

FACILITATING MENSTRUAL SANITARY WASTE DISPOSAL

**INTERACTION DESIGN PROJECT I
IN I-108**

by

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at

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**INDUSTRIAL DESIGN CENTRE
INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
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Facilitating menstrual sanitary waste disposal

Saral Design Solutions Pvt. Ltd., Ghatkopar, Mumbai

19th May to 17th June, 2016

I interned with Saral Designs Pvt. Ltd. on facilitating the segregation and disposal of menstrual sanitary waste. They manufacture machines that manufacture sanitary pads. More about them later.

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Just incase there is someone in this room who doesn't know what men-stray-tion is, lets start with that.

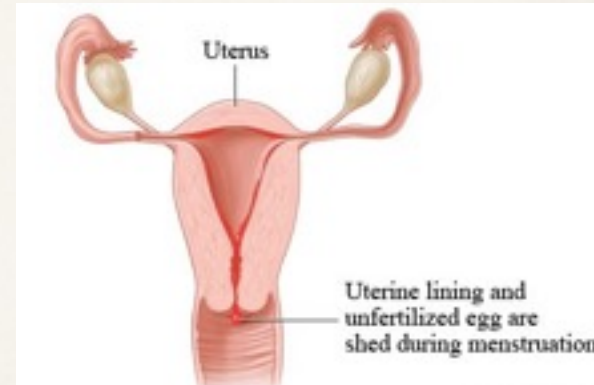
Menstruation

more commonly known as “*that time of the month*”

✦ periods ✦ रजोधर्म ✦ माहवारी ✦ पाळी(च्या)

A woman's body goes through a series of changes to prepare for a pregnancy. About once a month, the uterus grows a new lining (endometrium) to get ready for a fertilised egg.

When there is no fertilised egg to start a pregnancy, the uterus sheds its lining. This is the monthly menstrual bleeding that women have from their early teen years until menopause, around age 50.



In the female body, ovulation i.e. the release of the egg, happens once in about every 28 days. To prepare for a possible pregnancy, the uterus is lined with tissues and blood vessels. If a fertilised egg does not successfully embed onto the uterus's lining, this lining is shed.

This monthly menstrual bleeding is what we call periods, or ..., or ...

<next>

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So, Why are we talking about this today?

Why is it a big deal?

In India,

- ❖ **73.3%** girls are have no prior information about menstruation before starting with their first period.
- ❖ **1 in 5** school girls drop out of schools once they start menstruating.
- ❖ **70%** women suffer from reproductive tract infections.
- ❖ Only, **12%** women use commercial absorbents. The rest use materials like cloth, husk, news papers, etc to control their periods, which are often unhygienic.

Because it's quite a big deal.

Most of the numbers here are from the often quoted Nielson report. And they are shameful.

73% girls know nothing about periods when they start menstruating. A lot of them think they have a disease and they are going to die. Imagine waking up one fine day leaking blood!

For a multitude of reasons including menstruation, girls have been dropping out of school. Periods are associated with being impure, awkwardness, and is accompanied by nerve wrecking body pain.

A huge number of females get urinary tract infections pretty regularly due to bad hygiene.

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How are we responding?

- ❖ **NGOs and Governments.**

Subsidised rates, heavily advertised and promoted.

- ❖ **Manufacturers.**

Large untapped markets.

Running awareness programs. Releasing affordable alternates.

NGOs, the Government and the Manufacturers are doing everything they can to make easy access to sanitary napkins a reality.
Nirmal Bharat Abhiyaan

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Not all the steps taken are the greatest of ideas though.

Saral Design Solutions Pvt. Ltd.

- ❖ Developed India's first indigenously designed machine for producing ultra thin sanitary napkins
- ❖ Decentralised manufacturing
- ❖ Collectively solving the problem of quality, access and affordability of menstrual hygiene products.



Saral Designs is a social entrepreneurship organisation run by a bunch of engineers. They are building a machine, first of its kind, that helps decentralise manufacturing while maintaining extremely high quality of product.

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Where is the problem you ask?

Heaps and heaps of waste!

- ❖ An average sanitary pad is almost 80% plastic
- ❖ Even with only 12% women using disposable sanitary napkins, 9000 tons of non-decomposable and infected sanitary waste is generated every month!
- ❖ This chokes drainage systems, exposes sanitation workers to bacteria and pathogens, and are an eyesore.

An average sanitary pad is almost 80% plastic. The volume of sanitary waste generated is humongous, and the numbers are only increasing.

Under the Municipal Solid Wastes Rules, soiled napkins are considered to be a part of non-recyclable household waste and are to be incinerated.

Currently however the sanitary waste is hidden and disposed off mixed with all sorts household waste, and compacted together to be disposed off in landfills. Since in a sanitary napkin, the blood can not free flow into the ground, it stays trapped with all the other debris and is home to quickly multiplying bacteria and harmful pathogens. In addition to being an eyesore, this exposes rag pickers and waste segregators to potentially dangerous diseases.

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So, how are dealing with this now?

Waste control & more regulations!

- ❖ **New government regulations.**

Increased manufacturer responsibilities.

Helping the municipality, controlling material, spreading awareness, changing patterns of use.

- ❖ **Mini-incinerators. Treatment at source.**

Promoted and installed in communities, schools and colleges.

High cost of implementation. Low temperature combustion, release of toxic gases like furans and dioxins.

waste control and more regulations!

The latest guidelines have added to the duty of manufacturers and brand owners the responsibility to help the municipality with its work, to control the material they use, and to spread awareness among users to properly dispose off sanitary products like pads and diapers.

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And that's where I come in.

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<http://www.moef.gov.in/sites/default/files/SWM%202016.pdf>

Duty of manufacturers or brand owners of disposable products and sanitary napkins and diapers.

“We could look at developing a new disposal mechanism of pads for slums and villages. This could be something to go with the packet or maybe a dustbin re-design... most people just throw it, choking water systems”

—Suhani Mohan, Co-founder Saral Designs, Acumen Fellow

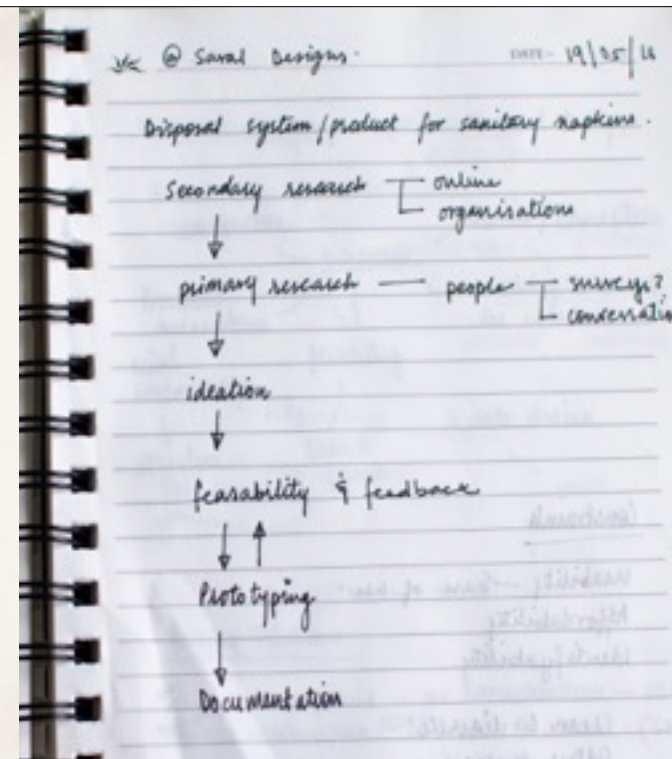
That is a snippet from the conversation I had with Suhani, the co-founder of Saral designs. A simple Facebook conversation lead to this solo project - an attempt to intervene and counter the problem of disposal. To be complaint, and effective while being affordable.

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And so I began,

The Process

- ❖ Made a plan.
- ❖ Met the team. Understood what they were doing and why. Understood the product and its manufacturing process. Their constraints.
- ❖ Studied the history and the current scenario.
- ❖ Made conversation with people, visited villages, slums, segregation unit, health centres, NGOs, help groups.



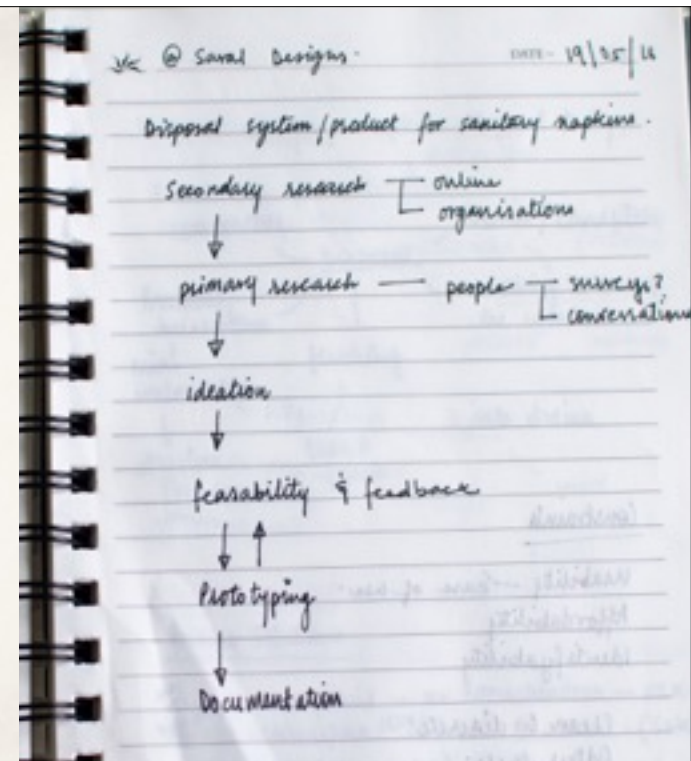
19th of May, 2016. That is a page from the diary I was maintaining for the internship.

Through the course of the internship, I met multiple stakeholders, held conversations with people, observed user behaviour and interactions..

The Process

- ❖ Researched on materials. Fastening mechanisms.
- ❖ Ideated. Prototyped. Quick tests and feedback incorporation.
- ❖ Conducted awareness sessions.

need to follow up and complete project.



..and experimented a lot with possible product solutions.

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Lets go into some details -

WEEK 1

Secondary Research

Historic & Existing Sanitary Products



First, I studied the market. What are the other products available? How do they deal with disposal? Do they deal with disposal?

Can products be reusable? Biodegradable?

This opened my eyes to a plethora of options available out there, and also to how many people are trying to solve for the same problems that I was.

Many are close home. The 2nd picture there, the red base with white cloth is developed by Laxmi Murthy, a PhD at IDC. Another senior from PD has devised a methodology to fold and use a 60x60 piece of cloth.

Current Situation



Even today, myths and misconceptions are prevalent. At one of the workshops I attended, one of the participants had this to say -

"I went into the bathroom and saw a little bit of red.

And by this time I had watched commercials with the blue ink. So I thought, it was supposed to be blue.

So I was like, "Oh! It's not blue yet!""

Many NGOs are also working on this. Sanitation worker collective SWaCH stood up fighting for their rights. They sent bags of used napkins to manufacturers.

Existing Disposal Solutions

There are a bunch of disposal solutions available in the market today. Most are too expensive.

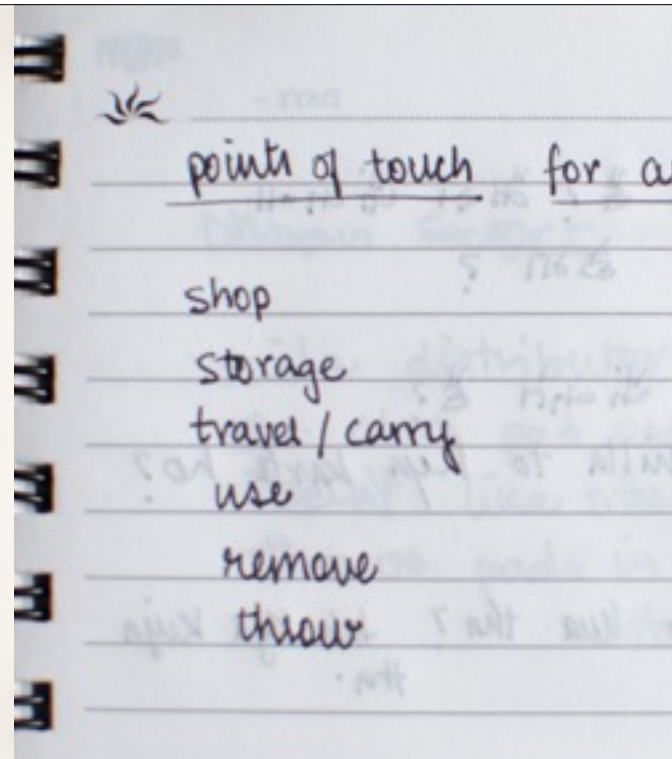
The government is promoting the use of mini incinerators, but installation and maintenance make it an impractical option. Moreover, they release highly toxic gases - furans and dioxins as a byproduct.

WEEK 2

Primary Research

Journey of the Sanitary Napkin

- ❖ Manufacturer
- ❖ Shopkeeper/ retailer
- ❖ User
- ❖ Cleaner/ Sanitation workers
- ❖ Segregator
- ❖ Other stakeholders (NGOs, Individuals)



To reach the root of the problem, I decided to talk to everyone associated sanitary napkins and its disposal.

Saral design targets the urban poor and rural inhabitants. Most of who do not currently use sanitary napkins. It was observed that people carry forward their habits from whatever they used earlier. The observations from here helped developed the essentials list for the product.

Target User Interactions and Observations

Dharavi, Karjat, Ghatkopar, IIT Bombay, Pune (10 different locations)



The major learnings that influenced the final design were observations, their stories and how they reacted to our stories. I also conducted a face to face survey with 51 females at 10 different locations across Mumbai, Pune and Karjat.

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Achanak Chowk, Vadar Vasti - Pune

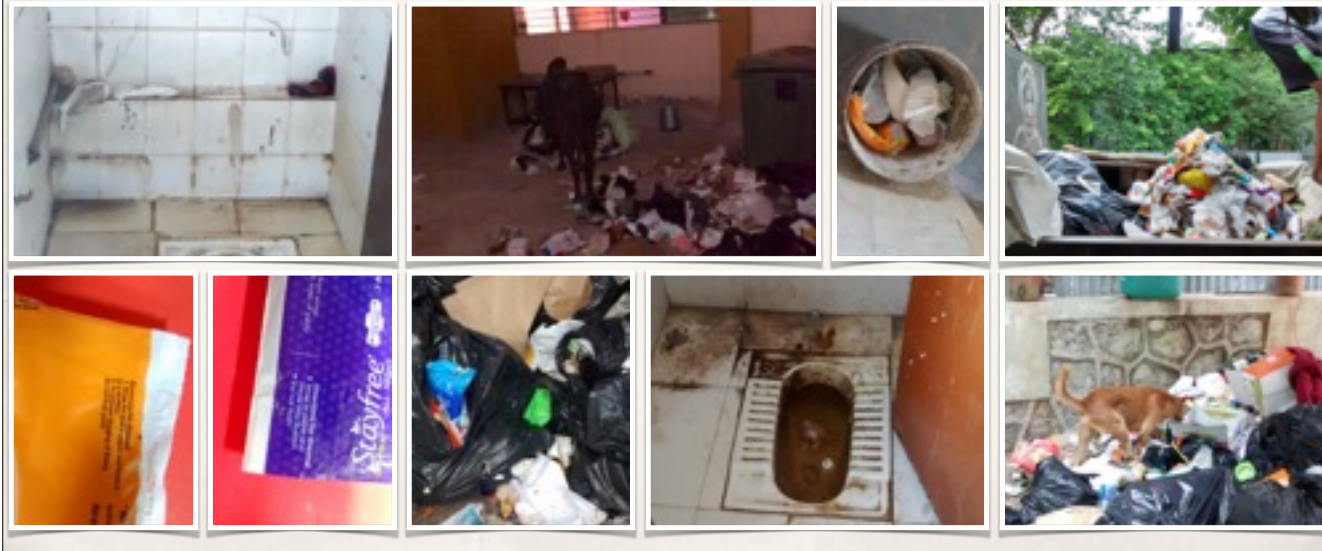
Arvand, Ganegaon, Markewadi, Salvad - Karjat

Dharavi, Ghatkopar, IITB H10 and BMC - Mumbai

// <https://docs.google.com/spreadsheets/d/1-iKNXGIMNSz2NVScQ4ycAm9aLsp3K-i3y8p6Lzcw6s/edit#gid=1795268544>

Target User Interactions and Observations

Dharavi, Karjat, Ghatkopar, IIT Bombay, Pune (10 different locations)



These observations helped understand human behaviour. Some observations also explained common myths. Animals attracted by blood often tear apart used cloth and pads. There is a myth floating around that says that “saap sungh lega to bacha nahi hoga”. This makes people wash their sanitary products and wrap it well before disposing.

// behaviour: pads behind doors, washing pads

Organisation Visits, Workshops



I also interacted with and visited the facilities of NGOs in the space, and other manufacturers.

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Samagra (Swapnil - Poop guy) Pune
She cup, menstrupedia, ecofemme, aakaar innovations, saral designs

What do people have to say?

“40 paise per pad? Nahi yaar, bahut mehenga hai. Pack ka 4 rupaya badh jaayega”

*–Suhani Mohan, Co-founder, Saral Designs
while discussing cost of a proposed solution*

Manufacturers worry about costs,

“No conversations are made at the shop, sabko orange cover waala pad chahiye.
Posters bhi try kar liya, kuch kaam nahi karta. Celebrity chahiye.”

*—Bhavin Gawali, Sales Head, Saral Designs
while discussing market placement in retail*

and marketing,

“ye machine mein kaise fit hoga?
Manual intervention nahi hona chahiye na, scale nahi hoga.”

*–Swati Agarwal, Operations, Saral Designs
while discussing feasibility of a proposed solution*

and ofcourse, manufacturing!

“meri wife hoti hai dukaan pe tab hi aake (pads) khareedte hein”

*–Shopkeeper, Vadar Vasti, Pune
on being asked if females buy pads from his shop*

shopkeepers worry about rats, and about females needing females at the counter

“gandagi se aadmi sookh janta hai na, kab tak sahega?”

“uthaane wale bhi gents hai na, wo bhi pet ke like kaam karte hai.”

—*Pallavi, Vadar Vasti, Pune*
on plans of leaving locality due to state of toilets

users worry about the eyesore, about health and about males who have to see all this

“saap sungh lega to bacha nahi hoga”

—Shobha, Markewadi, Karjat
on why she washes pads and wraps in plastic before disposing

people discuss myths

“Pad 30-60 ka ek-do packet, har mahine.
Itna capacity nahi hai. 7000 (salary) mein kya hoga?
Ye Mumbai hai. Bacche ko padhaayega ya (pads) kharidega?”

*—Kunda, Hostel 10 bathroom cleaner, IIT Bombay, Mumbai
on why she doesn't buy commercial sanitary napkins*

and life priorities. Many can't afford sanitary napkins. Many don't have access to any.

“and by this time I had watched commercials with the blue ink,
so I thought, it was supposed to be blue.”

*—Attendee, Out of the Pad workshop, Mumbai
while sharing her first period story*

but everyone knows they exist. The advertisements are everywhere. However, wrongly they inform us, they are the most widely spread informant.

“sab choke hum apne haath se saaf karte hein.
Itna saara hota hai na, photo dikhaunga aapko”

—Gautam, Head Safai Sainik, Samagra, Pune

Sanitation workers worry about repairs, additional work and health issues.

“kal kisi ne mithai ke dabbe mein rakha tha. Hamne socha, arre waah, mithai ka dabba, par khola to <shocked expression> ... aisa nahi karna chahiye na”

*—Maria, H10 bathroom cleaner, IIT Bombay, Mumbai
on the variety of packaging they find sanitary pads hidden in*

They worry about identification.

“Newspaper mein fenkana mangta hai. Vo dekhke hame samajhta hai ki choona nahi hai. Acha acha packet mein daalega to haath se dekhna padta hai.”

“kabhi kabhi ulti aati hai”

*—Imal Kamble, Shrinukti Sangathan, BMC segregator, IIT Bombay, Mumbai
on recognising sanitary waste while segregating*

and mixed waste and exposure.

WEEK 3 & 4

Ideation and Prototyping

WEEK 3 & 4

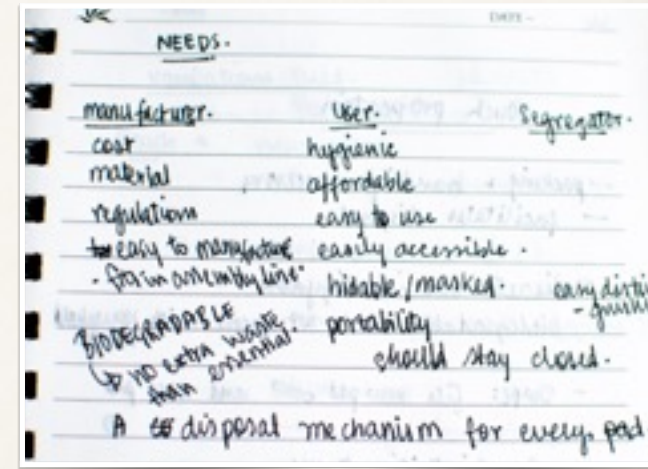
Ideation and Prototyping

By now I decide to focus on a making segregation easy.

It was relevant to the organisation I was working for, and a problem that desperately needed solving. Once segregated, the waste can be dealt with either via centralised incineration or sanitary landfills.

List of Essentials

- ❖ Unless requirements of all stakeholders are met, the product will not be used.
- ❖ Findings from the user studies were overlapped with the needs of all the stakeholders to derive a list of essentials.

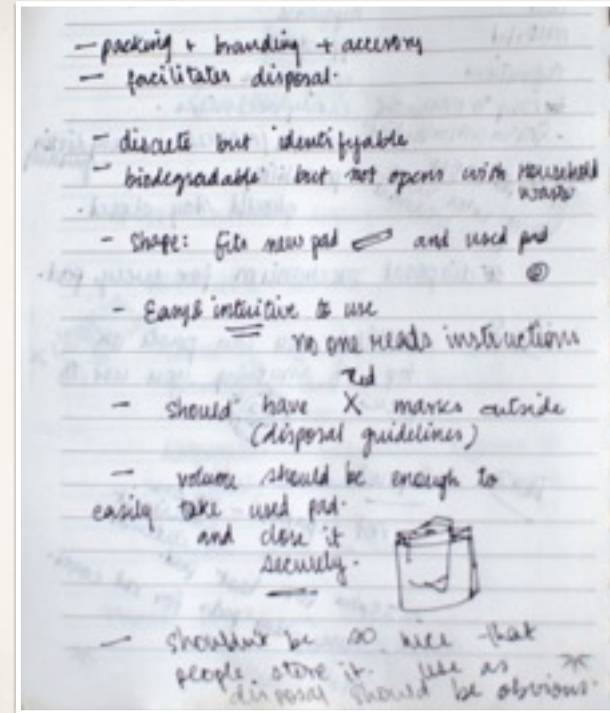


Using all the learnings so far, I made an essentials list. The findings from the user studies were overlapped with the needs of all the stakeholders to make the product implementable.

//packaging starts out preventing product waste by protecting it, but eventually ends up as waste itself when the product is used.

List of Essentials

- ❖ This list kept in mind regulations, manufacturer constraints, and behavioural quirks like “it shouldn’t be so nice that people save it for later. Use as disposal mechanism should be obvious”



This list kept in mind regulations, manufacturer constraints, and behavioural quirks like “it shouldn’t be so nice that people save it for later.”

Ideation



The basic ideations on paper dealt with shape and size. Material. Cost. Method of closing/ sealing. Intuitiveness. etc.

Tests, Trials and Feedback (iterations)



It was followed by a series of experiments, trials and iterations from feedback. Concepts ranged from stickers, to pouches, to gift packs, and origami based games. Inputs on brand outreach, marketing and target audience identification were shared.

I am in touch with the team, and intend help them put this list of directives to production.