

# **SUPERMARKET SANITISATION**

*Human-Centred Design Engineering*

**CONCEPT DEVELOPMENT  
DOCUMENTATION**

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# UX JOURNEY MAP

UNDERSTANDING USER EXPERIENCE WITH A FOCUS ON FEELINGS & EMOTIONAL RESPONSE & HOW THAT INFLUENCES THE USER'S ACTIONS

1

Scenario: supermarket customer interacting with a typical trolley / basket cleaning system during the COVID-19 pandemic

## STAGES OF INTERACTION

**STAGE 1**  
Observation & waiting

**STAGE 2**  
Obtaining paper towel

**STAGE 3**  
Applying cleaning solution

**STAGE 4**  
Cleaning handle

**STAGE 5**  
Discarding paper towel

**STAGE 6**  
Using handle

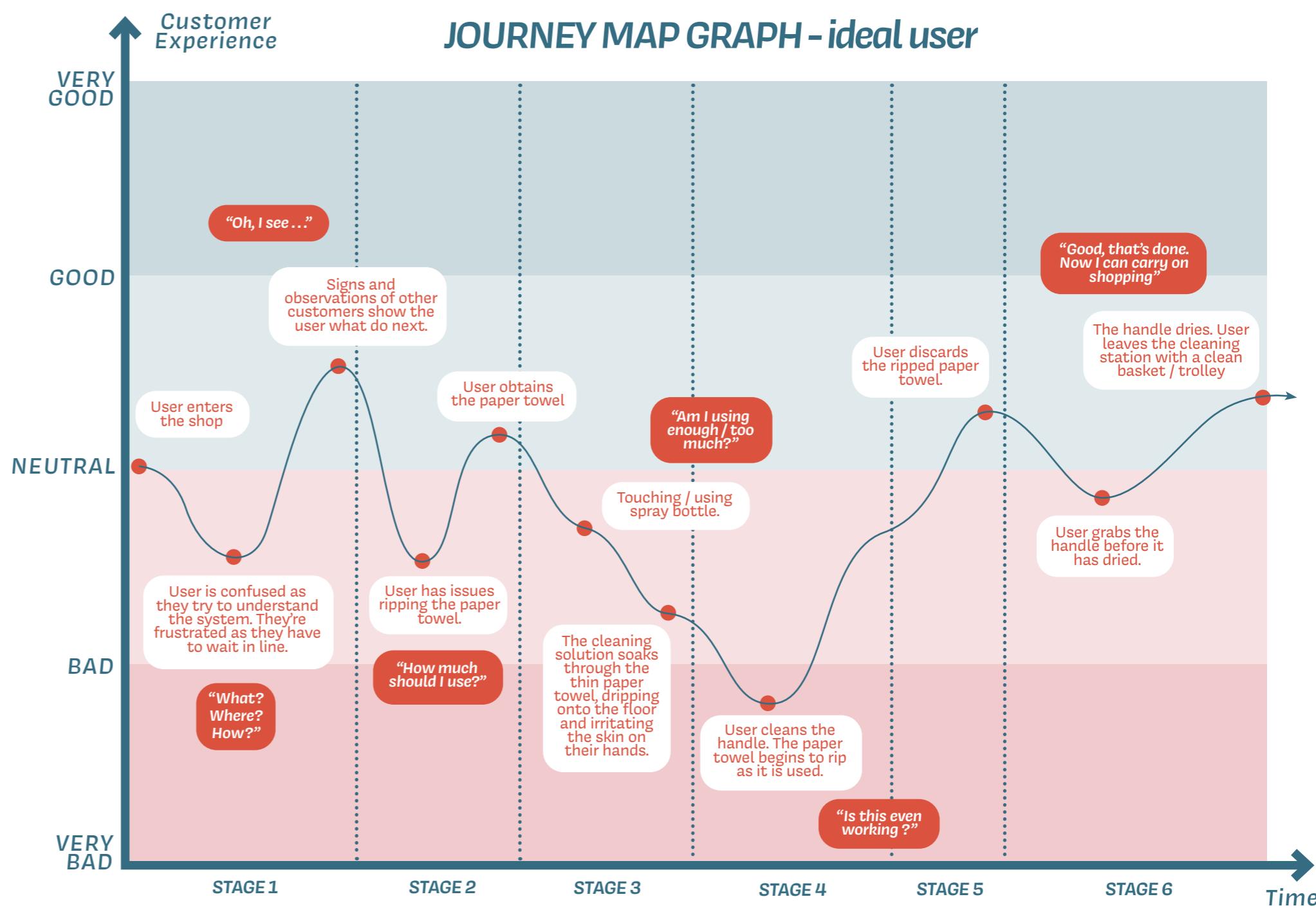
**IDEAL USER**  
(follows all stages)



**APATHETIC USER**  
(aware of system,  
chooses not to use it)

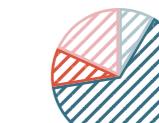
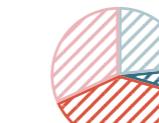


**FORGETFUL / UN-OBSERVANT USER**  
(unaware of the cleaning system)



## EMOTIONAL RESPONSE

This varies throughout the interaction, and also differs between each unique interaction. Above are pie charts showing a possible journey of emotions felt by a typical user.



**FRUSTRATION**

**DISGUST**

**CONFUSION**

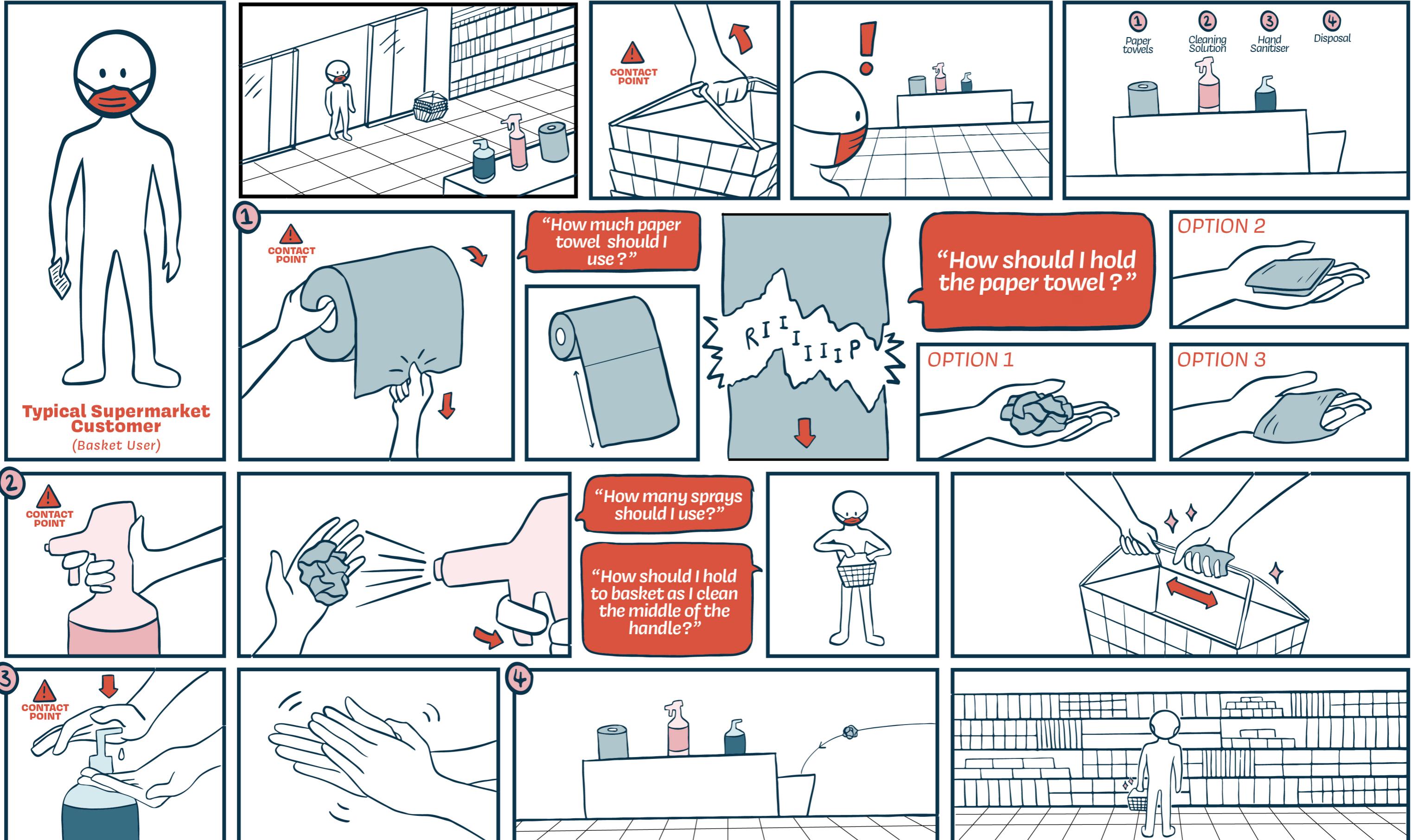
**CONTENTMENT**

# STORYBOARD

ILLUSTRATING AN 'AS-IS' SCENARIO TO  
SHOW THE UNNECESSARY COMPLEXITIES  
OF A USUAL BASKET CLEANING INTERACTION

2

Scenario: An average basket user interacting with a typical cleaning system during the COVID-19 pandemic



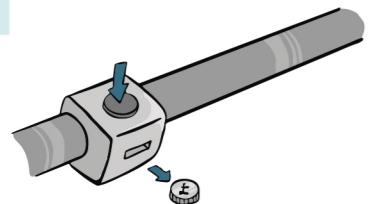
# INITIAL IDEA SKETCHES

DIGITAL SKETCHES  
OF 15 PRODUCT  
CONCEPTS

3

Exploring ways to incentivise cleaning and make the process quicker / easier / more enjoyable for users

1



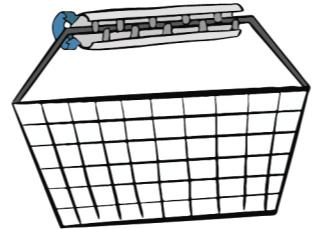
The trolley only releases the coin once the customer has acknowledged that they have cleaned it

2



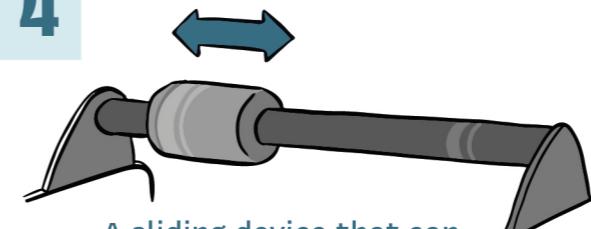
Engaging younger users to put used baskets in a certain place so they can be cleaned

3



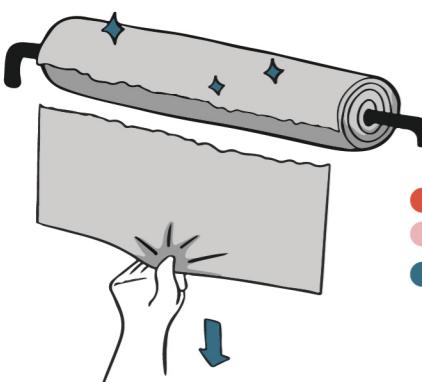
A clip-on anti-microbial coating that can be easily replaced

4



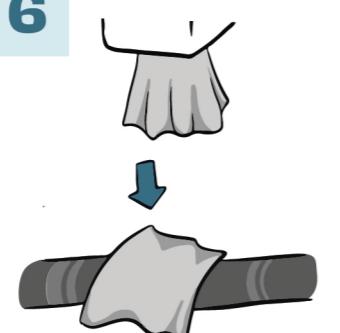
A sliding device that can clean the entire circumference of the handle

5



Paper towel layer that can be removed to reveal a clean surface

6

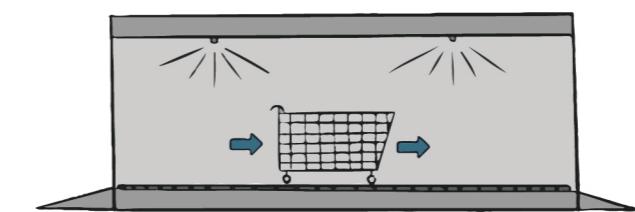


7



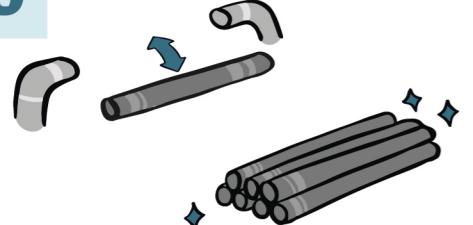
A UV light stick that can will instantly clean any surface it shines on

8



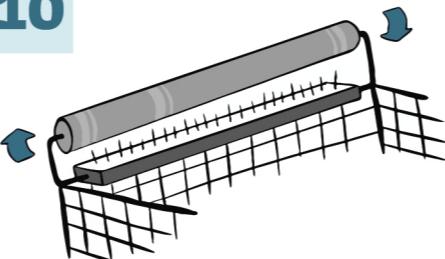
A trolley 'car wash' with a moving conveyor belt. The sprinklers above will spray out both antiviral and antibacterial mist

9



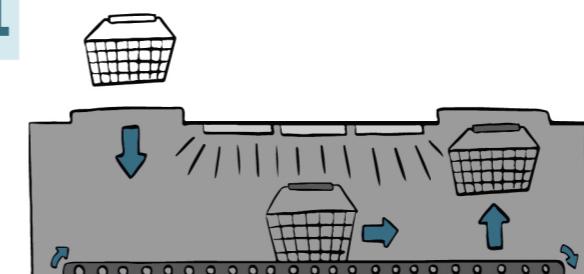
Replacable handles that can be bulk cleaned

10



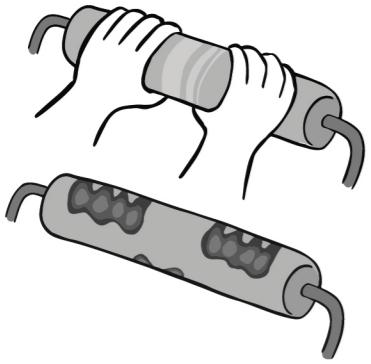
The handle rotates whilst a cleaning mist is sprayed up onto it

11



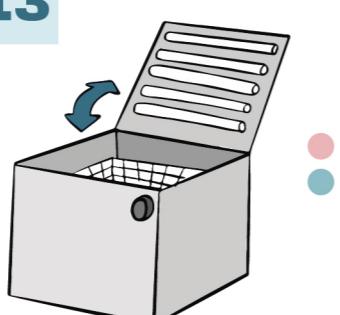
The basket will move along the conveyor belt and be sanitised by UV light.

12



A thermochromic material coating on the handle that reveals where other users have touched it

13



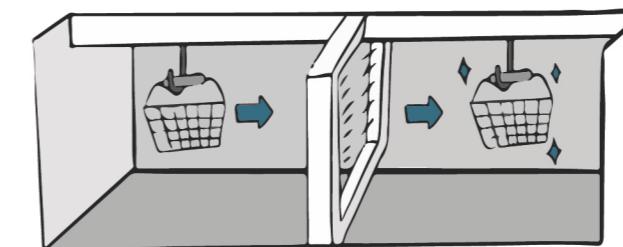
A box that will instantly clean a stack of baskets with UV light

14



The handle flashes a message reminding users to clean it. It can be reset with a button in the side

15



Baskets hang on the hooks and pass through a cleaning mist

**Presented here are 15 different concepts.**

Some are much more complex and would require more investment, whilst others are much simpler and therefore easier to implement. It is important to explore all possibilities in this divergent thinking phase.

Many of these ideas were inspired by group ideation and product benchmarking. This resulted in a range of ideas that are catered towards different user groups.

The key below indicates which user groups and situations are suited to each idea.

● Concept designed for cleaning trolleys

● Concept designed for cleaning baskets

● Concept designed to be used by customers

● Concept designed to be used by supermarket employees

# THREE CONCEPTS

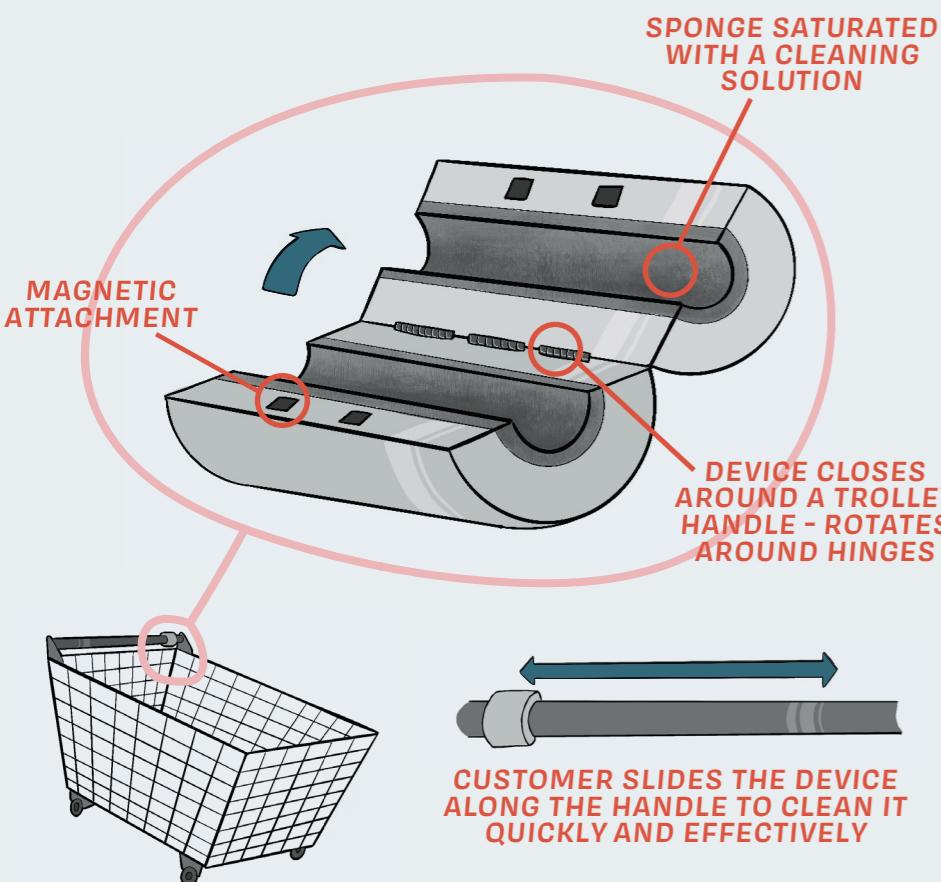
DEVELOPING THE 3 BEST IDEAS, EACH ONE WITH A UNIQUE CONCEPT AIM

4

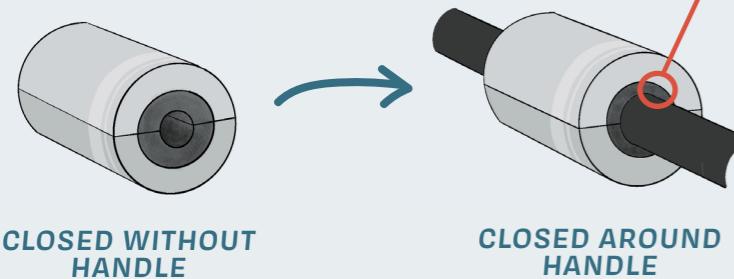
## CONCEPT ONE

**AIM:** Design a product that retrofits onto a trolley handle so the customer can easily clean it themselves.

### 'The Sliding Sanitiser'



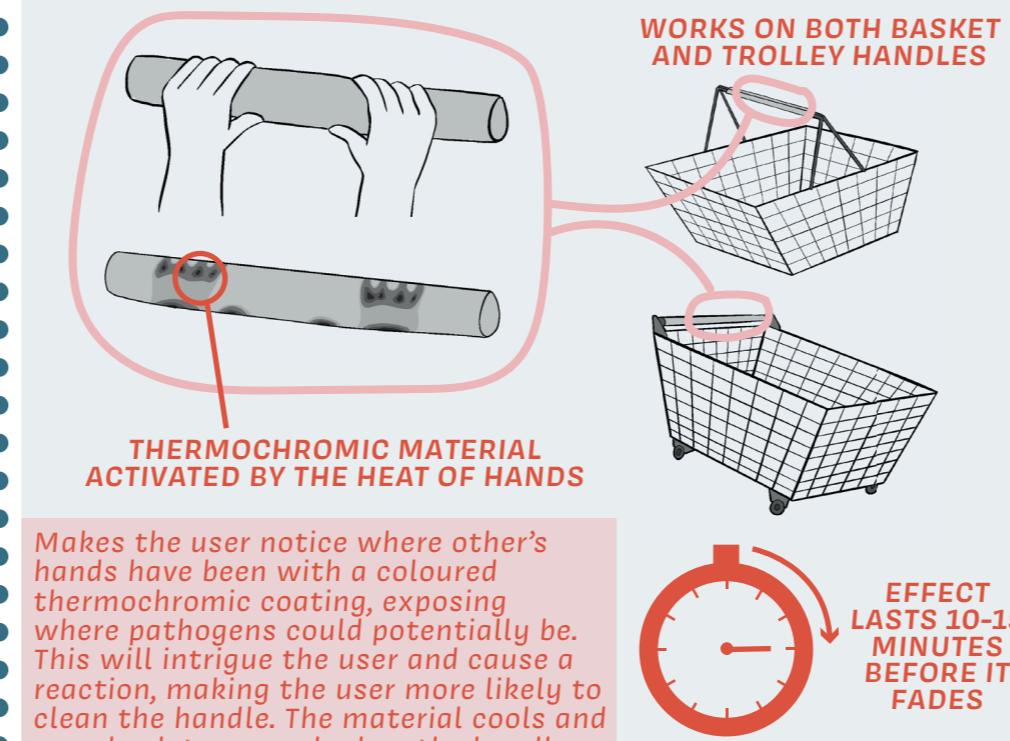
The user won't need to use any external supplies, making it simple and quick to use. They won't need to wait in line to use cleaning supplies and it can be used multiple times throughout shopping. There will be less of a chance of the user forgetting to clean the handle as it is clearly in view.



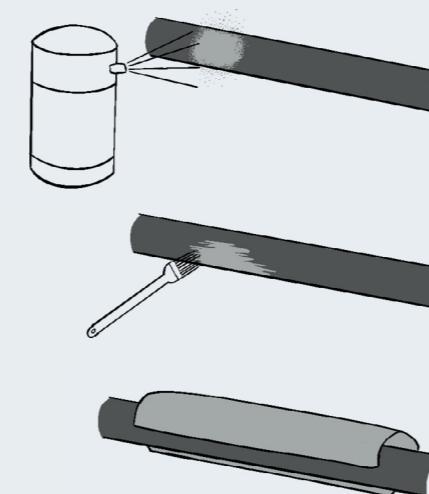
## CONCEPT TWO

**AIM:** Design a product/system that highlights to customers the importance of sanitising basket and trolley handles.

### 'The Germ Detector'



## APPLICATION METHODS



### SPRAYPAINT

- ✓ It would create an even texture
- ✗ A lot of material would be lost in the process
- ✗ Multiple layers would be needed

### PAINTBRUSH

- ✓ Less material loss
- ✗ It would take a lot of time to apply

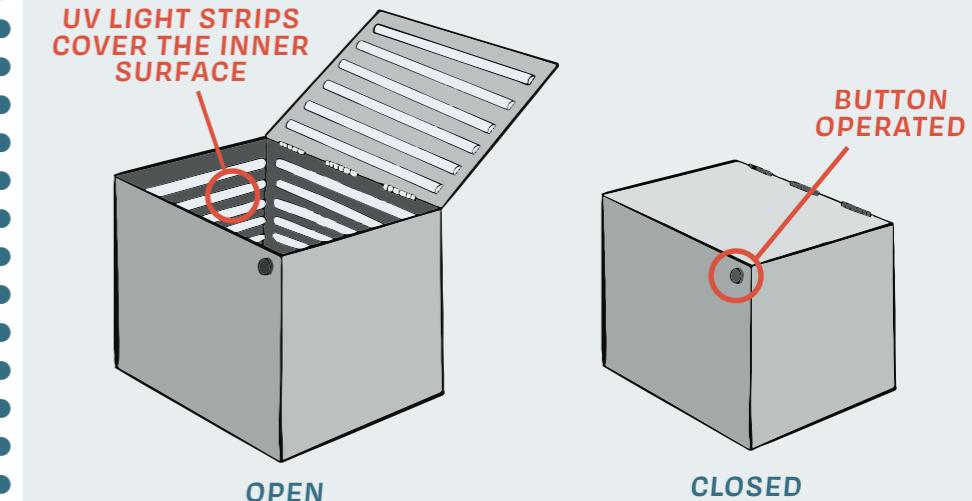
### STICKER

- ✓ No material loss
- ✓ Quick to apply
- ✗ It could peel off easily

## CONCEPT THREE

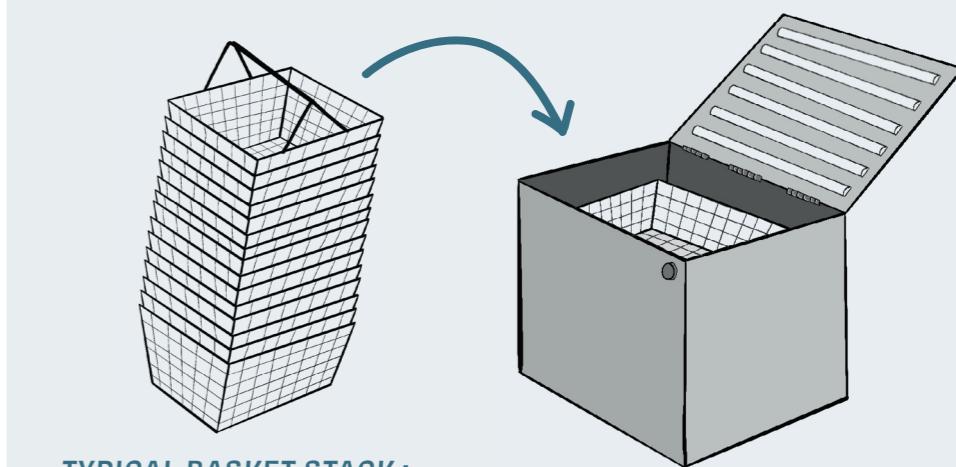
**AIM:** Design a product that cleans multiple baskets simultaneously in order to make the process more time efficient.

### 'The Instant Cleaner'



There user group for this product would be supermarket employees as a way to save time cleaning each basket individually for customers. It will also be more effective as UV is an instant disinfectant. The lights will only turn on once the lid is shut so as to mitigate the risk of skin damage from the radiation.

UV LIGHT WILL INSTANTLY CLEAN THE WHOLE BASKET & HANDLE



# CONCEPT 1

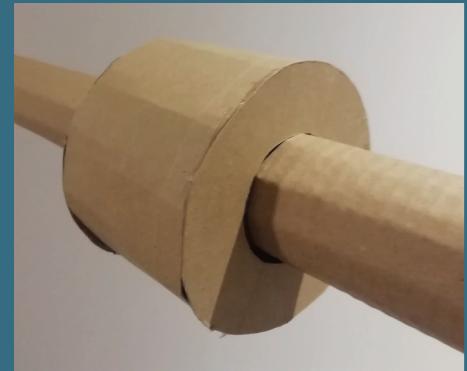
## 'THE SLIDING SANITISER'

To be used by customers and maintained by supermarket employees

5

### Lo-fi Prototyping

Using cardboard and hot glue

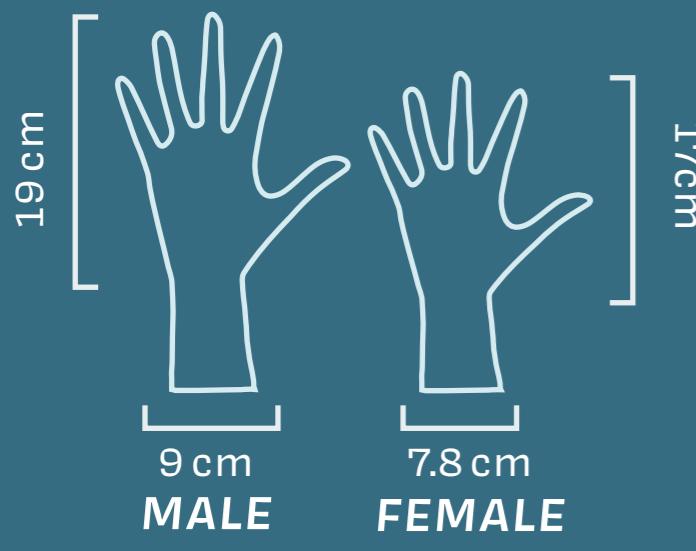


**Outer Diameter : 11cm**

**Outer Diameter : 9cm**

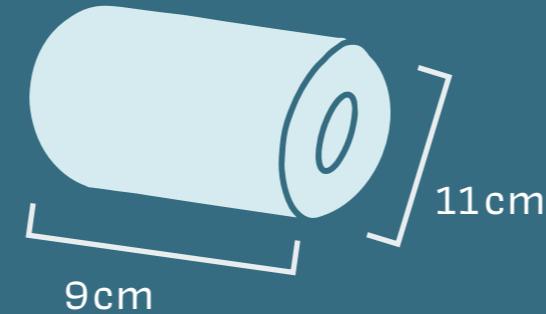
Results of user testing : every participant found that the prototype with a smaller diameter was easier to grab and slide along the handle. Therefore, the diameter of the product should be minimised if possible.

### ANTHROPOMETRICS



### PRODUCT DIMENSIONS

Considering hand size to optimise cylindrical grip



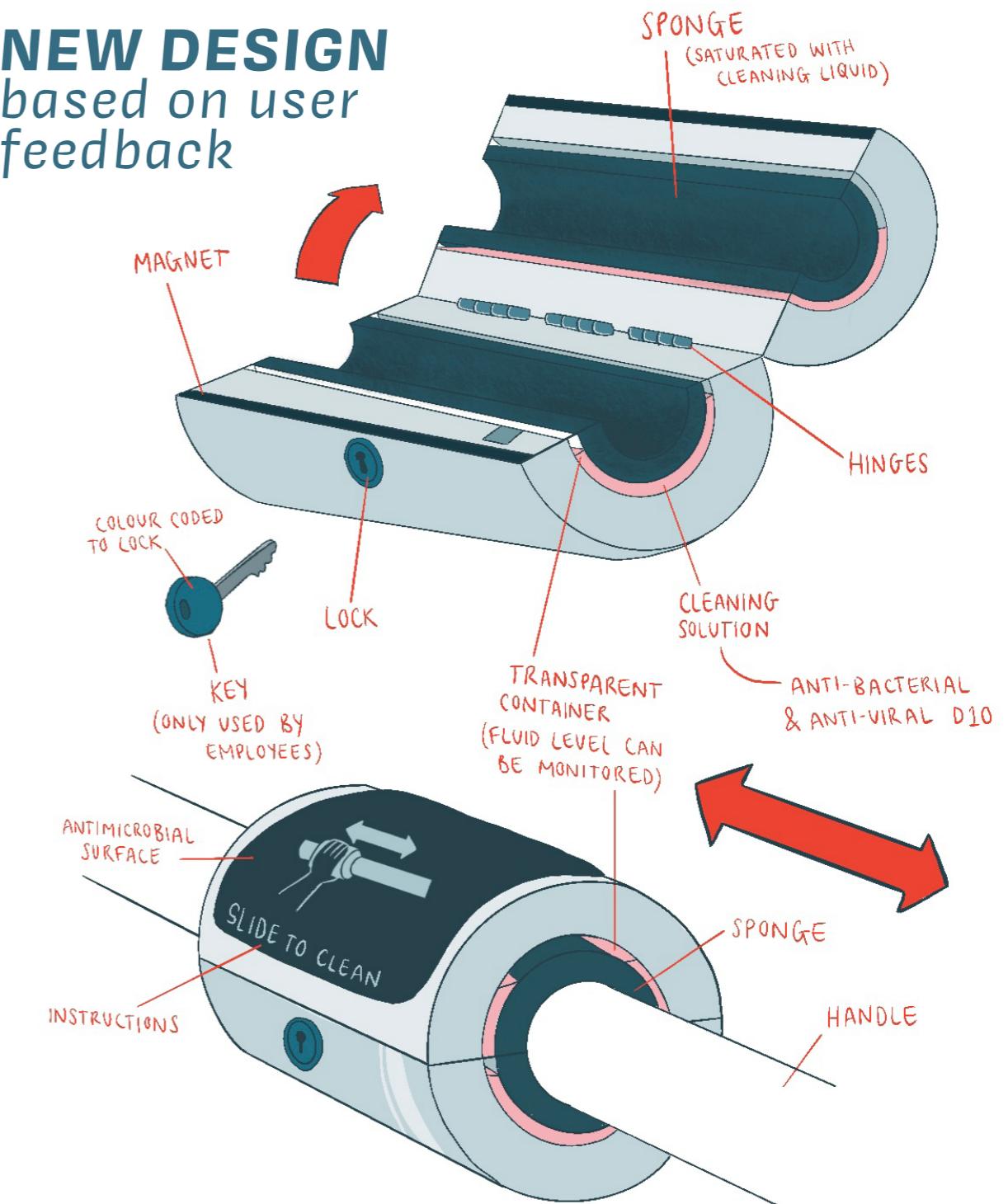
### USER FEEDBACK

What users had to say about the original concept design

- The device should be a bright colour so it is more visible.
- It isn't clear how the device will be filled with cleaning solution, and how often it will need to be refilled.
- The device should only be used on trolleys.
- There should be a way of locking it on the trolley so it cannot be taken off by the customers.
- The device itself will also have to be cleaned, which could defeat the point of it.
- The outer surface should be textured so it is easy to grip
- It could be integrated into the coin slot of a trolley to save handle space.

### NEW DESIGN

based on user feedback



### REFLECTION – Final thoughts on the feasibility of the design & possible improvements

The antimicrobial material on the device could instead just cover the entire handle to simplify the idea without the need for any interaction at all. Additionally, it may not make financial sense to buy enough of the devices for each trolley in a supermarket, especially as they could be damaged or used incorrectly by customers. Refilling the cavity with cleaning solution could be difficult and is likely to result in a spill. However, the desired interaction has potential as it is very simple and satisfying for customers to perform.

# CONCEPT 2

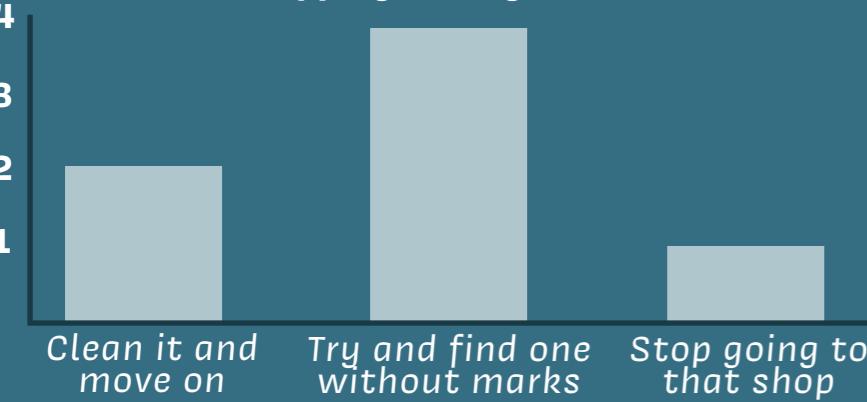
## 'THE GERM DETECTOR'

To be interacted with by customers

### USER SURVEY

Assessing if this concept would have the desired effect on user's behaviour

**QUESTION:** How would you react if you saw coloured marks on your shopping trolley handle?

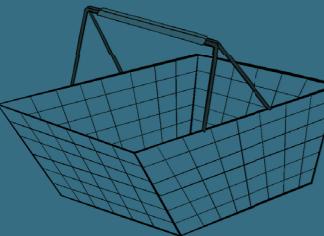


### USER FEEDBACK

What users had to say about the original concept design

- The material should cover the entire handle.
- Covering the handle in an adhesive sticker would be smoother and easier to remove and replace.
- This concept should be paired with another cleaning method as it doesn't directly clean the handle.
- There may need to be an instructional sticker explaining what the coating does as it could confuse customers.

### COVERAGE OPTIONS



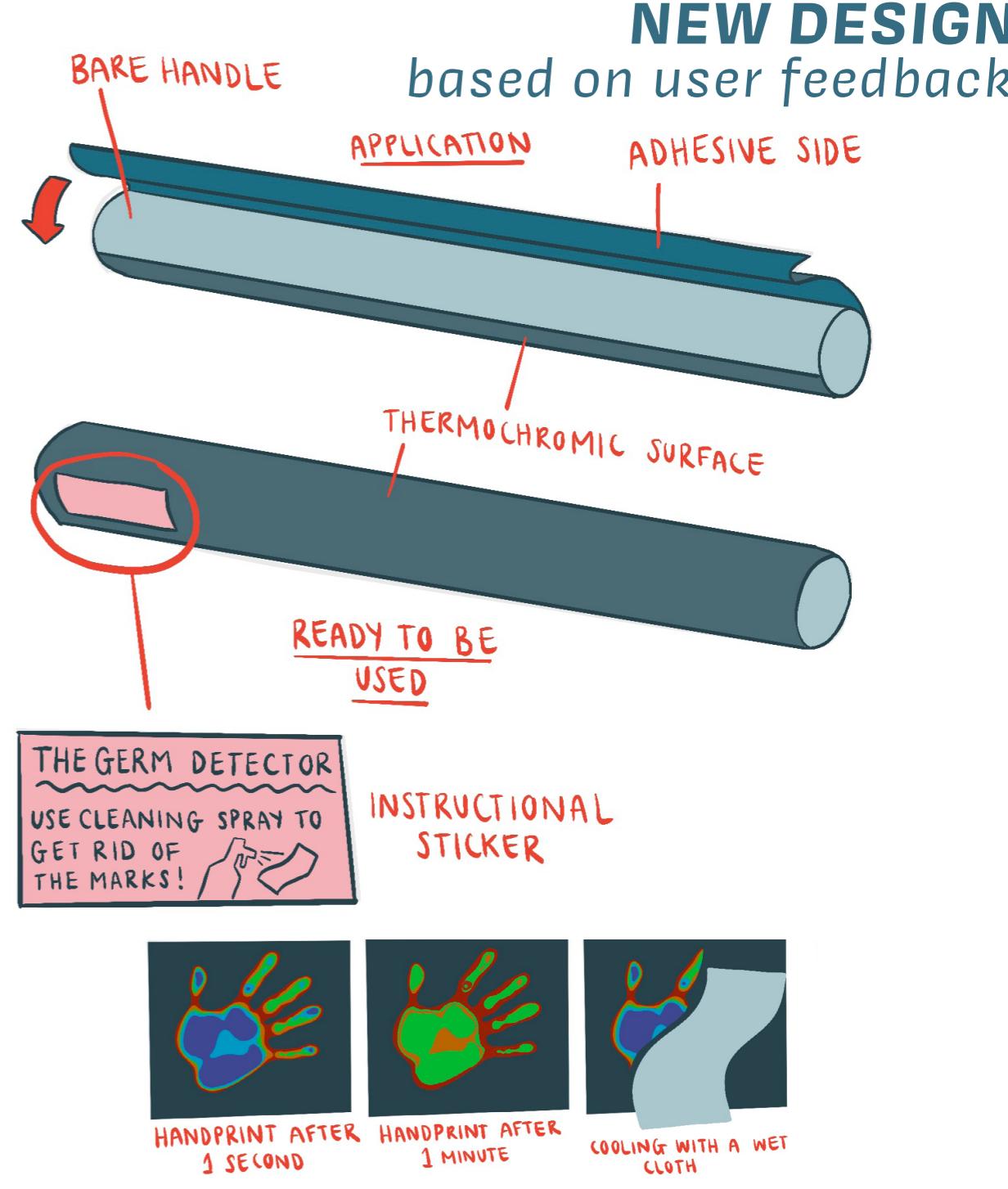
Normal handle  
(easiest to apply)



Partial Coverage  
(uses the least material)



Full handle  
(more effective)



### NEW DESIGN

based on user feedback

### REFLECTION – Final thoughts on the feasibility of the design & possible improvements

The concept relies on the idea that the material will hold its colour from one customer to another, so the material would need to be tested and developed with more research. This concept could work in a supermarket with few baskets that are all used regularly. The cost of the material and potential maintenance needs to be taken into account. This idea could be combined with concept 1 to create a full system.

# CONCEPT 3

## 'THE INSTANT CLEANER'

7

### User Testing

What operation method would be easiest for users?



**OPTION 1**

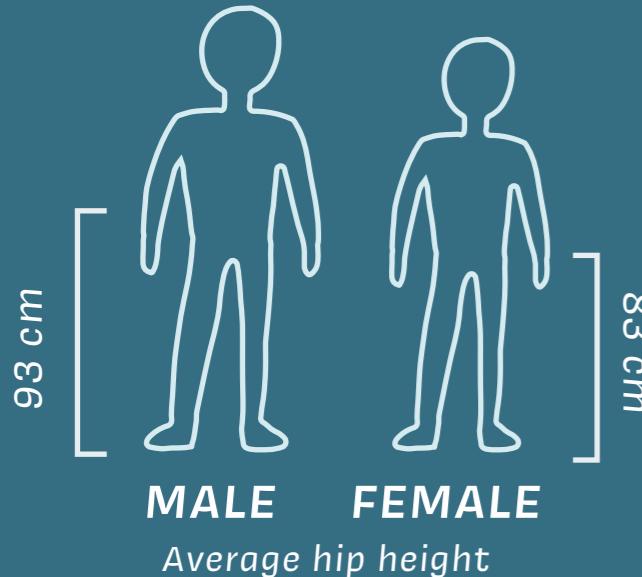
Lifting baskets into the device to be cleaned



**OPTION 2**

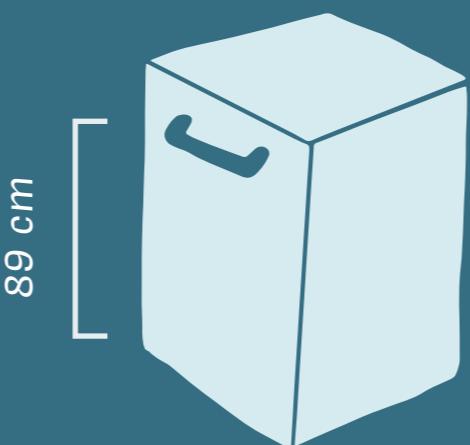
Most users preferred option 2 as it takes much less effort and is less likely to result in an accident or injury.

### ANTHROPOMETRICS



### PRODUCT DIMENSIONS

Considering that items should be pushed from hip height

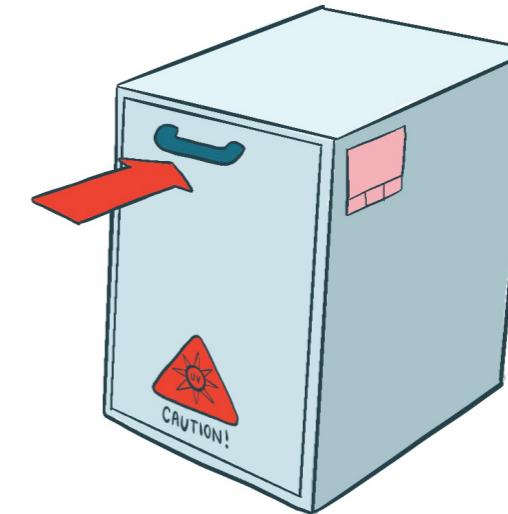
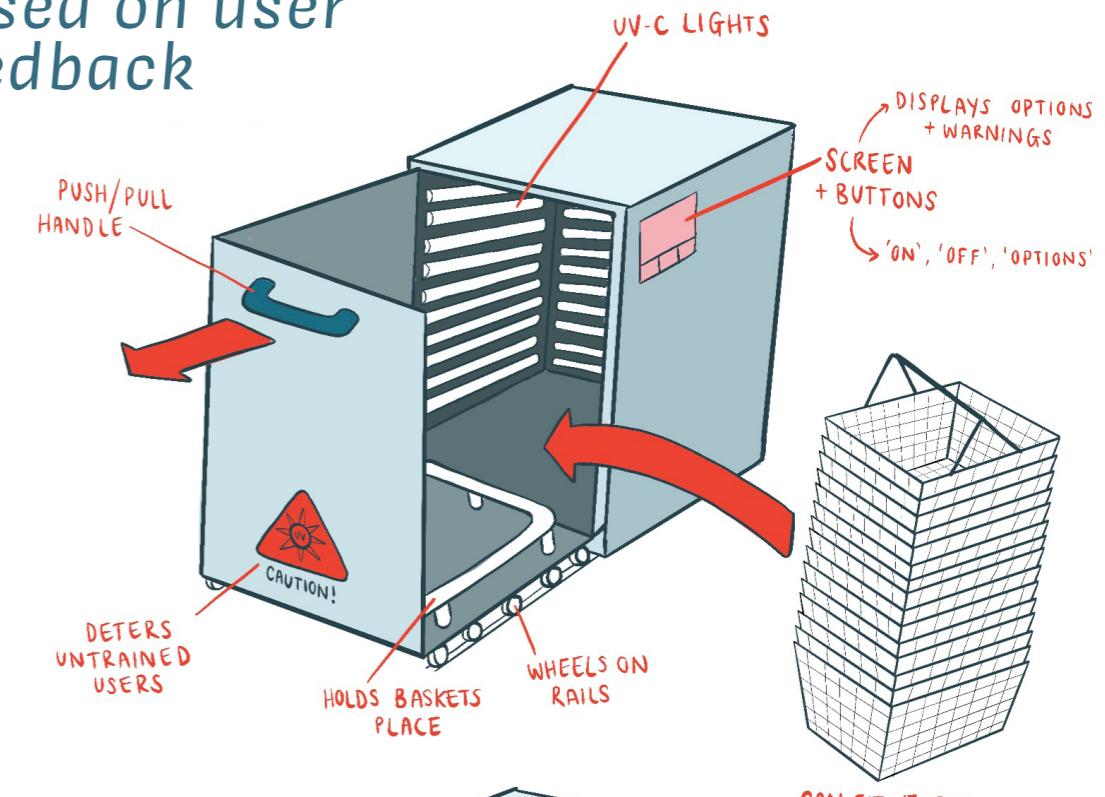


### USER FEEDBACK

What users had to say about the original concept design

- The box should be taller to fit more baskets
- The controls will need to consist of more than one button
- The lid should sense when it has been fully shut so that UV doesn't shine outside of the box and damage anyone's skin or eyes
- The box can only fit a certain type of basket / certain dimensions

### NEW DESIGN based on user feedback



### REFLECTION - Final thoughts on the feasibility of the design & possible improvements

It may still be difficult to lift the basket stack into the holder due to its weight, so the baskets would need to be collected into the box one by one or in small stacks. The rails need to fold into the box as it closes to avoid a trip hazard. The power source must also be considered, as it would need to work from a standard 3 pin plug. More than two rails for the wheel could be used to make the box more stable. Supermarket employees may find this solution easier than individually cleaning each basket, but they would first need training in order to use the product safely.