

Roots of Connection.

An Empathy Journey with Pepper Farmers

Context

Rattota, Sri Lanka

This project begins in Rattota, Matale, a region where small-scale farmers nurture one of the country's most valuable spices – ***Black Pepper***.

Black Pepper, *King of Spices*

Sri Lanka, the leading producer of black pepper, is the world's most widely used spice, accounting for 60% of its exports. India accounts for 62% of these, while the top ten countries account for 91%.



Current black pepper market of Sri Lanka is having few problems due to Low production quality and the gaps between supply chain.



Despite improvements, productivity levels remain low. To improve pepper supply quality and competitiveness, collective measures and capacity building in the value chain can be adopted. Sri Lanka should explore high-end markets like the USA and EU to expand its pepper production.

Currently, Sri Lankan Standards for Black and White Pepper are not mandatory for export, but systems certifications like ISO22000 Food Safety Standards, HACCP, and GMP are increasingly sought.

The Sri Lankan pepper industry can enhance quality standards by promoting good agricultural practices, upgrading facilities, establishing central centers, enhancing extension services, encouraging exporter integration, implementing mandatory standards, raising quality awareness, and investing in advanced testing equipment.

“Identified Problem”

The Gap between the Market Demand and the Storage Challenge

Small Scale farmers do not sell pepper according to the market preferences

Small scale farmers do not sell dry black pepper after harvesting.

Unless they sell the Harvest at young stage.....

Small Scale farmers do not have space to maintain a huge storage units and systems.

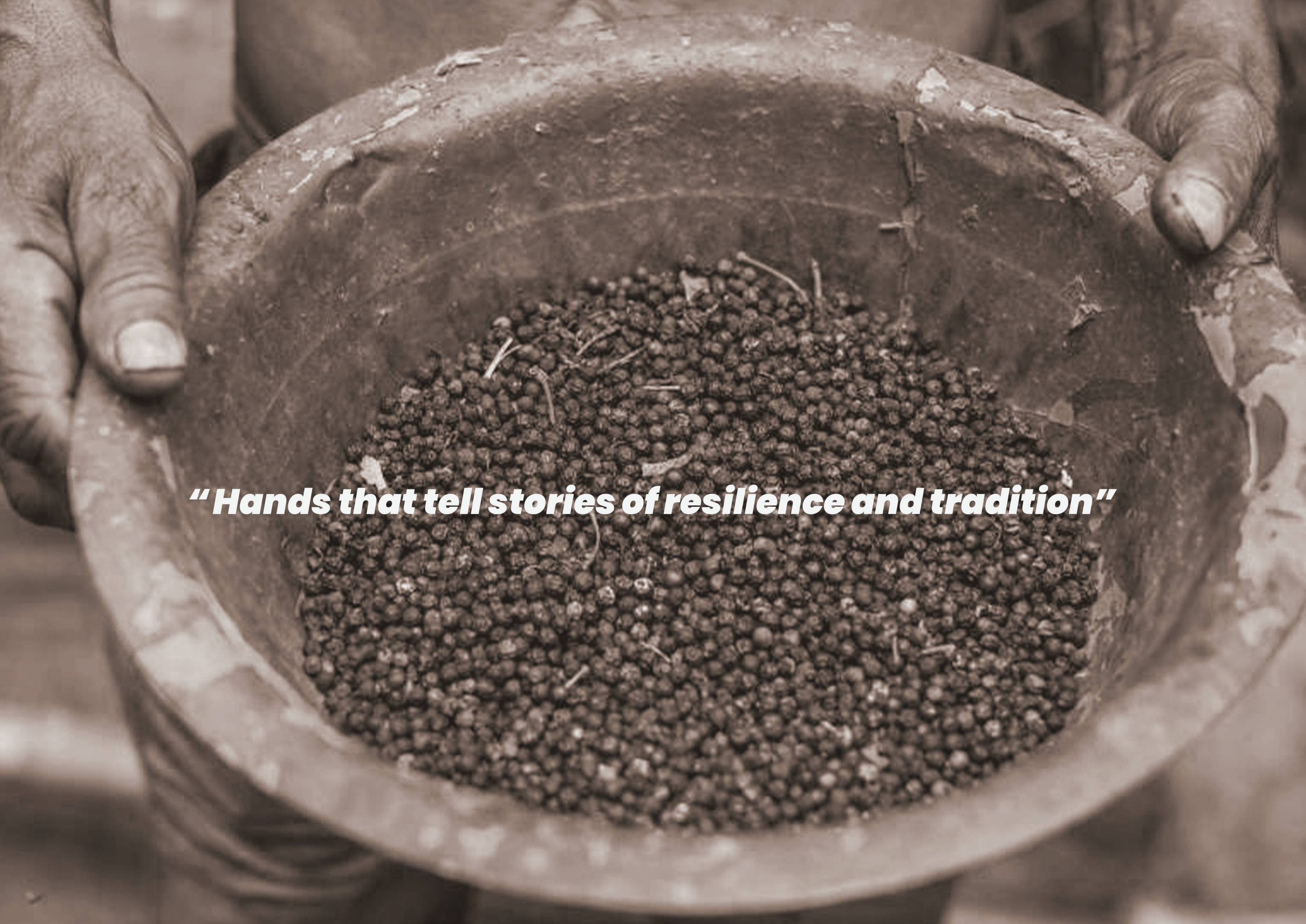
They are not financially stable to maintain a storage unit, and also they don't have proper infrastructure facilities

They are not financially stable to maintain a storage unit, and also they don't have proper infrastructure facilities

Because of this situation **Profit of the small scale farmers are Low.**



Unfolding the Chapter...



“Hands that tell stories of resilience and tradition”



“Generations bound by knowledge, facing the future together.”

A woman with dark hair tied back, wearing a white short-sleeved shirt, is sitting outdoors. She is looking slightly to the right with a gentle expression. The background is a blurred natural setting with trees and foliage. A semi-transparent rectangular box is overlaid on the left side of the image, containing white text.

*The lives that wishing
for a fairer tomorrow...*

"Our current storage is inefficient."

"We worry about our peppers spoiling."

"Storage costs affect our profits."

"A good storage unit could save us time and money."

About the Project

Connection comes alive....

Every grain of pepper tells a story of dedication, yet poor storage silently steals their reward. Poor storage means lost quality, and lost quality means lost profit. This project weaves meaningful connections, linking empathy with innovation, farmers with effective storage, and quality produce with fair markets. More than preserving pepper, it preserves dignity, effort, and opportunity, transforming challenges into stronger livelihoods.

Research

Methodologies and Findings

01. Primary Research

- *Observations – Field Visits*
- *Interviews with Pepper Farmers*
- *Interviews with Experts*

02. Secondary Research

- *Research Articles*

Primary

Research Findings

I. Observations

- The cultivation of peppers
(Planting, harvesting, storage, and transportation)
- Everyday life
- Pepper farming tools and equipment
- Methods of setting the equipment to use
- Other planted crops and income sources

II. Interviews *with Farmers*

- Harvesting through post-processing
- Everyday Life
- Small-scale farmers encounter numerous challenges
- Recent harvest decline
- Pepper crop supply and demand
- Reasons for achieving low profits
- Farmers' economic downturn
- Fertilizer and pest control strategies
- Separation of stalks
- Employed assistance
- Harvest robberies

III. Interviews *with Experts*

- The recommend the cultivation procedure
- Proper fertilizer and pest control techniques
- Officers and farmers have a communication breakdown
- Market conditions
- Physical and chemical aspects
- Experiments with the pepper farming procedure are being conducted
- Planting techniques and structures
- Workshops and knowledge-sharing activities

Field Visit

Black Pepper Community Rattota

The Full Mosaic



Secondary

Research Findings

I. The current storage methods used for pepper in different areas of Sri Lanka

II. The current storage methods used for pepper in different countries

III. Best ways to store pepper harvest before drying

- ✓ The current storage units
- ✓ The obstacles they face to handling a storage system
- ✓ The disadvantages they face due to a lack of a proper storage system
- ✓ The physical and chemical considerations that concern maintaining a proper storage system
- ✓ Materials for storage: factors to consider when selecting materials
- ✓ How is the product going to be implemented or introduced to them?
- ✓ Anthropometrics and ergonomics

Context Analysis

FARM LAND OF SMALL SCALE FARMERS



NARROW ROAD TO THE HOUSE



- Using their home gardens
- 2 Acres of lands have given by gvt
- Harvesting during August
- Quickly distributing harvest without drying
- Profits are low

Design Challenge

A storage solution for black pepper harvest

A good storage unit could save them money and time

Factors to Consider

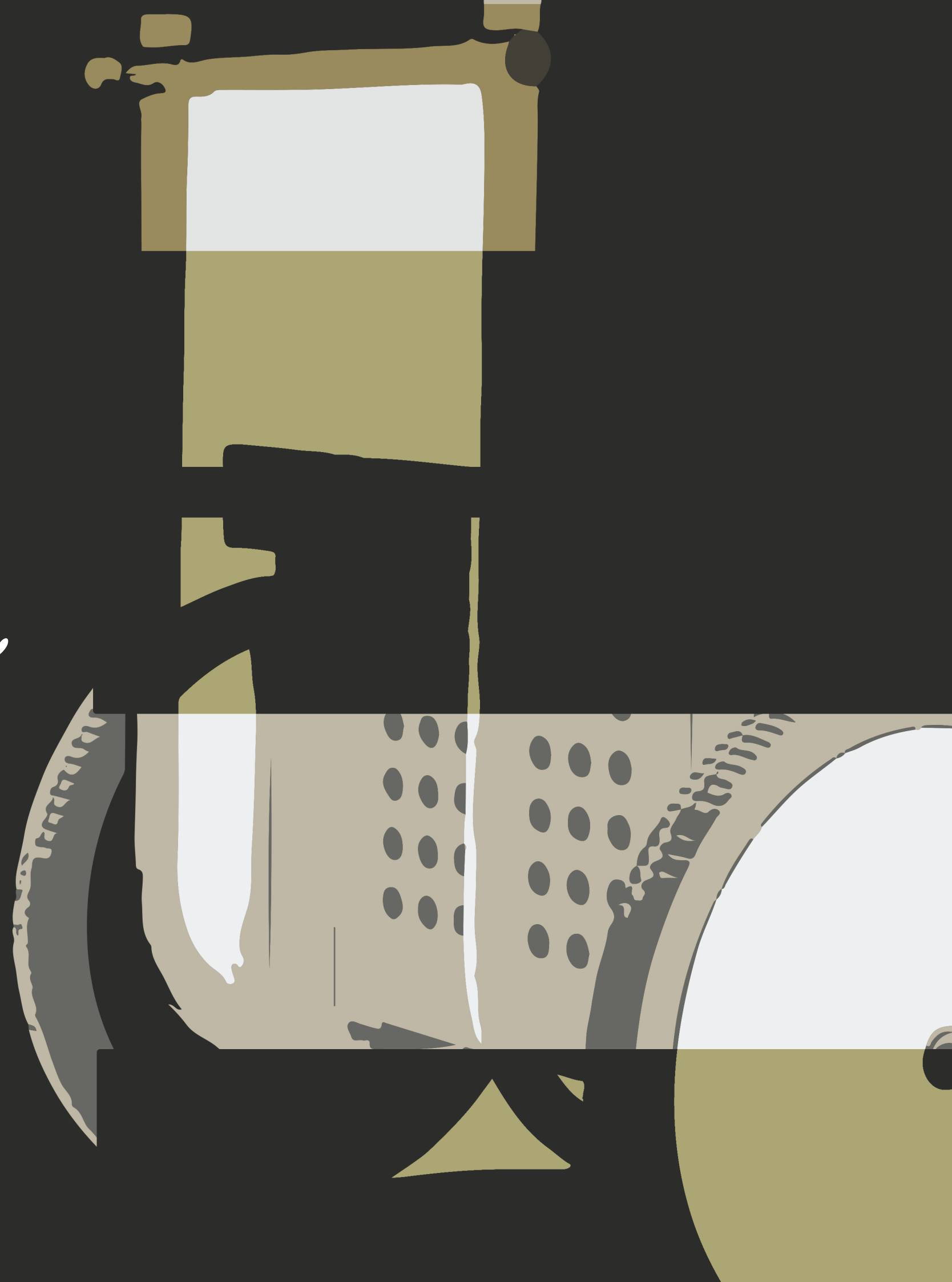
- Should easy the procedure of Harvesting to storing
- Easy Installation
- Can be able to protect harvest from thieves
- Easy to Access
- Avoid Spoilage

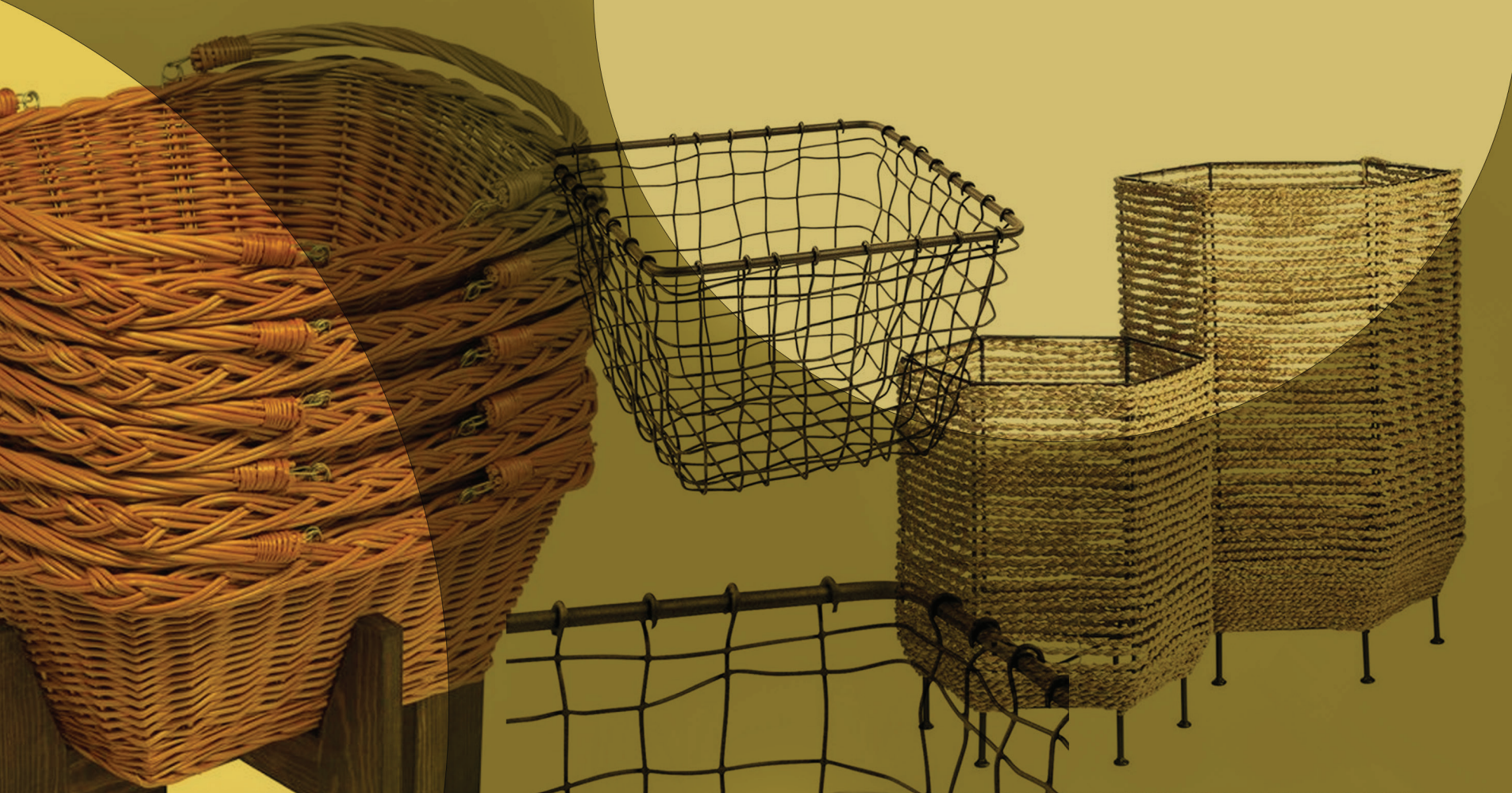
“Hump Storage”

CONCEPT

Cart + Storing

(Connecting the two processes)





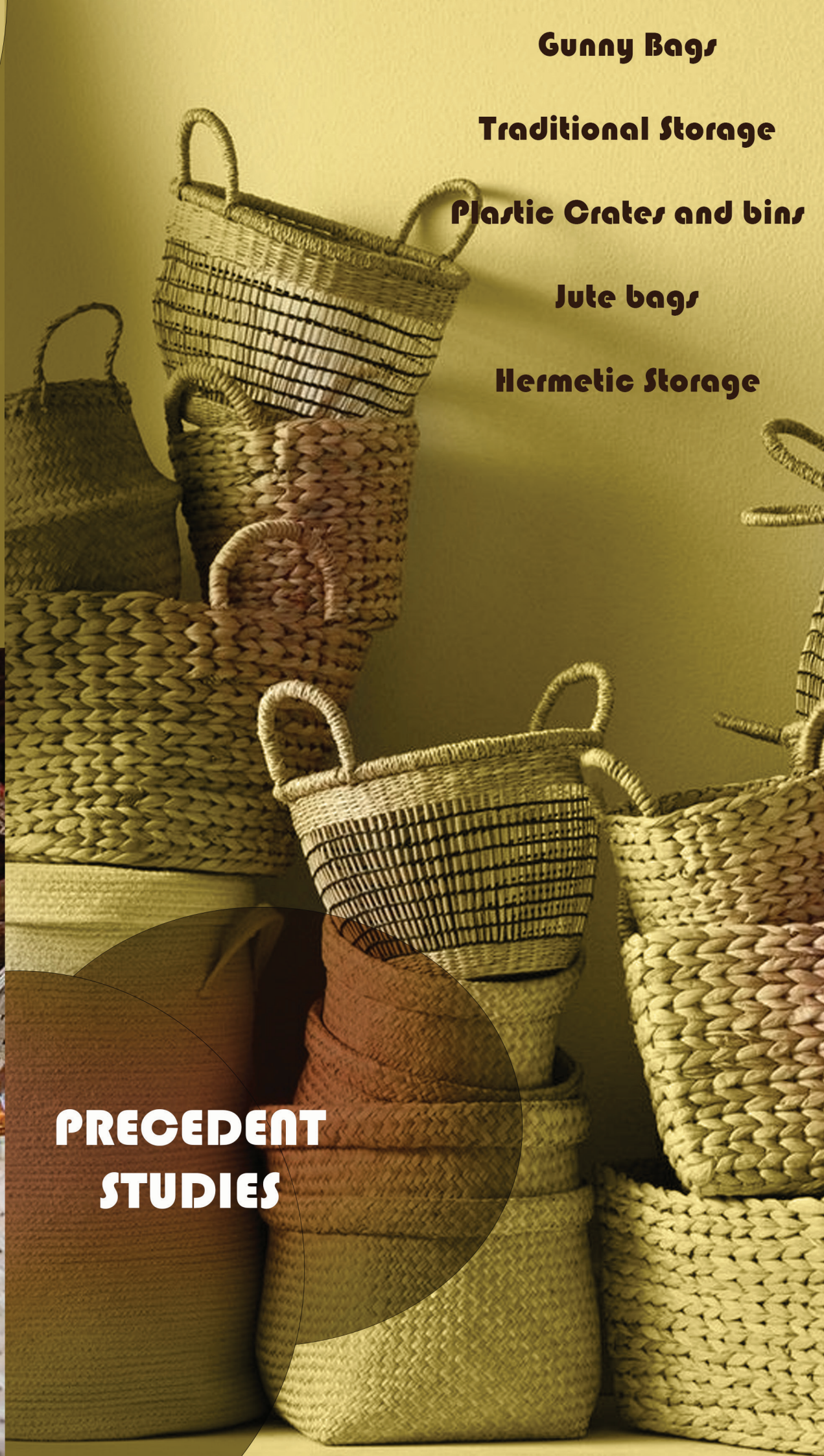
Gunny Bags

Traditional Storage

Plastic Crates and bins

Jute bags

Hermetic Storage



**PRECEDENT
STUDIES**

IDEATION

MOBILITY

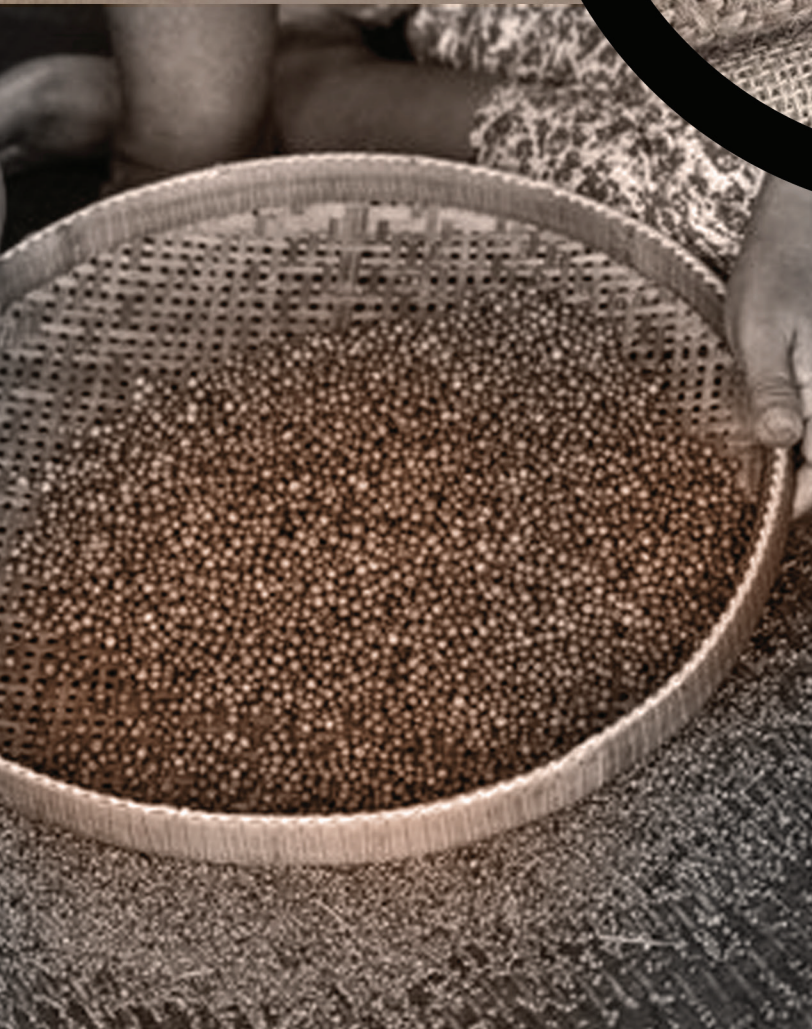


STORING

CART + STORAGE

DRYING

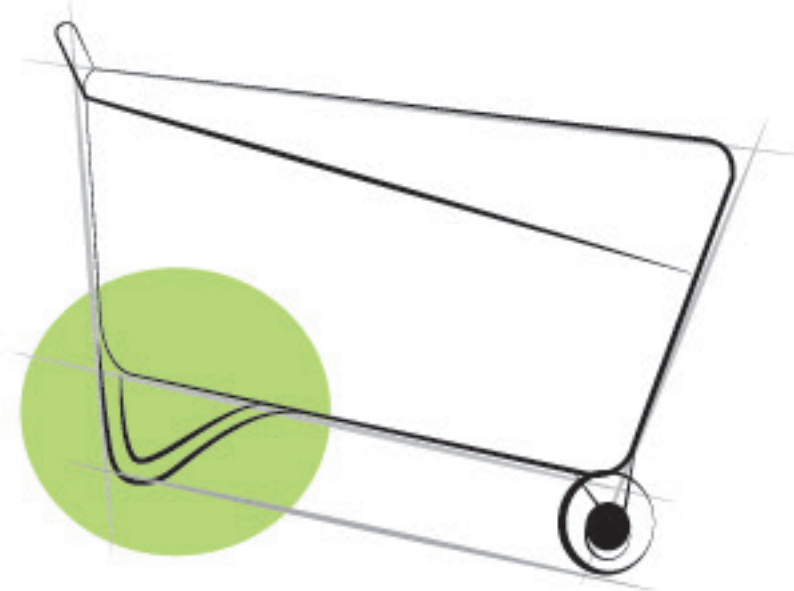
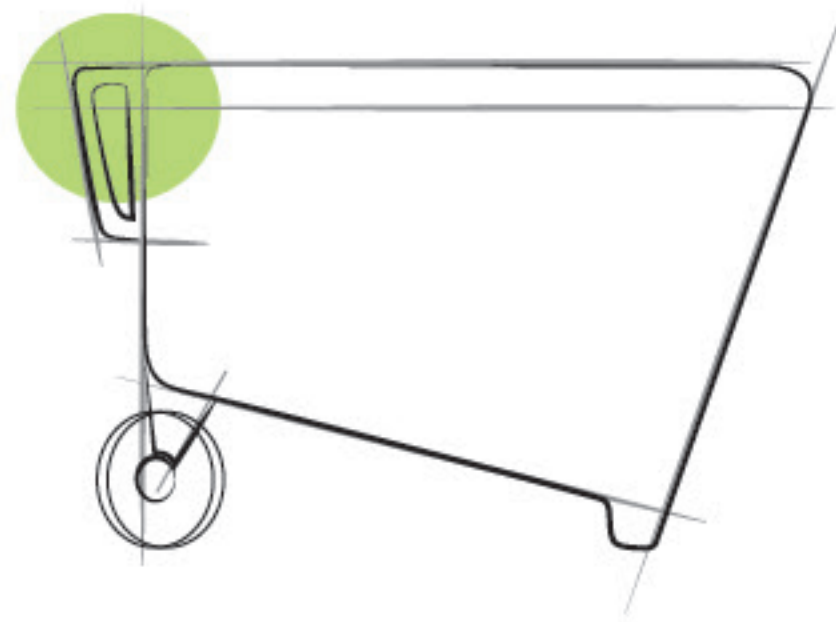
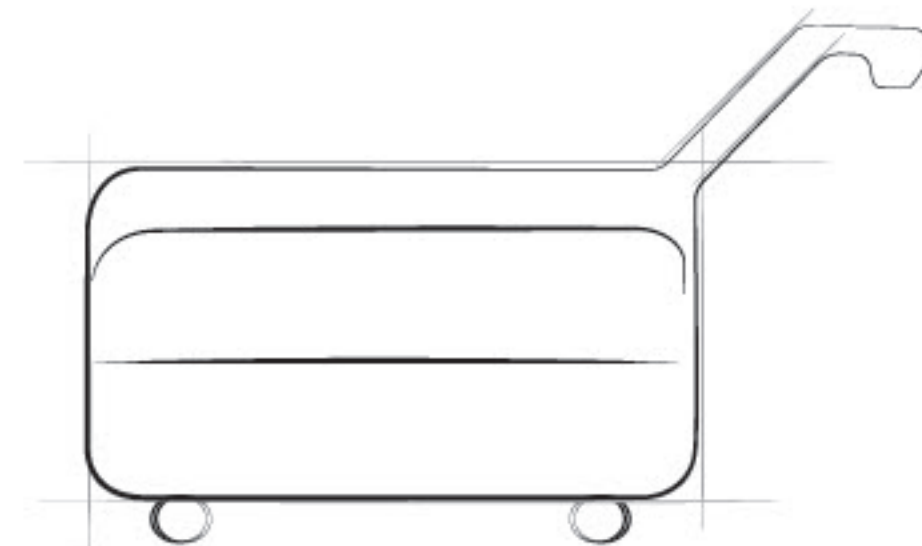
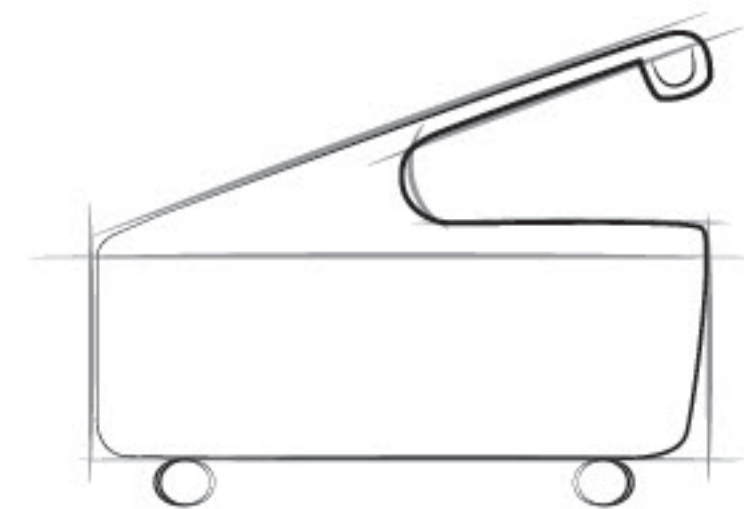
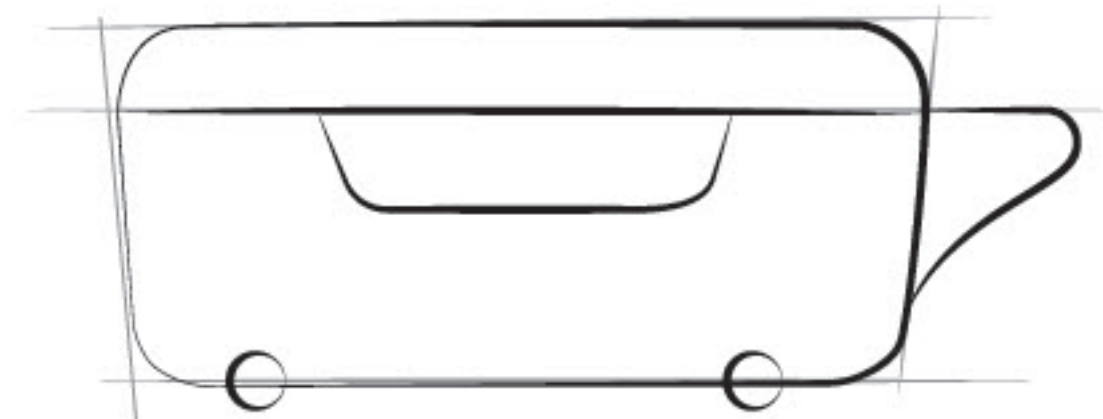
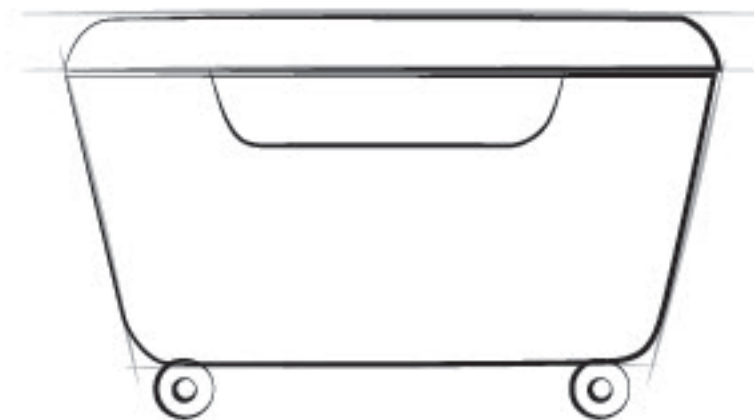
MULTI FUNCTIONALITY

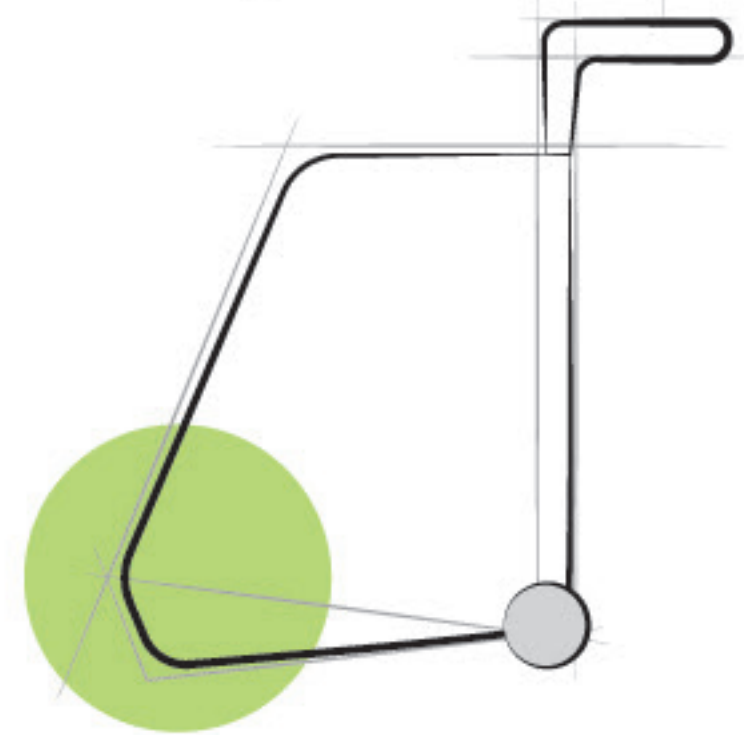
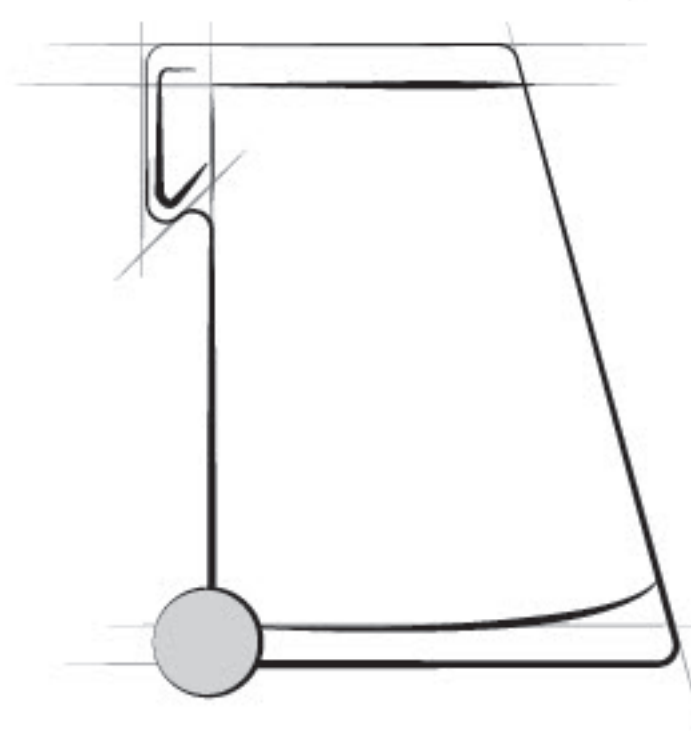
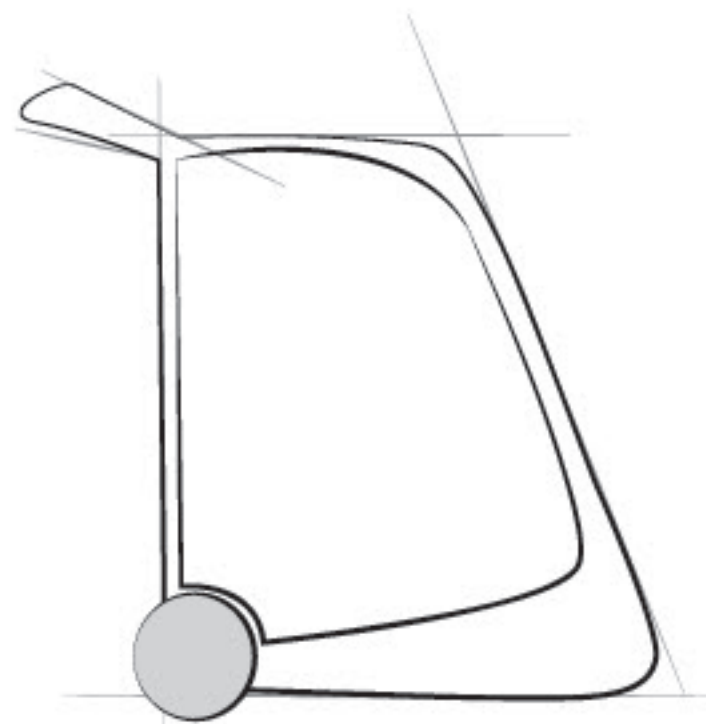
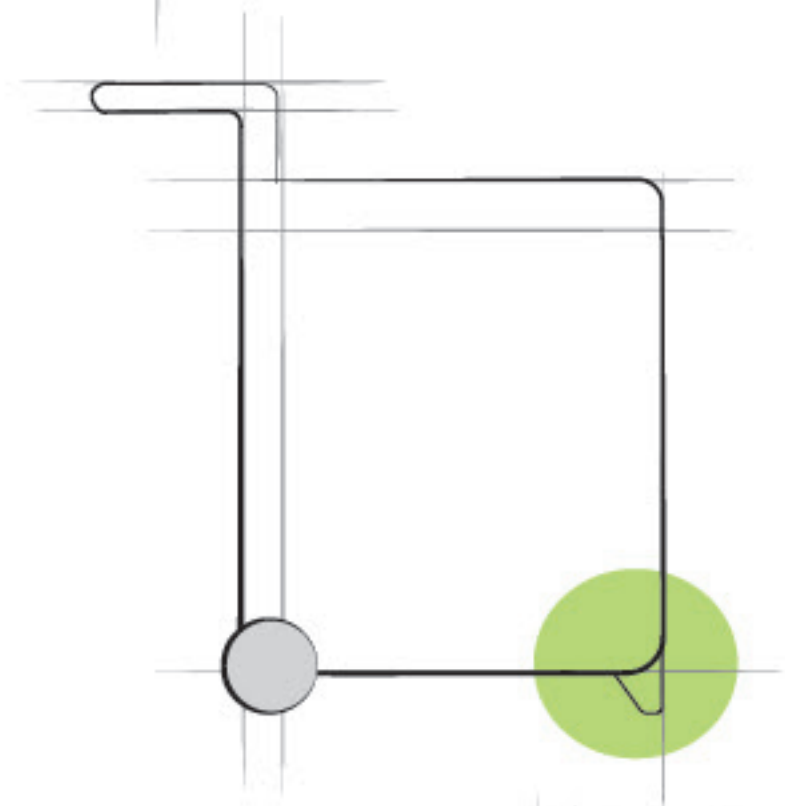
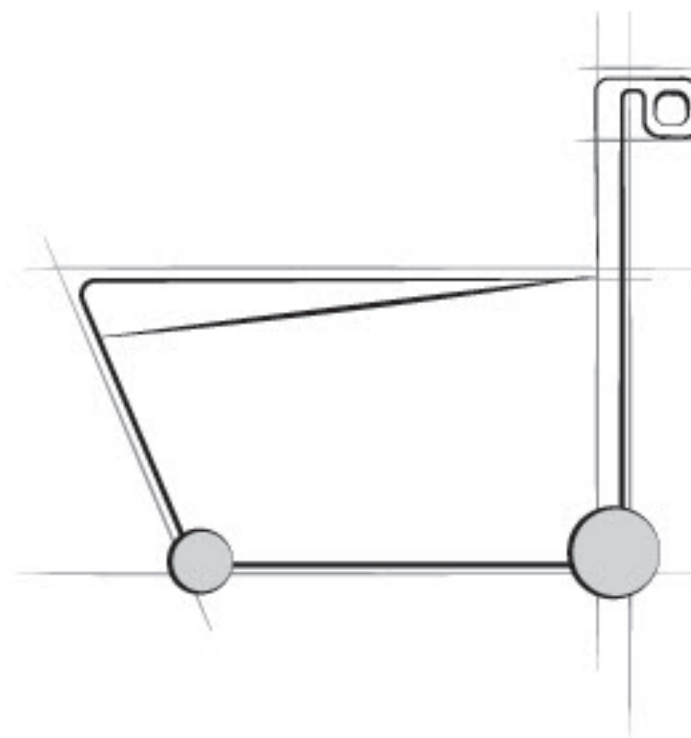
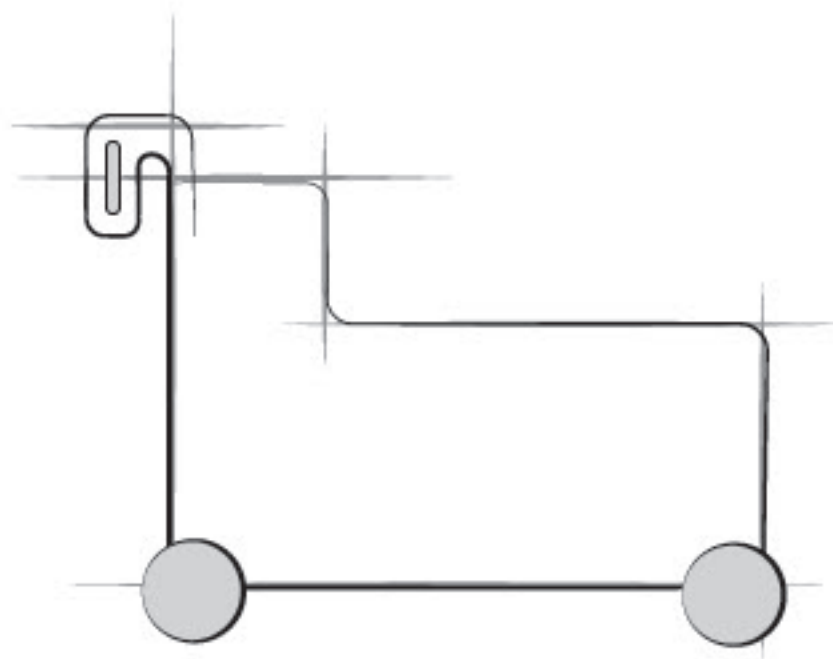
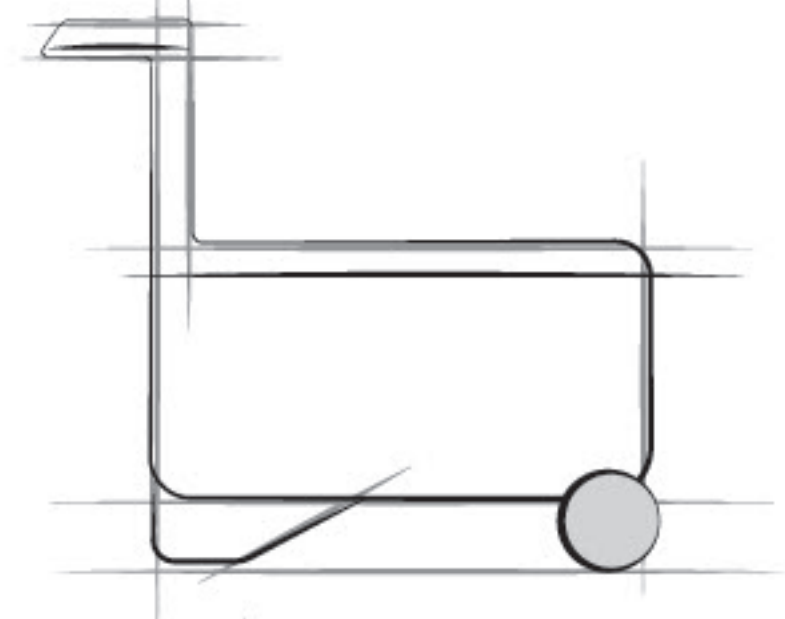
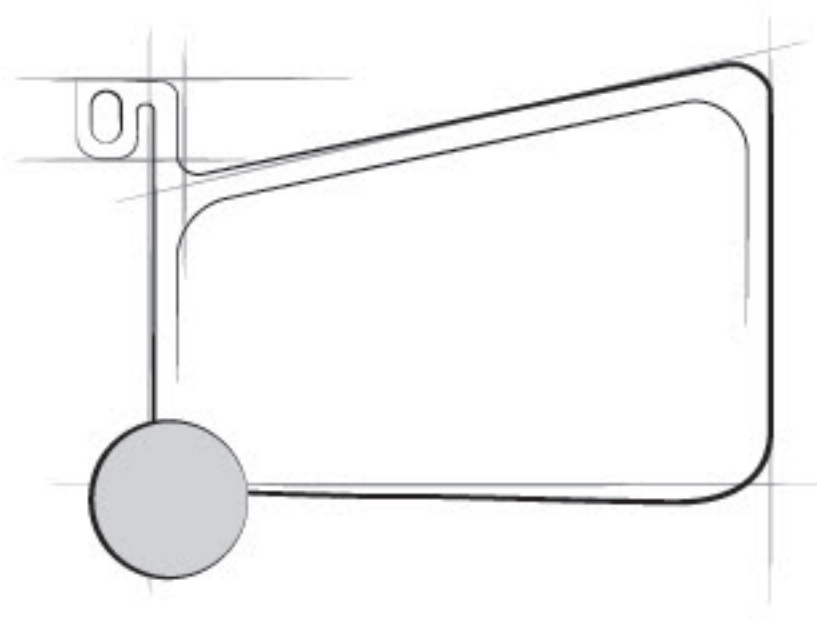
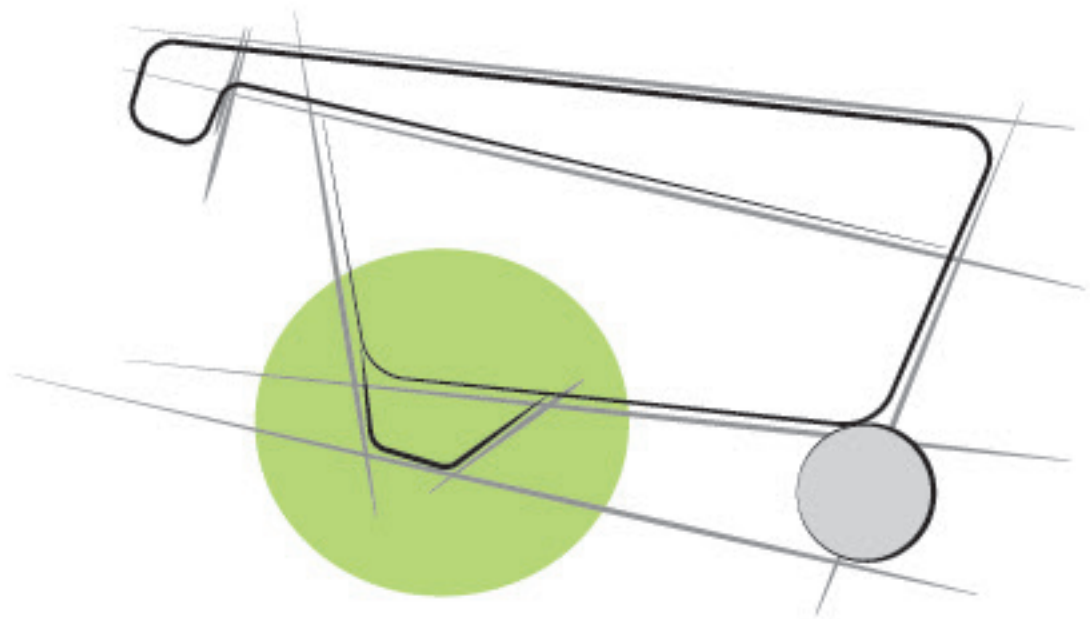


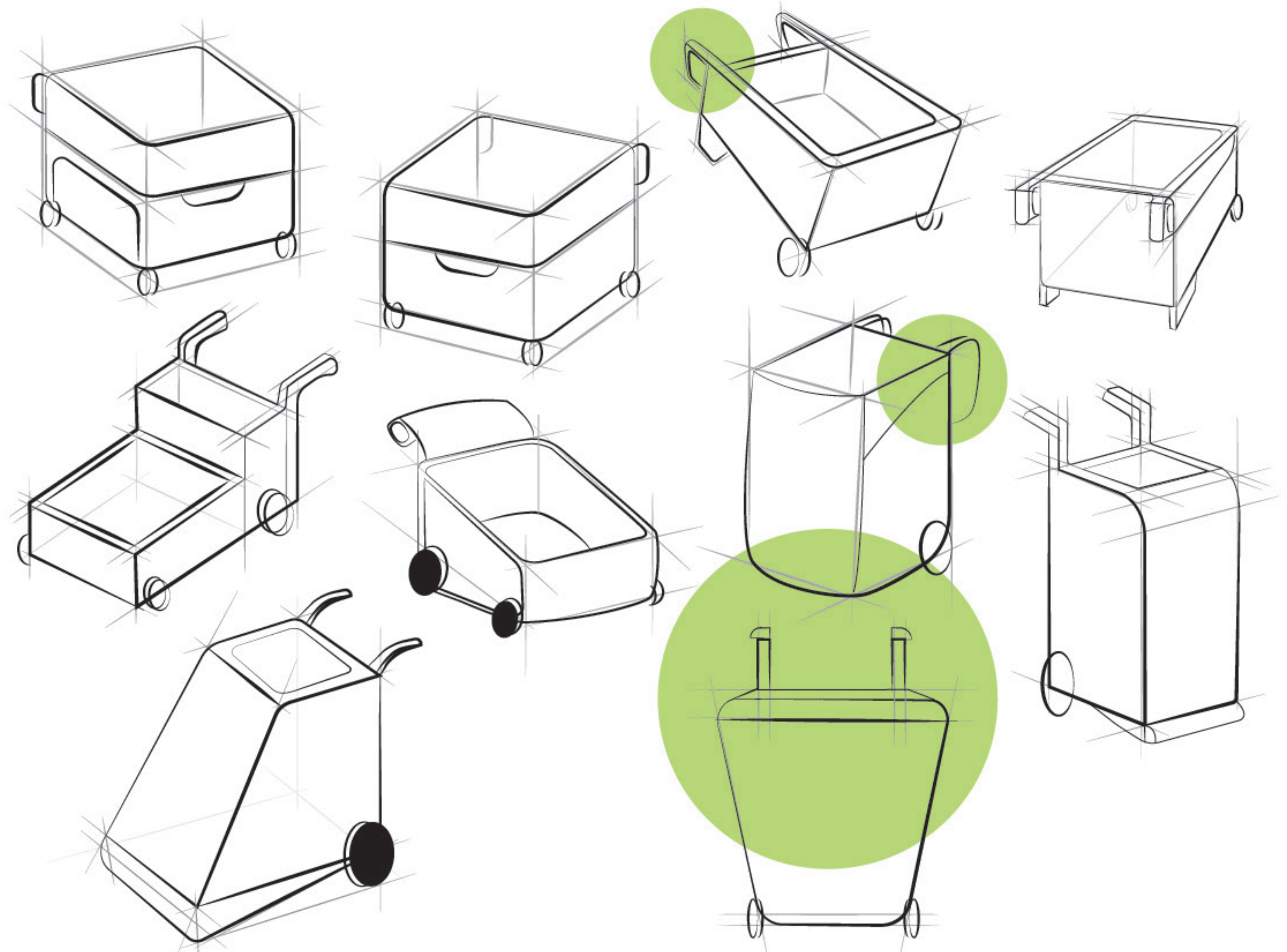
Ideation.

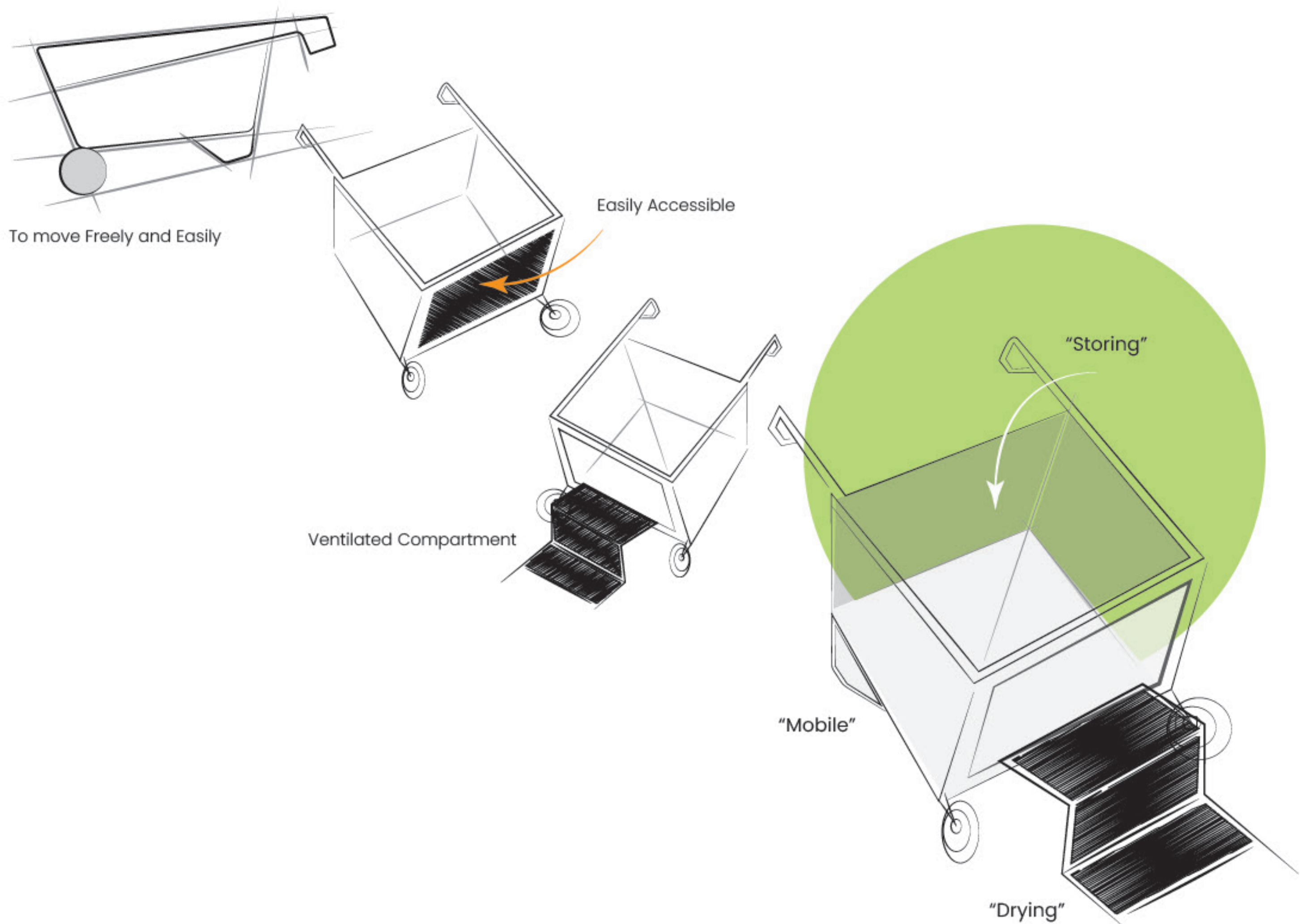
Development Thought process

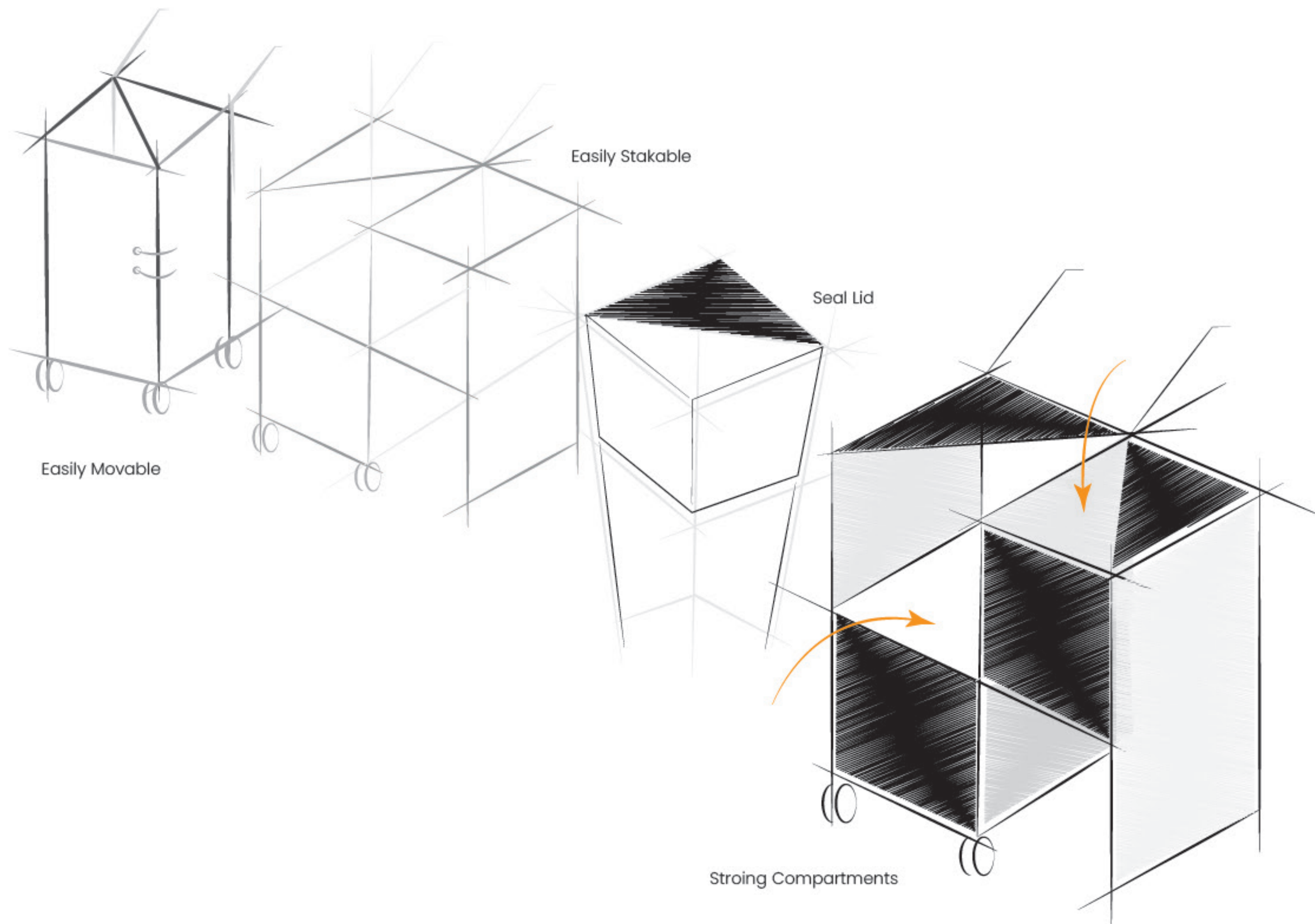


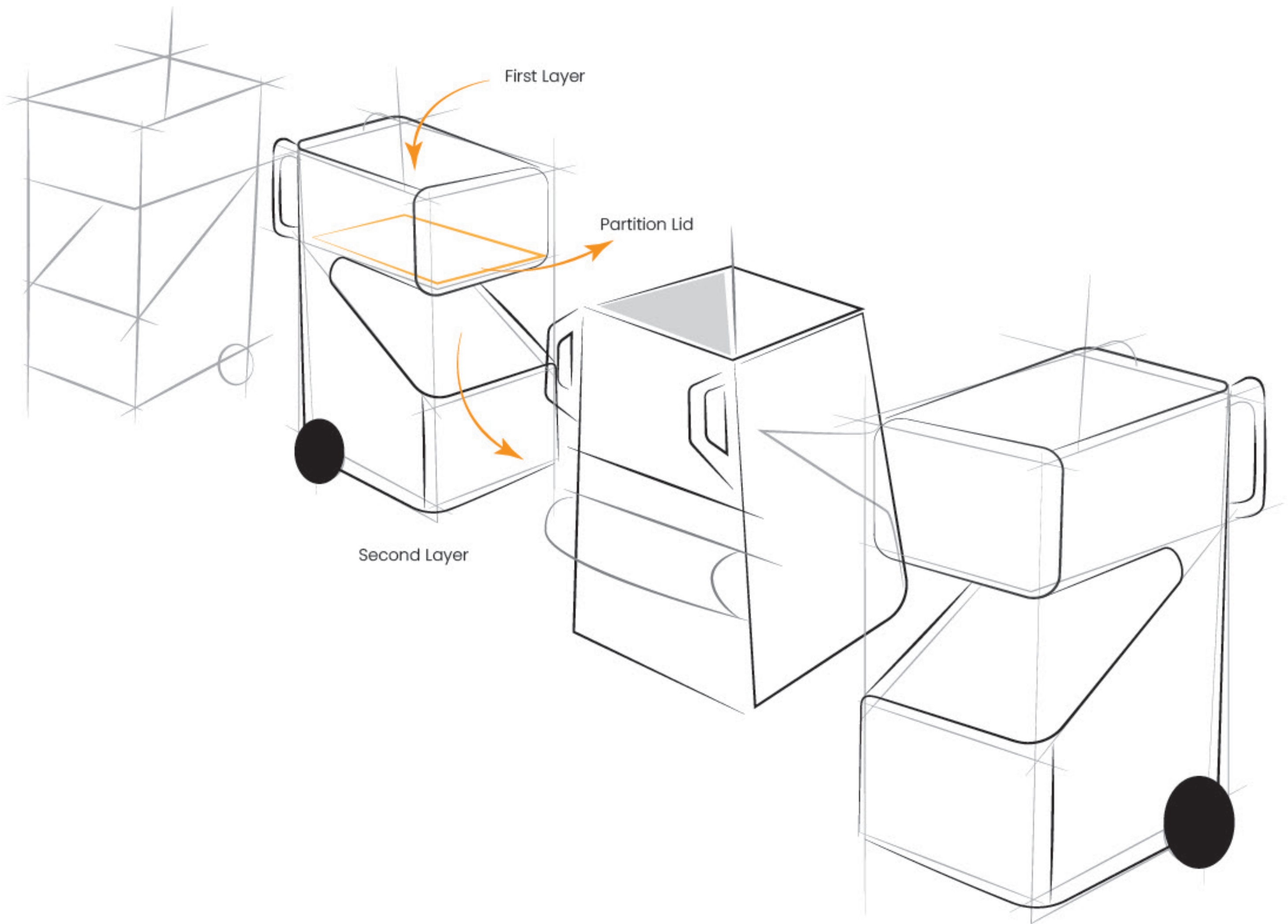




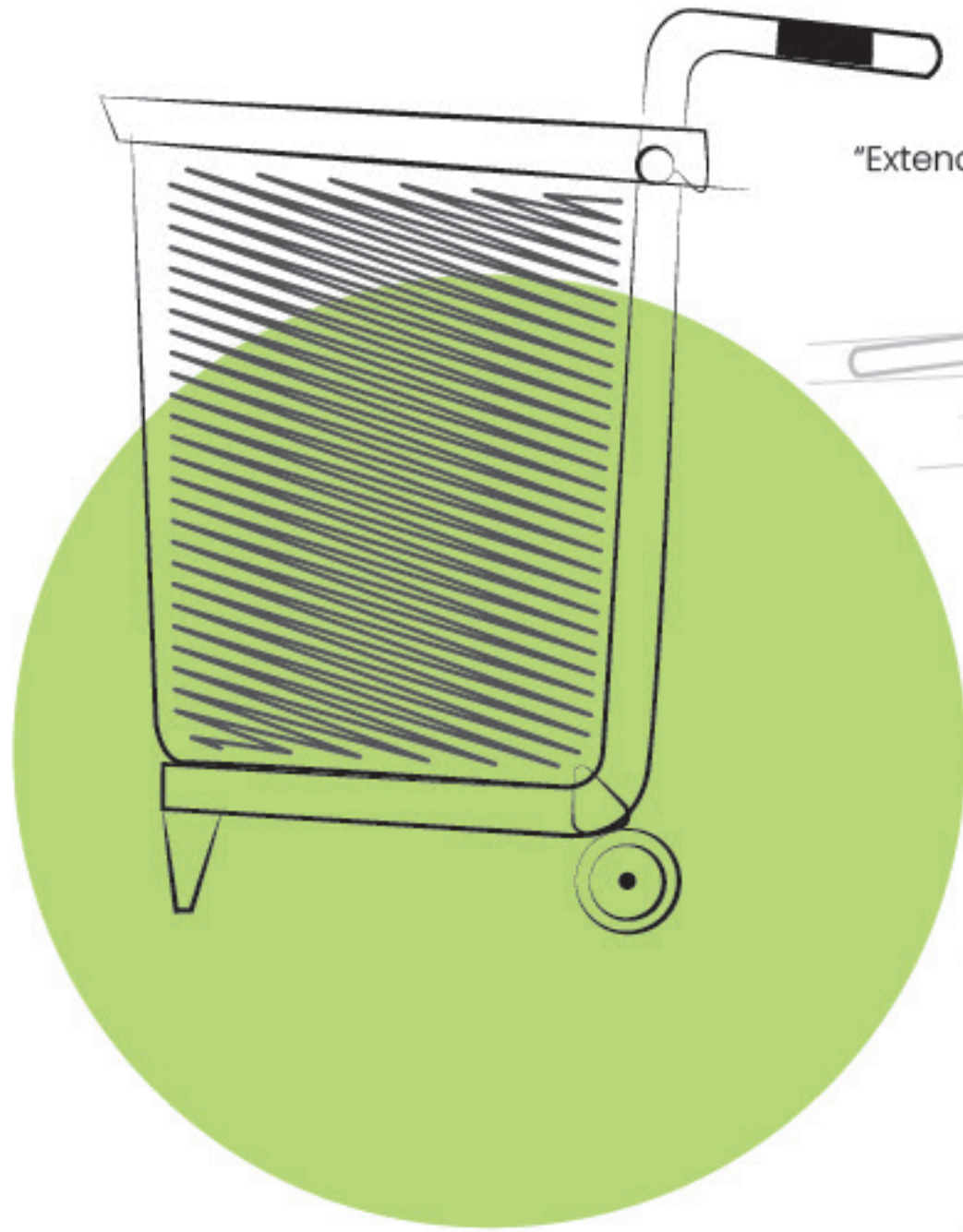




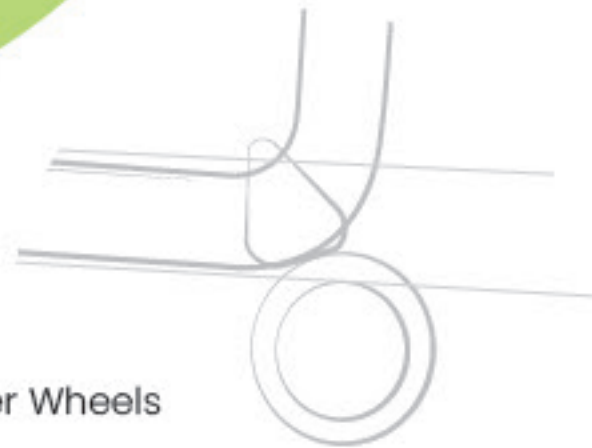




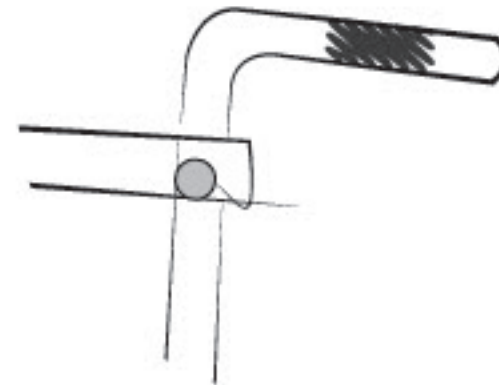
"Extended Height and Width"



Caster Wheels



Handle - Holding bar



Spacious Storage Area





"HUMP STORAGE"

Finalized Design

The Core Feature

Harvesting



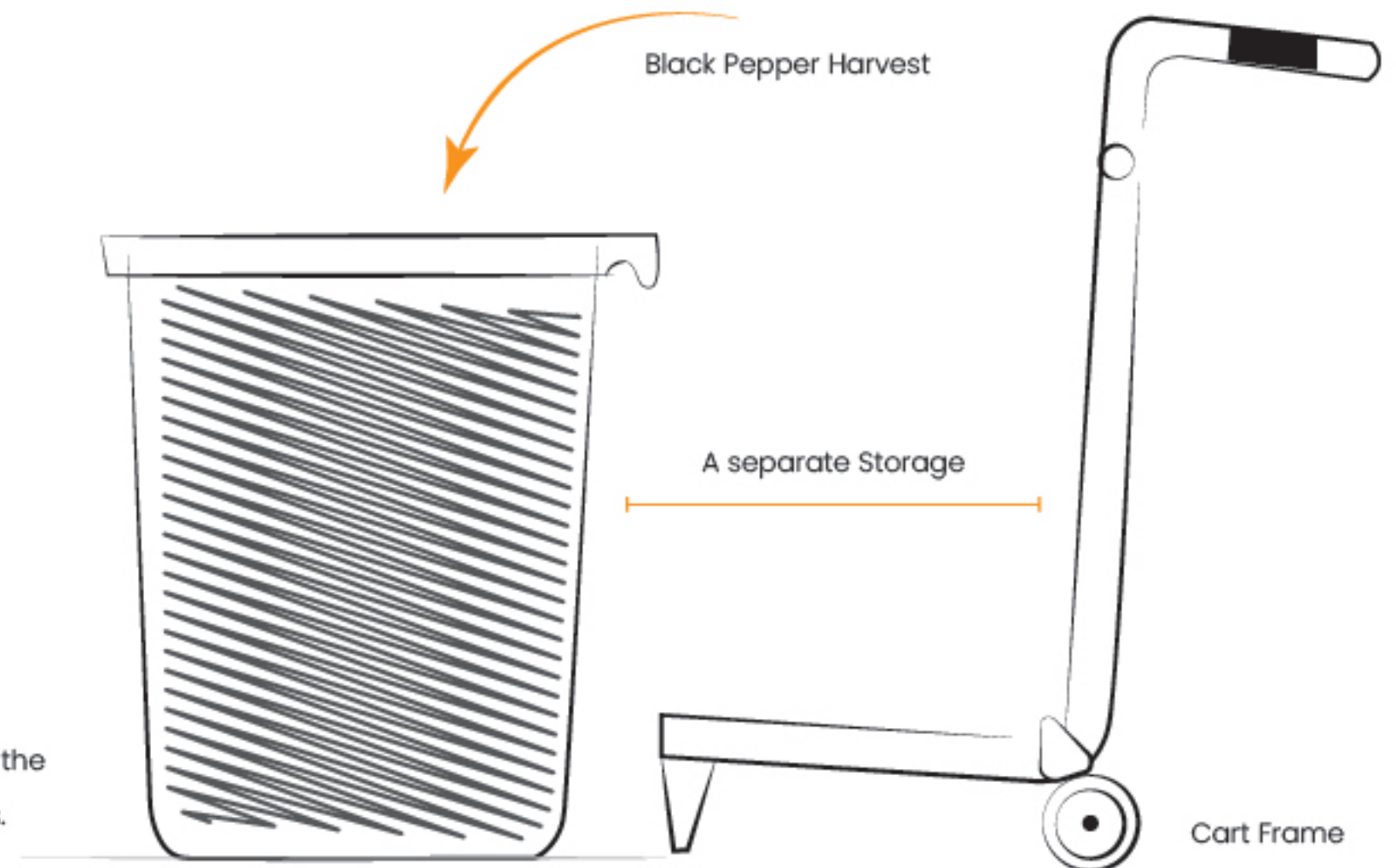
Trasportation



Safe Storage

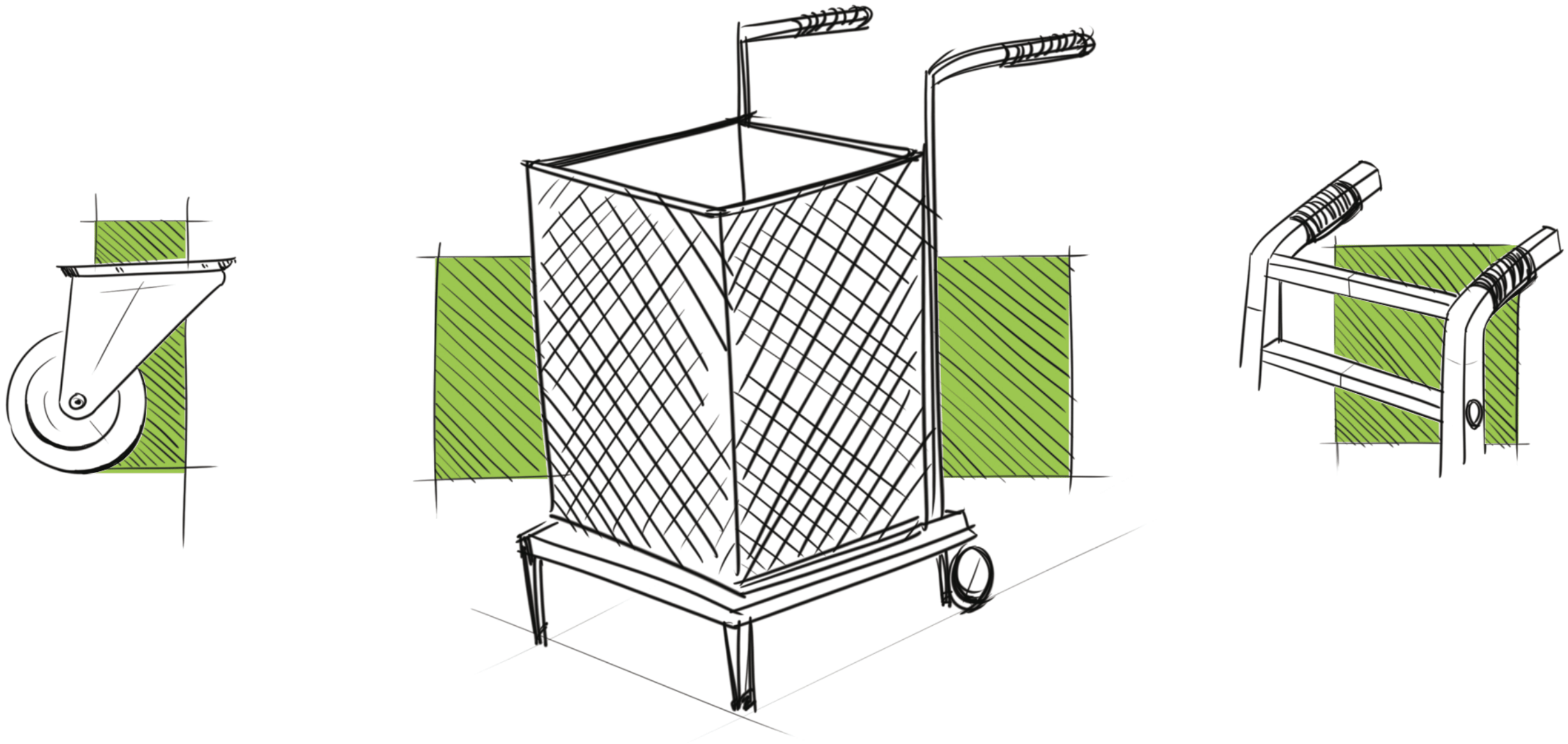


Anti-Robbery
Advantage



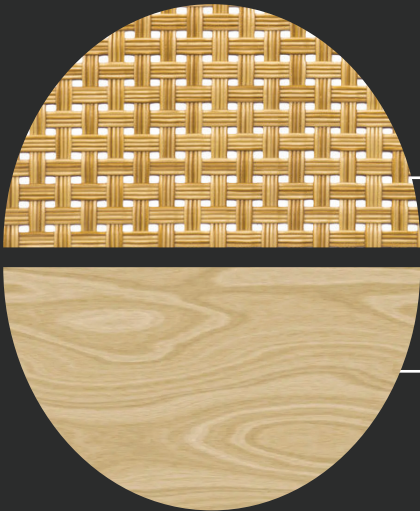
This is the final design concept of the hump storage system, which **Conncts** the entire process of harvesting, transportation, and safe storage of Black peppers.

"HUMP STORAGE"



- Optimal Storage Capacity ✓
- Optimal Ventilation ✓
- Easy Access ✓
- Moisture Controls ✓

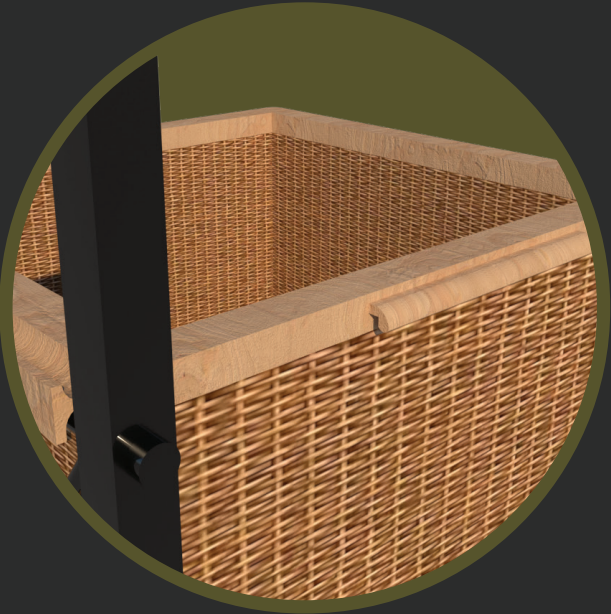
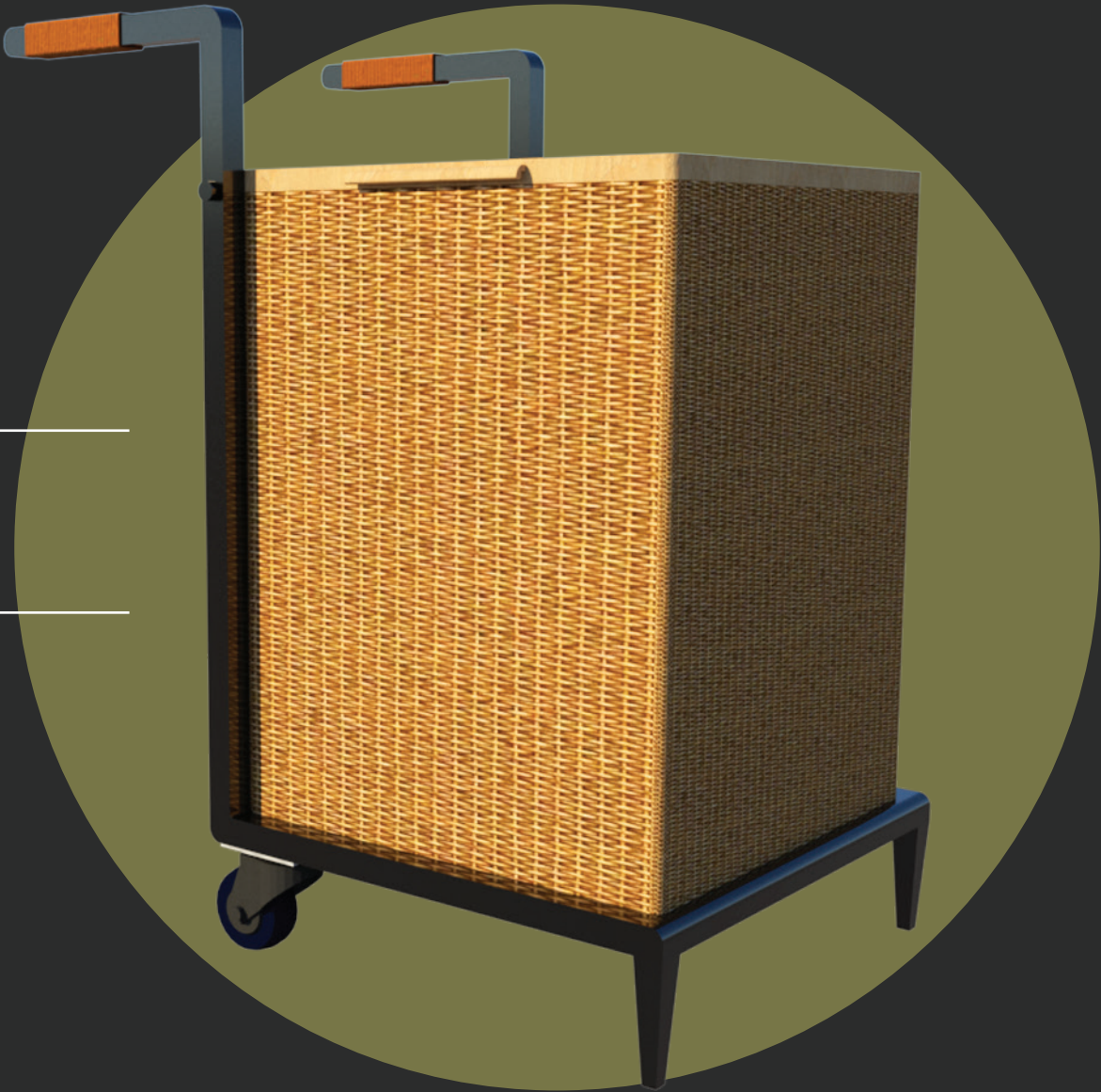
Functionality and Aesthetics



Cane

Wood

Enhance Farm Aesthetics



Note—The bin features integrated handles that facilitate secure and stable stacking of multiple bins

Hump Storage Cart

“Simple Cart Design”

“Two Components in One Unit”

“Staking Unit”

HUMP STORAGE CART

Product Details of the two-wheeled storage cart for black pepper farmers with a 200 kg.

I. Model Number – HSC200

II. Finish – Steel, Wood, Cane

III. Pepper Farm Lands, Rattota, Matale.

IV. Dimensions – *(All dimensions are in mm.)*

Frame – 1100x550

Frame Base – 550x550

Storage Container – 690,490

V. Weight Capacity – 200kg

Note—This hump storage cart with a 200 kg weight capacity is ideal for storing black pepper harvests. The base is made of wheels and an installation plate for the container to accommodate easy transport and storage.





Roots of Connection.

Connection is not only between people, but also between people and the objects that shape their lives. For pepper farmers, storage is more than a function, it is a lifeline. ***Hump Storage*** strengthens this connection, giving farmers a place to safeguard their harvest, protect their efforts, and ultimately enhance their livelihoods.

The mode of this journey is empathy, listening, observing, and understanding farmers' realities before shaping a design that honors both people and place.

Thank You

Kaveesha Vihangi | **PAD** AWARDS | **PRODUCTS** FOR LIFE

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