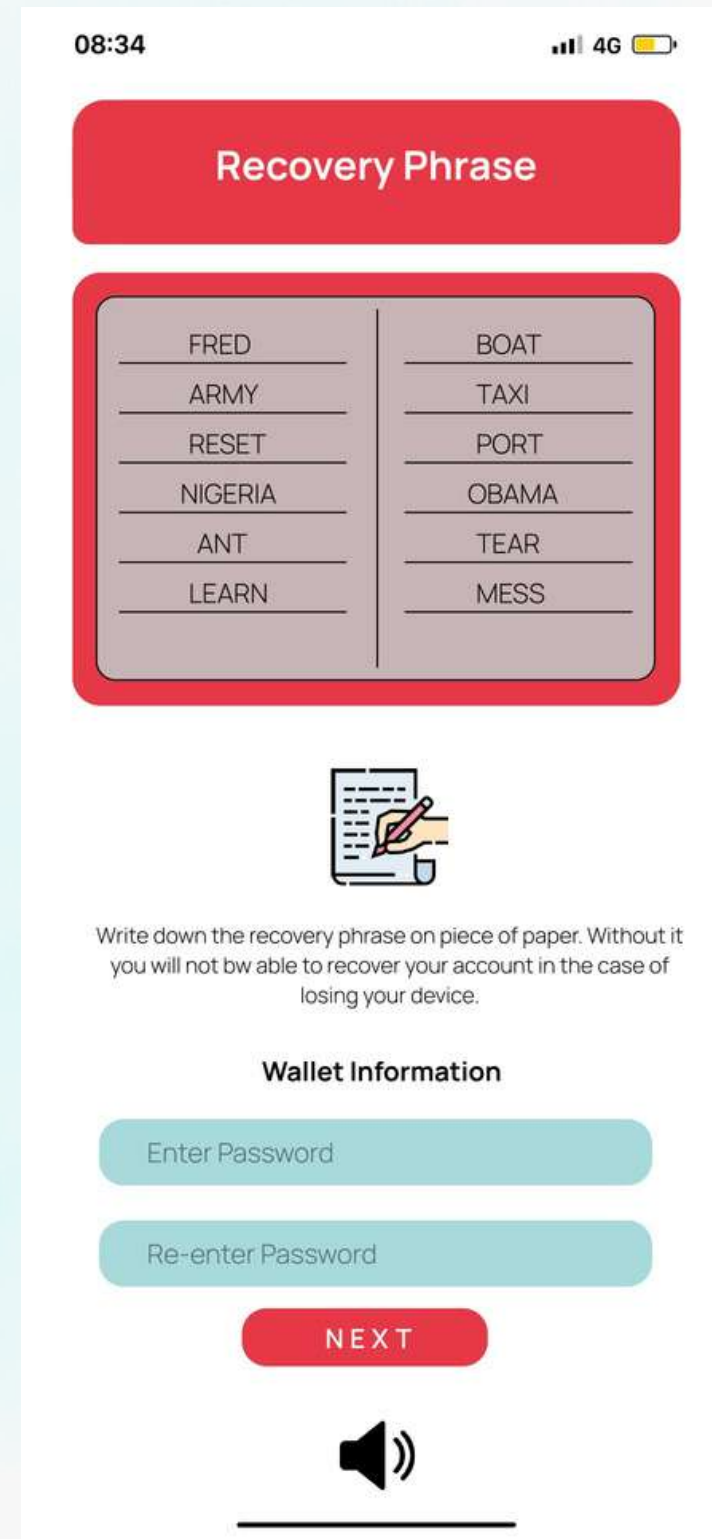
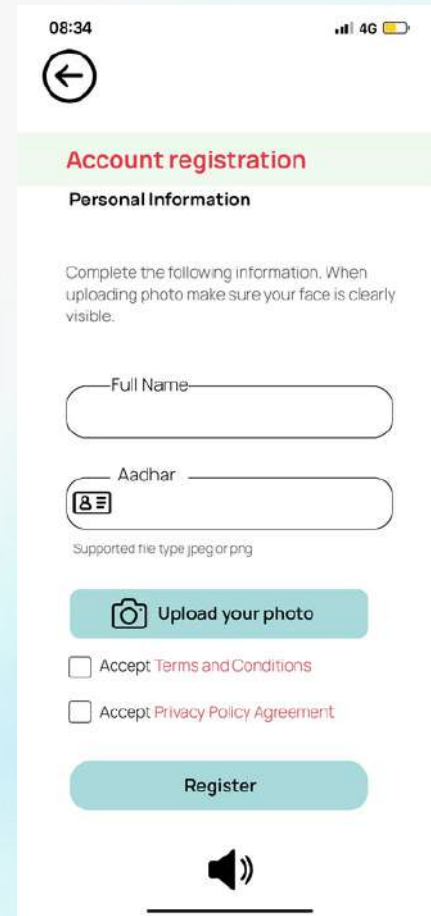
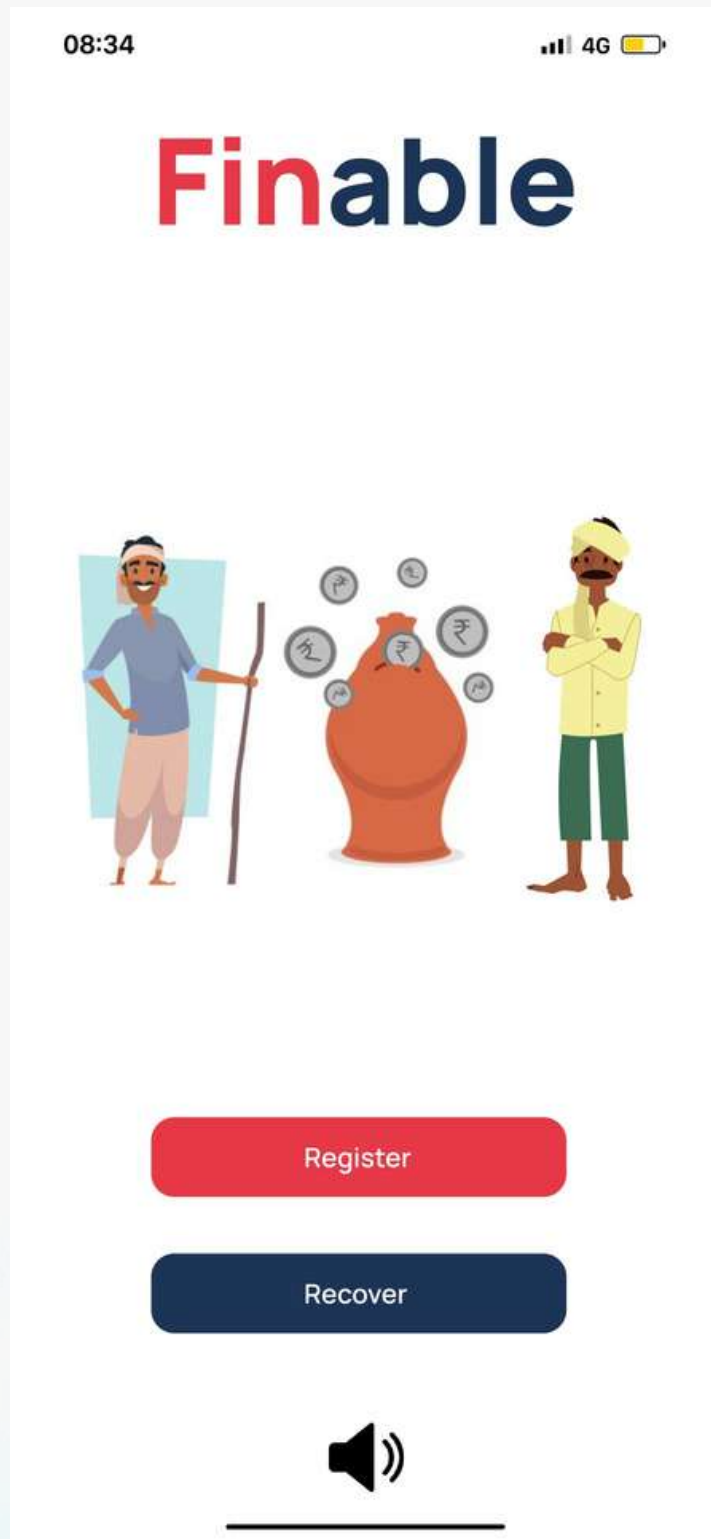
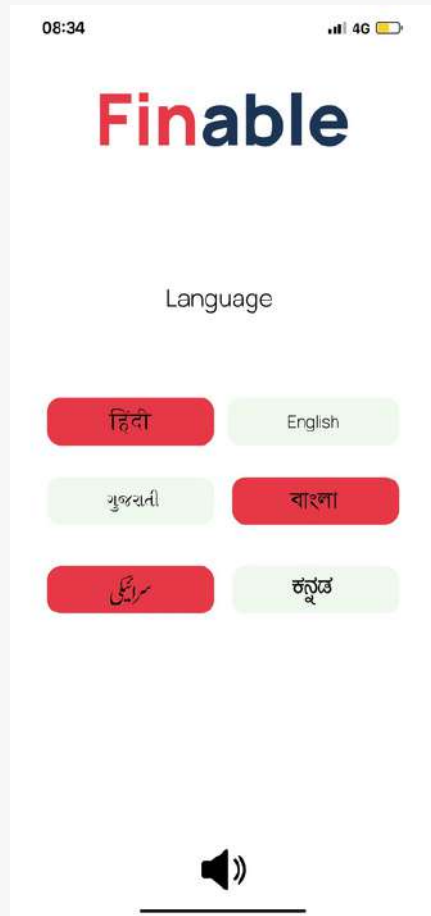
**MPesa** – using innovative strategies within existing technology to set up means for finance that impacts a large share of the population

**Cardano Africa**– Independent and secure digital identities is a step further to the inclusion of neglected population. With identity, it is easier to issue microcredit and hence loans to individuals who earlier had no means to get help.

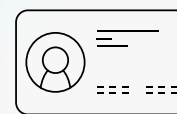
Application elements







The audio option will play a recorded message to assist people signing up.

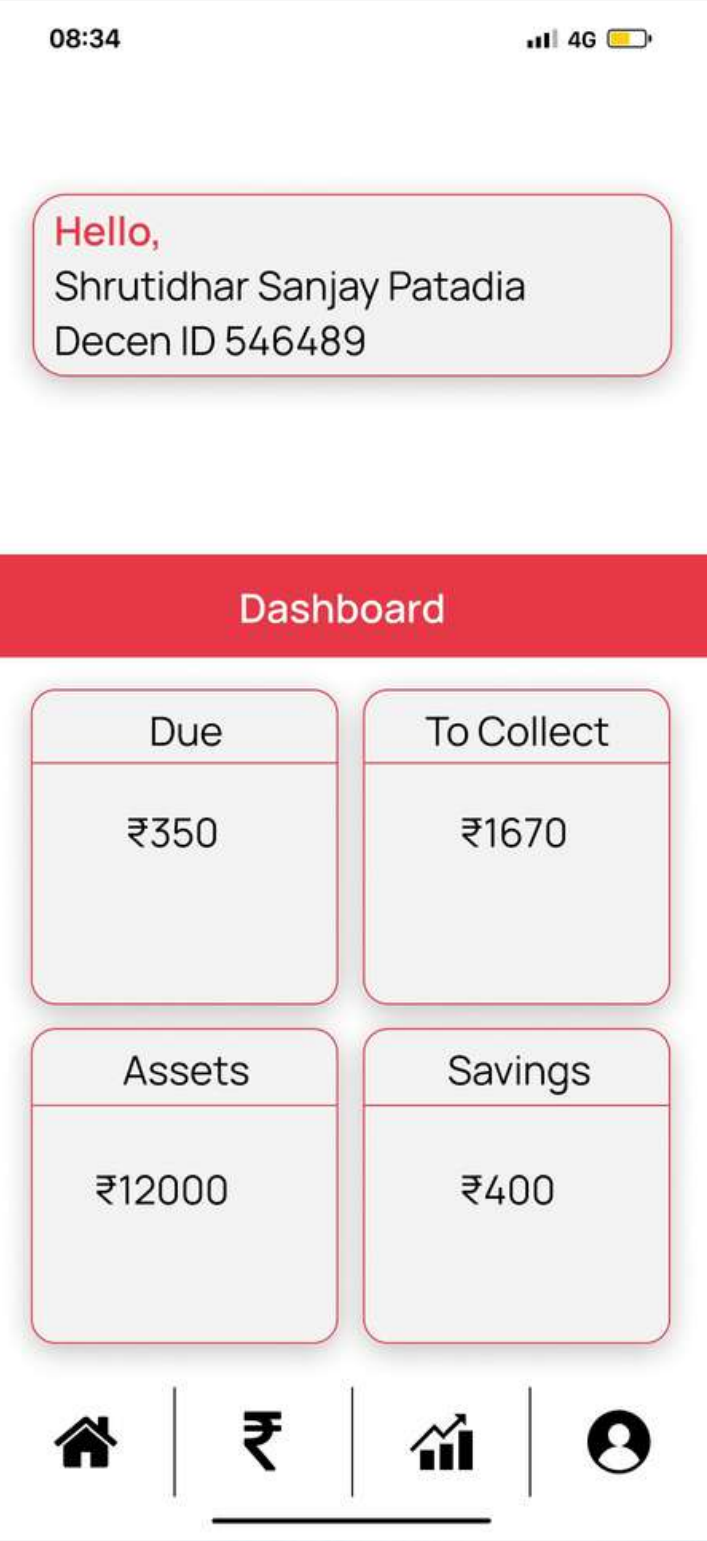


Govt. verification through Aadhar payment gate, 99% population has Aadhar identity

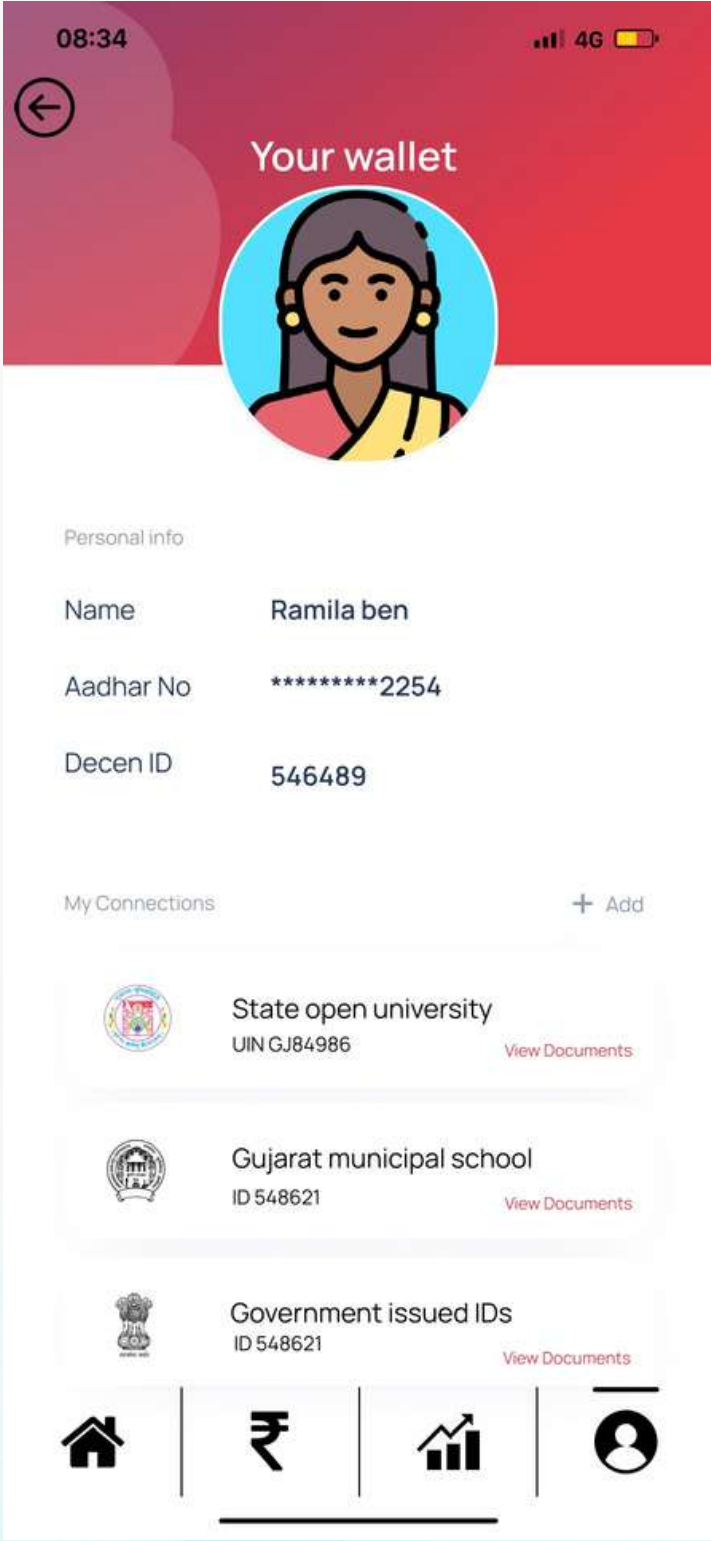


The recovery phrase helps recovery without any govt or secondary body involved. Common practise with blockchain tech.

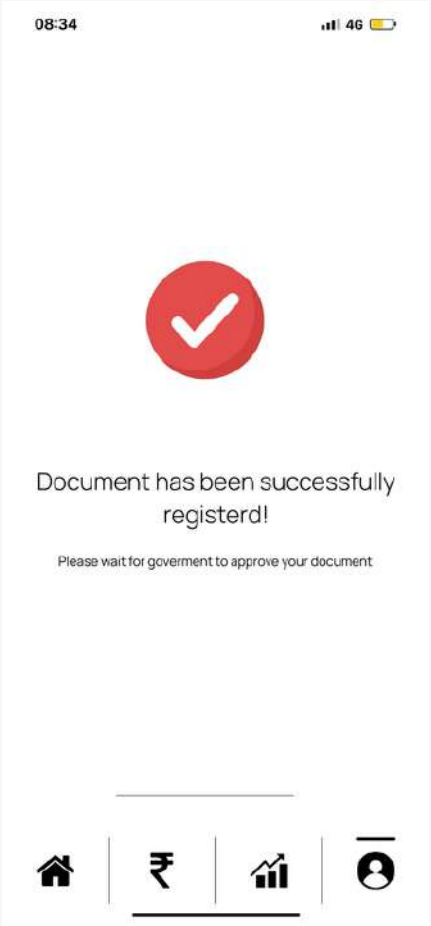
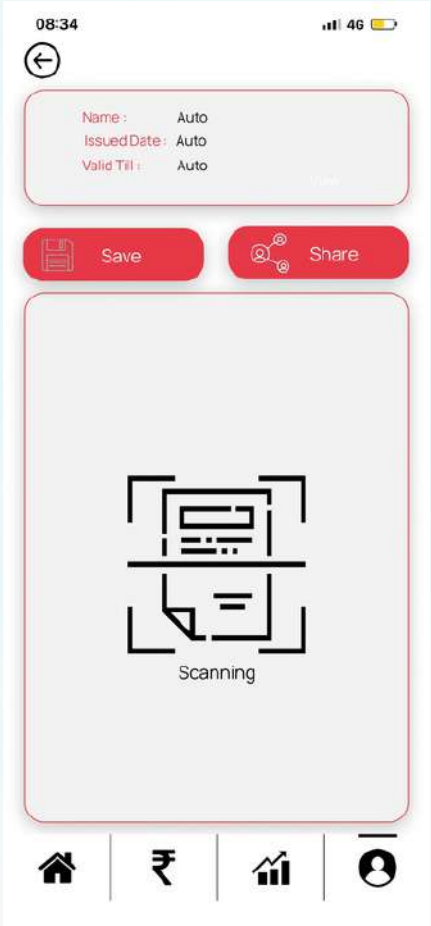
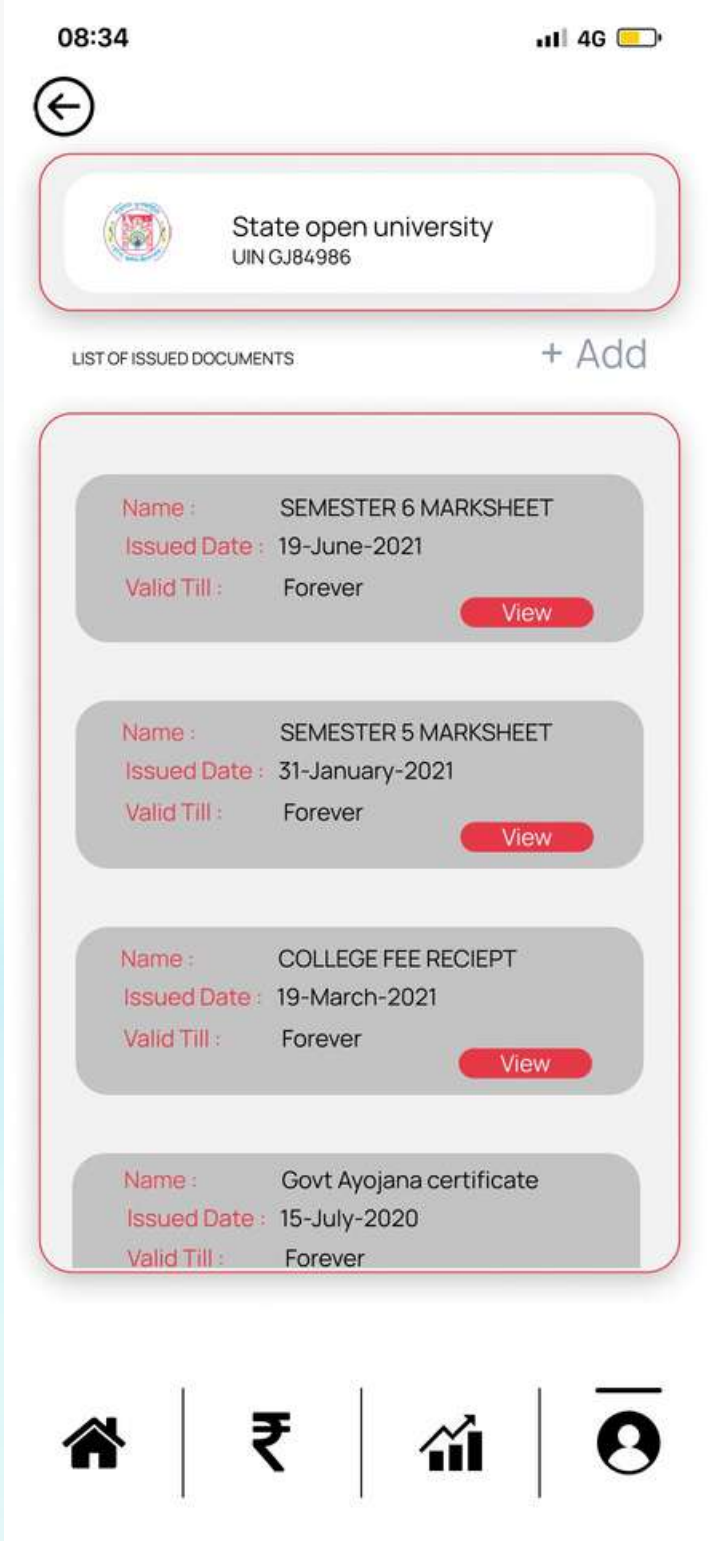




Home page directs to three sections of the app: Personal Finance, Investment, and Identity

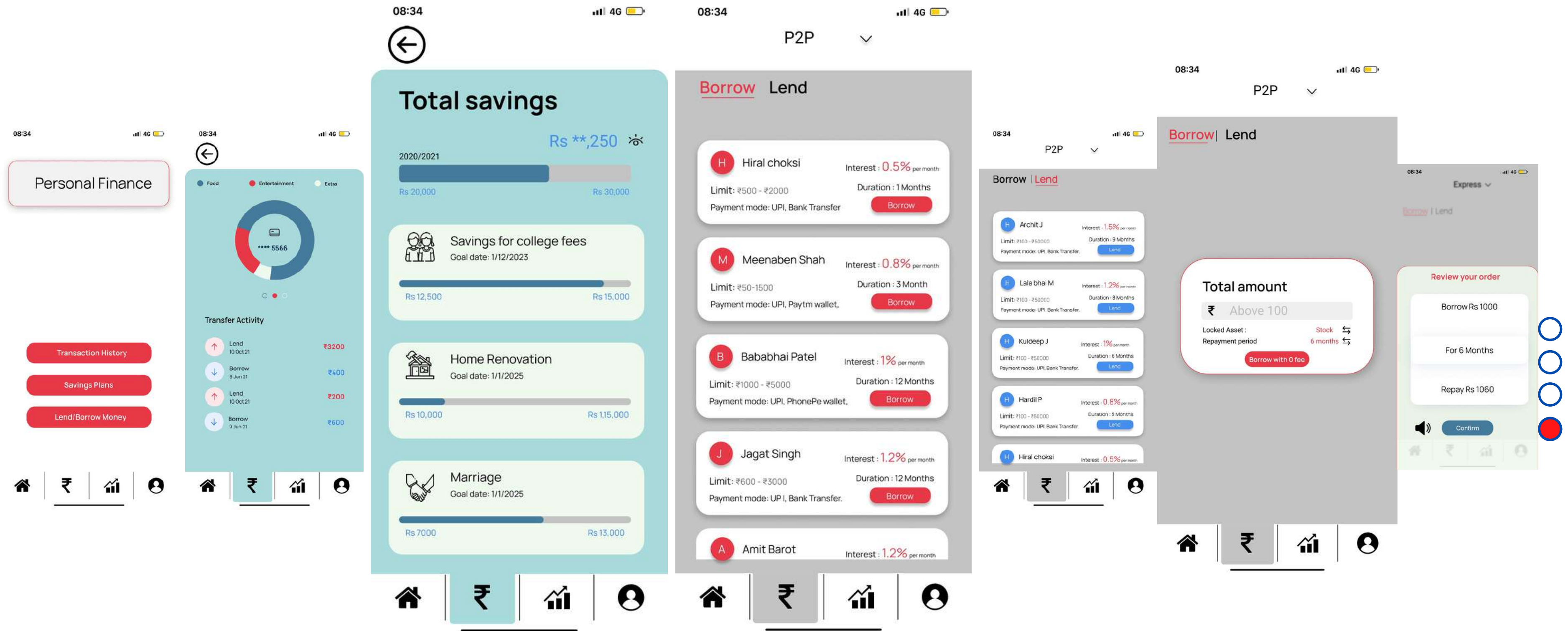


Users can get documents issued straight on the network through the Identity section.



Their documents can be verified on the network independently. Their credentials are established, and can be issued credit accordingly.



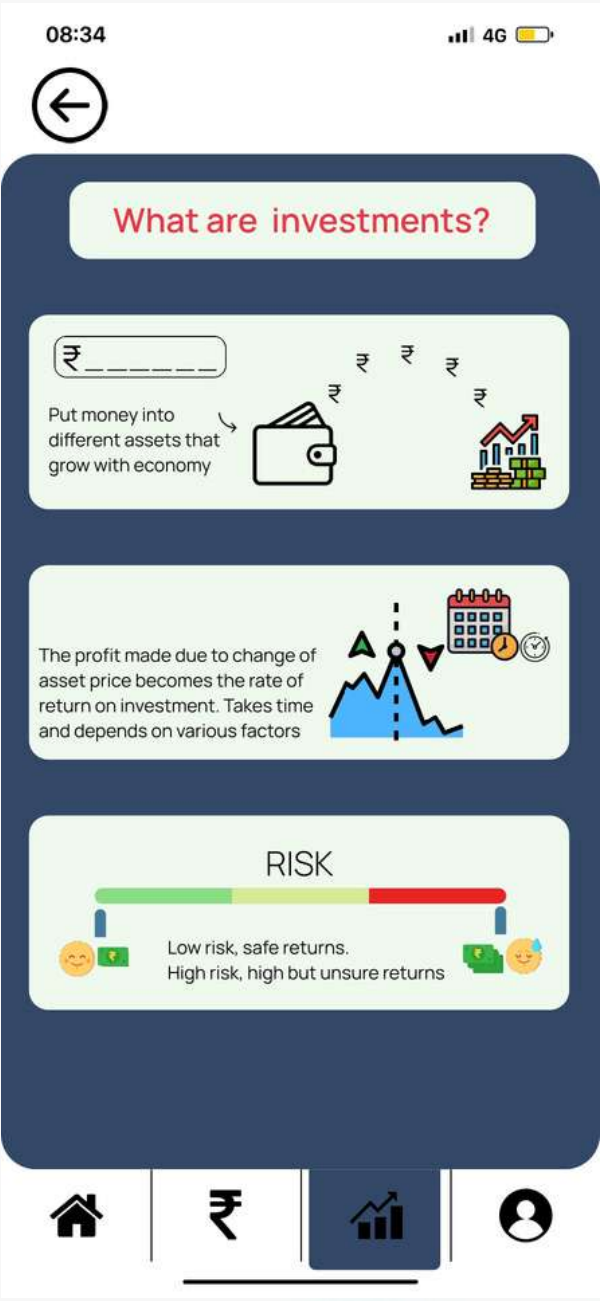


Their credit is further improved through recurring savings deposited within the app. Cash saving generally tend to get exhausted, as per user study.

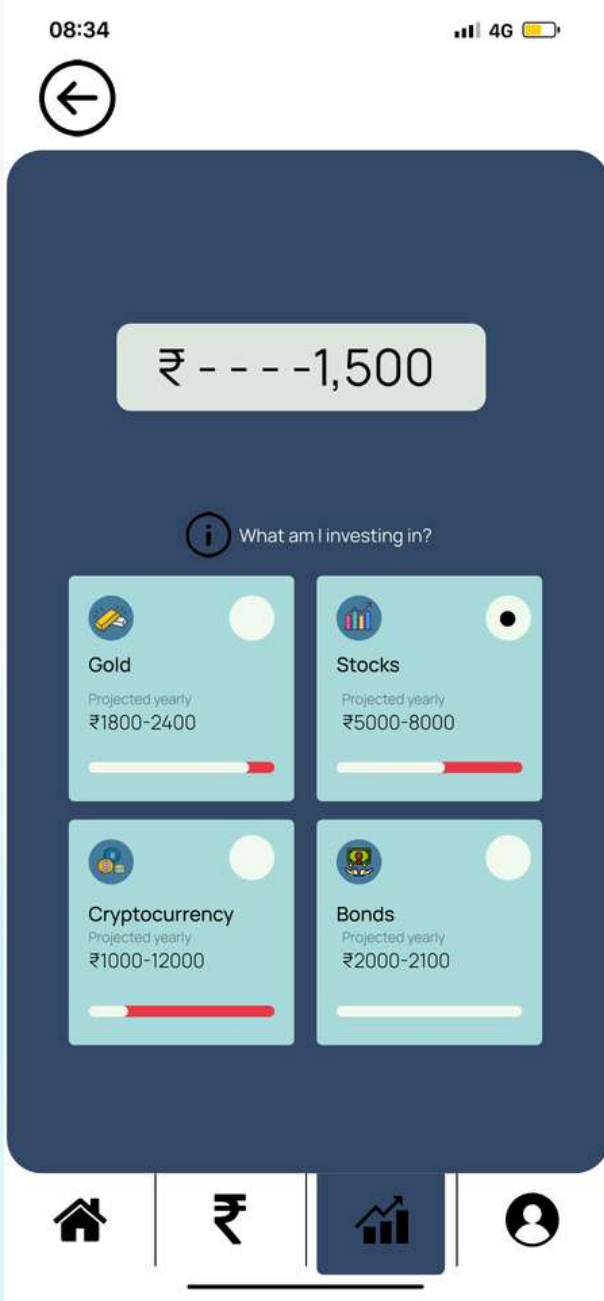
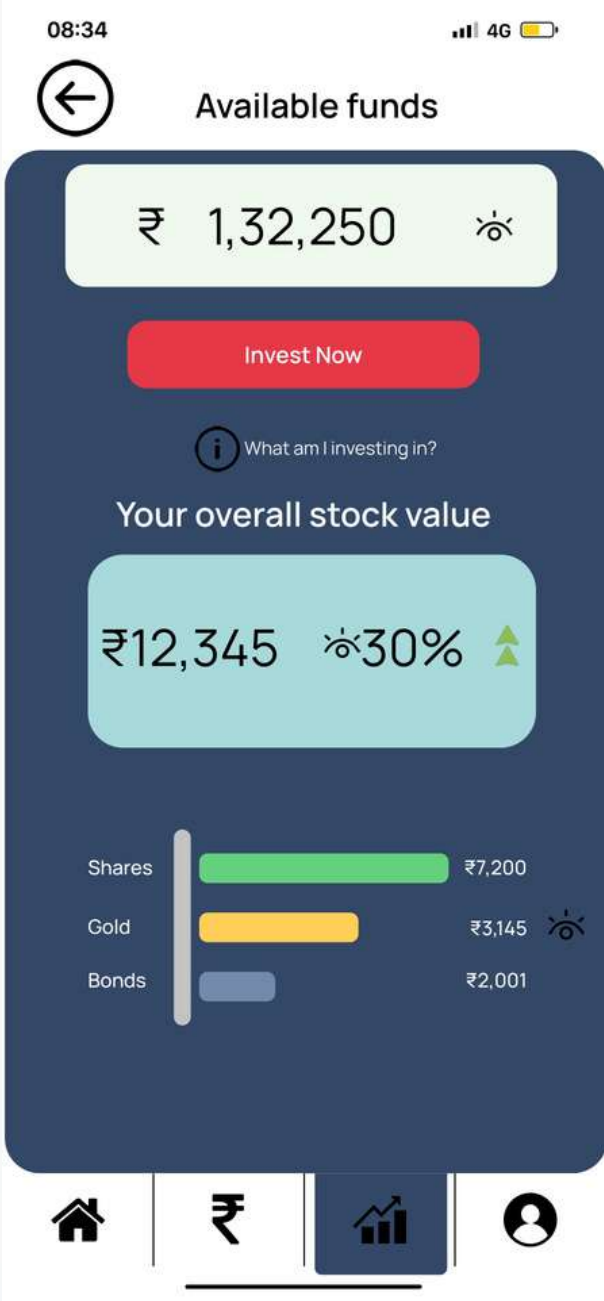
According to their credit, they can borrow or lend money on p2p basis. The amount to be borrowed will have a cap according to their credit. This will remove banks having to issue loans

They can also lock assets from the investment section as collateral , apart from their credit

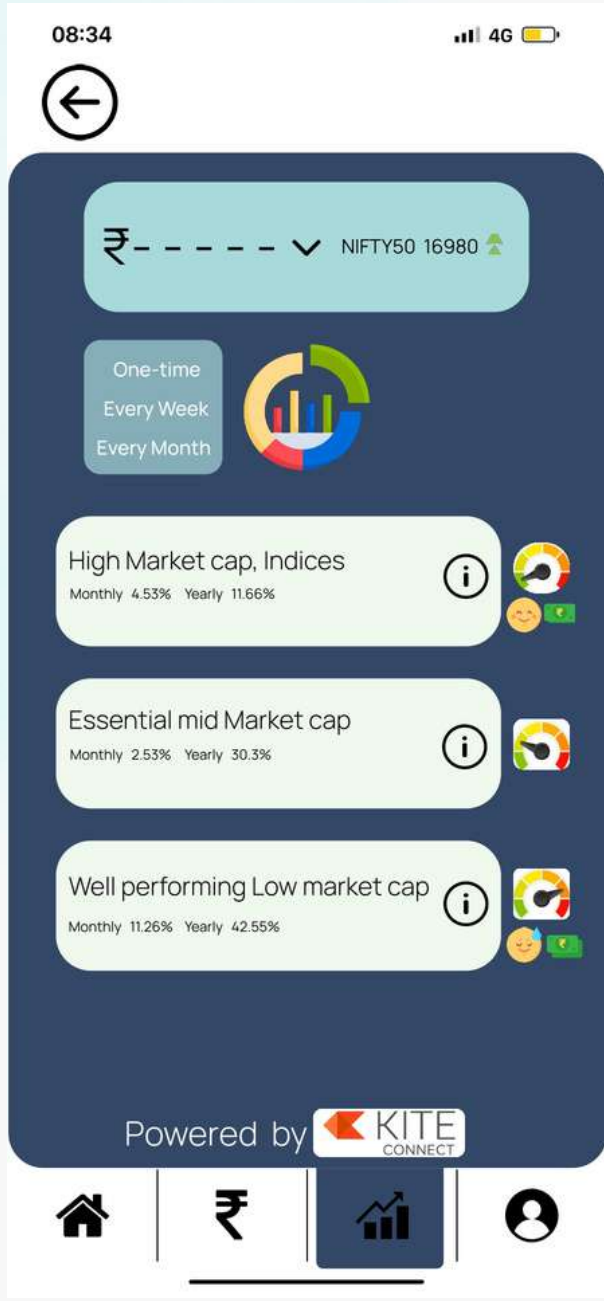
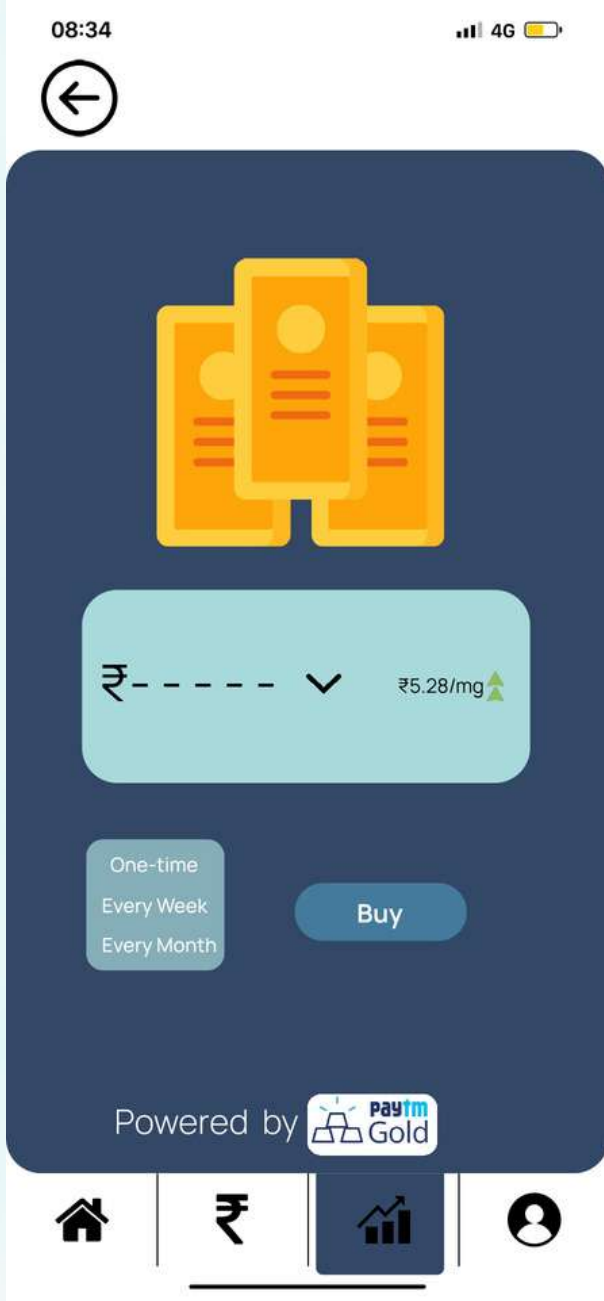




Investment section is catered to simplify and educate individuals regarding financial growth.



Recurring investments will also improve credit score within the app.



Once financial growth is realised, even in small amounts, encouragement for financial planning shall follow.

