

ETCA

Central Home Computer

ETICA

OUR MISSION

We believe in simplifying your life while reducing your environmental impact. Our centralized computing system provides the power for all your computing needs in your home thus eliminating the need for redundant devices and their carbon foot print.

TABLE OF CONTENTS

1. Problem

- Sustainable & Social Problems
- Target Market
- Life Cycle Analysis
- Product Trend
- Competitor Analysis
- User Journey Map

2. Design

- Market Research
- Initial Ideation
- Quick CAD Ideation
- Idea Development
- Prototypes
- Material / Form Inspirations
- Final Design Idea

3. Outcome

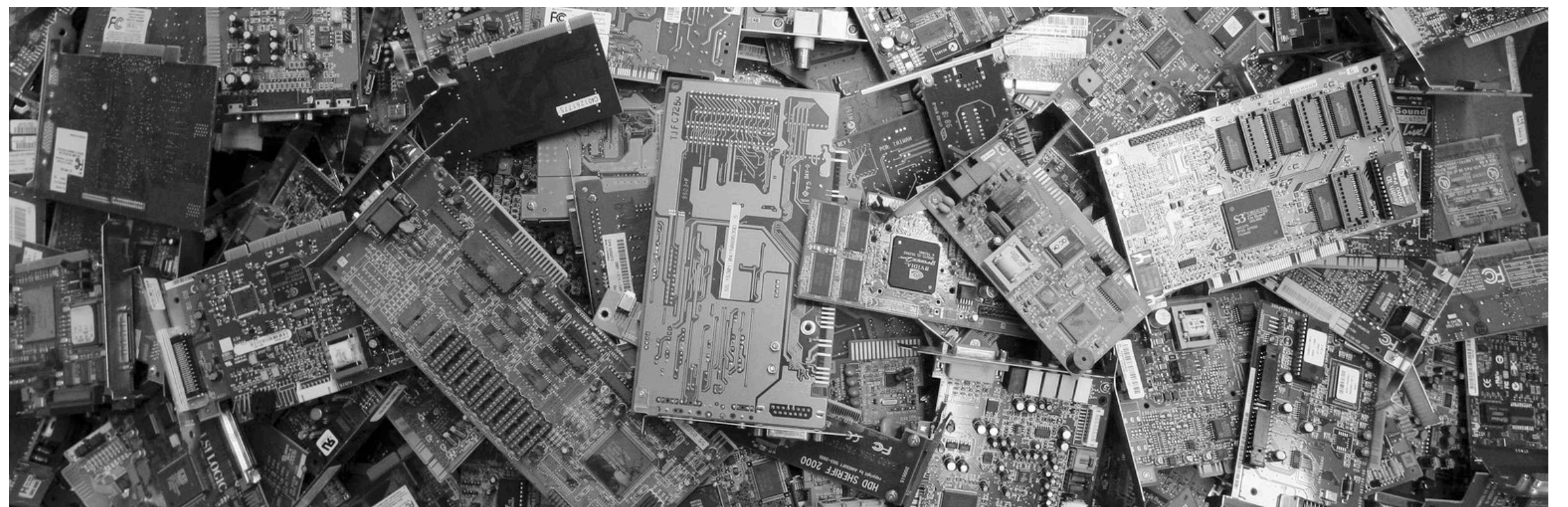
- Impacts
- Extension of Target Market

PROBLEM

ELECTRONIC WASTE

Computers, printers, copiers, fax machines, VCRs, smartphones, and stereos are some of the electronic devices most commonly associated with e-waste.

Among this group, computers and monitors are the most significant contributor to the amount of waste being generated.



LIFE CYCLE EMISSION

The life cycle emission problem is a serious issue that has been ongoing for decades, and it is expected to continue to be a significant challenge in the future. As the world becomes increasingly dependent on technology, the production and use of electronic devices grow, leading to an increase in greenhouse gas emissions and other environmental impacts.

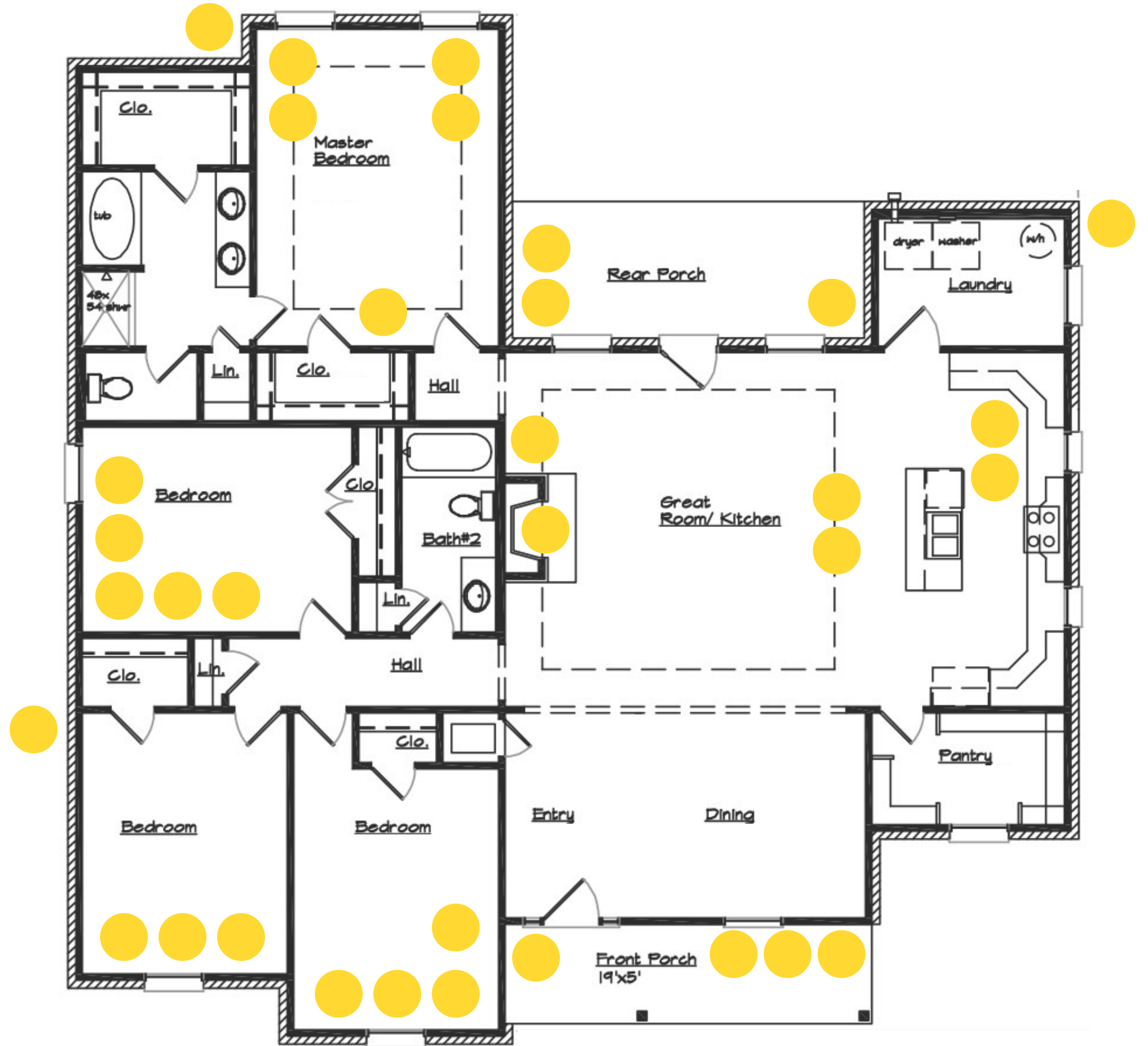


CONGO'S COBALT MINING

The cobalt mining industry in the Democratic Republic of Congo (DRC) is associated with unregulated and unsafe mining conditions, environmental degradation, human rights abuses, and child labor, which have raised concerns about the social and environmental impact of electronic devices production.



DISTRIBUTION OF DEVICES



TYPES OF DEVICES



TARGET MARKET

- Four or more family member household
- Single-family household with at least two children
- Households with at least five devices



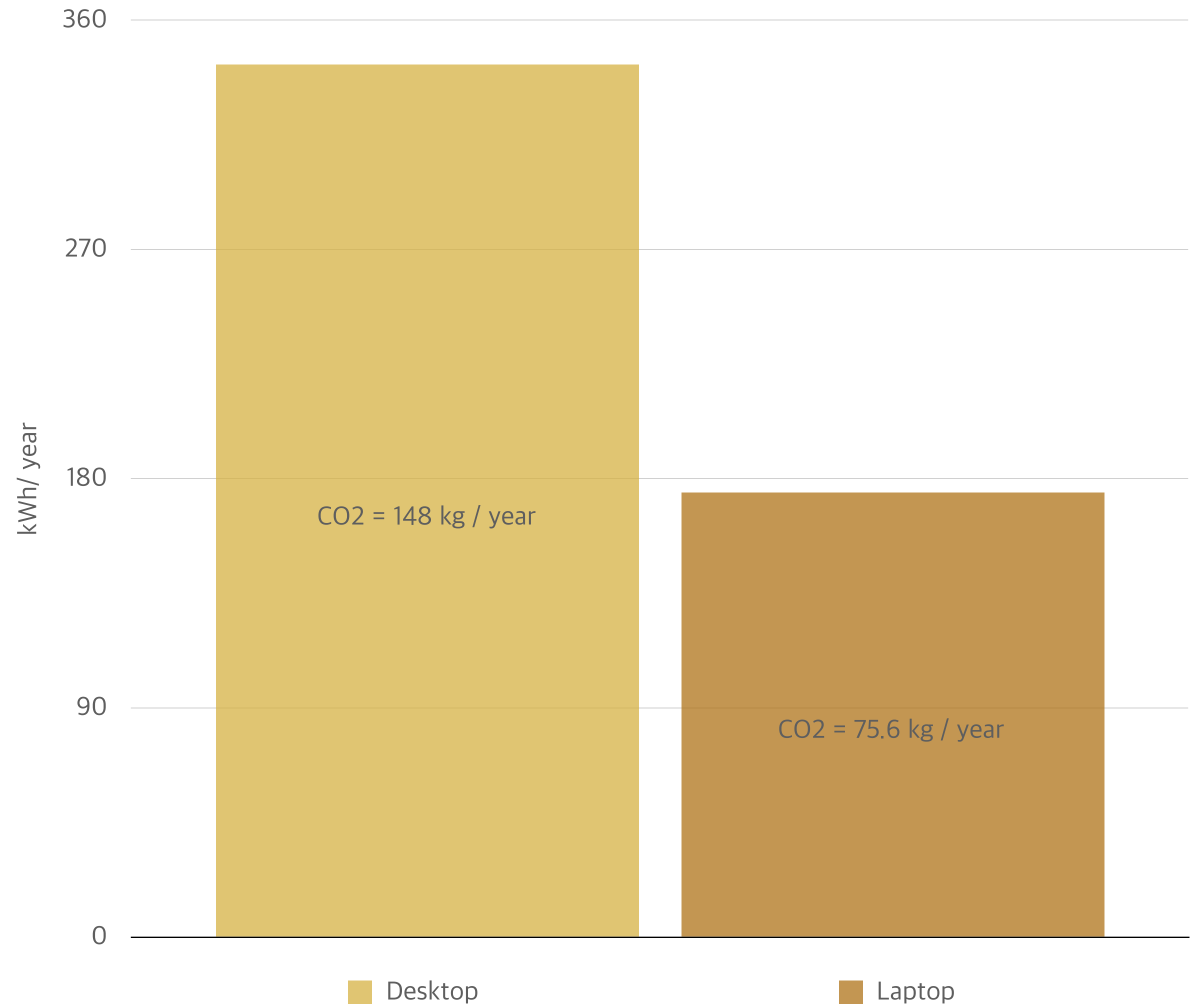
STAKEHOLDER MAP



PC VS LAPTOP ENERGY EFFICIENCY

A desktop uses energy around 117.5 Wh. If it is used for eight hours a day, the annual consumption comes to 342.4 kWh/year. That corresponds to CO2 emissions of 148 kg per year.

A laptop uses considerably less energy around 60 Wh. If it is used for eight hours a day, the annual consumption comes to 174.72 kWh/year. That corresponds to CO2 emissions of 75.6 kg per year.



*On stand-by, the power consumption of **both** a desktop and a laptop computer falls to about a third.

*Server CPUs generally operate between laptop and desktop parameters.

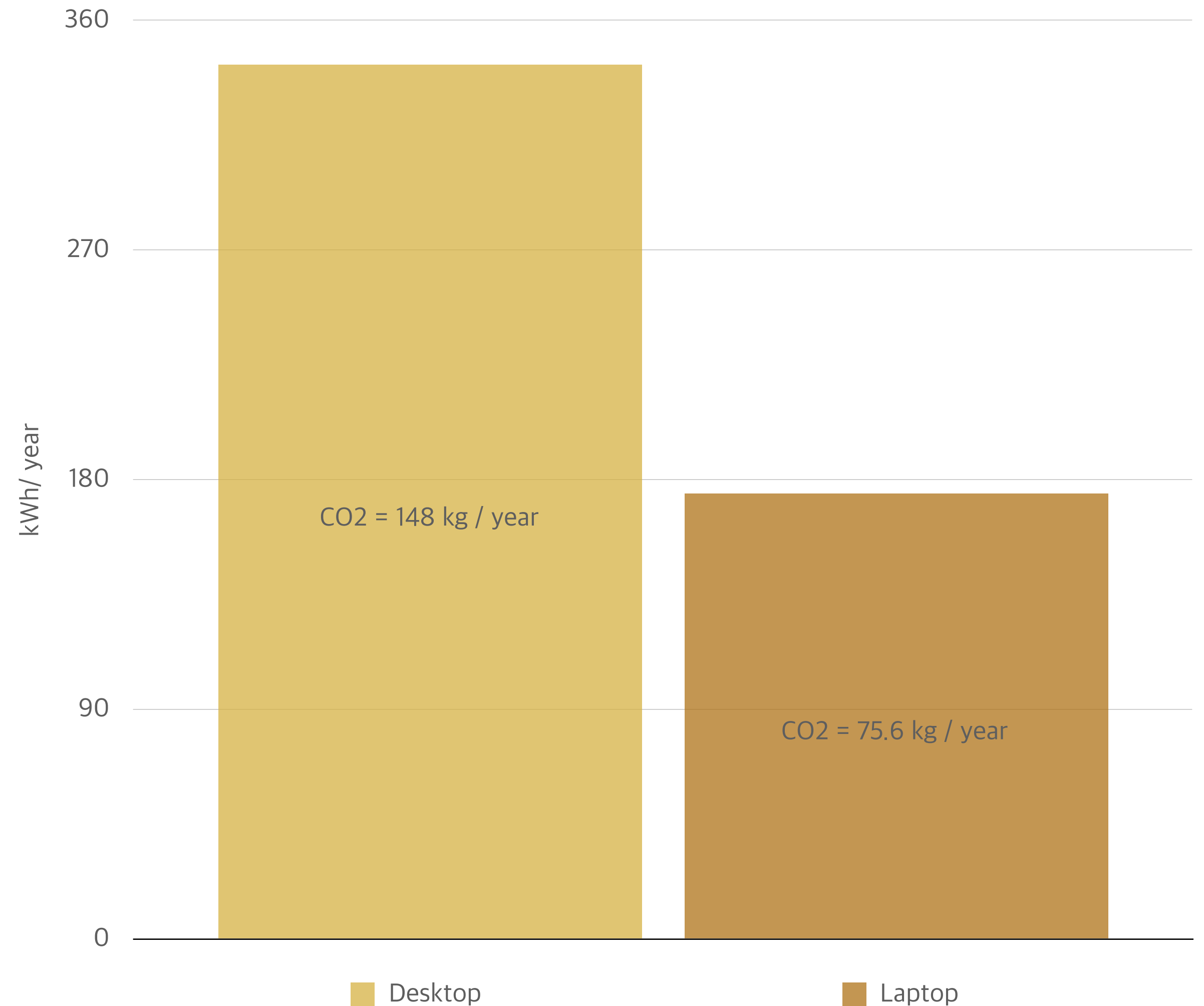
*CO2 calculations made using EPA Greenhouse Gas Equivalencies Calculator.

SERVER VS PC VS LAPTOP ENERGY EFFICIENCY

In general, a server processor can be more energy-efficient than multiple PC processors for a given workload, especially if there are many users involved.

This is because a server processor is designed to handle a larger number of tasks simultaneously and is optimized for power efficiency.

Server processors also often have advanced power management features to reduce power consumption during periods of low activity.



*On stand-by, the power consumption of **both** a desktop and a laptop computer falls to about a third.

*Server CPUs generally operate between laptop and desktop parameters.

*CO2 calculations made using EPA Greenhouse Gas Equivalencies Calculator.

USER JOURNEY

Arrival Home:

The child arrives home from school and goes straight to their room.

Turning on Devices:

The child turns on their gaming console, laptop, and TV.

Gaming Console:

The child starts playing games on their gaming console. They play for about an hour or until they get bored.

Laptop:

The child switches to their laptop and starts playing online games or doing homework. They spend about 30 minutes on the laptop.

Snack Break:

The child takes a snack break and goes to the kitchen to get a snack and a drink.

TV:

The child switches to their TV and watches their favorite TV show or movie. They watch for about an hour.

Homework:

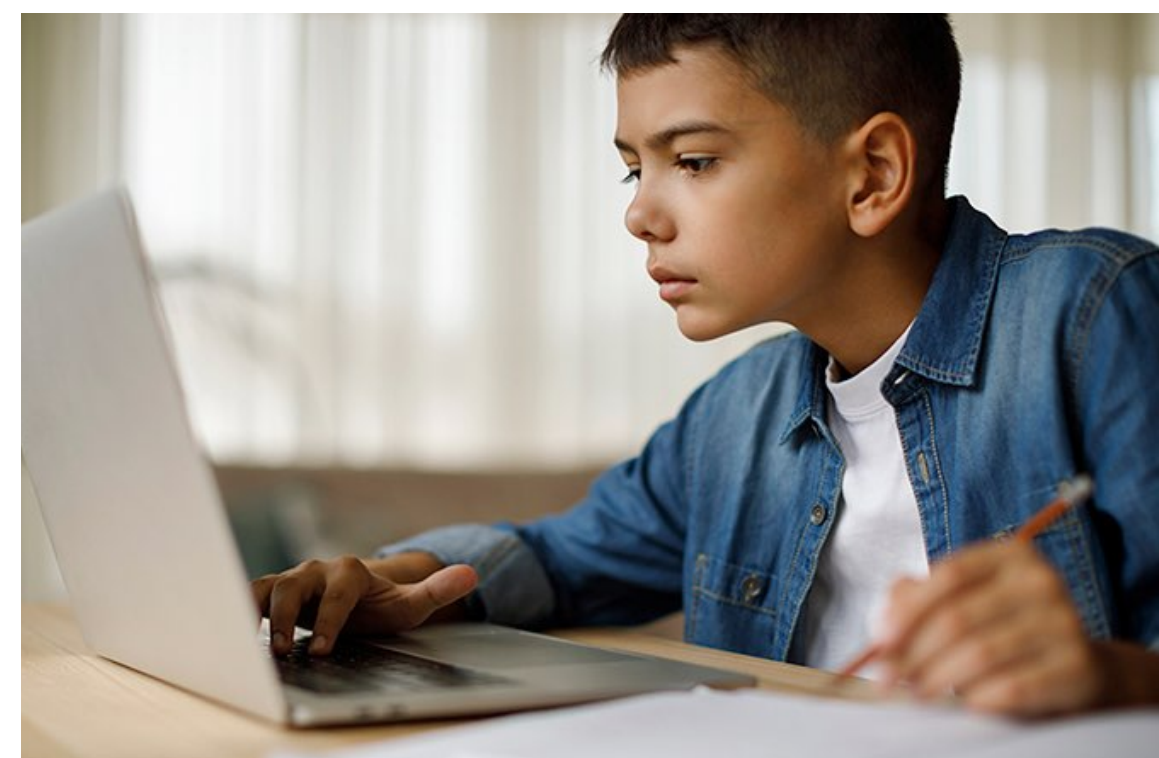
The child switches back to their laptop and starts doing their homework. They spend about an hour or until they finish.

Dinner Time:

The child takes a break from their devices and goes to the kitchen for dinner.

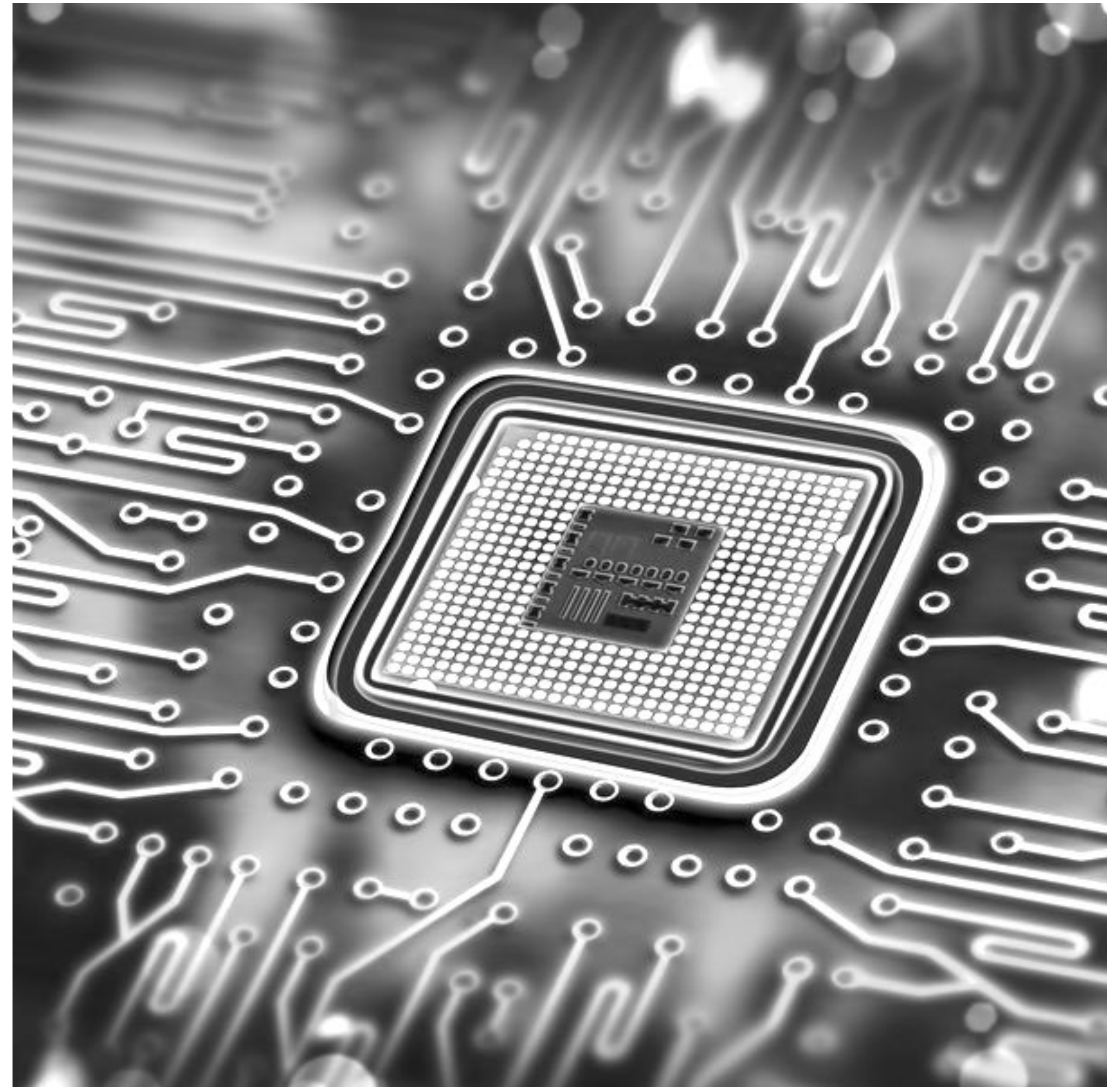
Device Shutdown:

After dinner, the child shuts down their devices for the night.



CENTRAL COMPUTER

- Possible to support a large number of users and data
- High availability and reliability requirements
- Enterprise-grade cash requirements
- Multiple CPU sockets



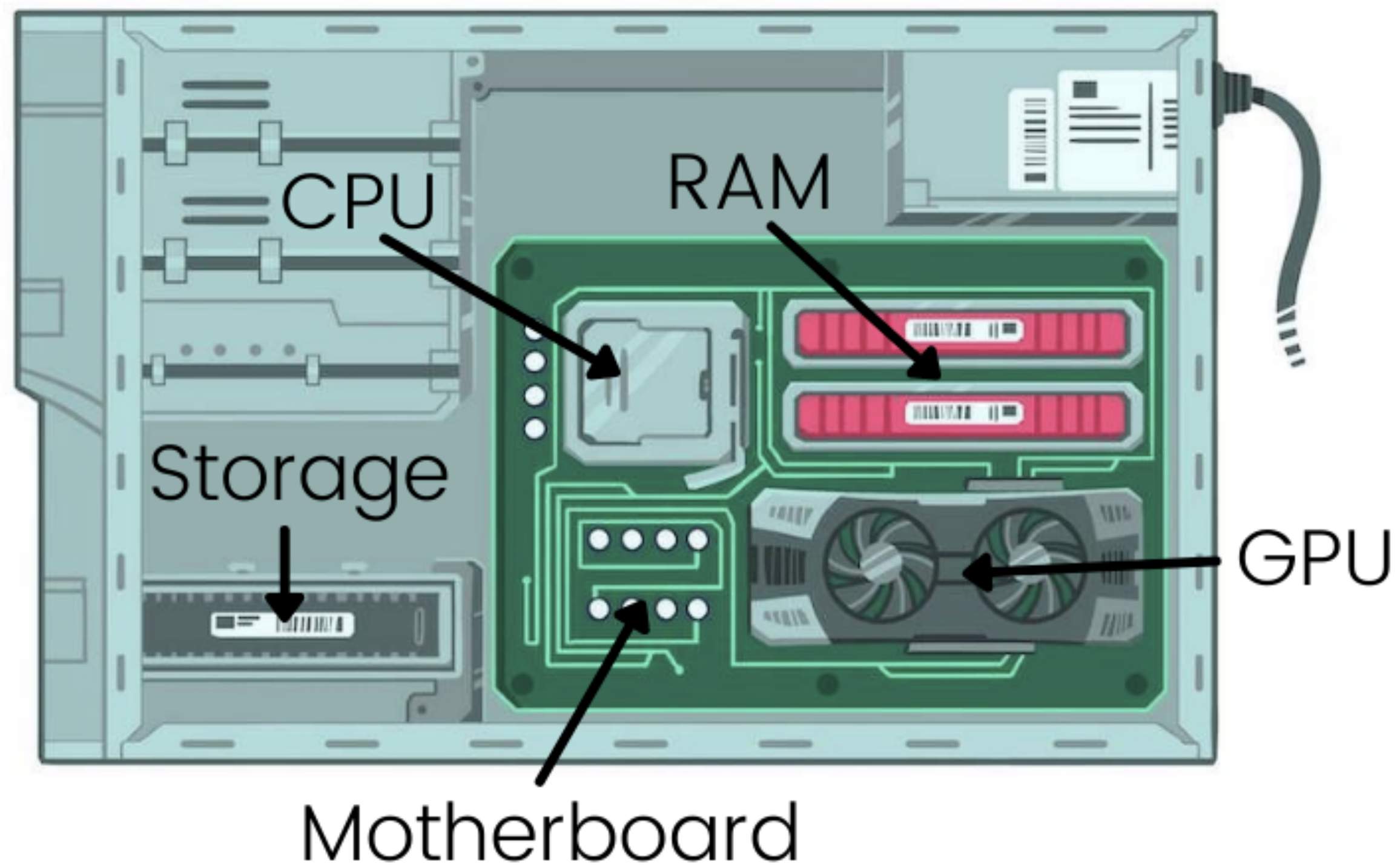
POSSIBLE SOLUTIONS

- Unification of devices
- Dematerialize
- Modular
- No fans
- Leasing program/ disposal management

DESIGN

DESIGN REQUIREMENT

- Motherboard
- Central Processing Unit (CPU)
- Graphics Processing Unit (GPU)
- Random Access Memory (RAM)
- Solid State Drive (SSD)



MARKET RESEARCH

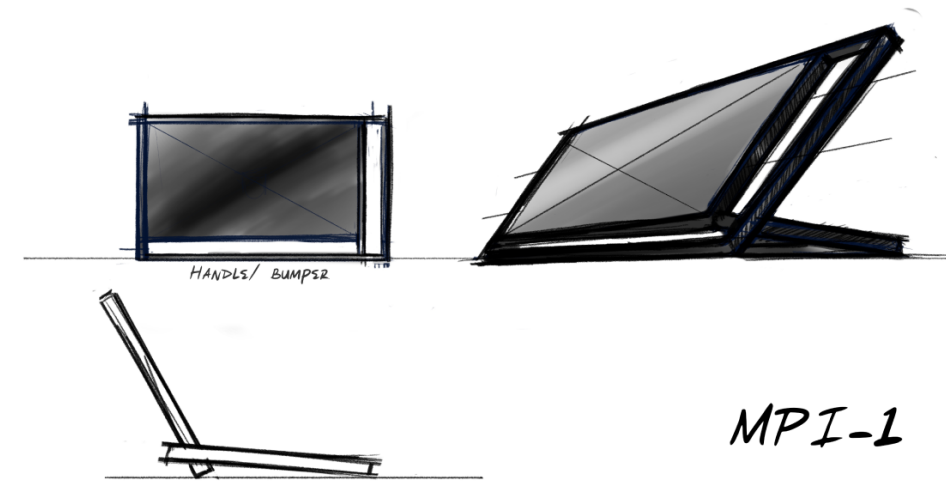
- Combination of fabric
- Portable scale
- Screen / display
- Round shape



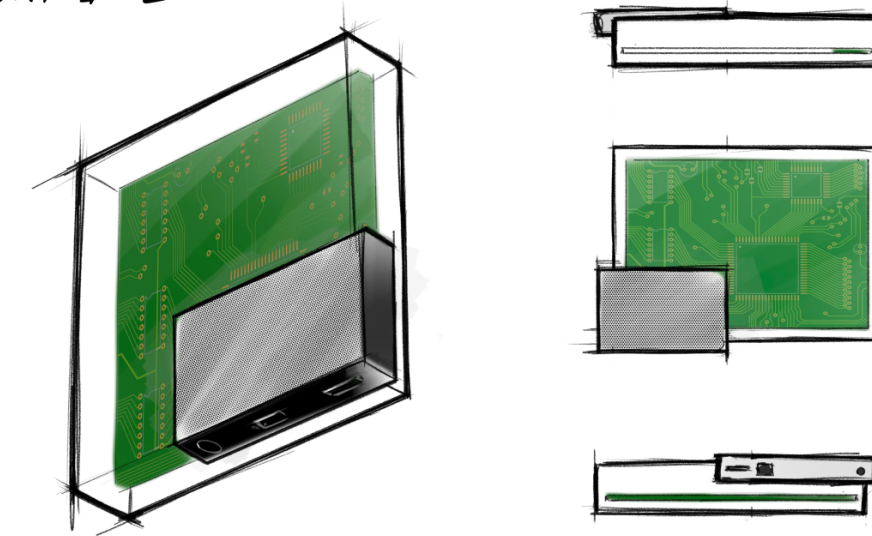
INITIAL IDEATION

Highlighting the modular feature and allowing users to disassemble and replace the components easily extend the product's life span. Thus, less energy, resources, and waste are produced.

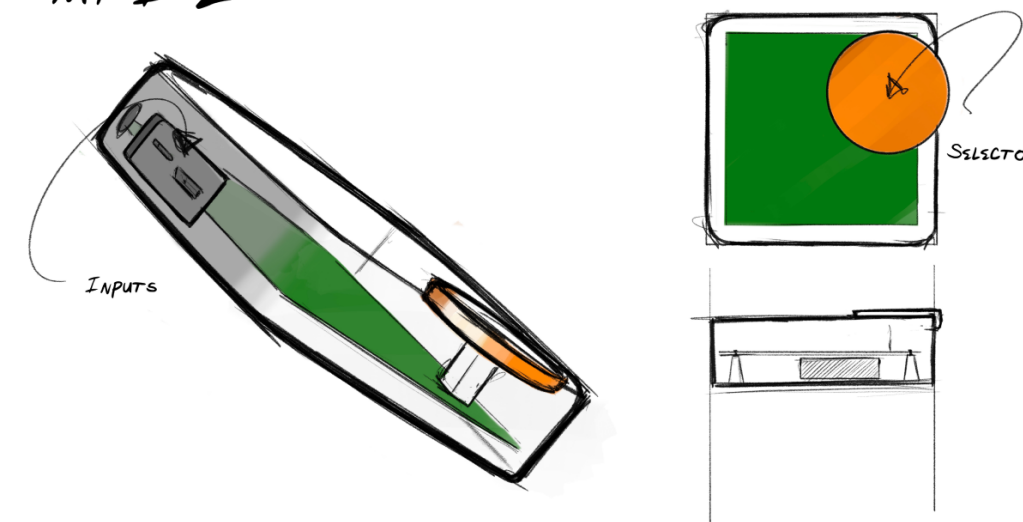
MODULAR LAPTOP



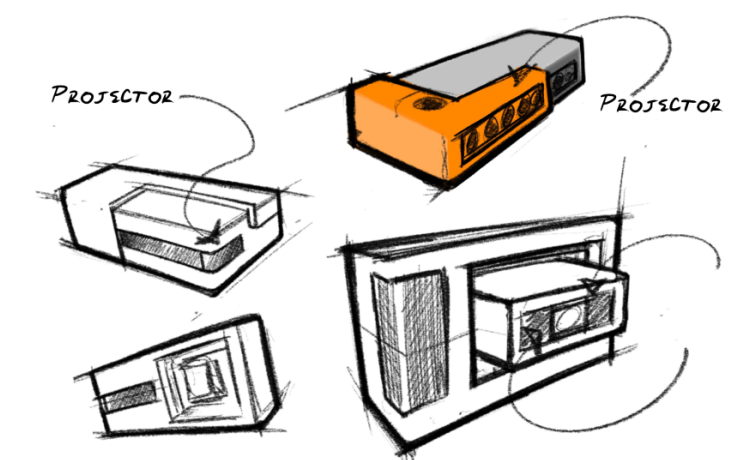
MPI-1



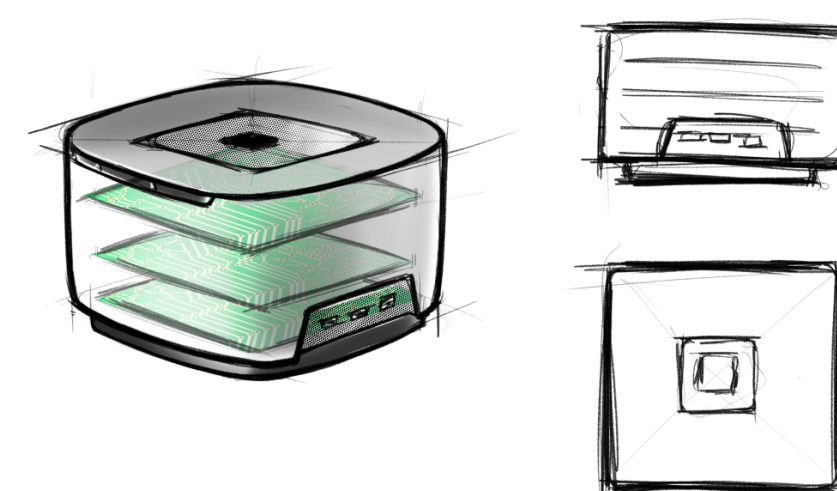
MPI-2



MPI-3



MPI-4



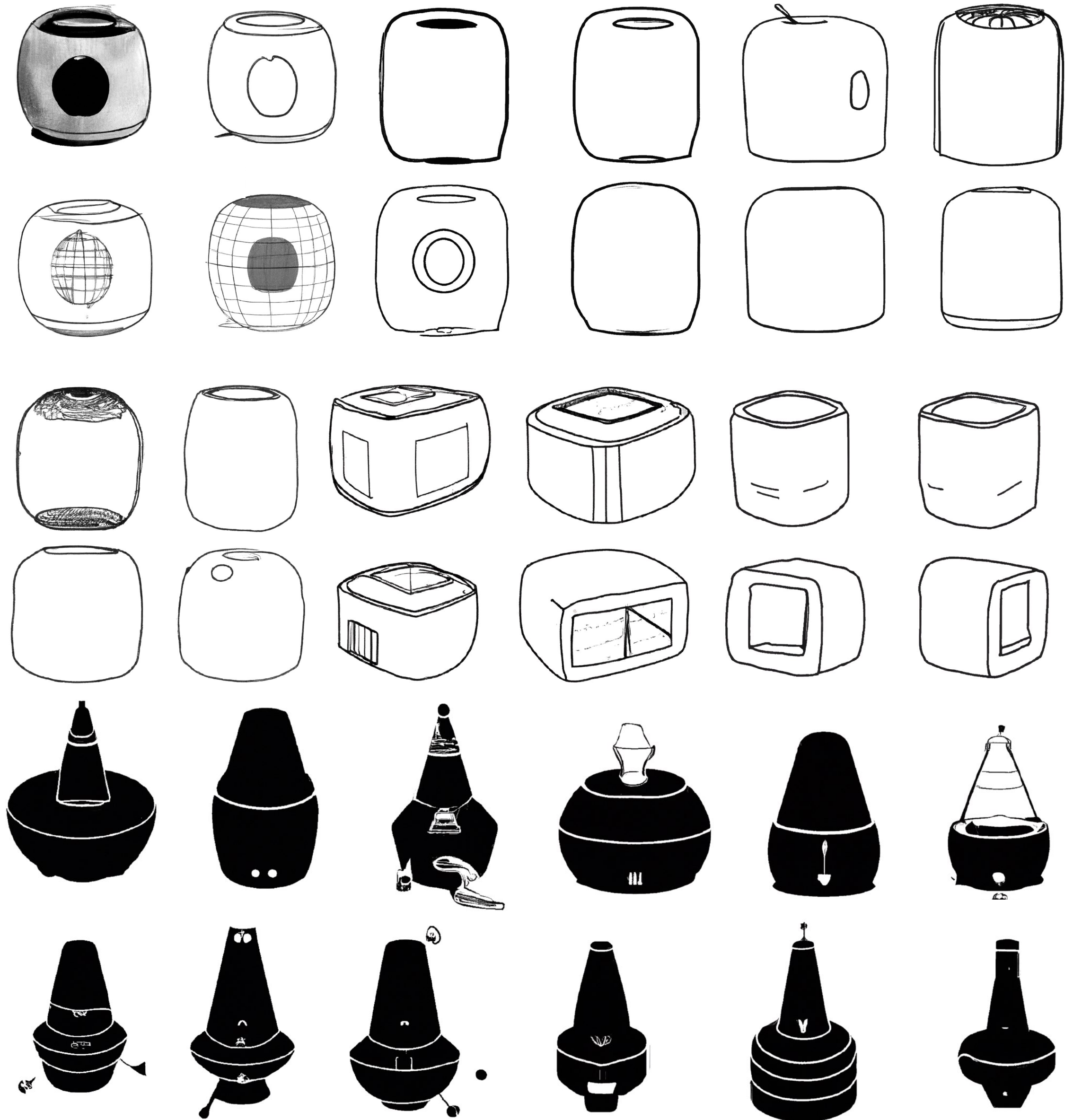
AI GENERATION

A central computer for households generated from AI emphasizes the unique forms aesthetically delivering a sense of high-end technology. These ideas inspired the final design through the use of irregular form and reflective material that makes the product look light and fit well with any modern interior of houses.



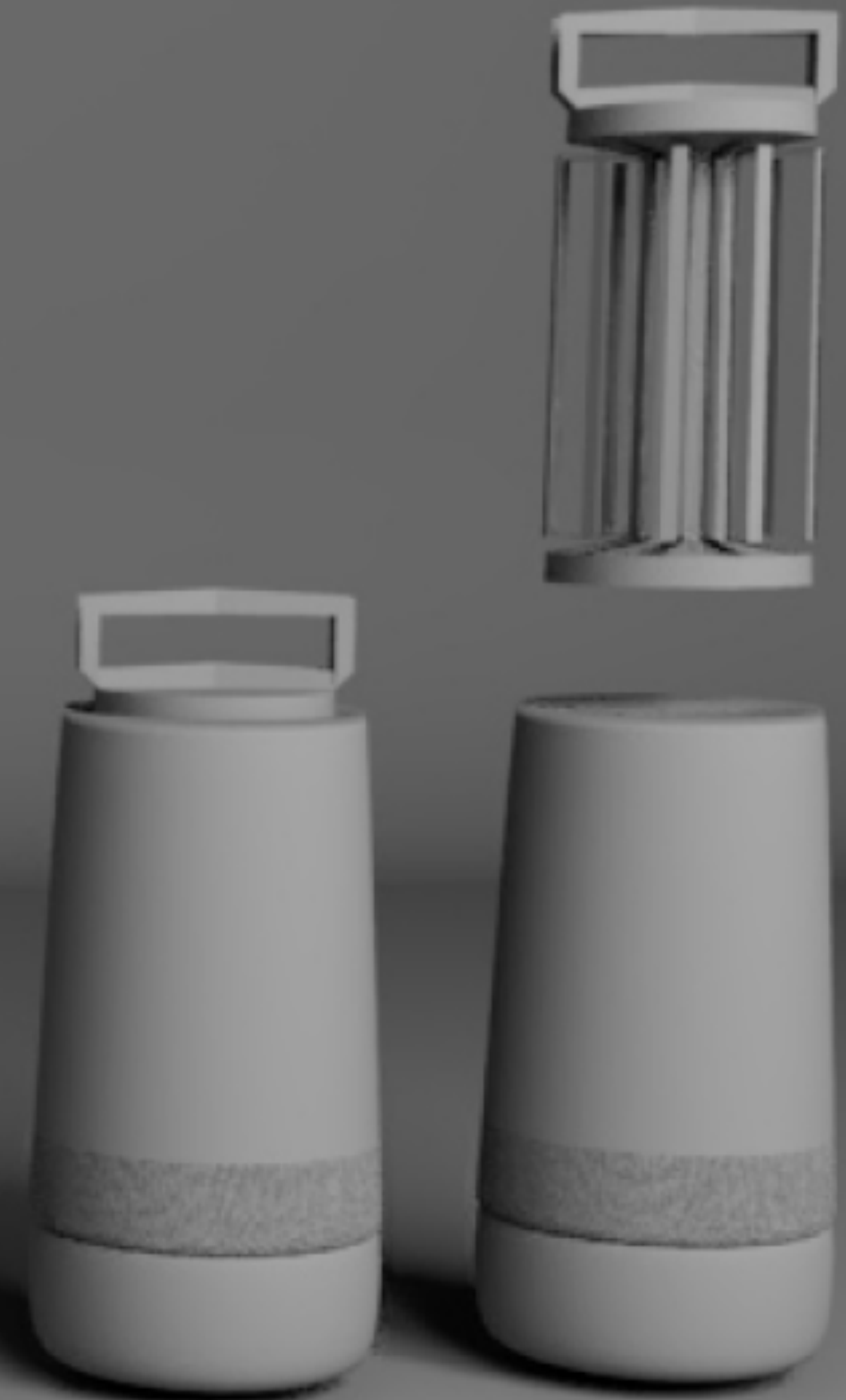
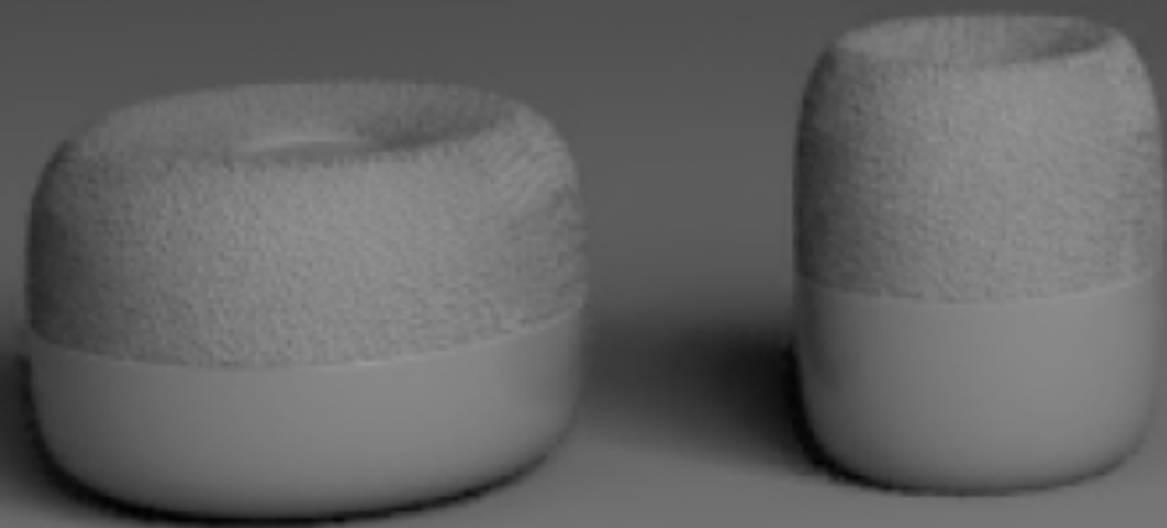
SILHOUETTE EXPLORATION

Initial exploration of silhouettes of the central computer is mostly inspired by the existing products, mimicking the form that is familiar to the users.



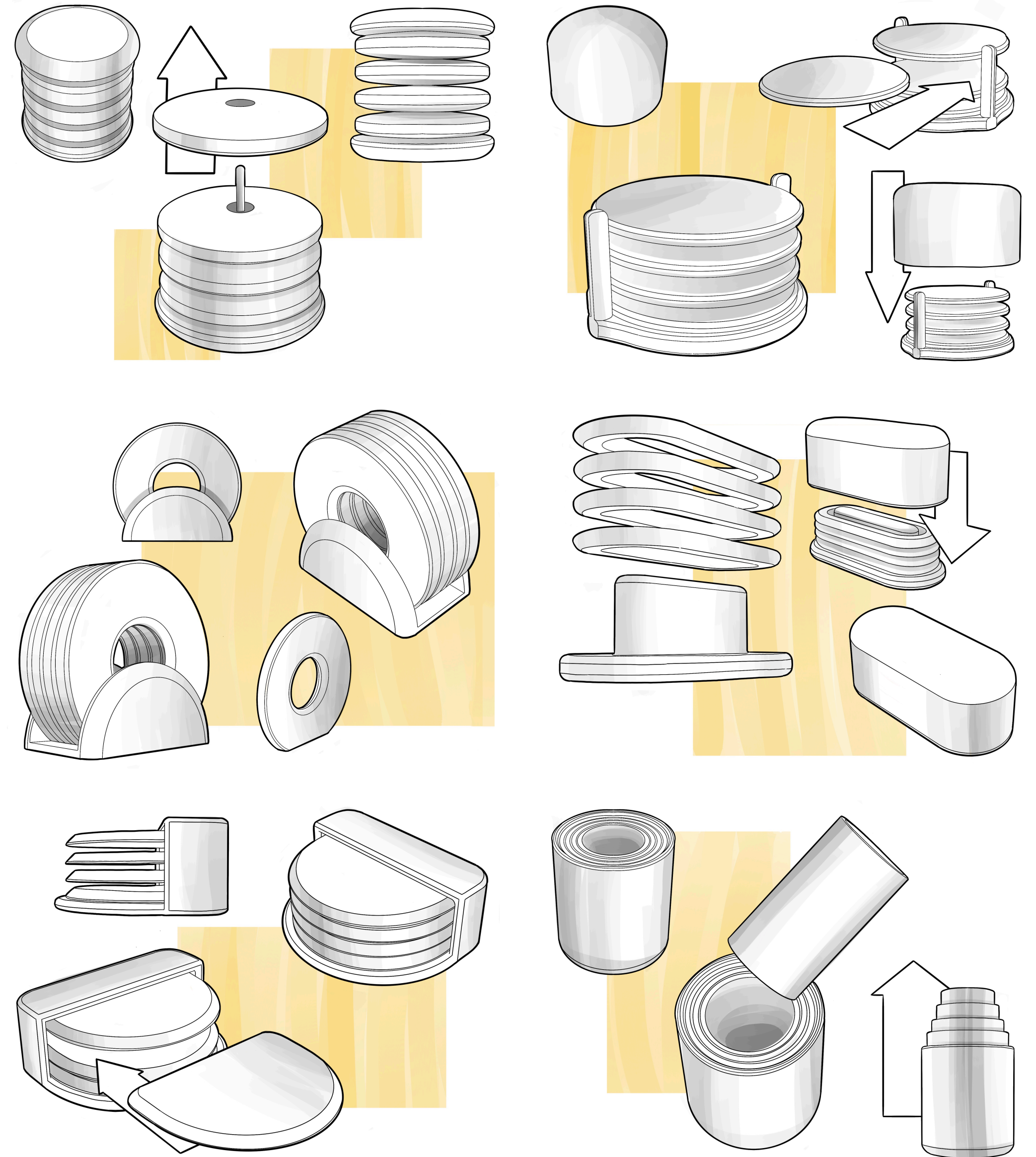
FURTHER IDEATION

Quick CAD ideation of emphasizing easy disassembly through a simple twist mechanism. Components can be replaced, upgraded, quicker and materials can be recycled with better energy efficiency.



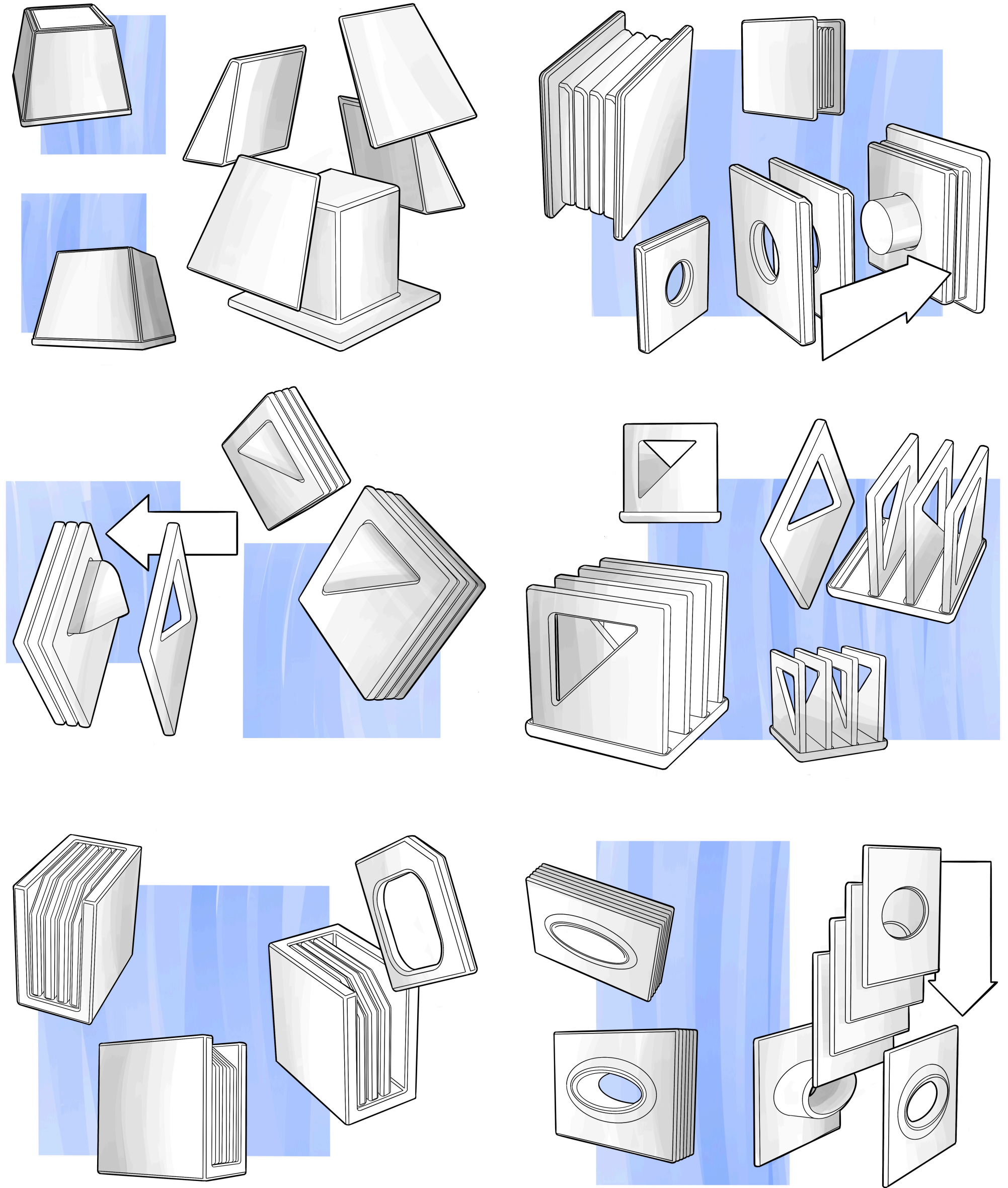
FORM EXPLORATION 1

- Cylindrical
- Case to prevent dust
- Soft edges
- Friendly shape



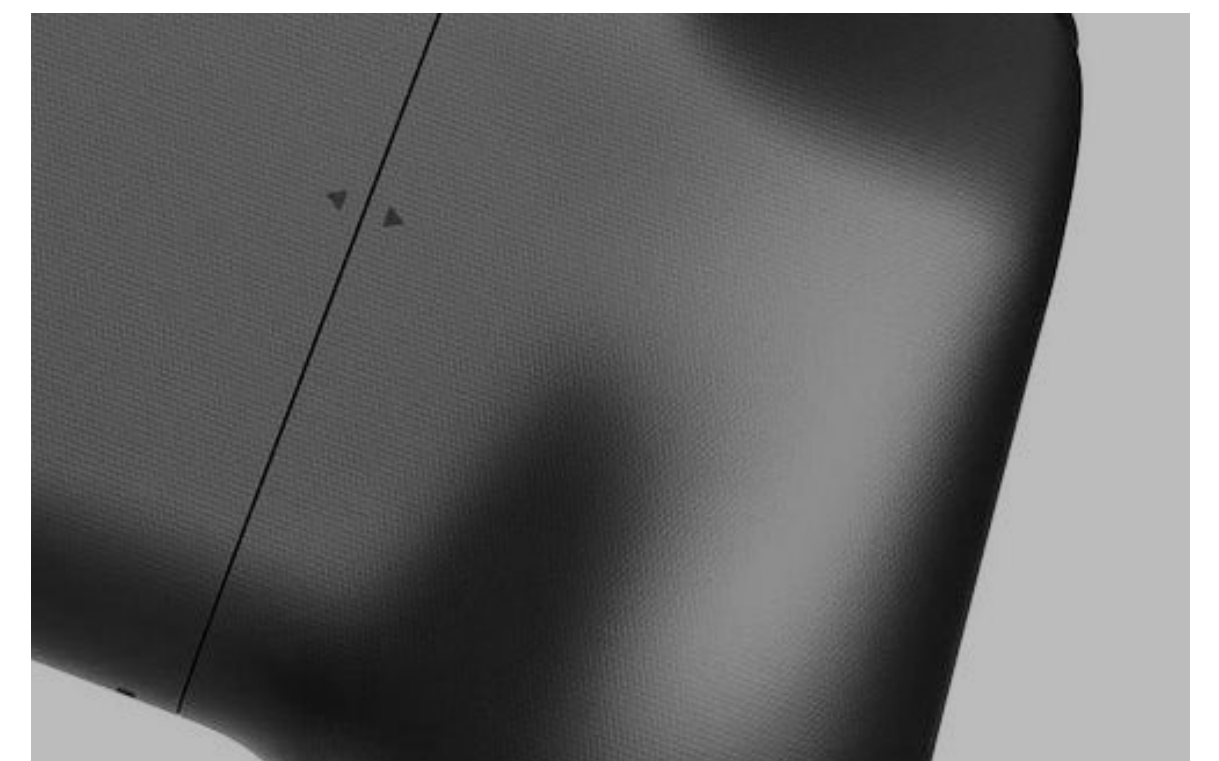
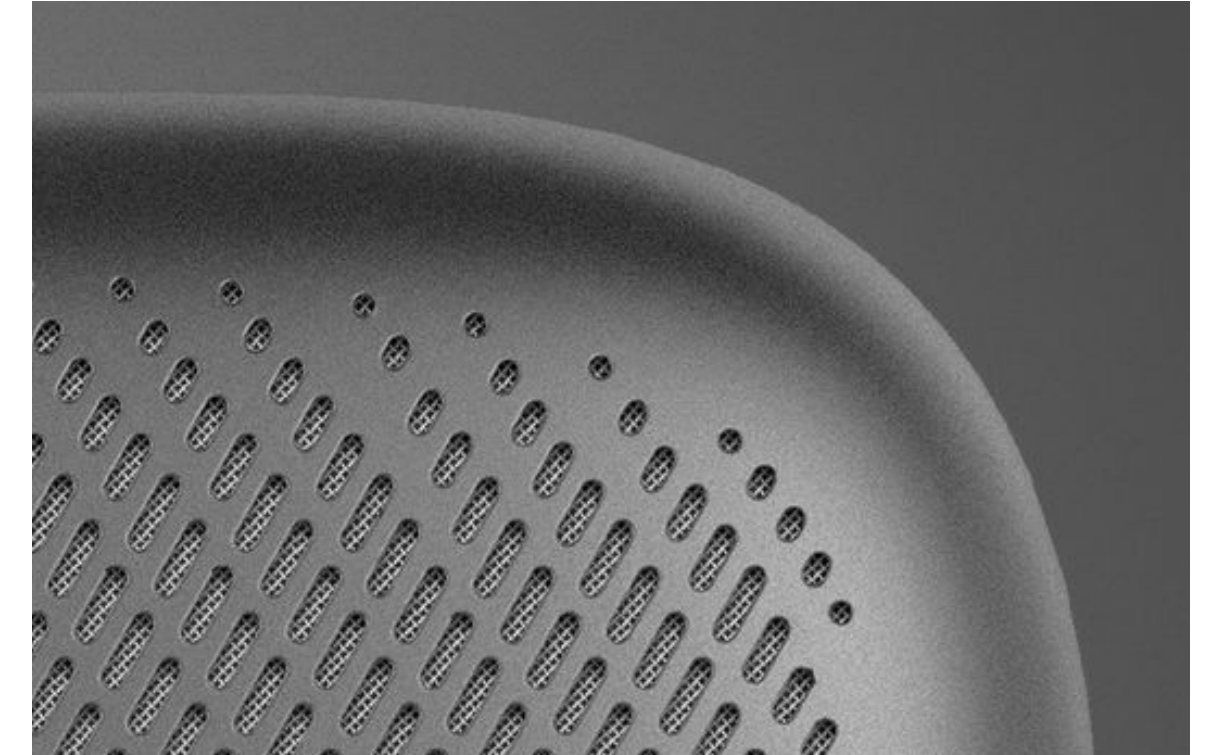
FORM EXPLORATION 2

- Rectangular
- Efficient use of surfaces
- Sharp edges
- Slick forms



MATERIAL INSPIRATION

- Recyclable
- Raw, local materials
- Brutal, last long
- High thermal conductivity



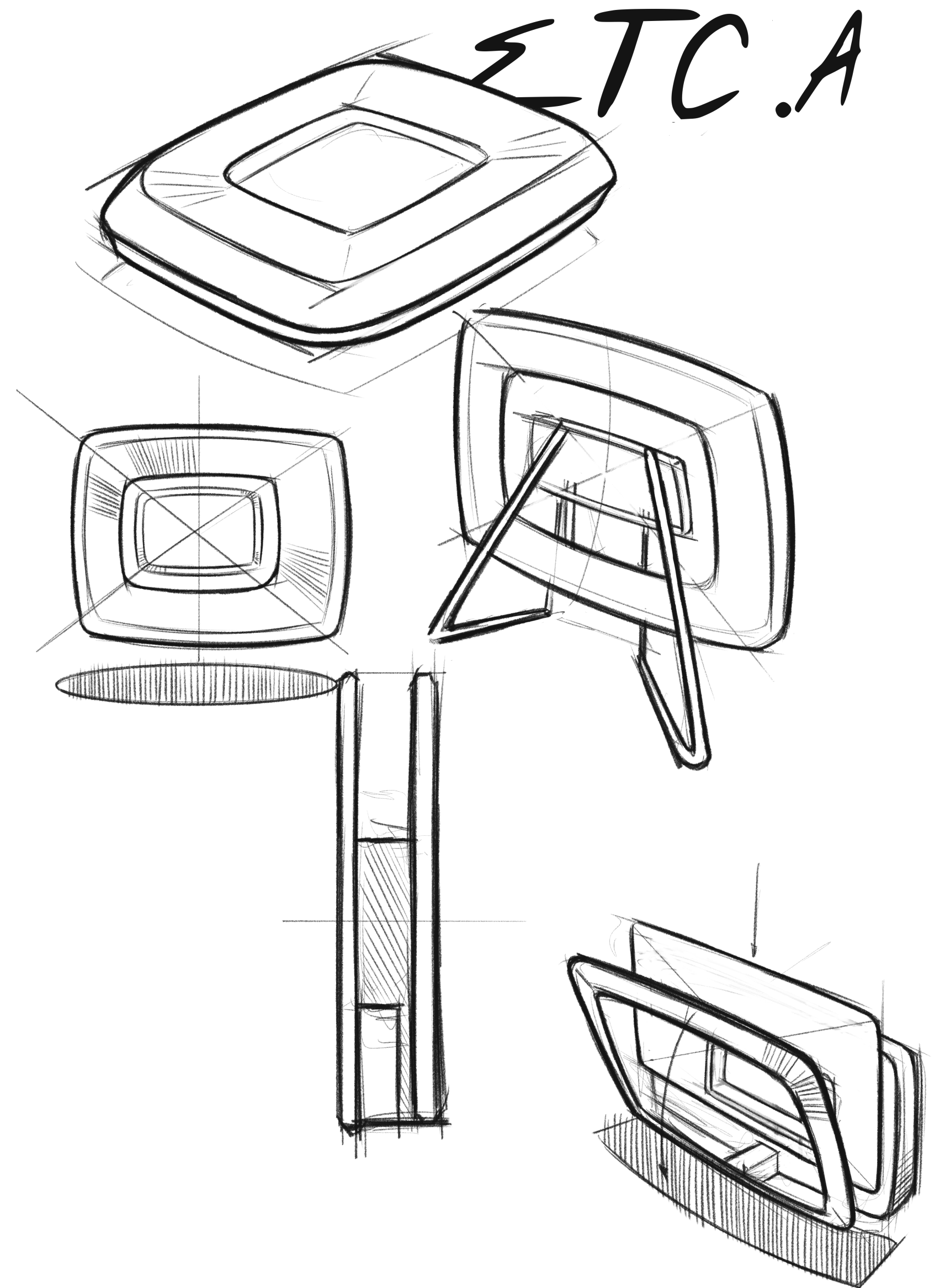
FORM INSPIRATION

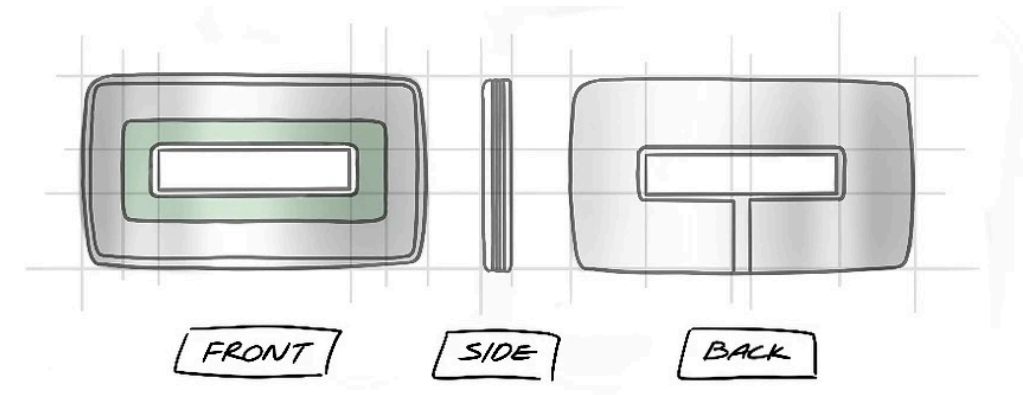
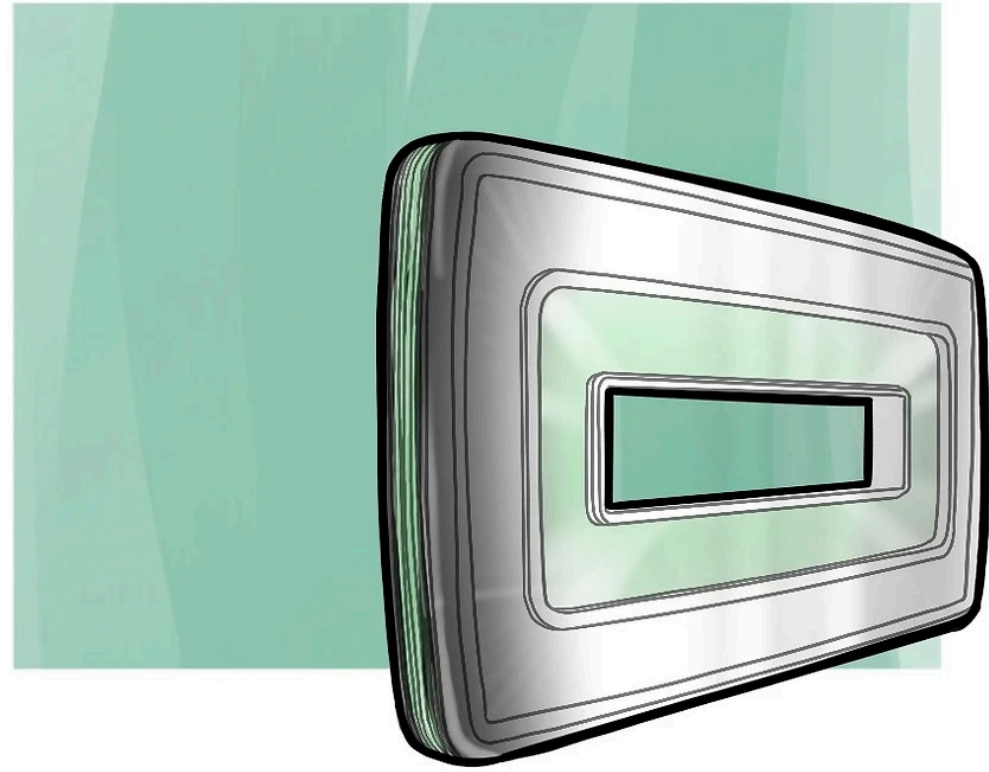
- Clean, chic exterior
- Hidden button
- Hollow
- Subtle dynamics



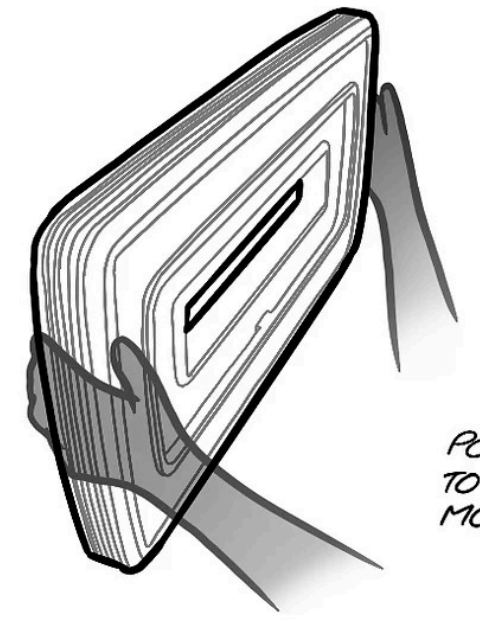
FINAL DESIGN IDEA

The final design of a central computer is elaborated from the learning through ideation and exploration. A simple rectangular shape with slight curves of edges casually blends into the user's house without any oddness of being a new technology in the system.

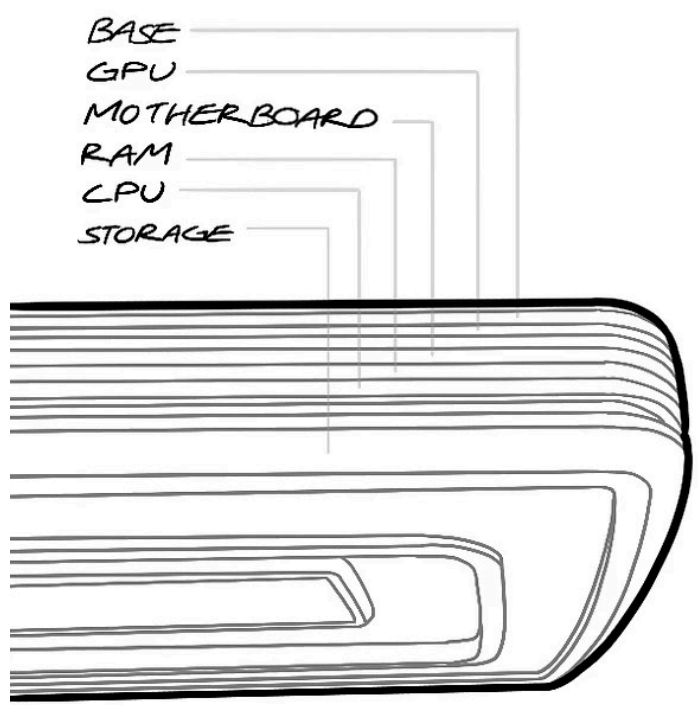




HOLLOW COOLS DOWN
PRODUCT WITHOUT FAN



POSSIBLE
TO BE
MOUNTED

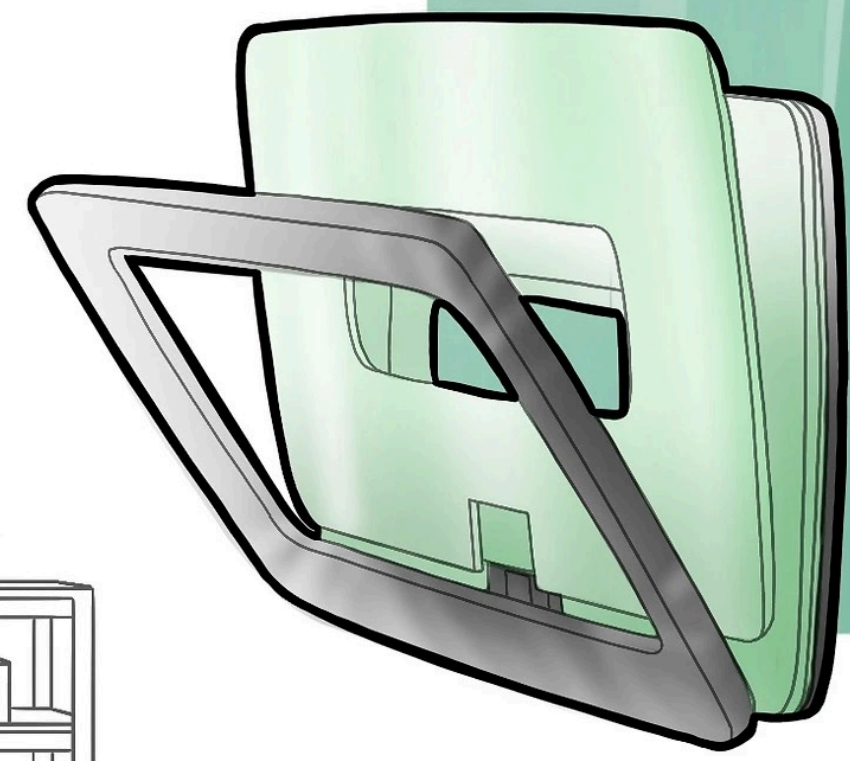
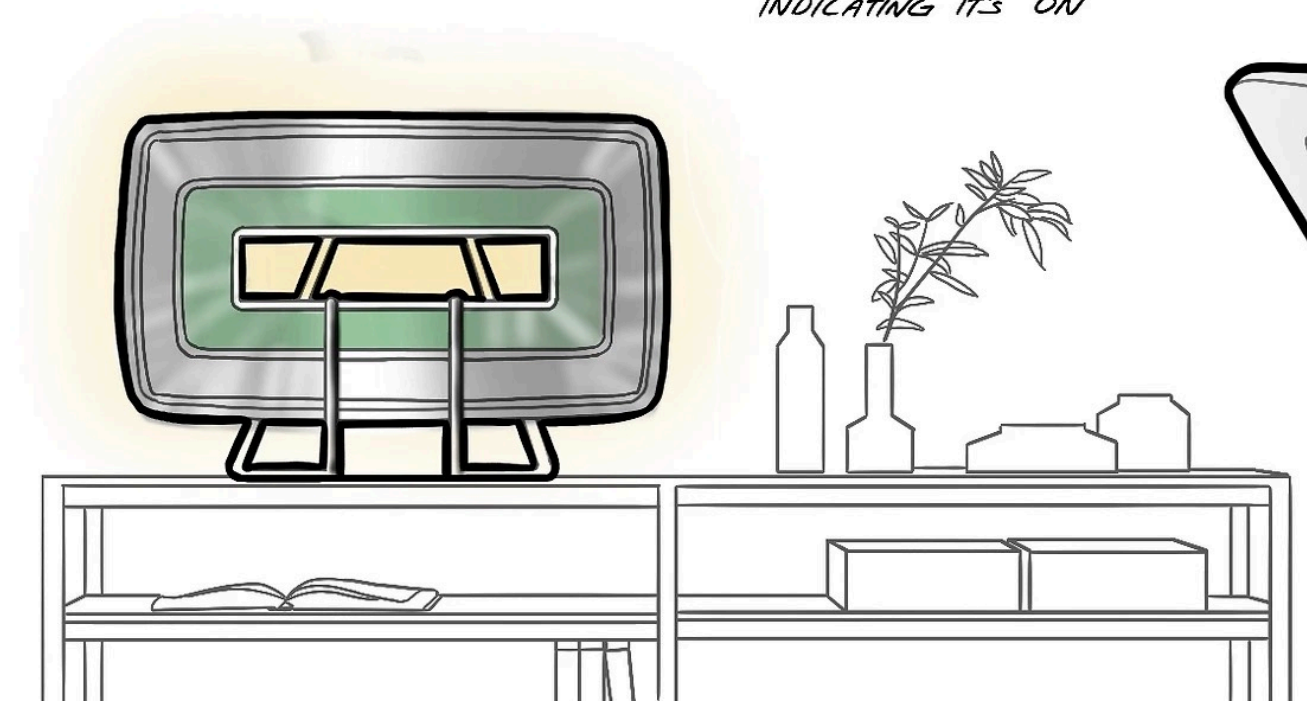


EXPLODED VIEW



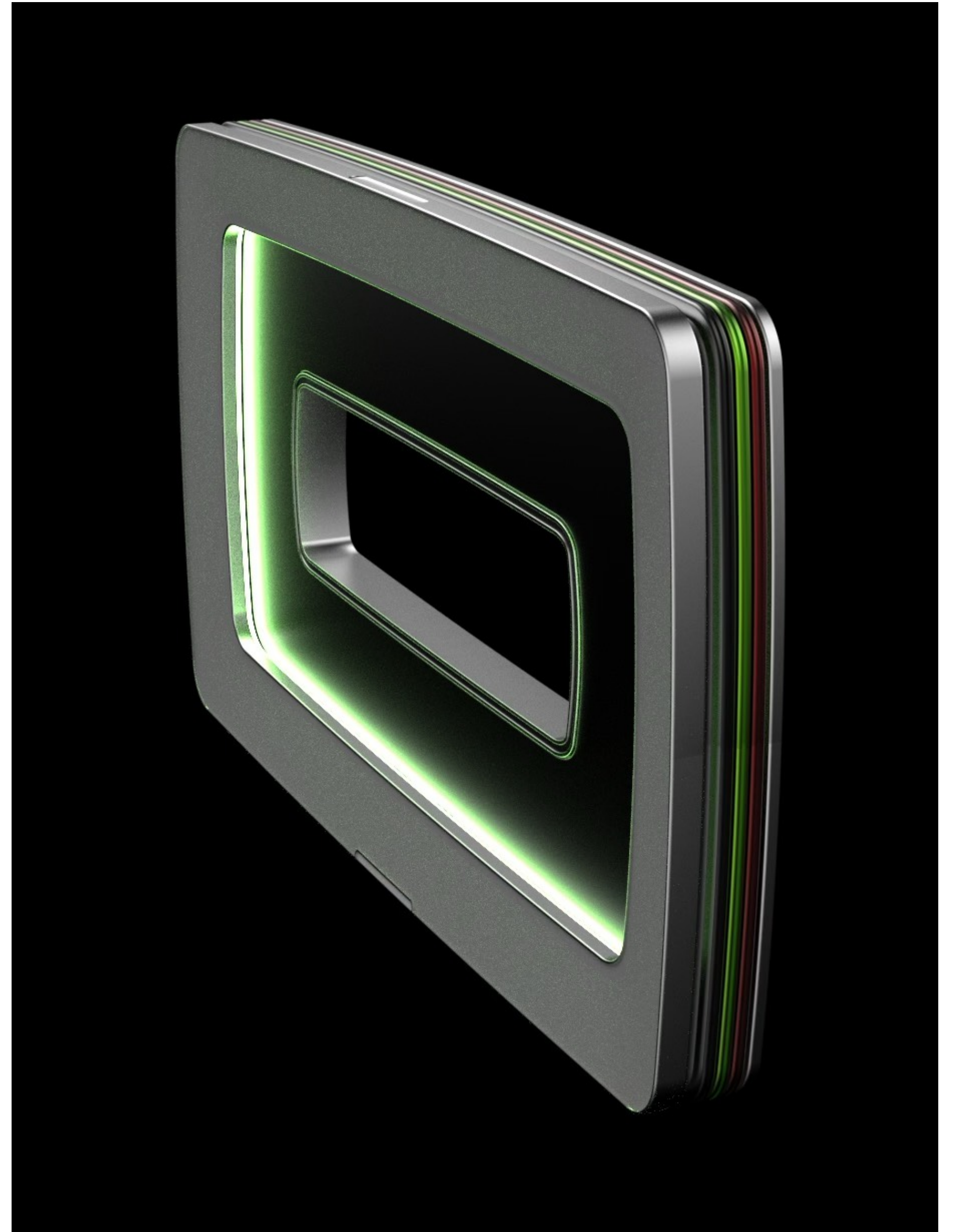
COMPONENTS
INTERSECTING THROUGH
HOLLOW PIECE IN THE CENTER

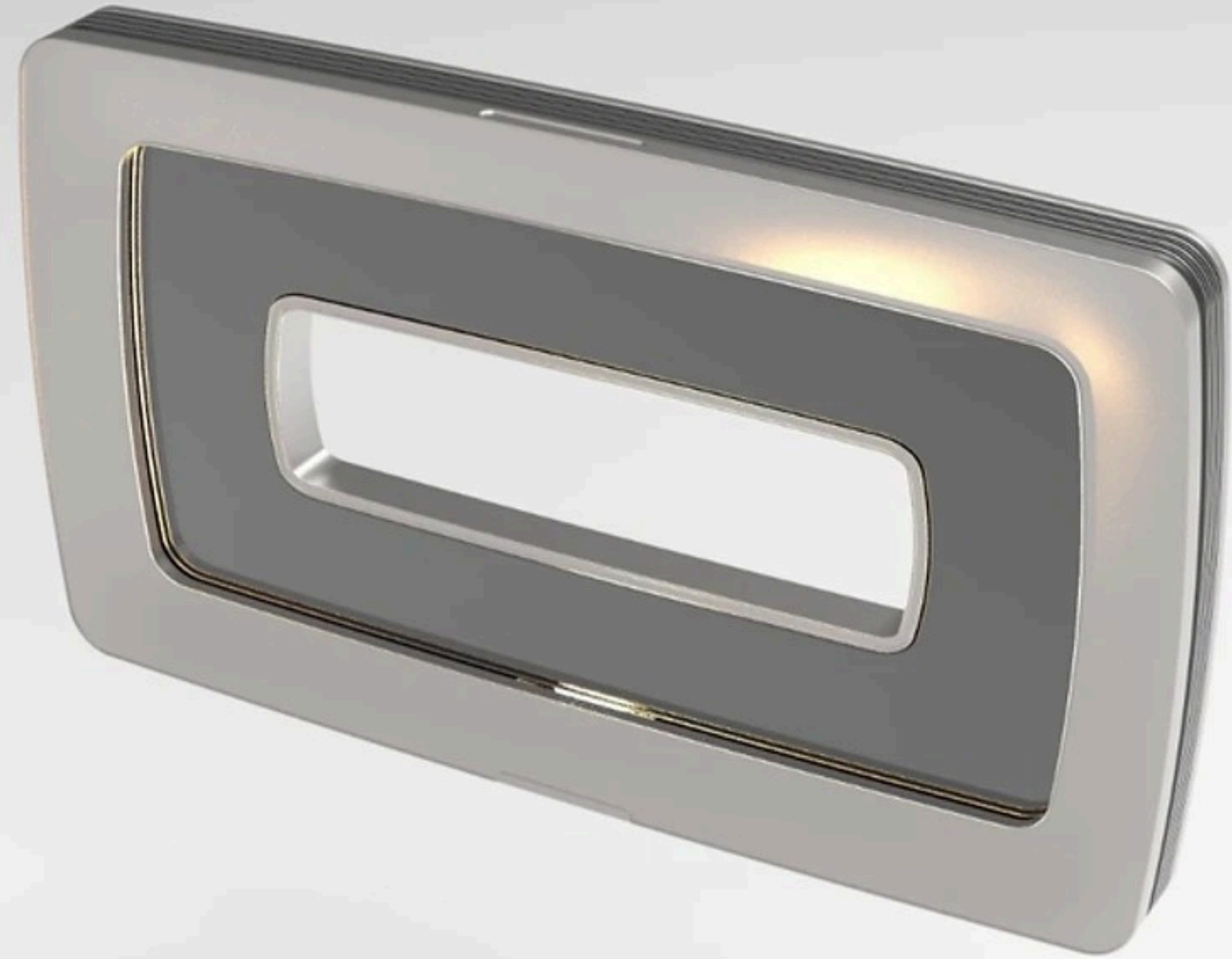
DIM LIGHT
INDICATING IT'S ON

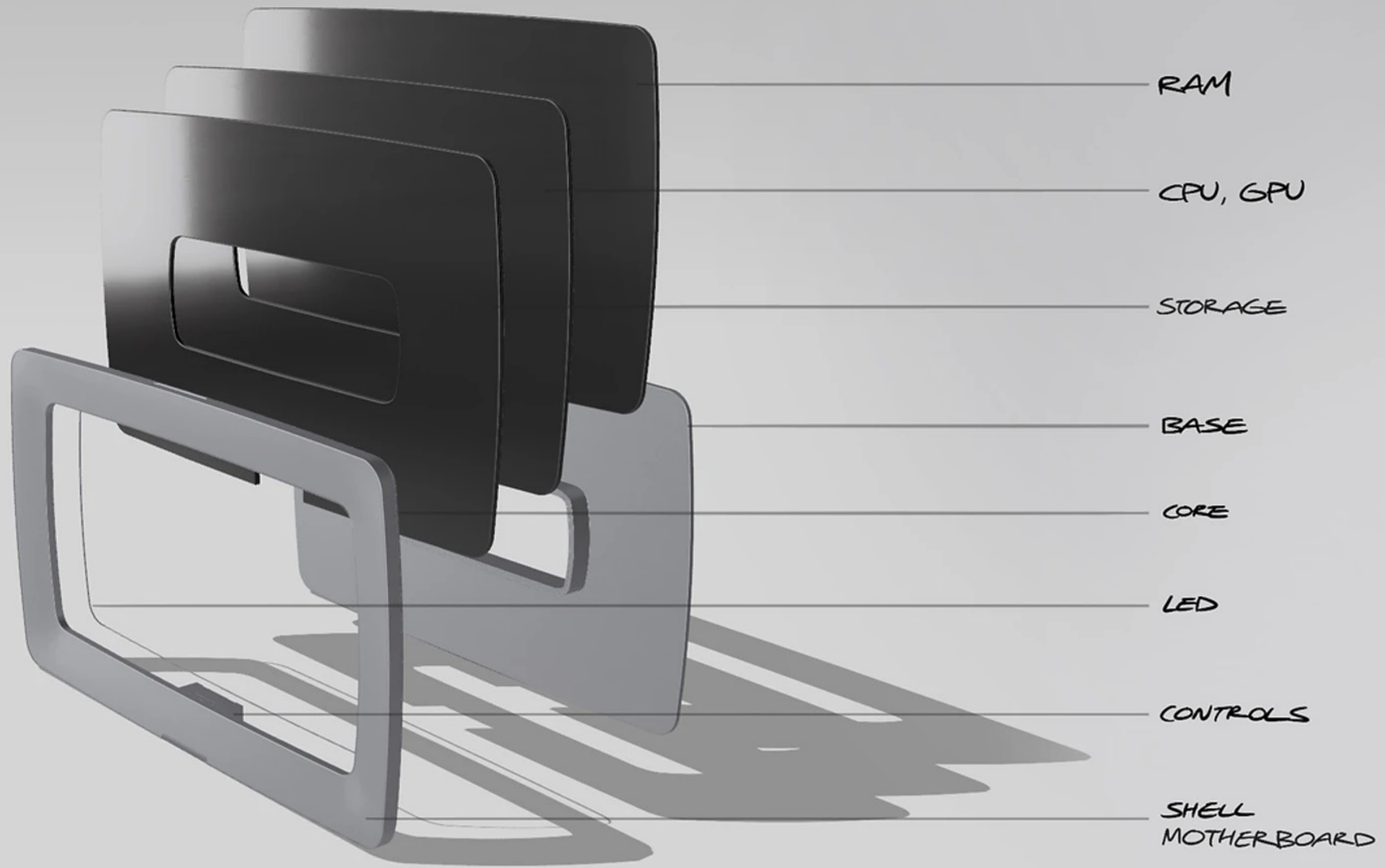


ETCA

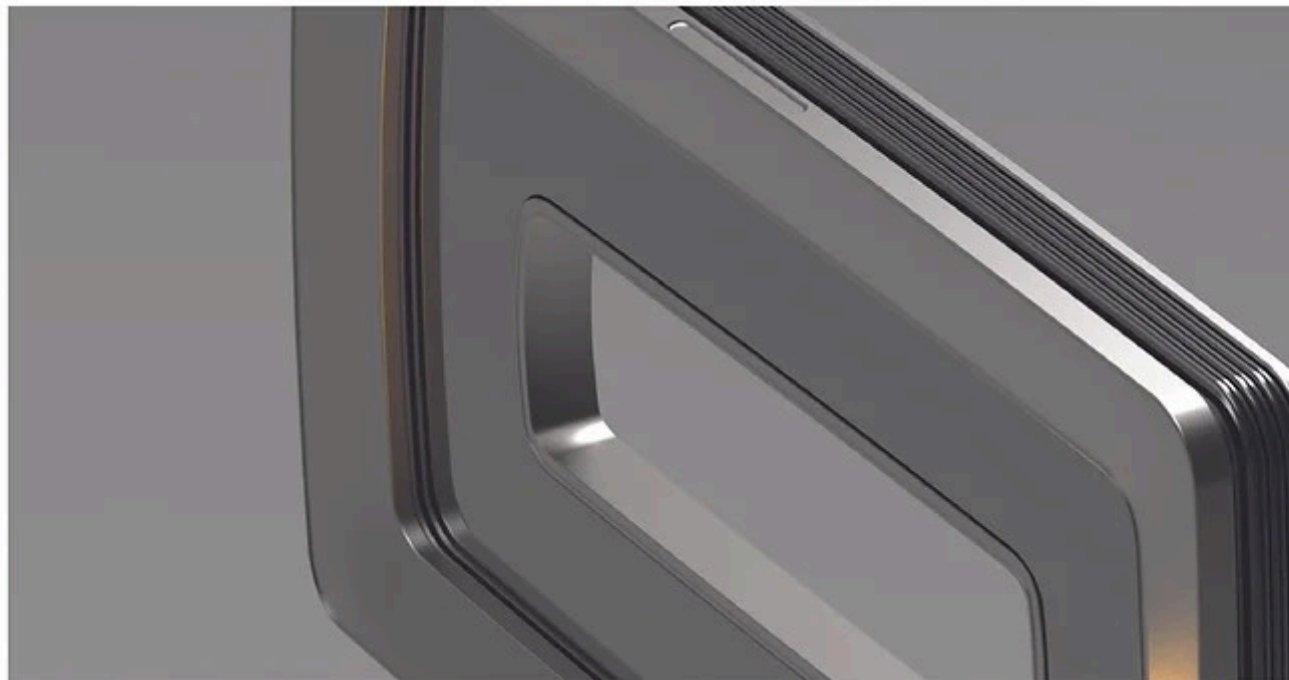
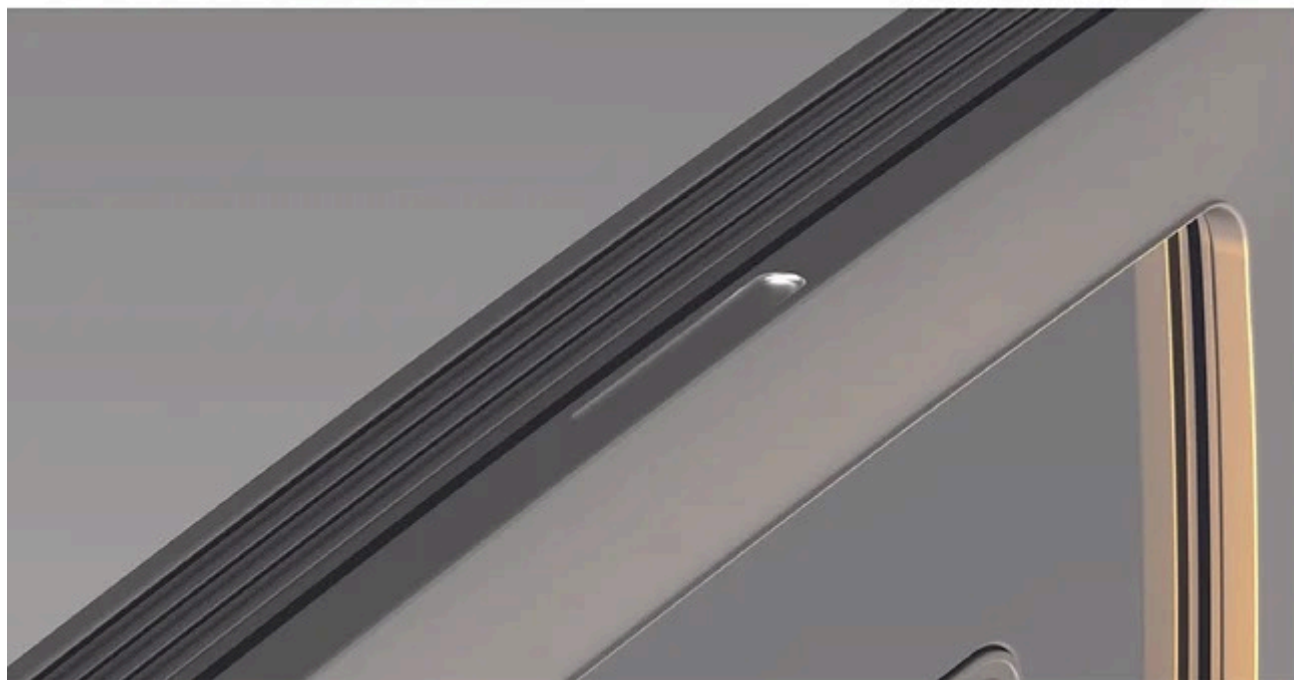
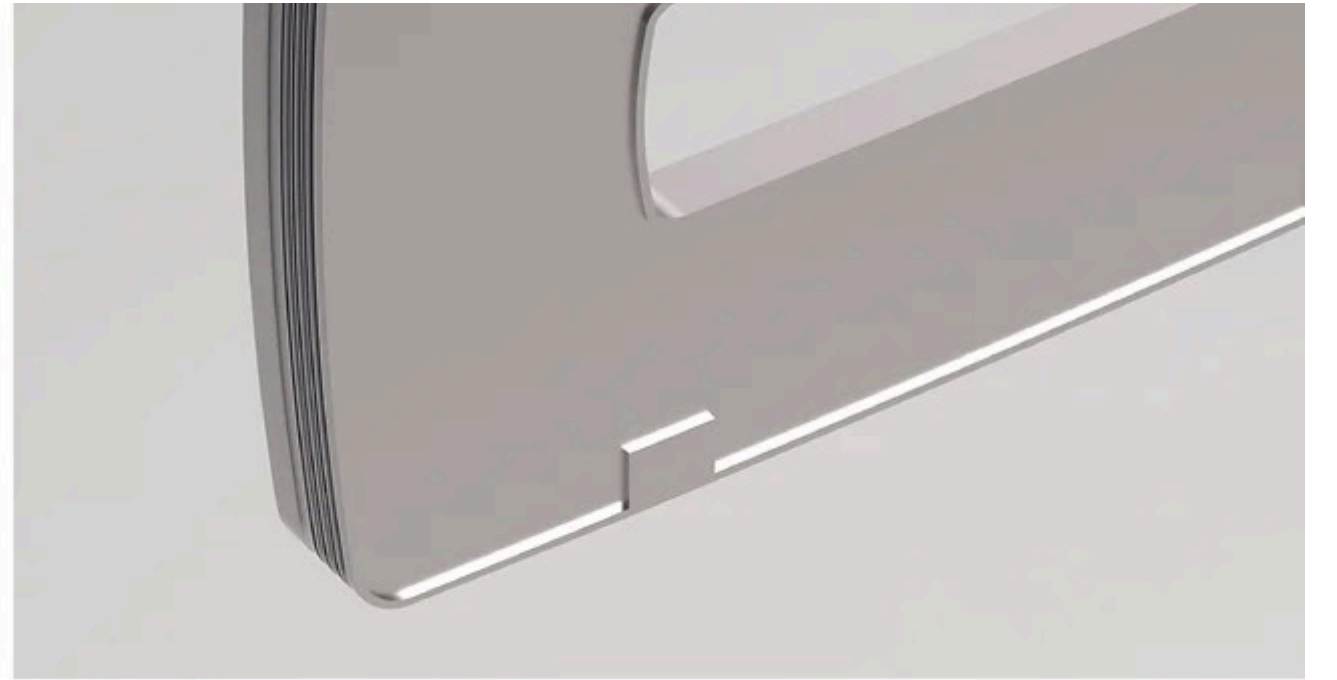
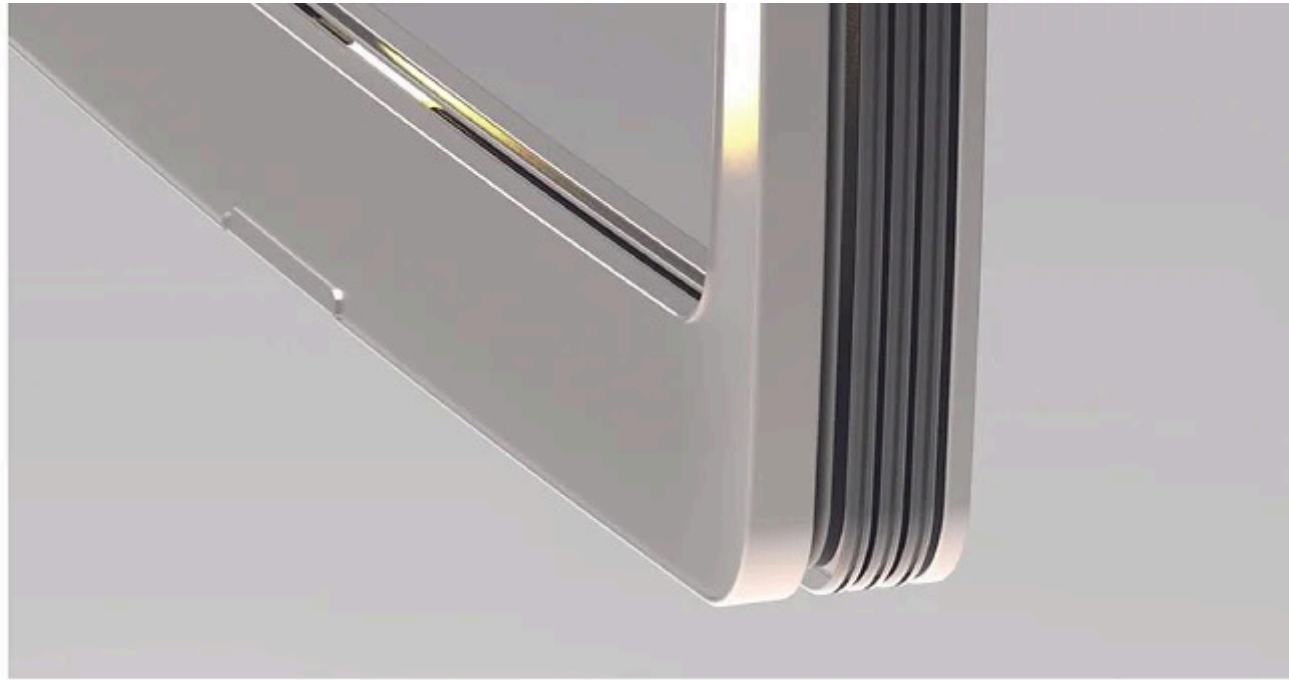
Enjoy a smarter, more sustainable way to compute.
Our innovative system, ECTA is designed to be energy-efficient and eco-friendly, helping customers save money on energy bills while reducing carbon footprint.















ETCA

BRAND IDENTITY: UNITY

ETCA

BRAND IDENTITY: ET CETERA

ETC A

BRAND IDENTITY: LAYERS

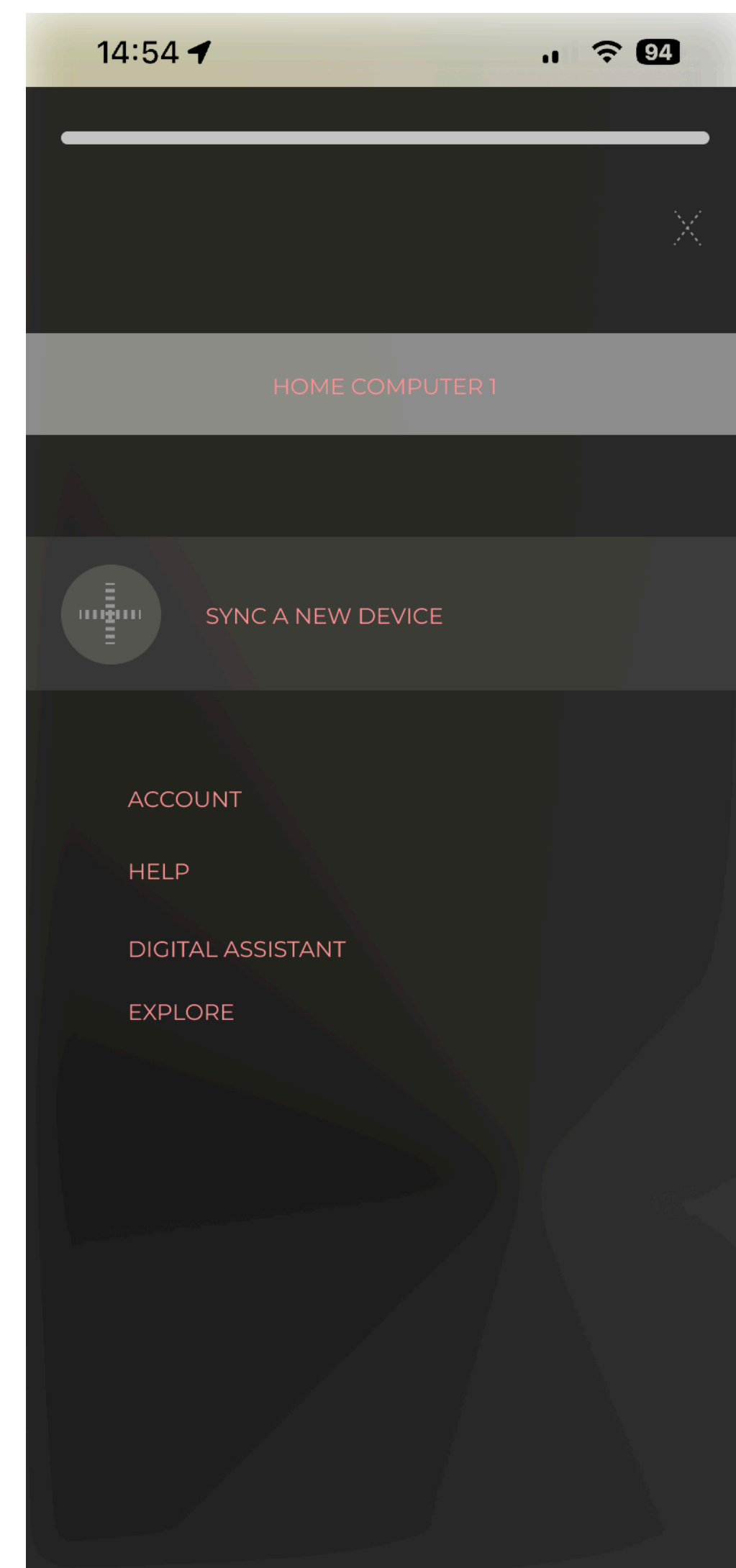
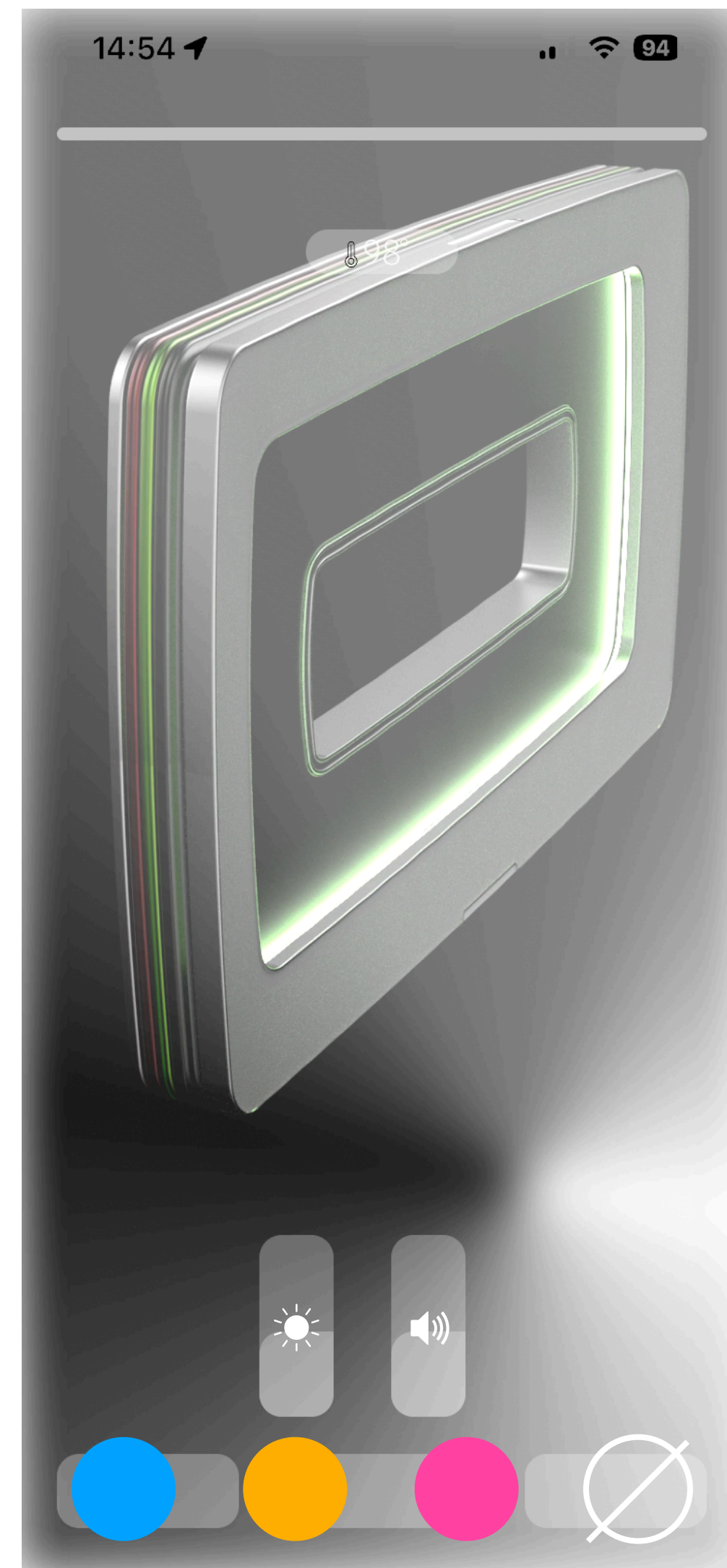
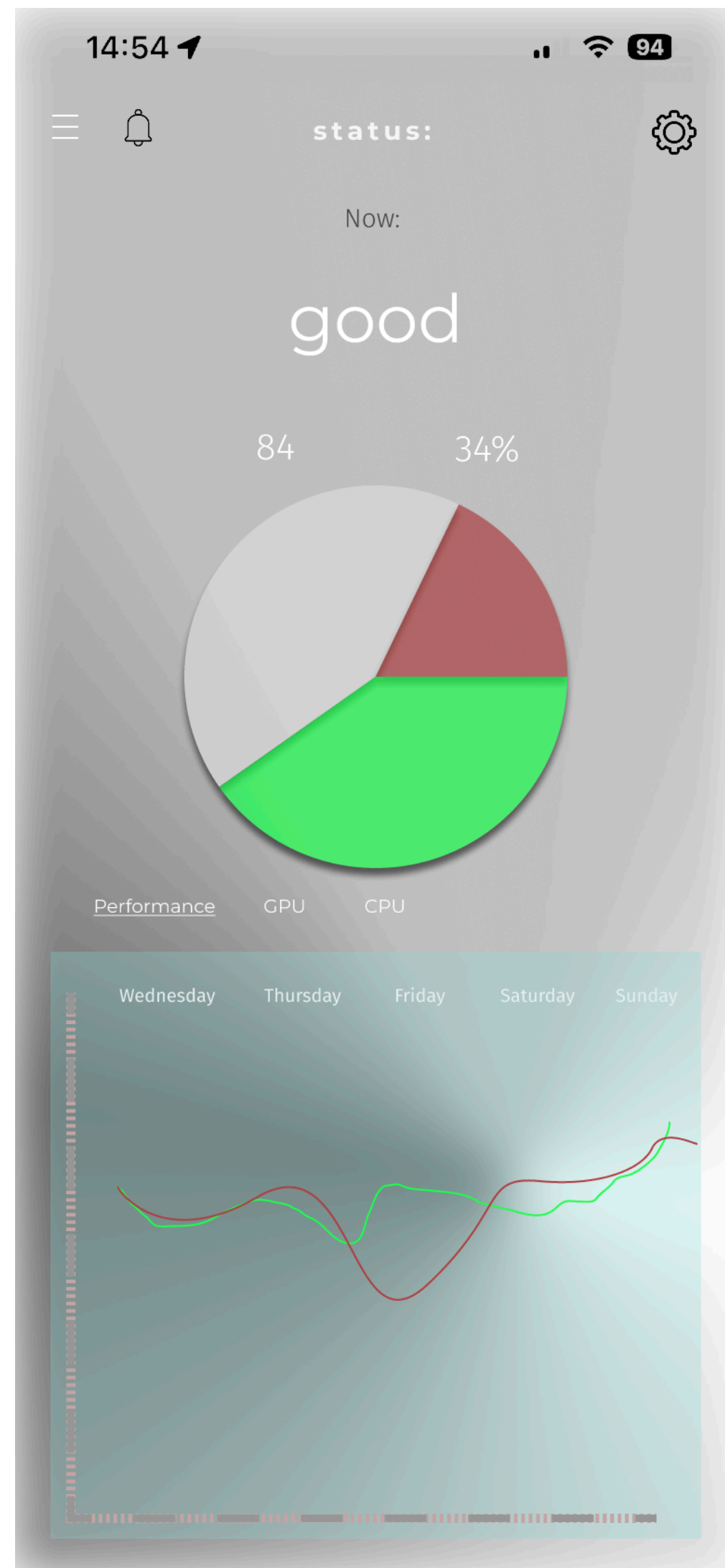


ETICA

The image shows the word "ETICA" in a stylized, sans-serif font. The letter "E" is composed of three thick, horizontal black bars stacked vertically. The letters "T", "I", "C", and "A" are rendered in a light gray color. The "T" has a vertical stem and a horizontal top bar. The "I" is a simple vertical bar. The "C" is a thick, rounded shape. The "A" is a simple, wide, triangular shape with a horizontal base.

App Connectivity

- Track the status of each component
- Visually communicate the temperature and performance rate
- Get notified for replacements and other updates
- Select a correct central computer depending on your location
- Change other settings and configurations



OUTCOME

4 person family home

Goal:

create baseline LCA, and contextualize the homes environmental impact

Parameters:

materials used

energy consumption during production

e-waste generated at the end of its life cycle,

Context:

Single-use plastic bags: 85

Gasoline-powered vehicles: 75



living/dining room

TV (+35) (+30)
 Router (+30) (+30)
 Home entertainment (+42) (+42)

164 | 188

kitchen

Smart speaker (+25) (+30)

25 | 30

child bedroom #1

high school student,
 gamer

Gaming console (+38) (+40)
 TV (+35) (+30)
 PC (+40) (+45)
 Monitor (+32) (+38)
 Phone (+38) (+35)
 Laptop (+45) (+42)

228 | 230

home office

PC (+40) (+45)
 Monitor (+32) (+38)
 Speakers
 Headphones
 Smart speaker (+25) (+30)

97 | 188

TOTAL COST

858 | 703

child bedroom #2

college student,
 furniture worker

Ipad (+40) (+38)
 Laptop (+45) (+42)
 Phone (+38) (+35)

123 | 115

master bedroom

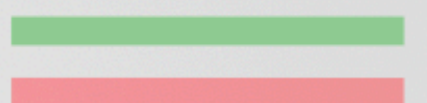
parent1: work from home
 parent2: office worker

TV (+35) (+30)
 Ipad (+40) (+38)
 Laptop (+45) (+38)
 2-Phones (+76) (+70)
 Smart Speaker (+25) (+30)

221 | 168

environmental cost

social cost



living/dining room

TV (+33) (+30)
Home entertainment (+35) (+42)

68 | 188

kitchen

Smart speaker (+23) (+30)

25 | 30

child bedroom #1

high school student,
gamer

Gaming console (+36) (+40)
TV (+33) (+30)
PC (+40) (+45)
Monitor (+30) (+38)
Phone (+36) (+35)
Laptop (+35) (+42)

210 | 230

home office

PC (+38) (+45)
Monitor (+30) (+38)
Speakers
Headphones
Smart speaker (+25) (+30)

93 | 188

child bedroom #2

college student,
furniture worker

Ipad (+30) (+38)
Laptop (+35) (+42)
Phone (+36) (+35)

101 | 115

master bedroom

parent1: work from home
parent2: office worker

TV (+33) (+30)
Ipad (+30) (+38)
Laptop (+35)
2-Phones (+72) (+70)
Smart Speaker (+25) (+30)

160 | 168

TOTAL COST

657

-26.56%

37 Empire State
Buildings

environmental cost

social cost

