



miku

a pump system for working moms

product + service

**this is the story of supermoms,
about how their lives have change
but products haven't.**

problem

working moms struggle to keep up with milk production and pumping

goal

to stimulate breast milk production
free moms from the pumping process
to create a milk storage inventory system



what

feeding system

who

for every biological mother

why

pumping is time consuming and storing milk is not efficient

how

wearable and freehanded

where

anywhere

inspired by every working mom on the globe,

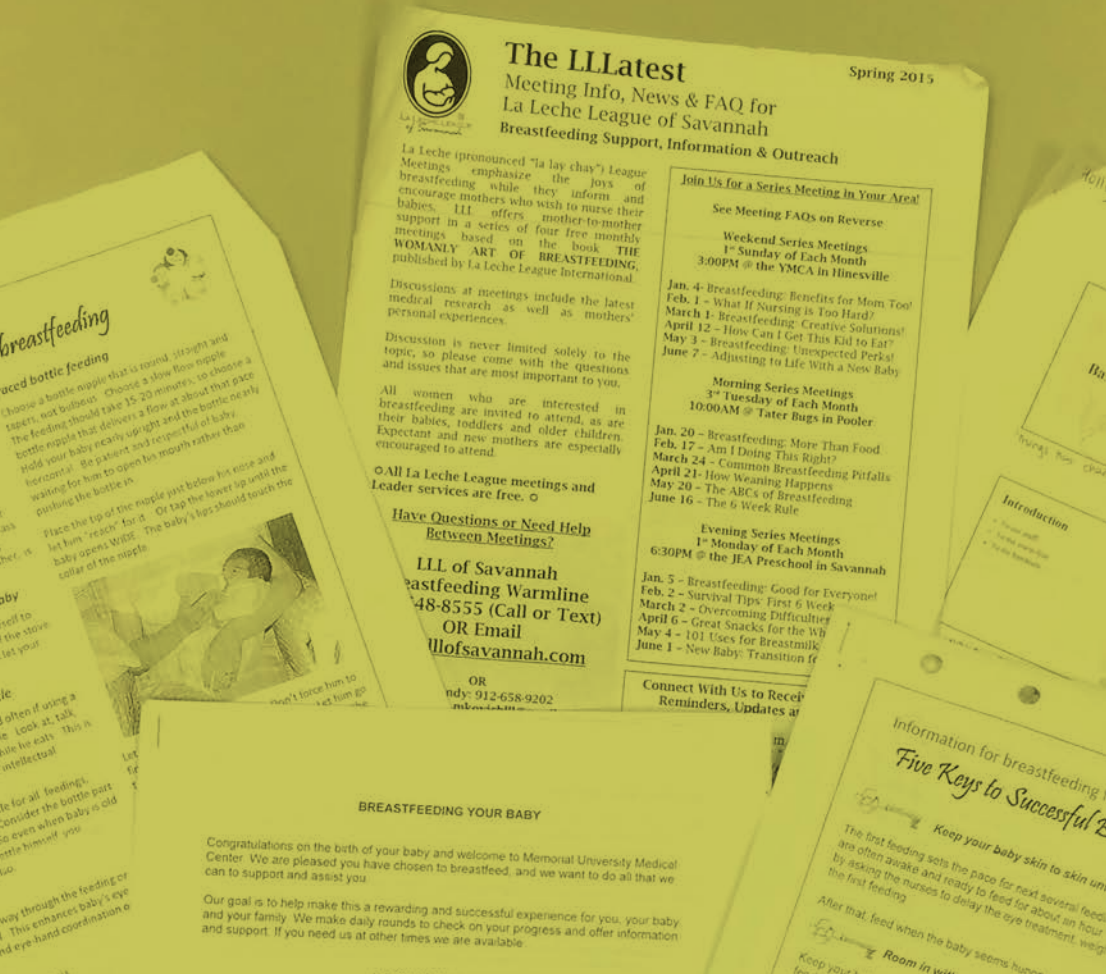
miku is a pump system that improves mother's physical and emotional well being throughout the course of breastfeeding.

discovering

visiting the hospital

A service safari is an experiential field trip to understand how services feel from the outside and experience it as the consumer. In this case I was part os a breastfeeding class. The visit let me perceive the quality of the service offered, observe moms and the expectations they had, as well as how many people actually wanted that type of service.

I was very welcomed in the Memorial Health Clinic in Savannah, GA were I was able to learn a lot in a breastfeeding class taught by a lactation expert. It was very insightful to observe mom’s reactions with the information given, listen to the questions they had and what issues worried them. And as Holly confirmed it later, most of the moms-to-be are worried about not being able to breastfeed.



holly
the lactation expert
Savannah, Georgia

- psychology degree from michigan state university
- international board of certified lactation consultants
- la leche league leader
- wic lactation coordinator

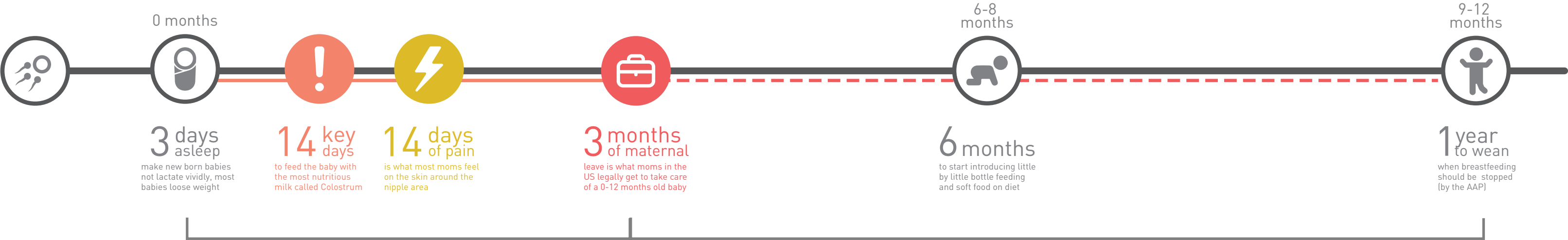
“breastfeeding is instinctive to babies but no to mothers.”

discovering

baby
develops and strength jaw
builds immune system
decreases risk of diabetes
decreases risk of celiac disease

both
cheaper than formula
bonding experience
psychological development

mom
reduce chances of breast cancer
reduce chances of depression
reduce chances of osteoporosis
helps with weight loss



Milk production is stimulated
by baby's suction. Breastfeeding every three hours is a high stimulation to produce breast milk.

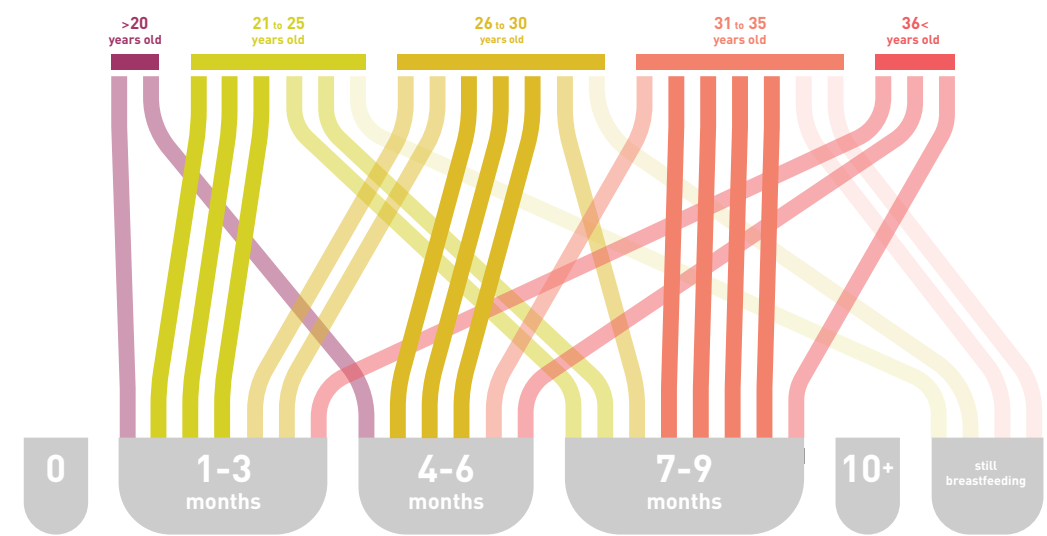
Breast milk production is interrupted
When mom's go back to work they have to change breastfeeding for pumping.

Pumping does not stimulate
milk production as the baby's suction does. This creates a vicious cycle making it more and more difficult to produce milk.

surveys

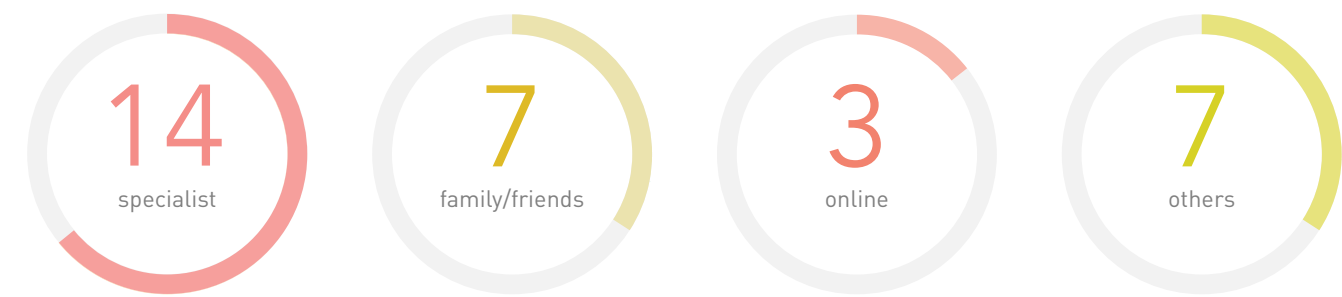
Thirty one moms were interviewed for these surveys.

how long did you breastfeed for?



Most moms that breastfed for around 7 to 9 months belong to the older portion of moms. The group of moms that breastfed for 1-3 months were mostly around 21 to 30 years old; demonstrating a pattern in young mothers.

did you asked for any help?



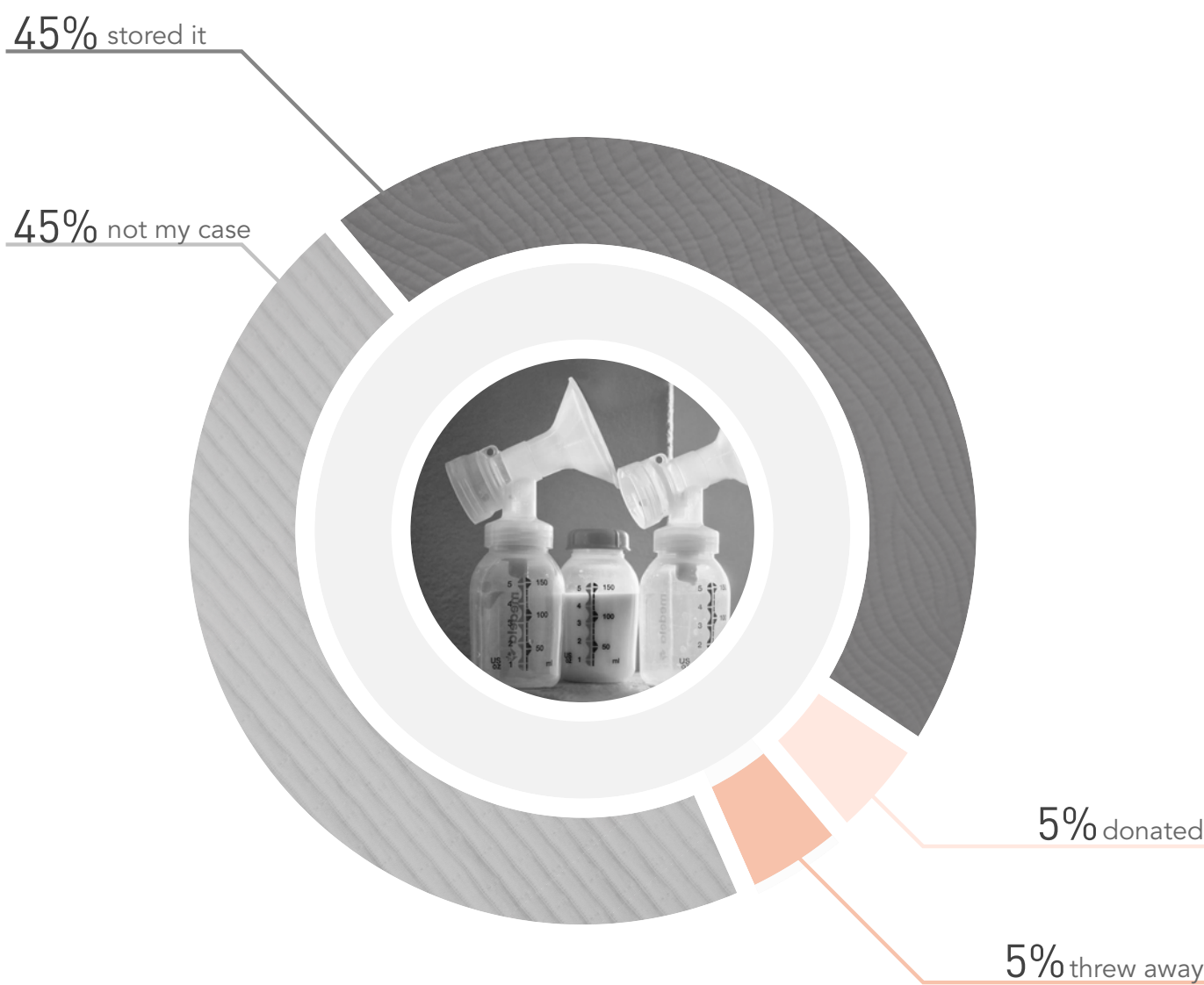
Most of the moms interviewed got help from a specialist and they still had problems to breastfeed.

common problems



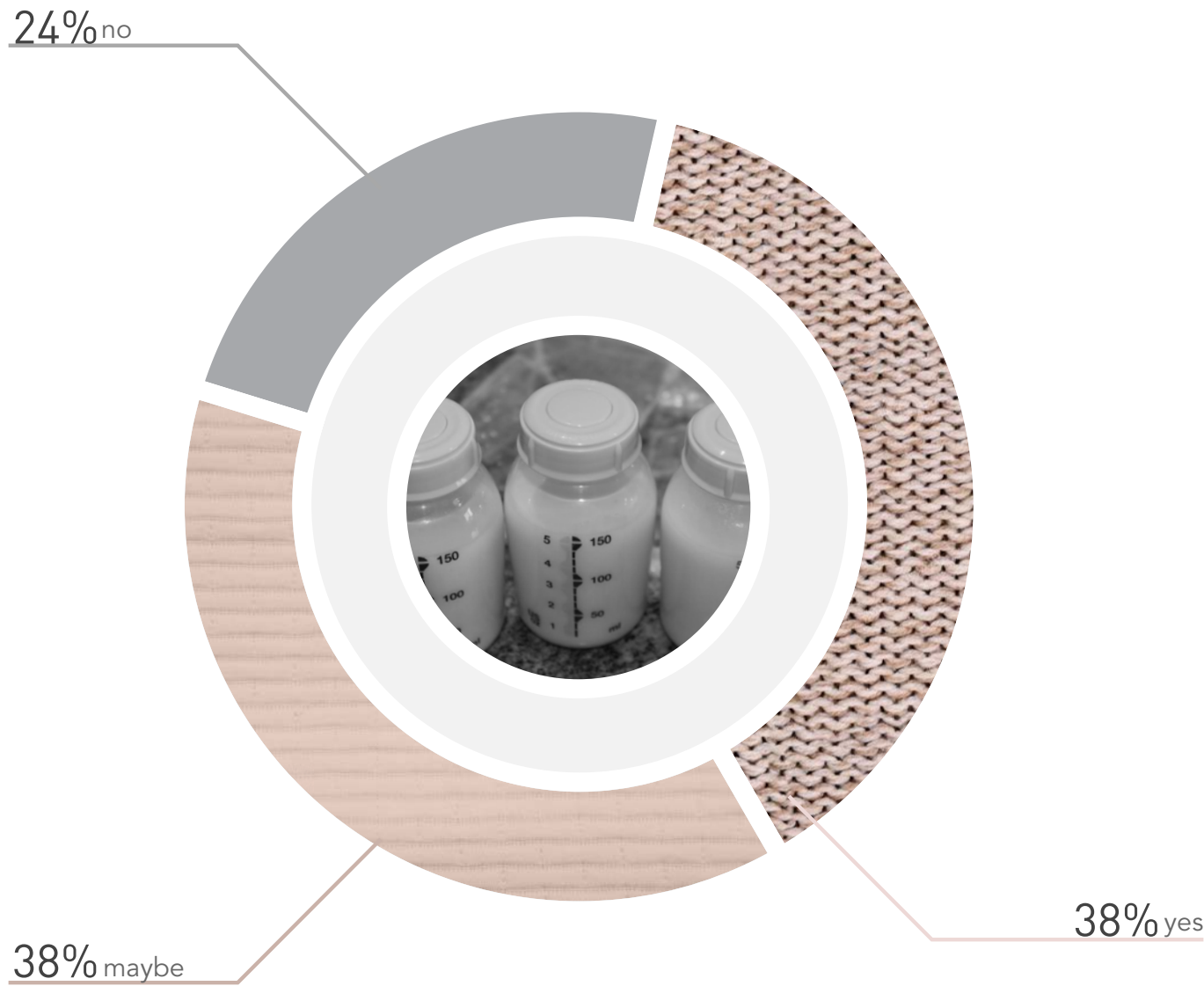
Pain seems to be the biggest problem. However, many studies and statistics show how pain usually stops after the first two weeks of breastfeeding. Also, as human beings we tend to remember pain experiences very well in order to avoid them and follow that survival instinct.

did you have extra milk?



How common is it for moms to have an extra supply of breast milk? What do moms do with that extra milk? Do they store it to use it later? Do they donate it or maybe throw it away?

would you use certified donated milk?



This answer shows a very insightful question, moms were asked if they would buy breast milk from a certified entity showing that it is in good condition. 38% said they would use the service, followed by another 38% of moms that would maybe do it.

dealing with pumping



finding a private space



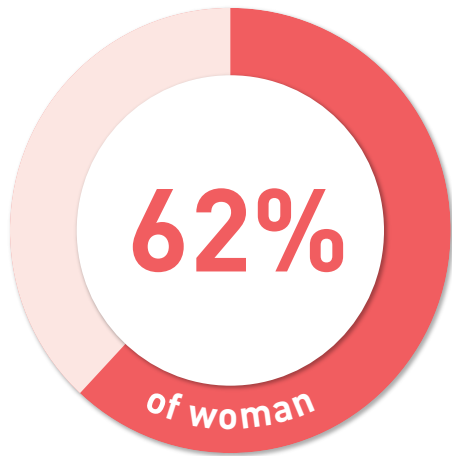
keeping up with regular activities



dealing with pump clutter



organizing milk bags



who **gave birth** in the past
12 months
are back in the **work force***



had **access** to
break time
private space
to pump at **work****

*Note: Based on women 16-50 years of age. Source: U.S. Census Bureau; American Community Survey; 2013 American Community Survey 1-Year Estimates, Table S1301; generated by the Women's Bureau; using American FactFinder; (<http://factfinder2.census.gov>) [7 January, 2015]. ** Katy B. Kozhimannil, PhD, MPACorrespondenceemail, Judy Jou, MA, Dwenda K. Gjerdingen, MD, MS, Patricia M. McGovern, PhD, MPH DOI: <http://dx.doi.org/10.1016/j.whi.2015.08.002>

“I am immeasurably angry that I live in a society which seeks to define my worth as a mother by how I can or can’t use my breasts.”

-Suzanne Barston,
Editor-in-Chief of Los Angeles Family Magazine

persona



jennifer
is a working mom
📍 San Francisco, California

-  **Goals**
To breastfeed her baby for as long as possible and pump during work days without neglecting her job
-  **Activities**
pumps about 6 times a day to keep a significant breast milk stock at home
-  **Environment**
recently returned to work full time
-  **Frustrations**
about having enough milk to nurture her baby
-  **Behaviors**
Very organized, plans out her days with anticipation
-  **Expectations**
Support from her boss throughout her breastfeeding and to have enough milk supply after returning to work

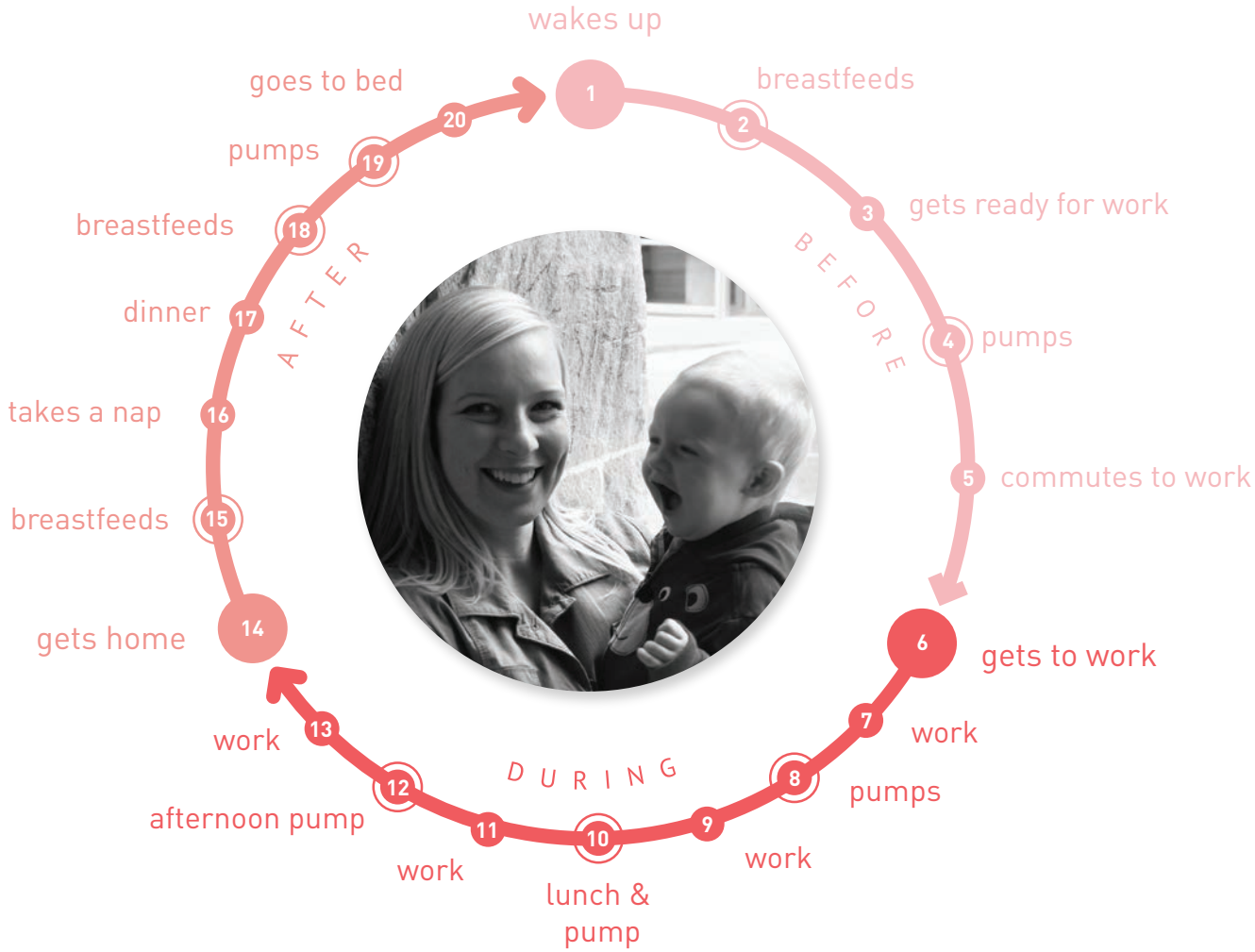
“It seems so natural; you are supposed to make the food for your baby.”

journey map

This is Jennifer's daily routine. She pumps or breastfeeds about 8+ times per day. She does not pump or breastfeeds during the night only because her son is old enough to sleep throughout most of the night.

During lunch break, her husband brings their baby to be breastfeed. Even though they both believe it is the best for their baby, Jennifer reaches high levels of stress trying to divide her time and being efficient at work.

Jennifer takes approximately 2 hours every day between pumping and cleaning the device at work. This makes her work over time and increase her stress. High stress levels in breastfeeding moms affect their milk supply.



stress over time



market research

There is a variety of prices and offerings throughout the breast pump market. The price ranges are very wide since there are hand pumps, electrical pumps and hospital grade pumps. BabyCenter interviewed more than 4200 moms about their preferences on pumps. A baby's natural sucking rhythm is 40 to 60 cycles per minute (approximately one pull per second). A hospital-grade and personal-use automatic pumps typically operate at 30 to 50 cycles per minute, the quicker the cycle the better the pump.

Avent

- manual
- unique flange design
- massaging cushion to stimulate milk production
- easy to use
- \$45



Freemie

- free-hands
- quiet motor
- can hold baby when pumping
- can't see milk volume
- easy to clean
- \$60-\$190



Medela Full

- effective and efficient
- easy to use
- quiet motor
- steady suction
- can pump directly to bags
- hands free
- \$245 to \$340



Medela

- space saving
- light weight
- battery and outlet
- belt clip
- \$150 - \$170

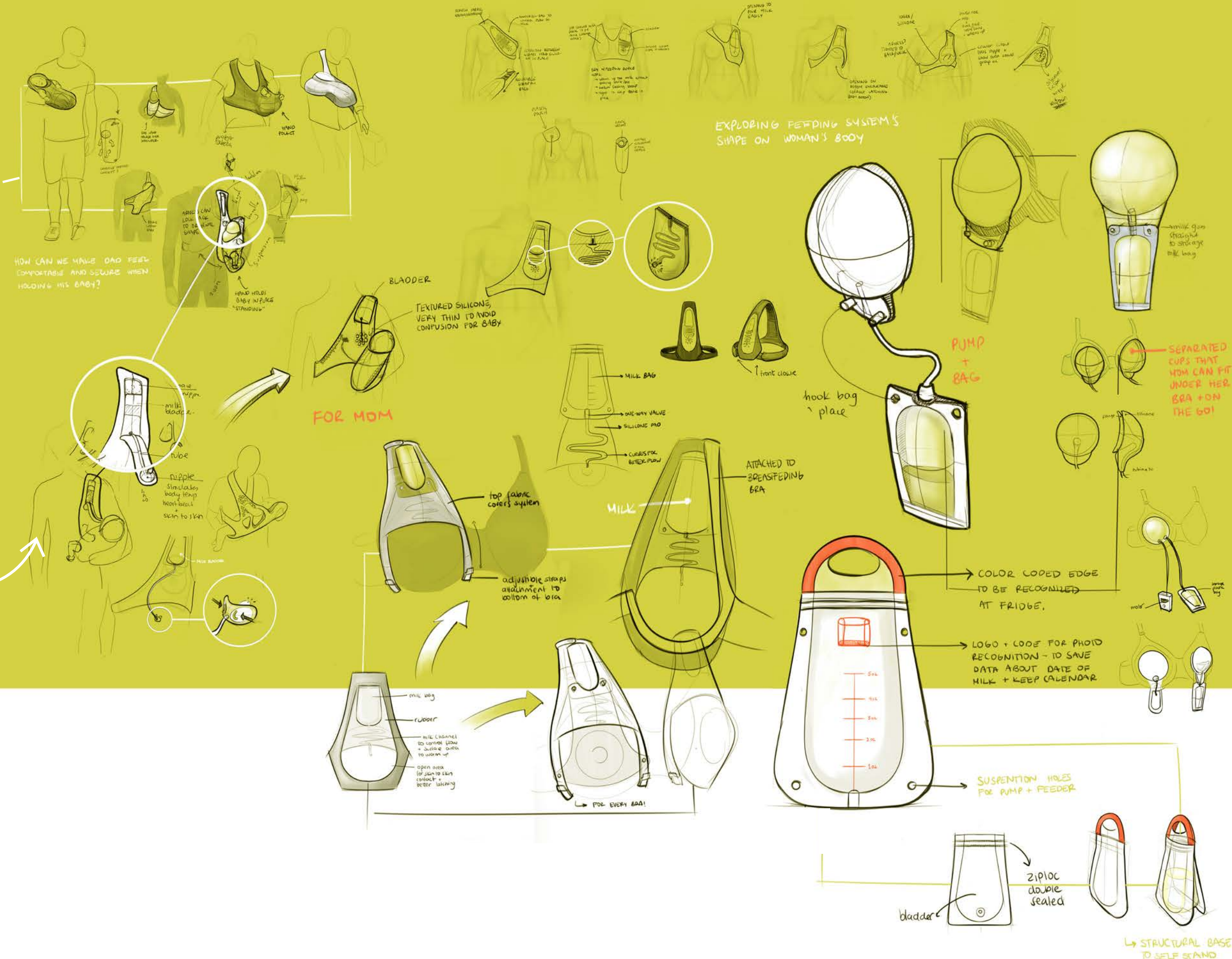


ideation

exploring with dads, this carrying system was inspired in how they hold babies

designing a feeding sytem for dads to feed their kids in a more intimate way

give dads the opportunity to build that bond with their baby





the freedom

pumping system

Free handed, letting moms to pump whenever they want without having to stop their daily activities. With a natural suction pattern and ergonomics to stimulate milk production.

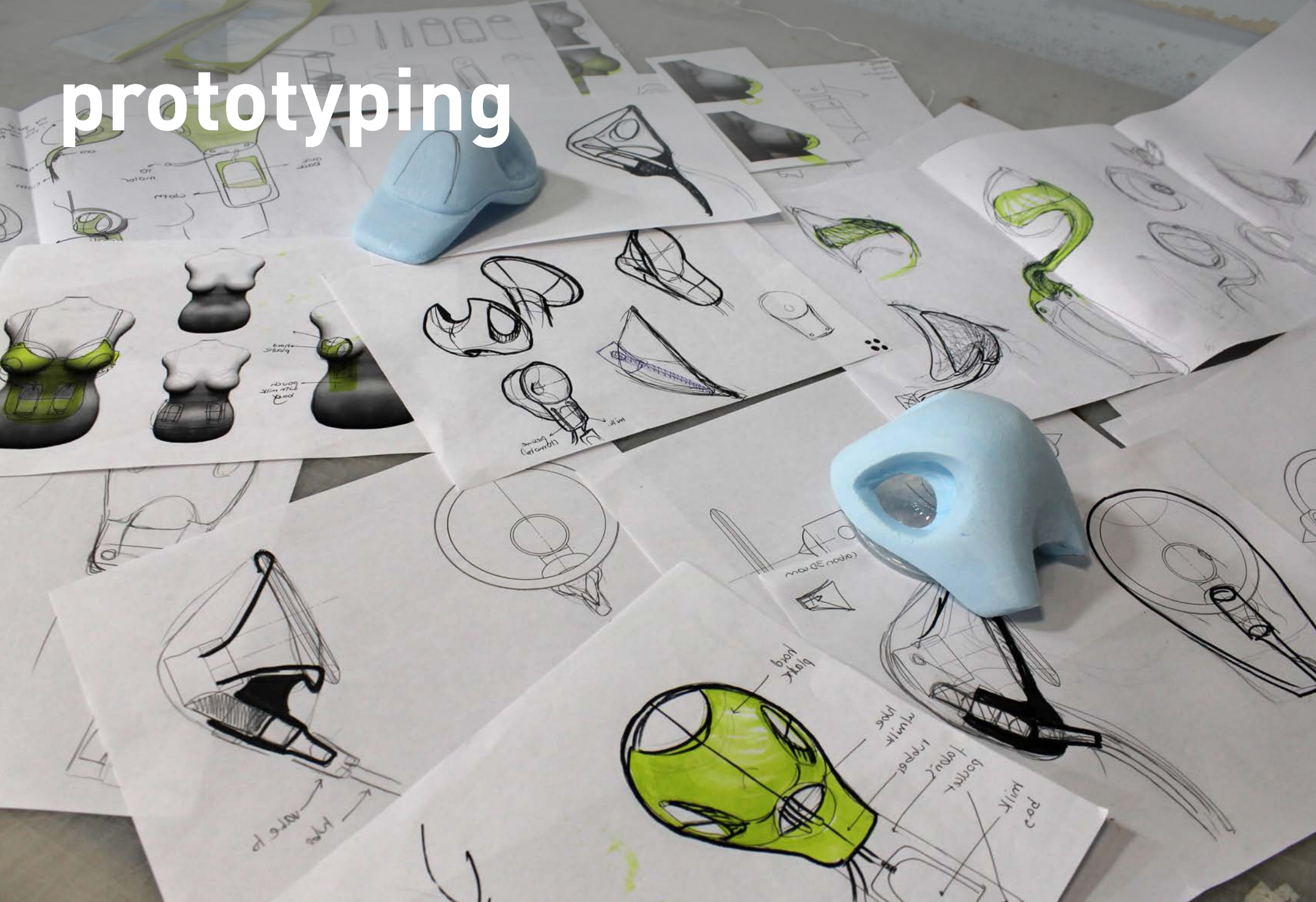
the golden package

storing system

A package to store milk directly from the pump. Celebrate the milk on a beautiful and smart packaging, facilitating tracking your milk storage and pumping patterns.



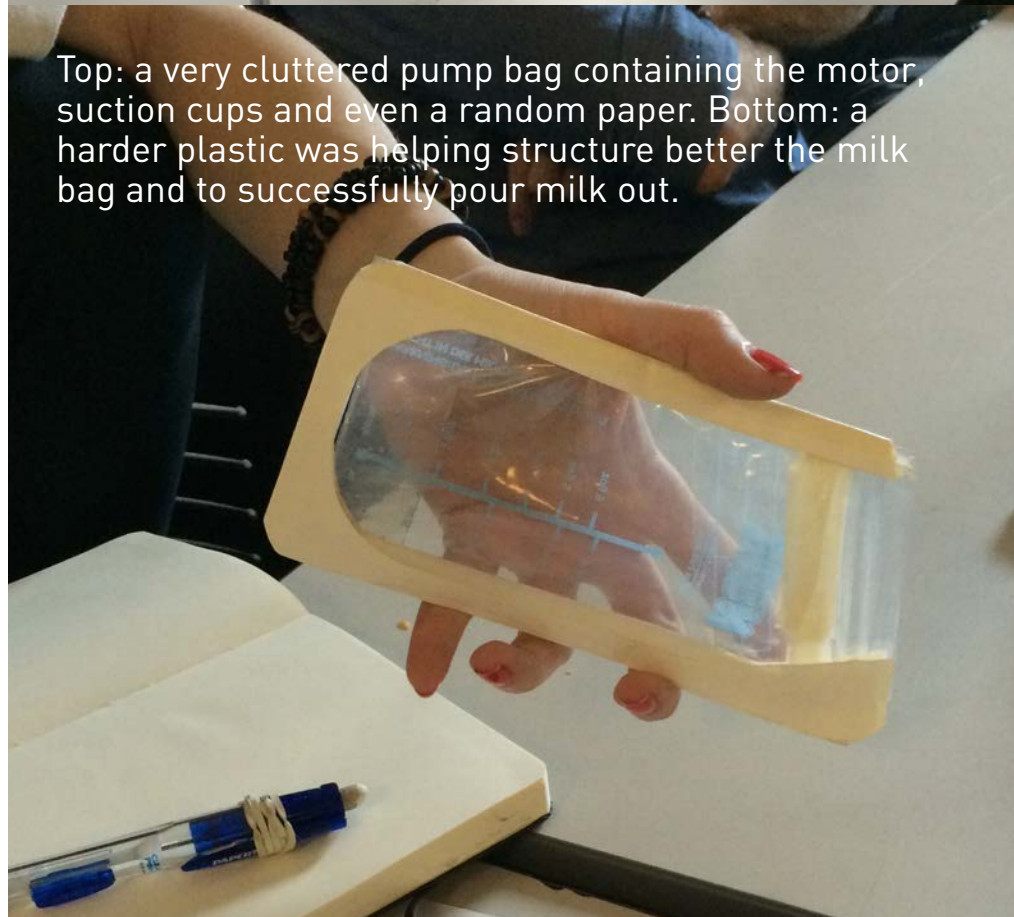
prototyping



testing



Top: a very cluttered pump bag containing the motor, suction cups and even a random paper. Bottom: a harder plastic was helping structure better the milk bag and to successfully pour milk out.



I tested the breast pump and milk bag prototypes with a group of moms working out in Savannah, Georgia. They were very interested in the concept but some of them couldn't see further the blue foam prototype. I learned that sometimes prototypes that will be tested need to be cleaned up to communicate better.

the pump



the pump

is composed by two individual silicone pumps worn below maternity underwear. By pumping both breasts at the same while being free handed, moms can save time and continue with their daily routines. The ergonomic silicone shell lets them easily grab it and place it on their breast. The silicone flange has a ring around the nipple to simulate baby' gums in order to stimulate milk production. When storing, both pumps snap into place on the sides of the motor and the suction tube loops around the core body of the motor to avoid clutter. All the pump parts are dishwasher safe for optimal cleaning.



the motor

has an organic suction pattern that simulates the natural suction and rhythm that babies have. The pump's rechargeable battery is charged with a mini USB cable letting moms charge it on the go.



the system



milk collection

a color-coded tube connects the pump with a one-way valve placed on a milk bag. The pumped milk is immediately stored in the milk bag in order to avoid losing any breast milk if changing containers. A second one-way valve is crucial to let air leave the bag while milk is entering the packaging.

milk bag pouch

miku milk bags are placed in a cotton pouch that connects with the pump. This reassures moms that the milk bag is securely fastened to the pump and milk tube. Since the milk bag is placed upside down while pumping, the pouch opening lets moms read how much milk is being collected.

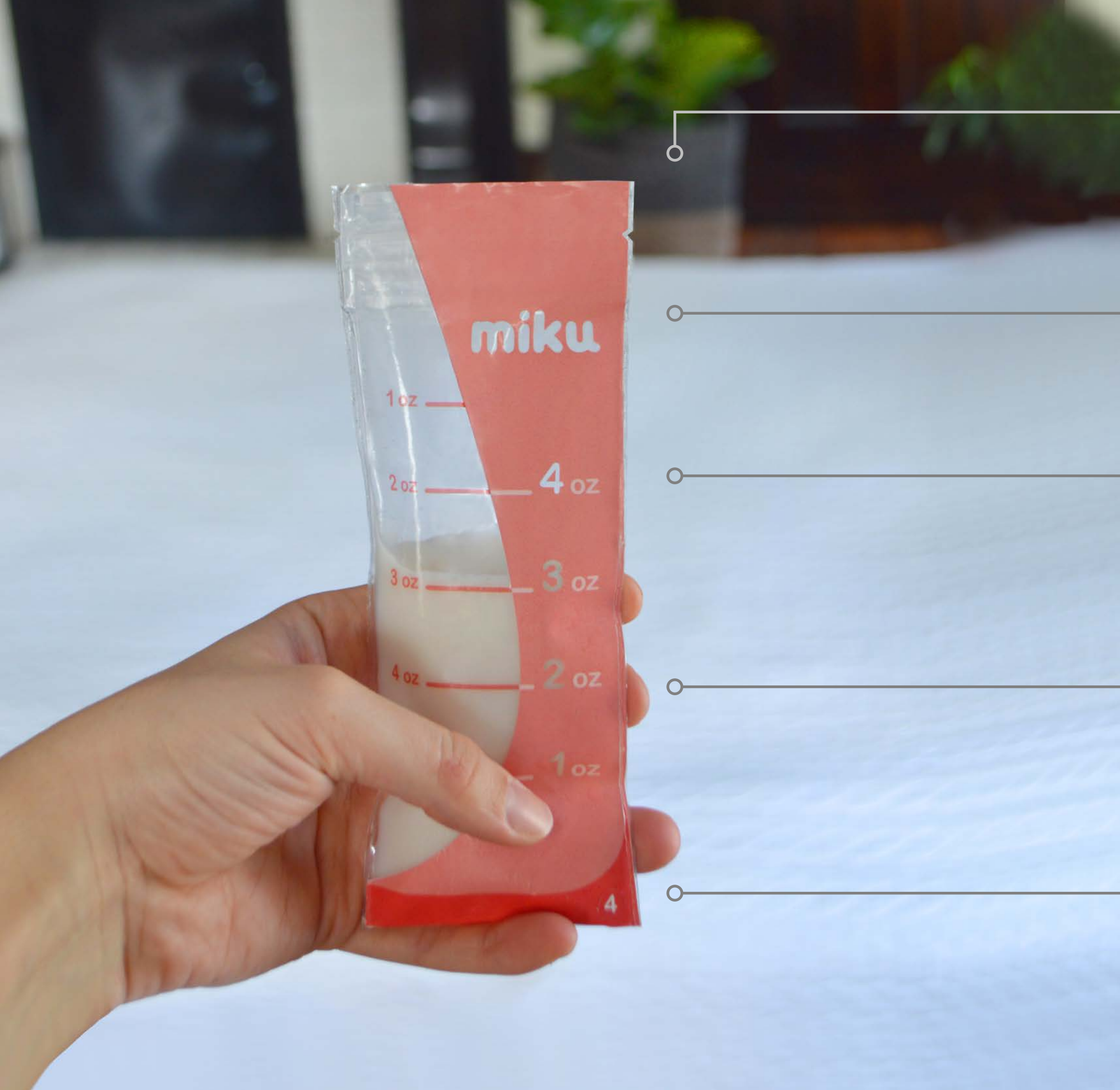


the packaging



bag dispenser

miku milk bags come in an exchangeable roll that sits in a practical dispenser. Since the rolls would be sold separately, they can be replaced when finished without buying a new dispenser. The packaging lets moms pull the bags they need for the day and quickly snap them off the roll. After, she can easily paste back the sticker flap on the dispenser. When removing all the sticker from the bag the time-temperature technology activates. Each roll of milk bags brings a month supply of bags with a key combination of 4 colors, each with 12 numbers.



sealed top

avoids spills when the bag is upside down while pumping. If parents want to consume the milk inside or use a milk bag without the pumping system, they can tear off the top to open the packaging.

extra support

on the sides of the bag help to get a better and more structured grasp when transferring the milk to another container.

graphics

and proportions were carefully taken in consideration to read the milk volume at a glance. The upside down measurement (top-bottom) lets moms see the amount of milk pumped.

volume

the milk bag capacity was studied and reduced in comparison with other bags in the market. miku's bag volume capacity resembles babies' feeding portions to avoid throwing away unused milk.

time-temperature

technology indicate when milk is near to expire by turning white. This technology makes the sticker's ink loose pigment when it is more than 5 months old or when it has been exposed for too long at an inadequate temperature.

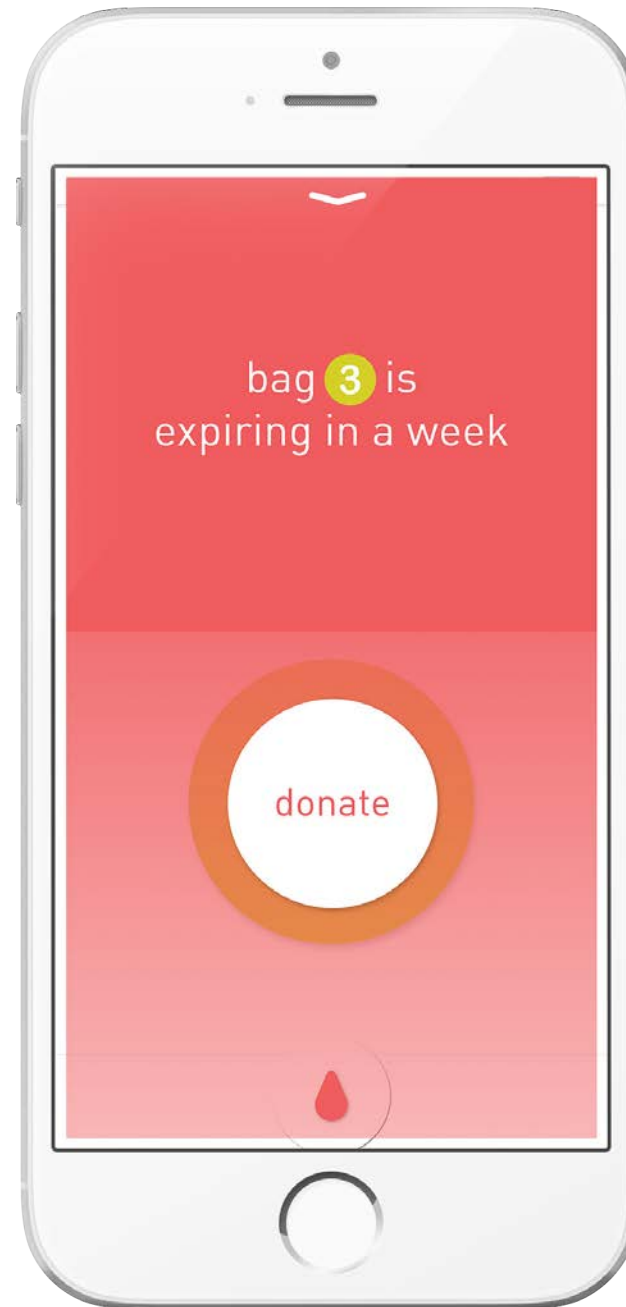
product family



app



breast milk data
captured from photo recognition
technology records amount, time and
date as well as storage method

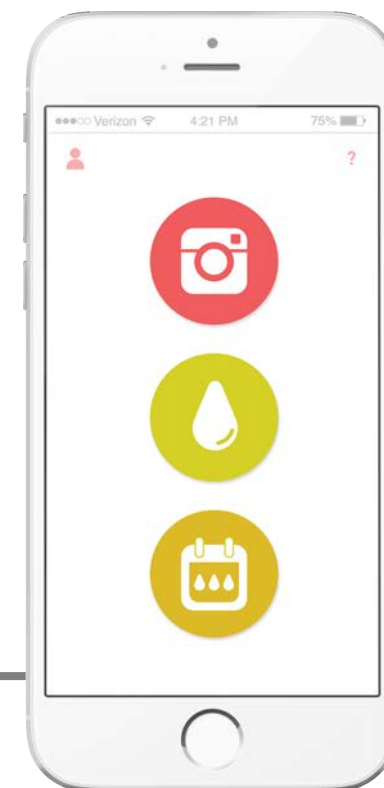
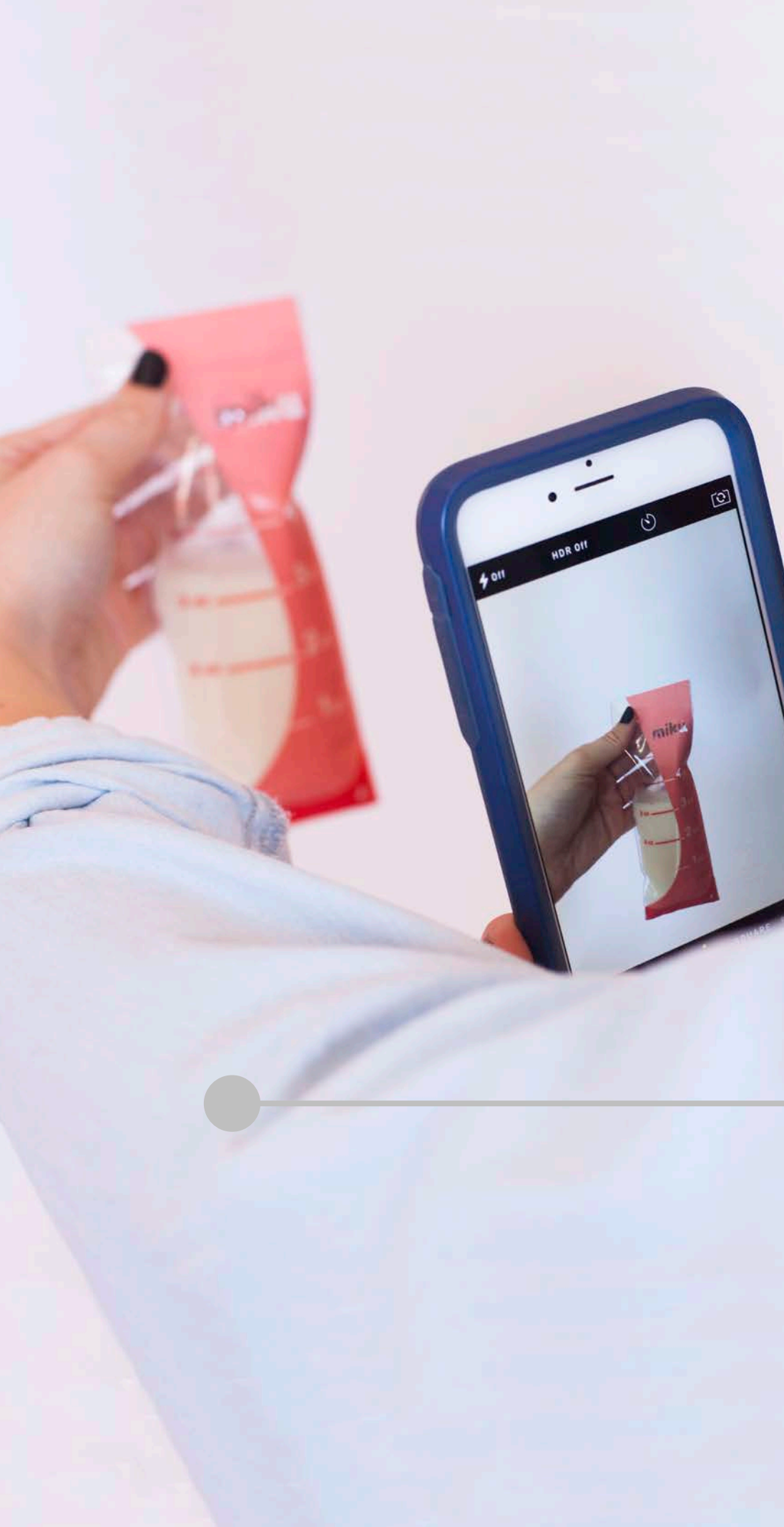


expiring milk
notification is sent to moms based
on past submissions, besides being a
notification it works as an incentive to
donate it



pumping data
and milk inventory information s
gathered on a daily basis and can be
easily accessed on the calendar

3 step submission



simple home screen
create new submission,
create a milkdrop or get
history from calendar

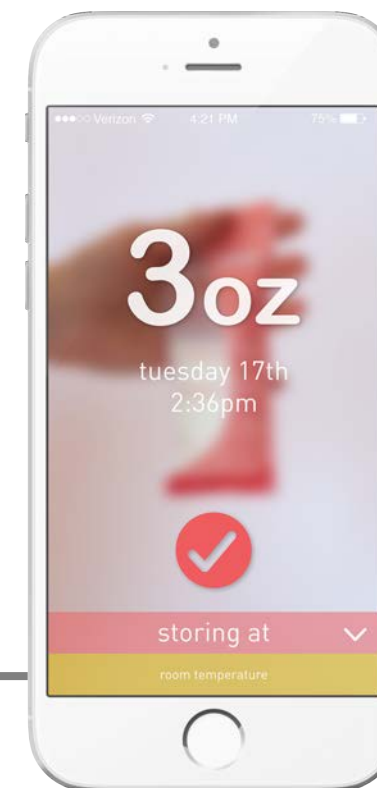
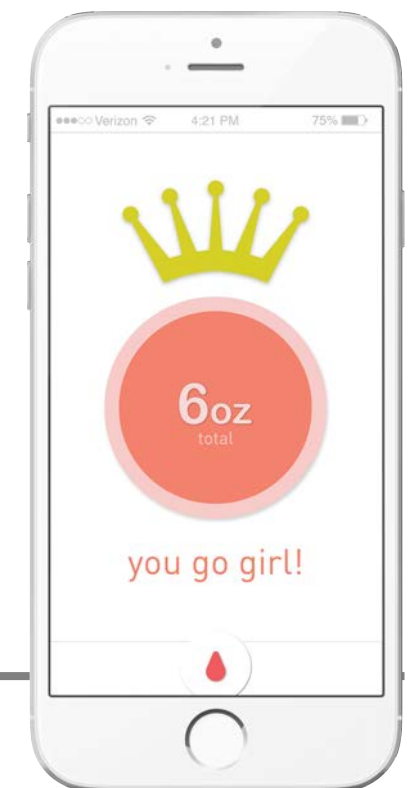


photo recognition
to gather data on milk:
ounces, date and time as
well as the storage method



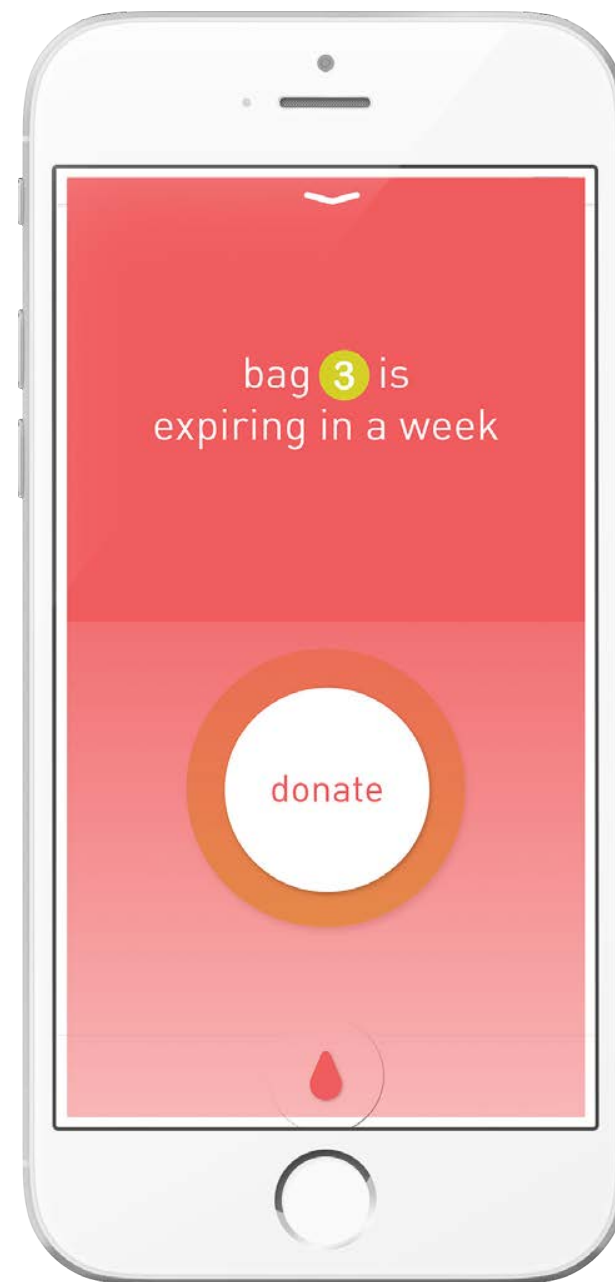
fun copywriting
to encourage moms
about their daily pumping
achievement



miku

a golden package for the golden liquid
recording data on pumping patterns
technology to facilitate milk storage and shelf life







miku

solutions for the modern mom

