

FLOES

We believe
in creating
a better
future for
generations
to come.

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Design for Sustainable Cities

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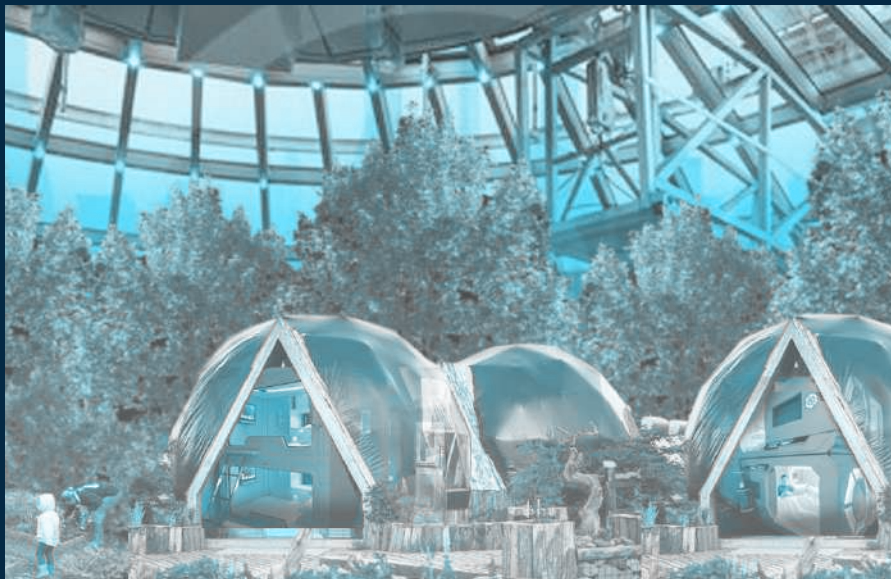
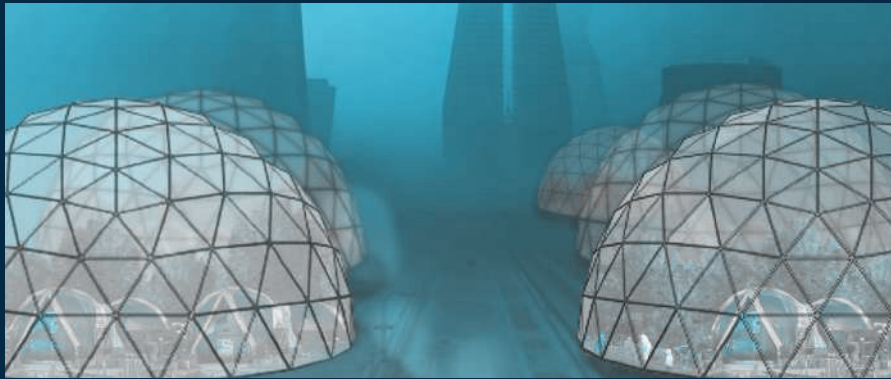
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Our scenario

Mi casa, our casa

Water is a scarce resource in California. Citizens know this more than any other state with a multi-year drought that has been ongoing since December 27, 2013. By 2036, strict government-issued quotas of indoor, per-person, per-day water use of 50 gallons will have to be respected by citizens.

In 2036, California's habitable area will be reduced due to wildfires and sea levels rising in coastal cities. Co-living will become a more common way of life. We predict families of 5 to 7 strangers will share a communal kitchen and a bathroom. Large groups of people living together along with limitations on resources will exacerbate issues commonly found in shared spaces.

California's scenario

Drought

Drought experienced in the summer is estimated to triple by 2050. Not only is drought harmful to human health, it exacerbates wildfires as dead trees feed the flames.

Wildfires

Wildfires cause damage and loss of life every year in California. With dry and hot weather for the majority of the year, California's climate is the perfect birthplace of these deadly natural disasters. Additionally the Santa Ana Winds spread the flames at incredible speeds making them harder to combat.

Coastline decrease

Scientists estimate the sea level rise impact in California to be of a minimum of half a foot by 2030.



Why water



Water is life

Bodies are composed of about 60% water. Water helps with digestion, circulation, transportation of nutrients, and maintenance of body temperature. However, nearly one million Californians are exposed to unsafe drinking water each year.

Water is scarce

California's constant groundwater overuse leads to sinking towns and arsenic pollution. Central Valley is one of the largest agricultural regions in California. In less than 100 years, it has dropped 81/2 metres.

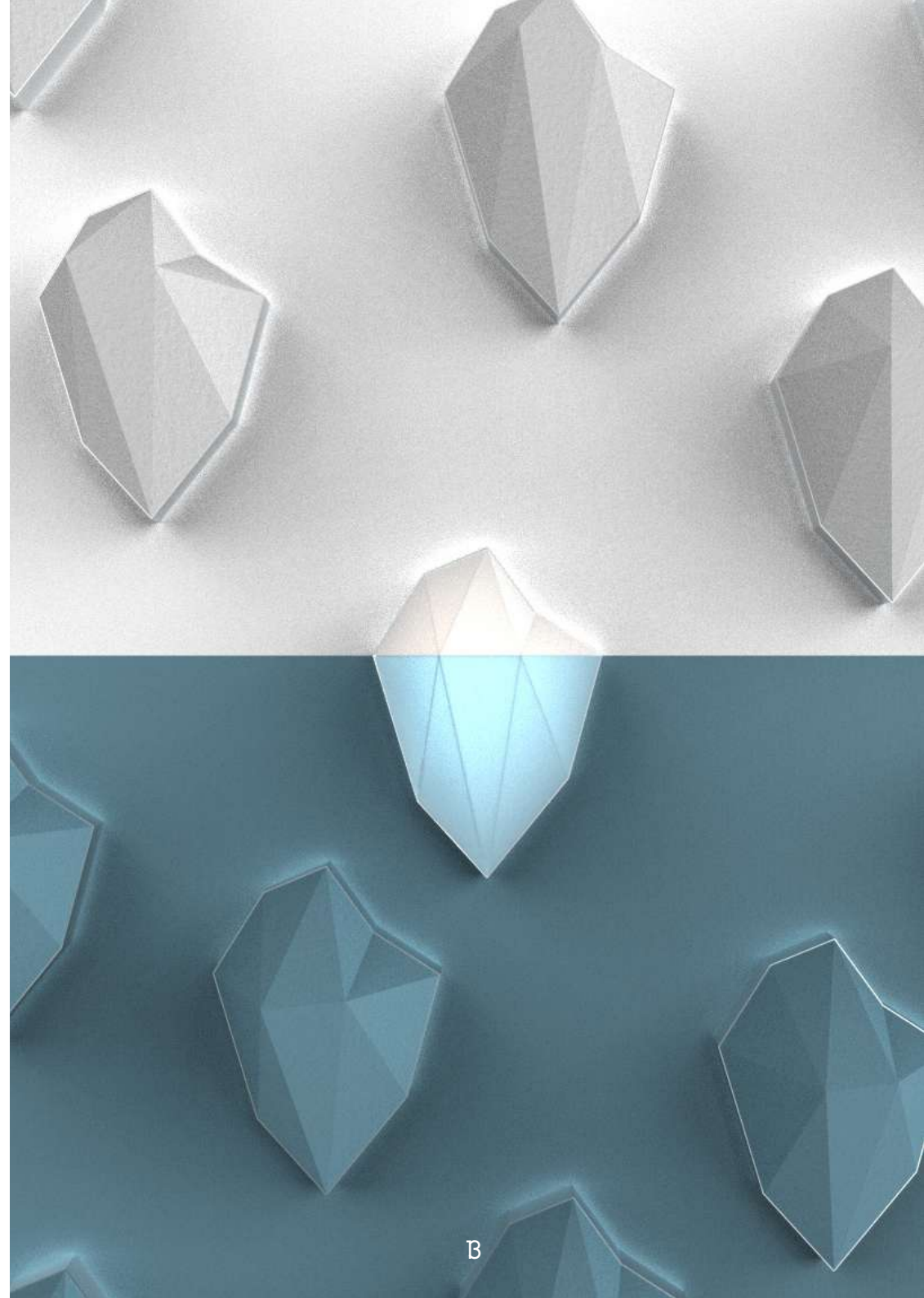
Water is precious

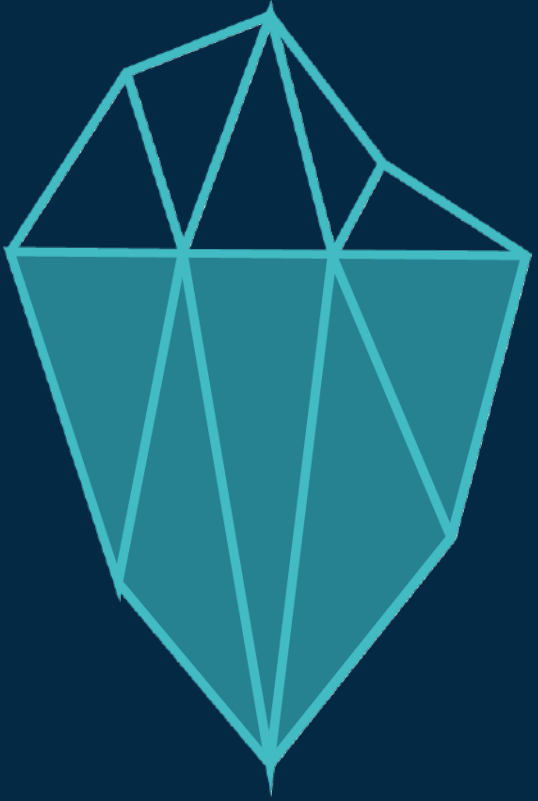
A healthy economy and available fresh water go hand in hand. Not only is water essential for farming, and individual use, it is also essential for car and clothing industries. It can also diminish the workforce due to increased illness.

Our goal

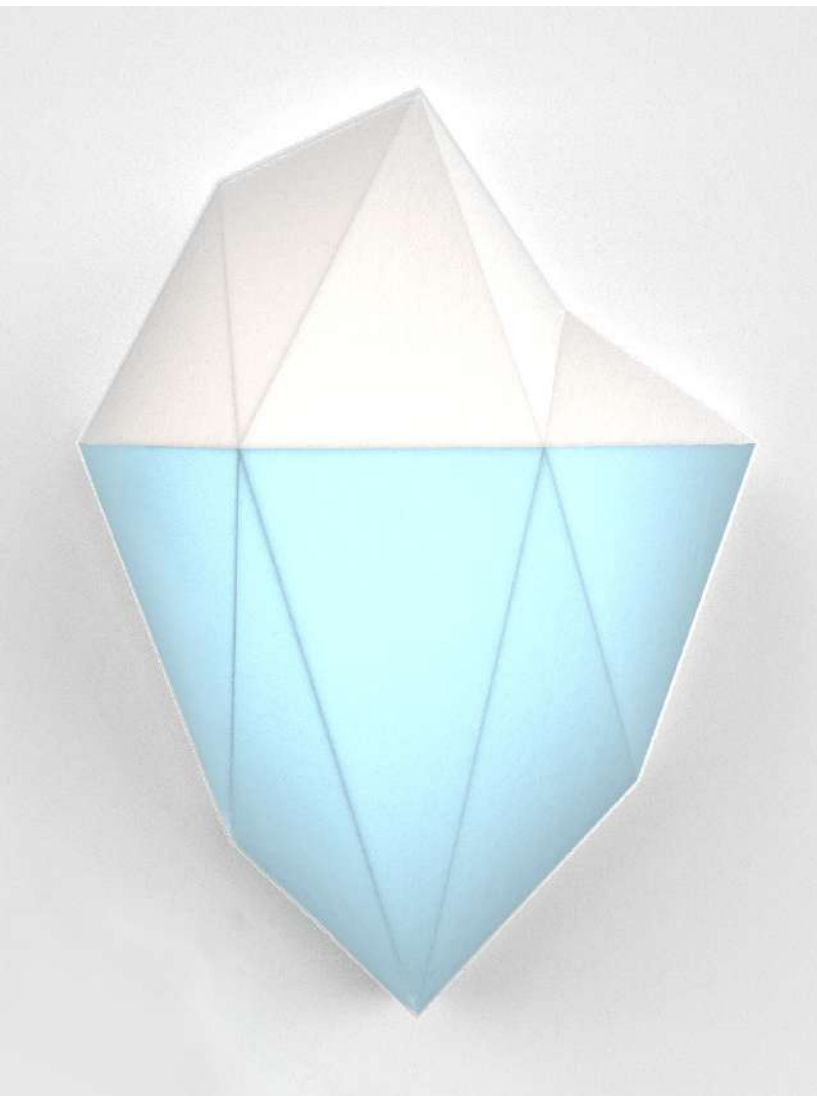
Our goal is to bring awareness to the multiple facets of the issue of water in California. Unlike awareness campaigns, however, it is important for us to suggest **affordable, easy, and scalable strategies** that yield results without forcing people to drastically change their lifestyles.

We need to help people understand how much water they consume, where they consume it, and how to limit this consumption. With this project, we hope to show that small gestures have a **real impact** and present a sustainable way to save water together.





Solution

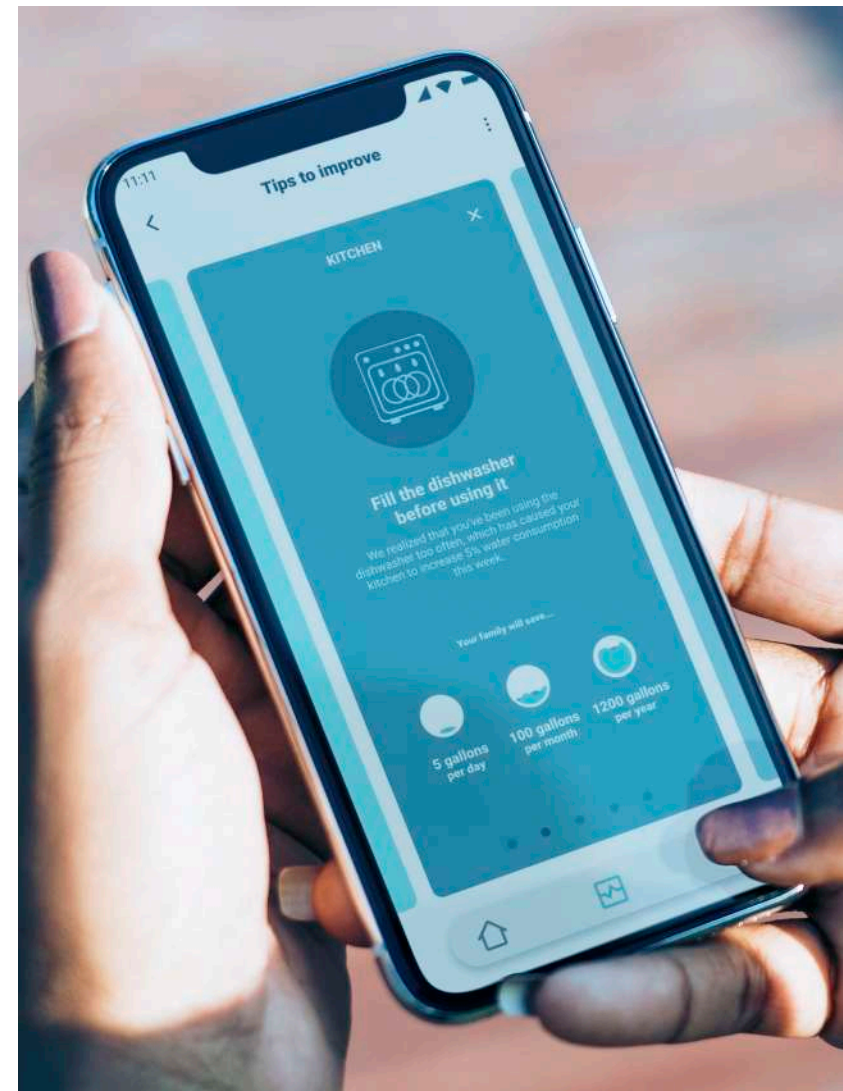


A beautiful way to save the planet

A visual aid to help you to improve your water behaviour. A simple interface, to easily recognize whether you are saving water or consuming too much.

The power of data to change behaviors

Keep track of consumption patterns, get custom suggestions, see forecast for future months and gain awareness to manage family's resource in order of priority.



How it works



01

The facility has been going beyond the monthly water consumption limits stated by California's government.



04

The family discusses their performance and co-manage their water consumption priorities.



02

The facility's management decides to order FLOES modules to install in every household.



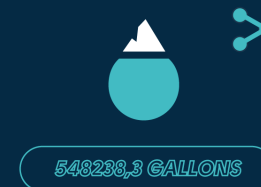
05

The facility management has access to their consumption divides water fines efficiently.



03

Each household has their water consumption tracked, sees their progress and receives information on how to improve their behavior.



06

Management shares the average and total monthly consumption of the facility with the government. It always keeps individual's information private.

Individual users and families

Understand the consumption

Consumption is broken down in two ways. FLOES allows users to visualize their water usage rate and how it compares to their monthly goal. It also helps them quickly identify the most water-consuming room in their home. In the FLOES app, the user gets a breakdown of the most water-thirsty devices.

Reduce usage

With actionable tips, the FLOES app helps users reduce water usage everyday. These tips are catered to their individual needs to limit the impact on life as much as possible.

Avoid fines

With the implementation of a fine system by the Californian government, the ability for users to track their water usage will be imperative. FLOES helps them understand how to consume while remaining under fine thresholds.

Facilities and government

Have access

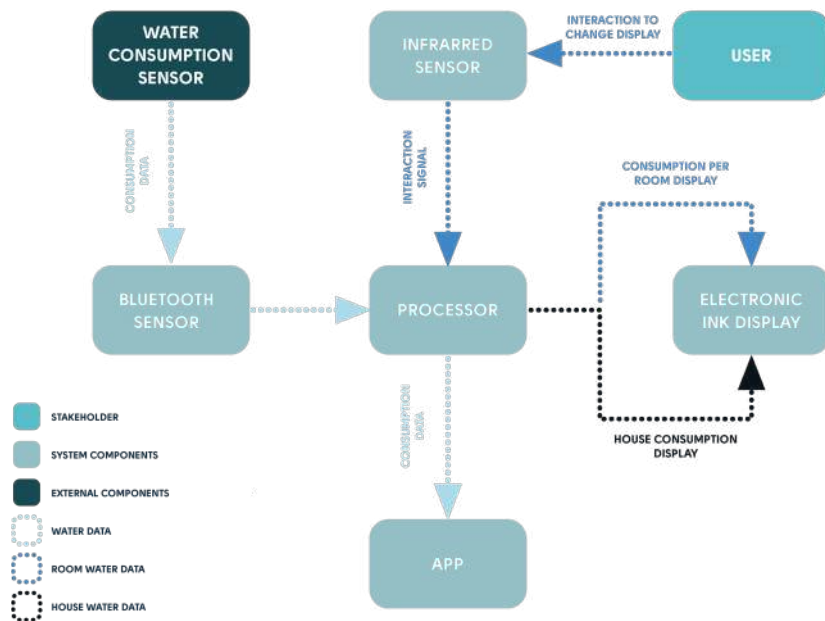
A water fining system based on usage creates the risk of targeting the lives of the people who do not have the time and money to monitor theirs. FLOES democratizes the implementation by creating a simple and affordable way to follow at-home consumption.

Forecast water

Our system can help governments to better plan and dissipate the impact of droughts on citizens. They can also better manage the sourcing of water and reduce the increased dependency on groundwater.

Easily manage emergencies

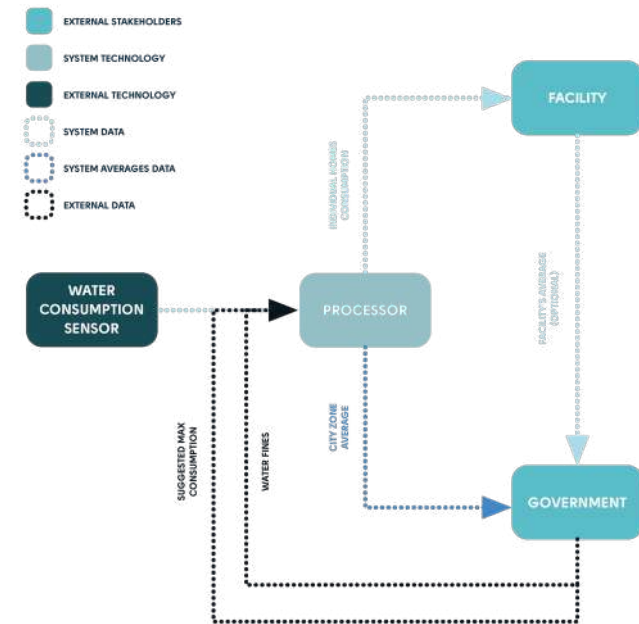
The heightened sensor system allows for immediate detection of leaks. Leaks in homes causes both flooding and an increase in water usage. With FLOES, water emergencies can be detected easily and remotely.



Using sensors and a Machine Learning algorithm, FLOES allows the user to monitor consumption inside their home in a straightforward way.

FLOES detects the pre-installed water sensors, from which it retrieves water consumption data in real-time. With this information, the FLOES module changes its consumption display, modifying the percentage of color shown according to the way water is used. It simultaneously records the information on the app to predict future consumption rates.

If the user wants to see which room consumes the most water, they can just touch the button and swipe. With its integrated infrared sensor, it detects hand movements and displays the consumption in each room.

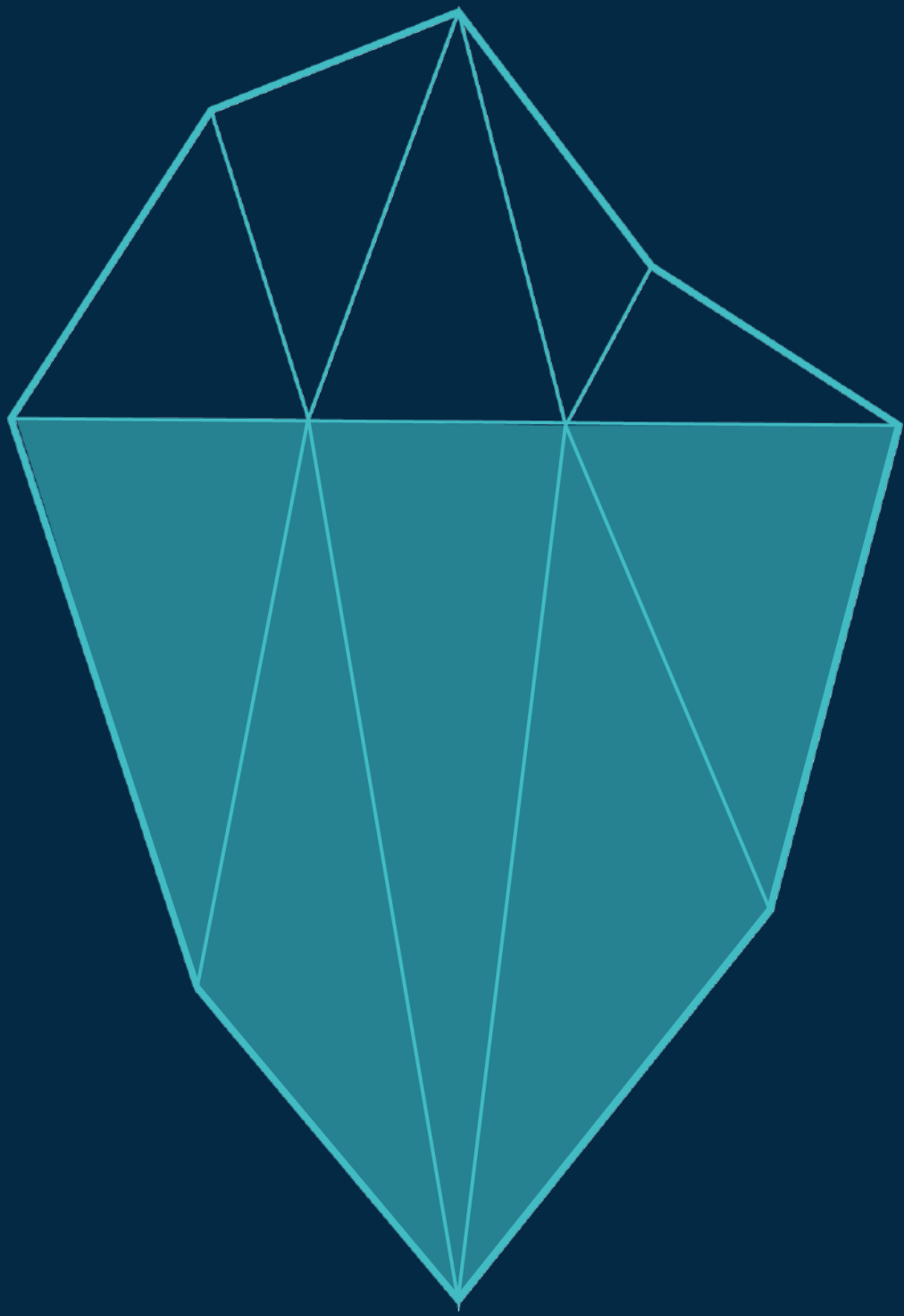


FLOES also enables facility managers to calculate consumption per home by sending them information about the total consumption inside the home, so that they can divide water fees efficiently. Management can then share the average and total consumption of the facility with the government.

The government also interacts with the system, as it gives it information about both the desired average per family and the fines for overconsumption. During emergency situations including

droughts, FLOES receives a different suggested amount adjusted to the state's needs. The family's consumption is shared with management, while the data that the facility can share with the government is the total facility's consumption.

Nevertheless, the consumption per room and per day, projection of consumption, and patterns of consumer behavior are private and only accessible to the family. This information is shared with users to help them better understand their relationship with water.



Product

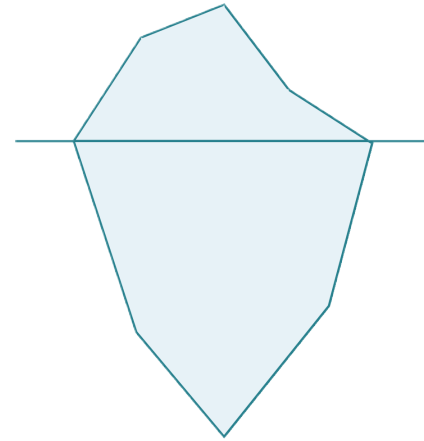


FLOES is water consumption made visual. A product that transforms the user's complex behavior into clear feedback, helping to understand it and to improve.

Looking at the wall module it is possible to see different facets changing color and lighting: the more blue it gets, the more water is being used. Due to its integrated Machine Learning, FLOES sets a saving challenge each month, helping to reduce water usage little by little with realistic objectives.

FLOES has an outer paper pulp shell and an inner box containing LEDs and processors. Thank to its tech system, it is able to show visual feedback and update it live.

FLOES is a visual aid to keep in mind how much water is saved and consumed.



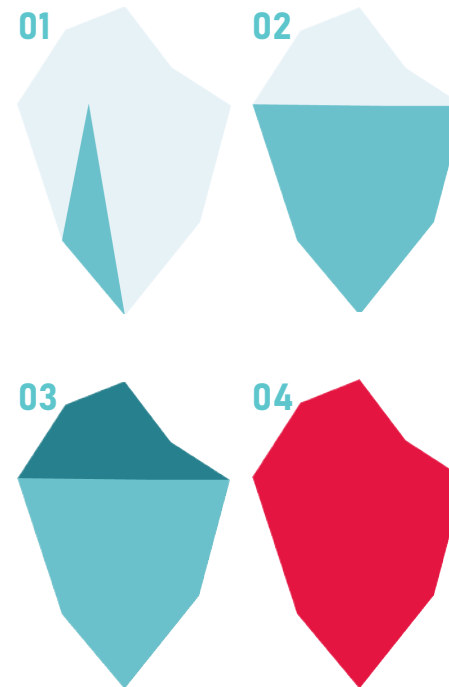
The module uses two shapes to represent different limits.

The horizontal line in the middle of the product is the monthly goal: if the user is below, they are doing better than usual.

The perimeter of FLOES is the limit set by the government: if the user goes beyond, they will pay a fine.

01. Saving water

If FLOES's colors are under the central line, at the end of the month the user will save even more water than expected by the system.



02. Reaching objective

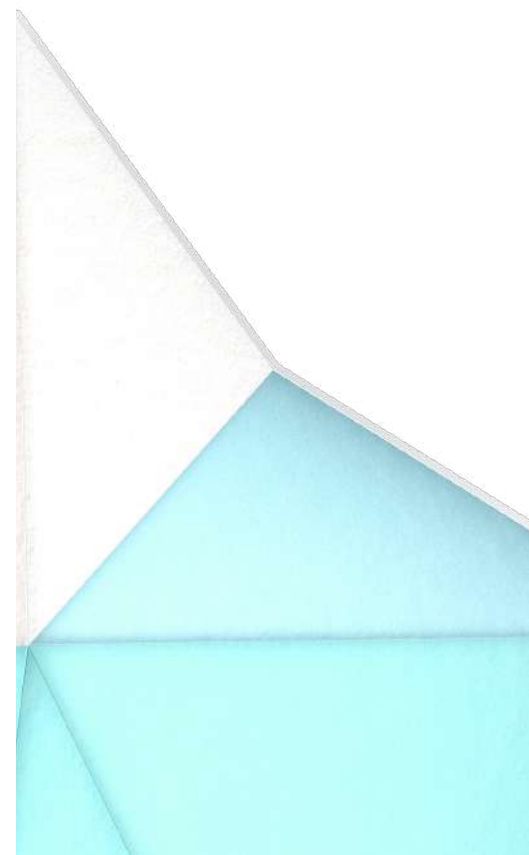
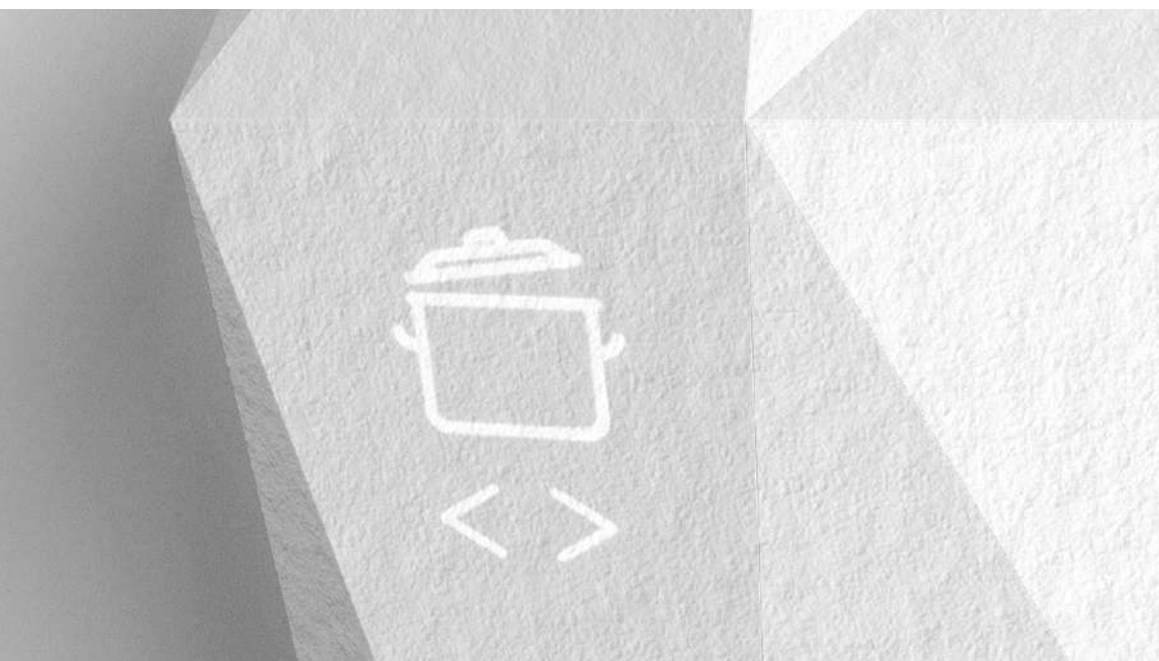
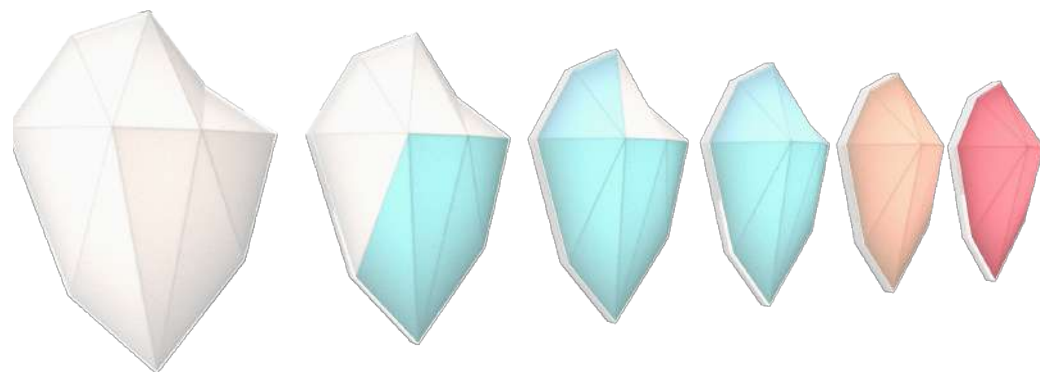
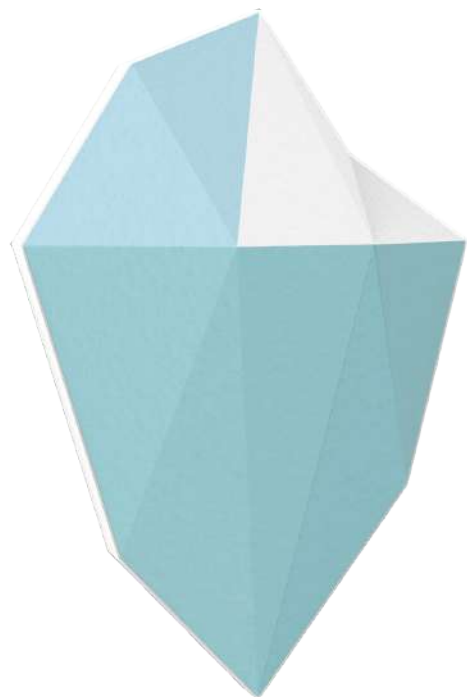
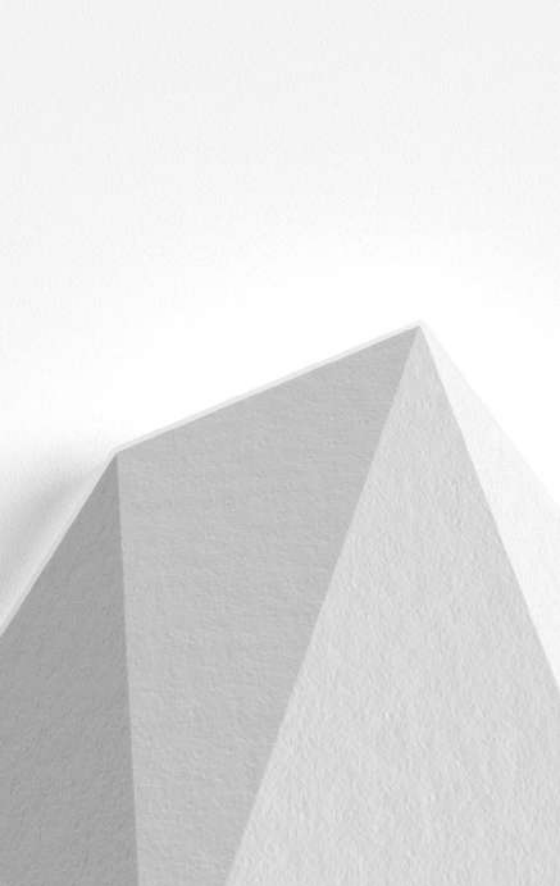
With this visualization, the user will reach the goal set by FLOES and more water will be saved compared to the previous month.

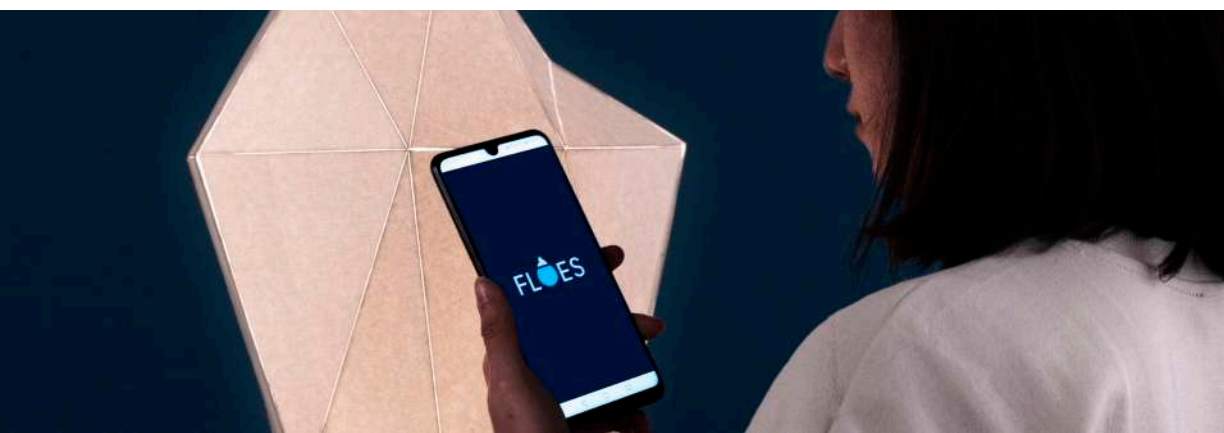
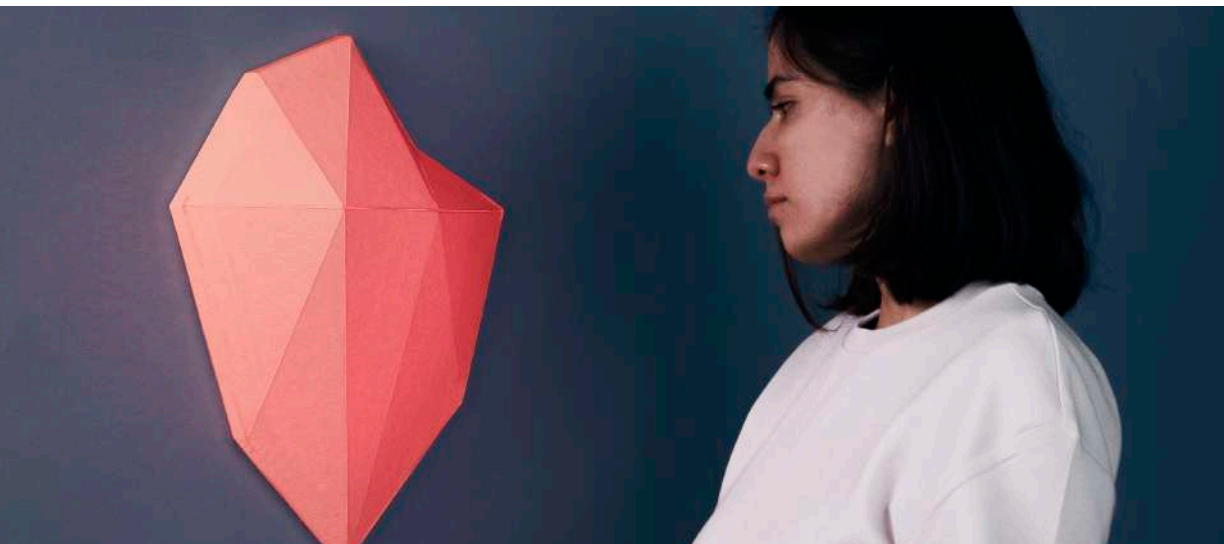
03. Reaching the government's limit

If the whole module is colored, the user is not fulfilling the monthly goal and is near to the limit the government has set: they risk a fine.

04. Getting a fine

When FLOES detects that the behavior will lead to a fine it will turn red. A strong warning to help to reduce water usage with concrete and immediate actions.

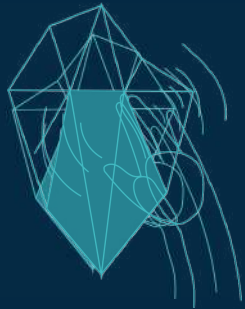




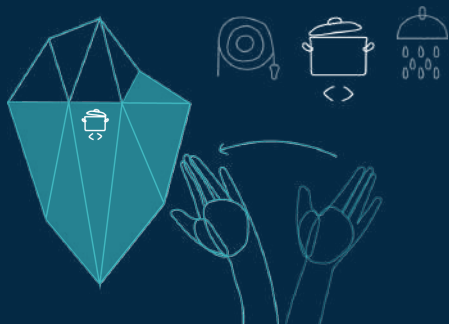
Product interaction



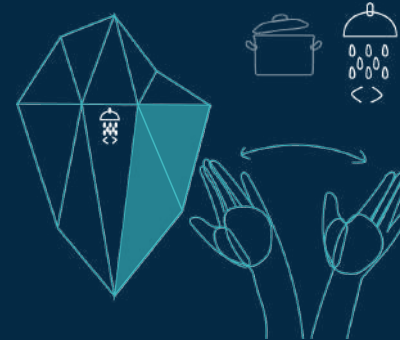
01
Check the module.



02
Touch the module to go to room visualization mode.



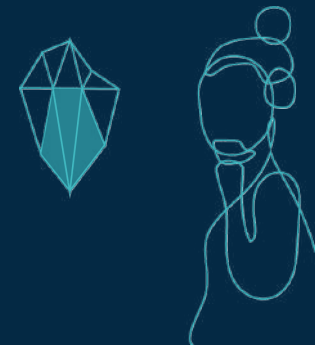
03
The first detailed room view is showing. Swipe left to go to the next room.



04
Swipe left to go to the next room or right to go back to the previous one.

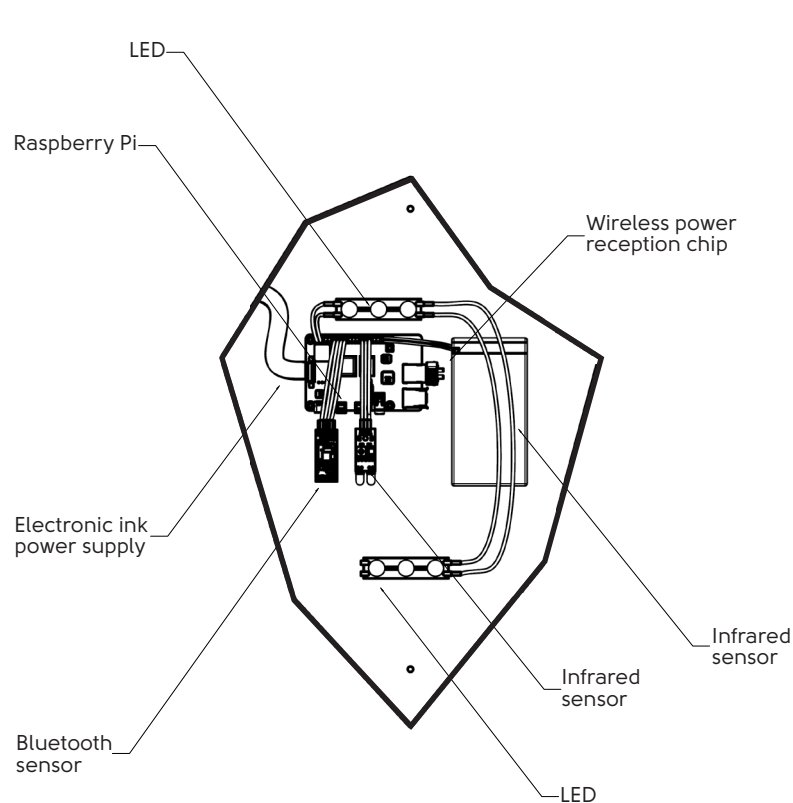


05
Touch the module again to go back to the standard view mode.



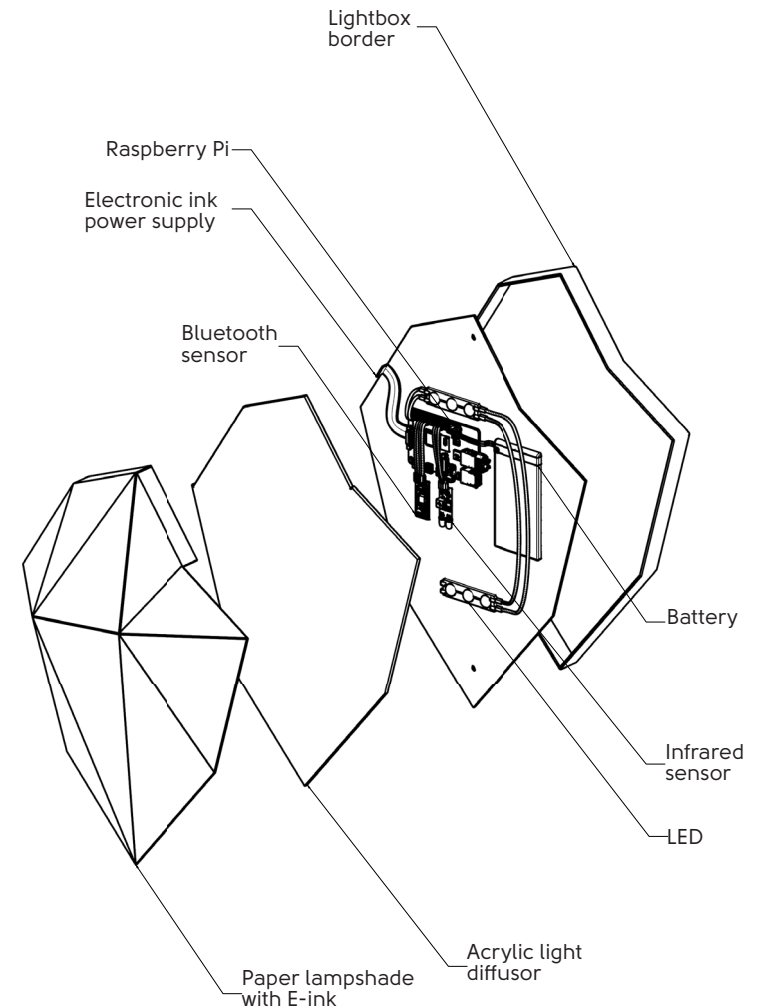
06
See gradual change on the module to know how to keep improving.

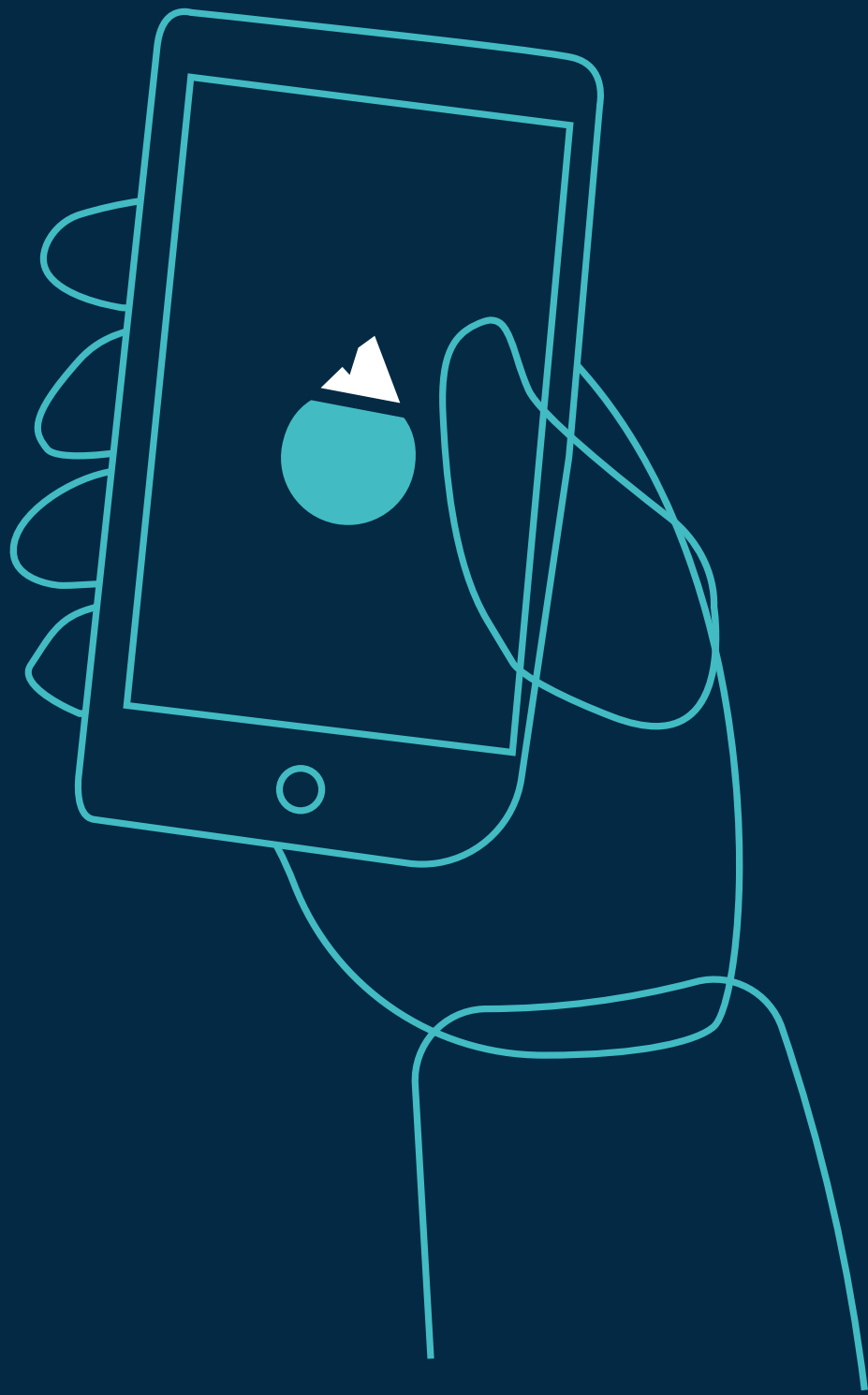
Technology



FLOES module uses a Raspberry p4 processor, LEDs, electronic ink technology and integrated sensors to do its magic. It has a bluetooth sensor that connects to the home's water sensor, from which it retrieves water usage data. The infrared sensor detects user's motions to modify the e-ink display according to the water data.

The LEDs project onto milky acrylic to create a white area light that intensifies the colors of the e-ink display. All is processed and controlled by the Raspberry Pi, which is powered by a lithium battery, that recharges through a chip that receives electromagnetic waves from the house's wireless power station.





Service



The FLOES app works as a support to the product, acting as the second touchpoint of our product-service system.

Information from the sensors goes straight to its system, which records the family's consumption behaviour and encourages to do increasingly better.

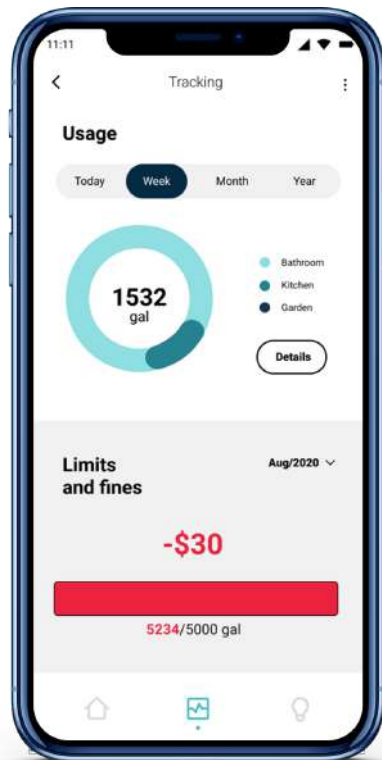
In addition, it allows to see the forecast of the monthly results by showing projections based on current efforts.

Family members can sign up to reflect and act further on their behaviours. They may have access to more detailed data on water consumption per room and appliance, a history of monthly consumption limits and previously paid fines. The users also receive valuable tips on how to decrease water usage.

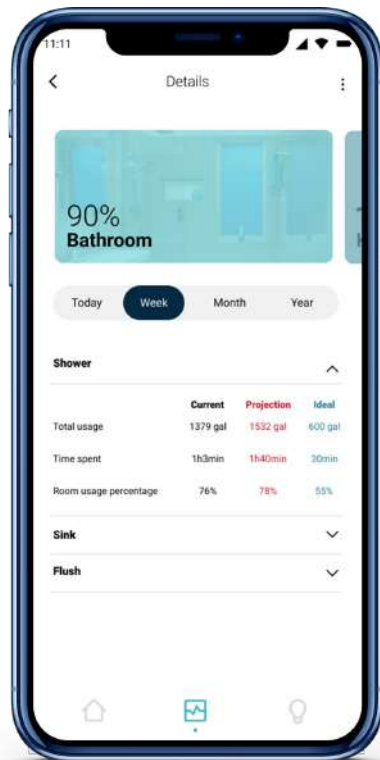
The app also allows to manage family members, add or remove rooms and sensors, tailoring FLOES to the household's structure, needs and habits.

Our system
learns the user's
behavior and
helps reduce
their water
consumption.

Use our app to keep track
of results over time.
Remember, even the ocean
is made of drops!

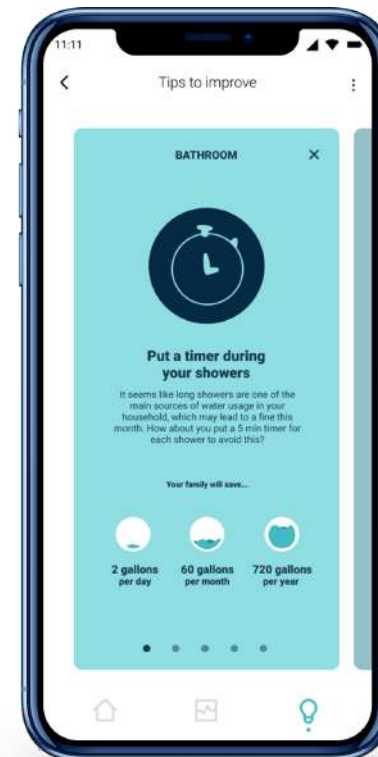


View your family's water consumption according to the household's rooms over time and the monthly history of usage limits and fines, keeping track of your improvement.



See in detail which rooms and appliances use the most water. Use this information to discuss new strategies and manage your priorities better.

Receive advice tailored
to your behavior.
Feel free to discuss and
choose your priorities!

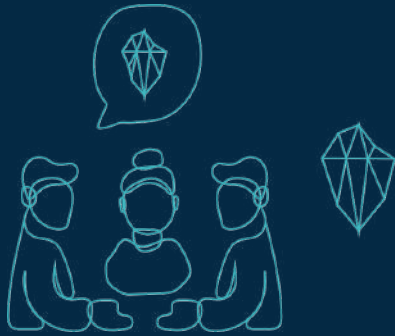


Get tips on how to improve according to your family's behaviour in each room.



A projection of the amount saved thanks to the suggestions is displayed.

Service interaction



01

A new family is formed in the facility. They are informed by the facility management that they have a tool for water consumption tracking that should be used to track their usage and prevent fines.



04

During this month, California is currently having a heavy drought period. The government updates the limit of water consumption per person. FLOES's app also updates with this information.



02

The family downloads the FLOES app and reads the instructions to understand how it works.



05

The family follows their routine normally. FLOES's system starts to receive data from the water sensors and learns from their behaviours.



03

In the app, they set up their home's characteristics, including number of family members and rooms in which water is used. They also sync the sensors to FLOES system.



06

They constantly have a visual feedback from FLOES's module to see how they're doing. They also check the app to see more details and suggestions on how to improve.



07

The family discusses their performance and decides together what to prioritize in order to keep their household below limits.



08

In the end of each month, the facility uses FLOE'S website to check which families were able to stay below limits and fines those who weren't able to do so.

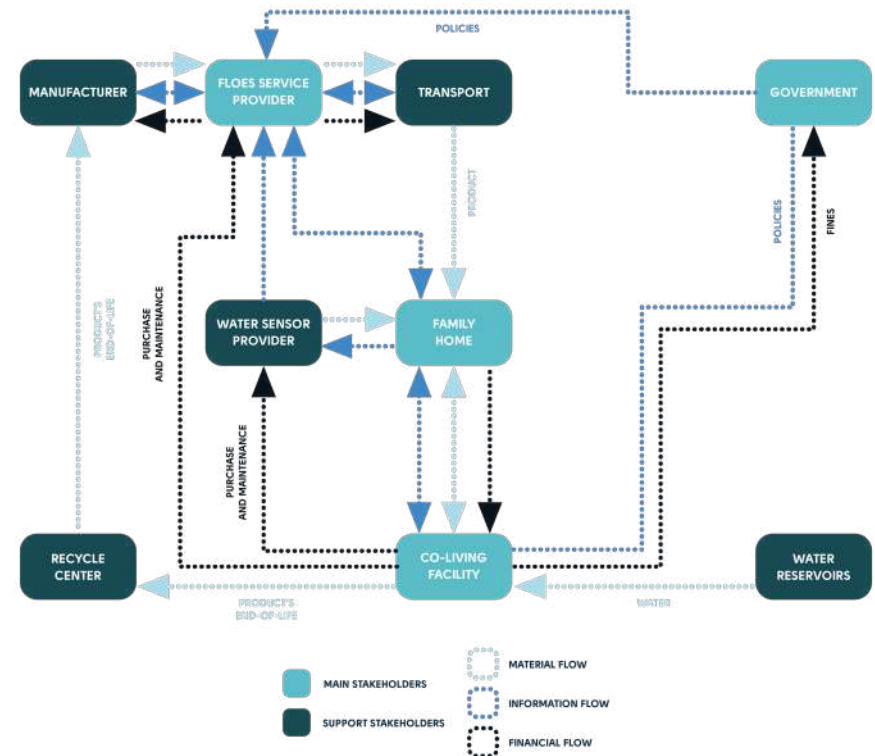


548238,3 GALLONS

09

They also send this information to the government, who gets a general perception of the policies' consequences and take actions for the sake of resources sustainability.

System map



Stakeholders

Individual and family

Family members use FLOES on a daily basis. They can check both the product and the app to co-manage their water consumption. Their goal is to avoid going beyond the monthly limits, as well as save water together for a better present and future.

Co-living facilities

The facilities are responsible for installing FLOES in the homes. They can check the general water consumption of the families who live there on FLOES's website and apply fines on those who cross the consumption limits, which are stated by California's government.

Government

The government is responsible for establishing monthly limits for water consumption and applies fines to the facilities that go beyond them. They can have access to each facility's total water consumption and use this data to define new policies and manage the state's resources.

Persona



Maria Spendere

Age: 27

Origin: Italy

Location: Los Angeles, CA

Occupation: Developer

Water consumption



Awareness



Family relationship



Overview

Maria is a young developer from Italy. She moved in California to study and stayed there for job opportunities. She moved into a co-living facility a few months ago.

She is overloaded with work and her favourite ways to unwind after a stressful day of work are taking a long hot shower and cooking a nice meal, but most times she can lose track of time while doing so.

However, the extreme climate situation in California worries her and she also wants to work well with her facility family members to reduce their water consumption. Last month, the stress was high in her household, as they had to pay a fine for going beyond the monthly water consumption limits. Overall, she finds it really hard to be aware of her daily actions' impacts.

Needs

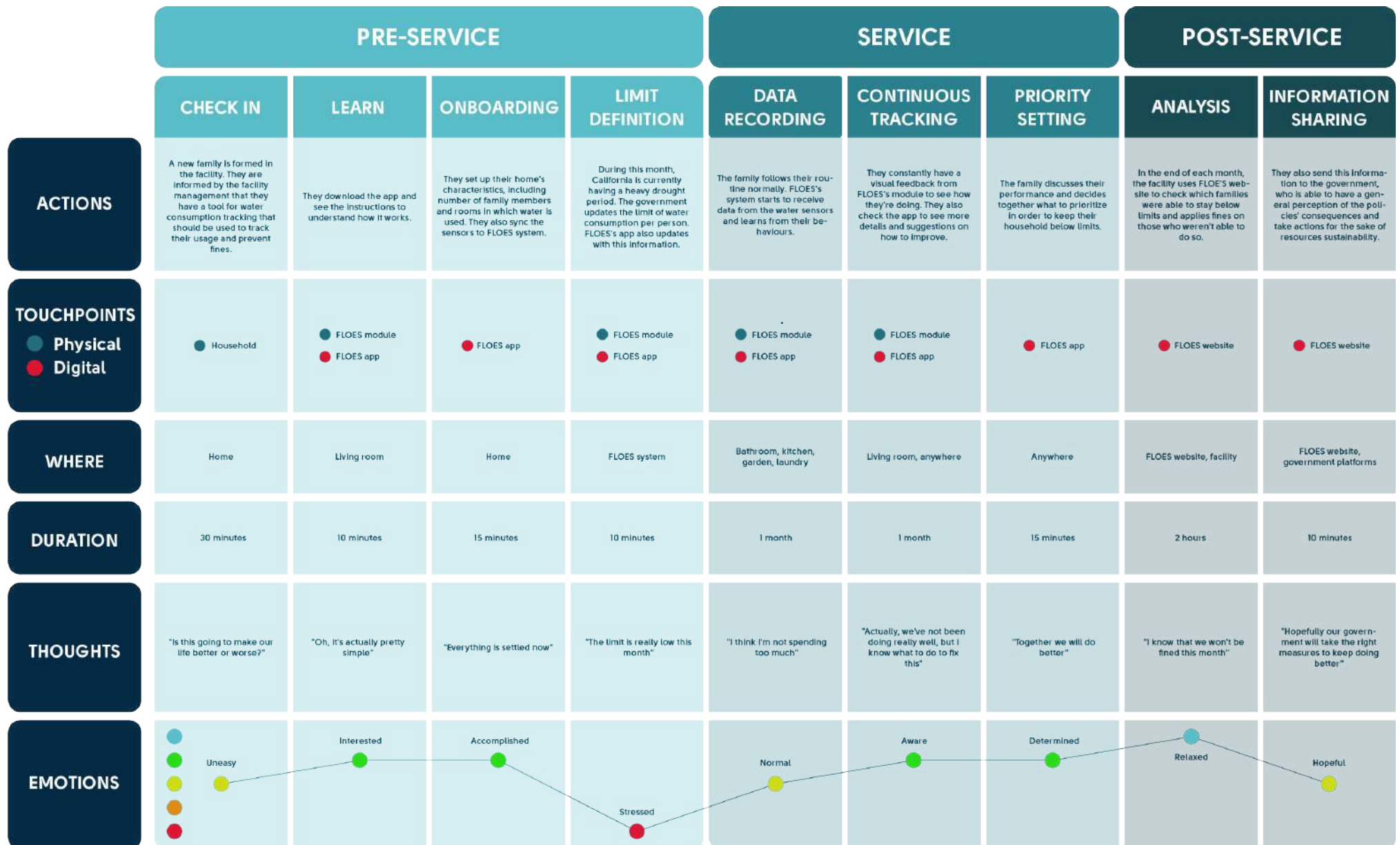
- Unwind from work stress
- Be aware of how much water she can use
- Save money
- Good communication with the people she lives with

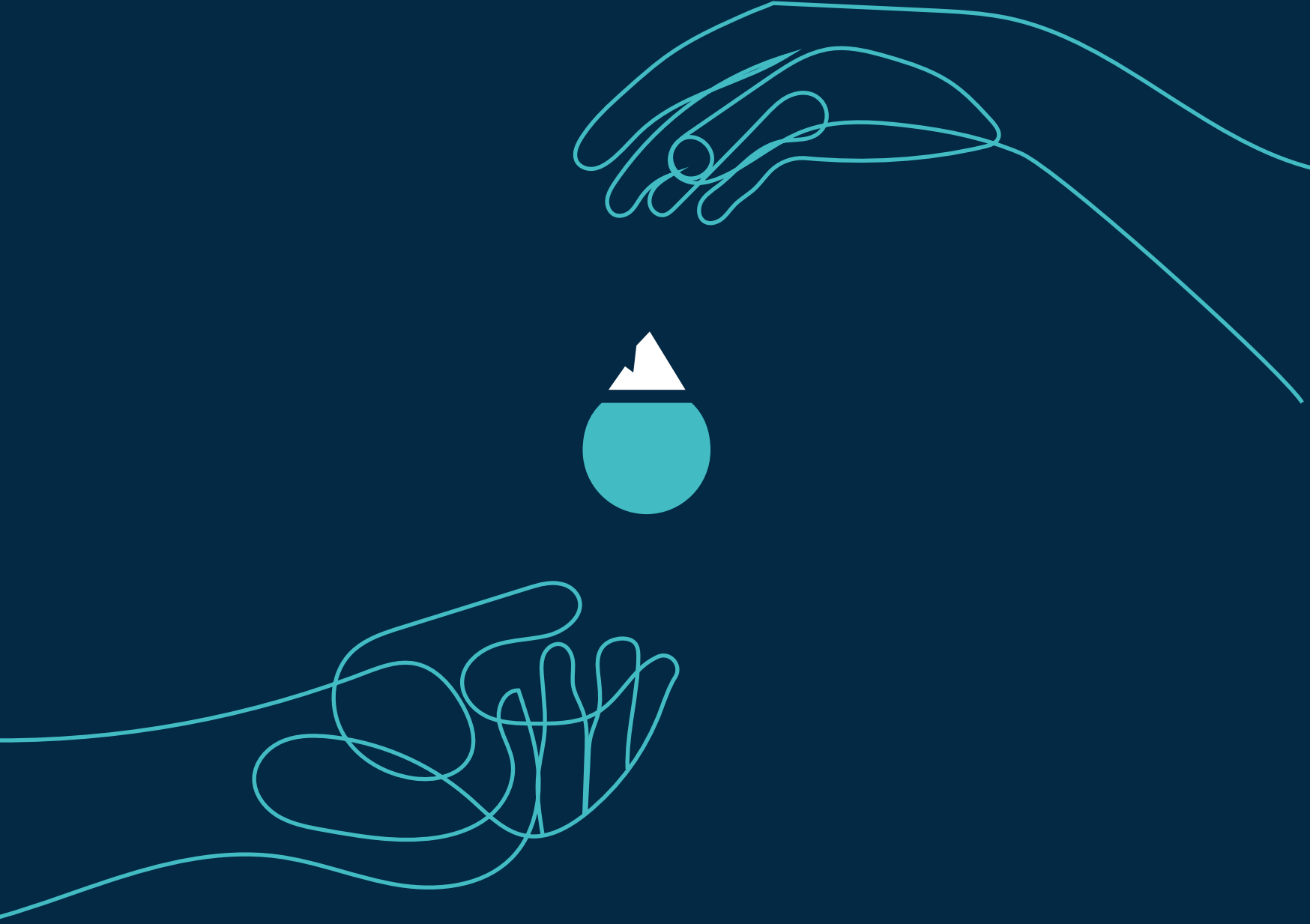
Pain points

- Work leaves her stressed
- Loses track of time using water
- Gets surprised by water fines in the end of the month
- Conflicts with family members

*"We received a fine last month!
We have to control our consumption"*

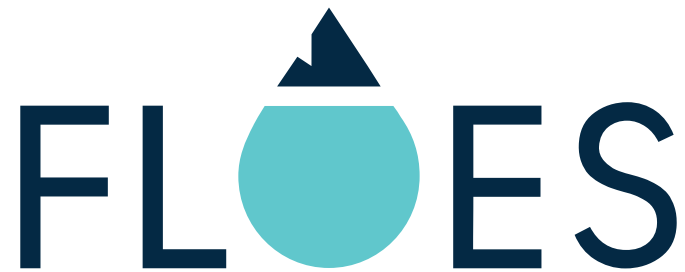
User journey map





Branding

Name and logo



The edge of the floes, or “Sinaaq” in Inuktitut, are the points where the open water meets the ice still attached to the coast.

Similarly, we want to show the intricate link between what happens in our homes and the direct impact it has on nature.



Our brand

VISION

Save the world's future together, because the planet is our shared home.

MISSION

Encourage people to choose concrete actions together to take care of water in a conscious way.


VALUES

Transparency
Altruism
Collaboration
Tangibility
Coherence
Sustainability



THE POWER OF PEOPLE IS VALUE,
WE CAN DO GREAT THINGS
WHEN WE ARE TOGETHER
FOR THE SAME GOAL.

#Waterisourchoice
FLOES



DROP BY DROP, DAY BY DAY
WE CAN EARN A BETTER WORLD,
IT DEPENDS ON OUR CHOICES.

#Waterisourchoice
FLOES

Our process

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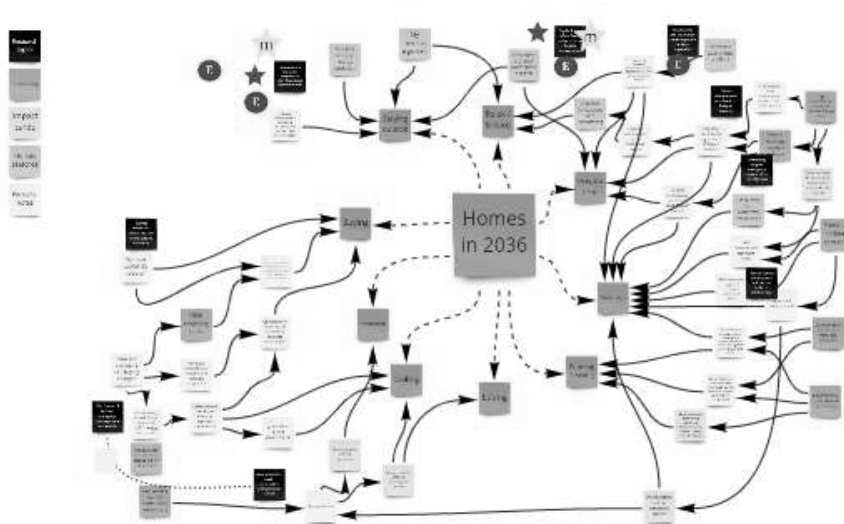
- Touchpoints
- User flow
- Wireframes
- Mockups

Branding

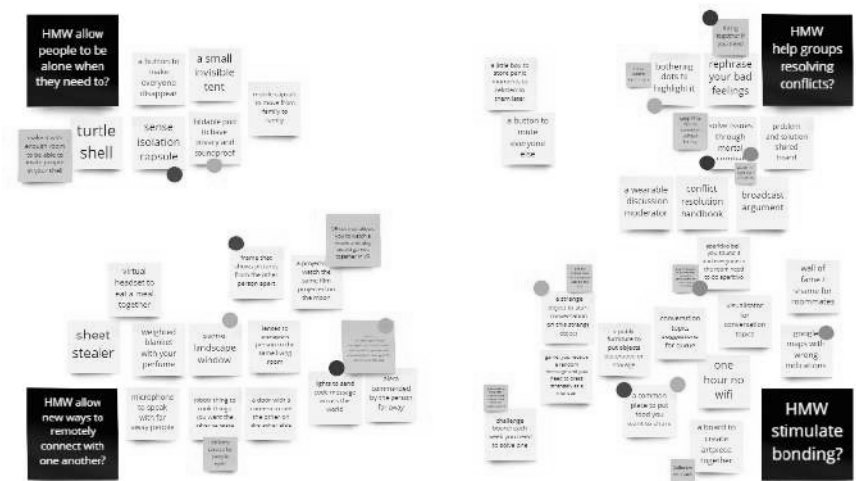
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- Visual moodboard
- Logo construction
- Typography
- Color palette
- Brand identity
- Domain

Our method



Our process started with research on California, housing, future scenarios and co-living.



The ideation phase was challenging. We started linking co-living and resource usage. We then focused on sharing water.

Background research

Socio-economic aspects

Foreign-born people represent 27 percent of California's population, twice the US percentage. According to projections, California will gain millions of new residents in the next two decades (Johnson & Cuellar, 2020).

This is significant as according to Johnson, Hans et al. Hispanics are the largest group living in California. Hispanics make up 52 percent of children age 17 and younger (Johnson & Cuellar, 2020). However, nowadays, most immigrants come from Asia. Different projections state that the number of Asians in California by 2030 will be between

Socio-economic aspects 14.6 and 15, 41 percent of the state's population will be Hispanic and 37 percent will be white.

Despite their high numbers, immigrants, especially from Latin descent, are still very prejudiced in the state. Coming to California hoping for a better life, they often do not hold degrees. This hinders them from finding stable jobs in the state. The precarious nature of their socio-economic situation puts them at higher risk to be impacted by the blowoff of climate change along with governmental obligations that come with them.

Water

With one of the most temperamental climates on the North American continent, California has always been unpredictable and difficult to manage. On one hand, it counts several floods every year. On the other, it is also plagued with droughts and wildfires.

In addition, temperature, wind and water flow patterns vary wildly throughout the state making environmental restrictions or law-making complex.

On average, Californians use 85 gallons of water everyday. That is about equal to the national average. However, lawmakers plan to

change this. The previous governor of California, Jerry Brown, passed bills AB 1668 and SB 606. These claim that "indoor water use will need to be reduced to an average of 55 gallons per person per day by 2023, declining to 50 gallons by 2030."

This would equal to 35 gallons or a 35% decrease in water consumption for each of the 40 million inhabitants of California.



Climate change

California has been facing enormous climate challenges in the last years, including wildfires, sea-level rise, droughts, heatwaves, floods, and many other extreme events, in a never-ending and self-feeding loop where one issue creates another. The frequency of those problems is only expected to rise.

One of the main issues we looked at was receding coastlines which will alter where people live in California by 2036. Currently, approximately 85% of California's population live and work in coastal counties.

The sea level along California's coasts is projected to rise by as

much as 20 to 55 inches by the end of the century, which could put nearly half a million people at risk of floods and can cause up to \$100 billion damage in property and infrastructure. Coastal erosion could have a significant impact on California's economy that depends on the ocean, which is estimated to be \$46 billion per year.

As the sea levels keep rising, salt water contamination will increase, which will threaten wildlife and the source of drinking water for 20 million Californians.



Socializing

Our research has shown how much our environment will be affected by climate change, whether it is displacement due to economic costs, frequency of wildfires that lead Californians out of their homes or a retracting coastline that limits habitable surfaces. With this in mind, living with 7-10 people will be more frequent than not. This will lead to more examples of co-living and a heightened need for collaboration in households. In order to understand this better, we looked at the NASA ICE study explaining the effects of forced proximity with non-intimate people.

"Affected interpersonal relations have been a consistent effect in ICE literature (e.g., Kanas, 1991; Kanas et al., 2001; Stuster et al., 2000). Tension among crewmembers driven by individual differences in crewmember values (Sandal, Bye, & van de Vijver, 2011), personality (Bishop, Santy, & Faulk, 1998; Inoue et al., 2004), and culture or language (Inoue et al., 2004), as well as competition over group roles (Krins, 2009; Sandal, 2001, 2004).

These have serious consequences on group performance and mission success." (Vanhove, Herian, Harms, Luthans & DeSimone 2014).



Interviews

In order to get more insights into the daily lives of people who live in California, we conducted four interviews, with four different people from different backgrounds.

Key findings

- Wildfires and droughts have a huge impact on their daily lives.
- The emotional toll related to climate change greatly affects Californians.
- It is common for them to use apps to check air quality index to keep track of where they can go and breathe properly, because it has a key importance to their health and daily lives.
- They trust the government of California to be wealthy and proactive enough to intervene and improve this situation.
- Measures to limit habitants' water consumption have already been put into place by the government in times of crisis.

The effects of climate change are very obvious here. Droughts and heatwaves are a big problem and we have a lot of wildfires, more every year.

(K, 28, Culver City)

A few years ago the government of California already created some restrictions, like asking us not to flush the toilet when we use it or take showers for less than 5 minutes, so that we would waste less water.

(S, 58, San Francisco)

Our brief

The first problem to tackle in this project is to limit water consumption. Drought has been a major climate issue in California. Recent laws have set an initial limit for indoor water use of 55 gallons per-person per-day by 2023, which gradually drops to 50 gallons per person by 2030.

Secondly, through concept development, we found that an organic way to enable strong bonds within a social group is to engage in collaboration. Given the co-living context we established in our scenario, our product will emphasize a collaborative approach.

How may we...

help communities in sharing resources while achieving a common goal?

Establishing our constraints

Step 01

What is currently being done to monitor water?

What technology is available to us?



Step 02

What are the material properties of paper?

How can we change them?



Step 03

What is currently being done with paper pulp?

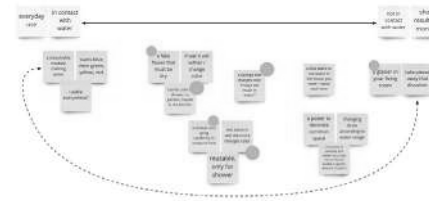
How far can we stretch it?



Refining our concept

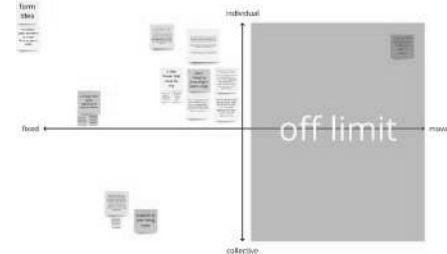
Step 01

What purpose will it serve?



Step 02

Where will our users interact with it?

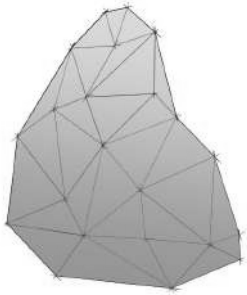


Step 03

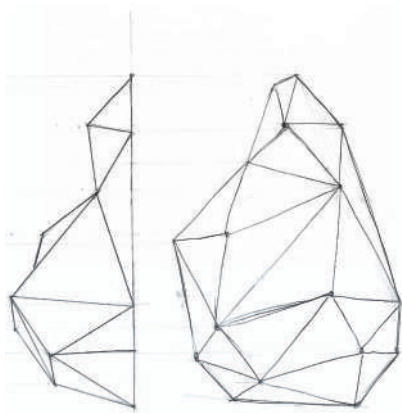
What are different ways we can express our different criteria?



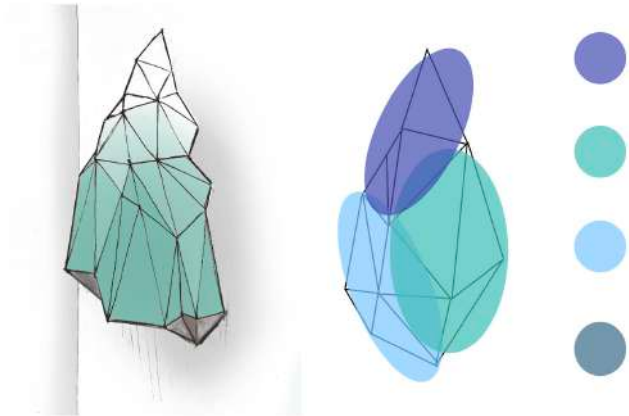
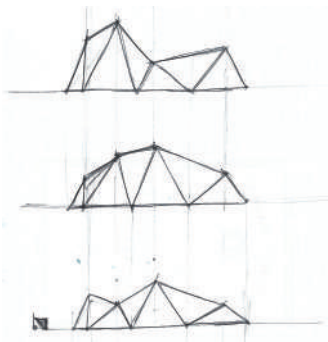
Product development



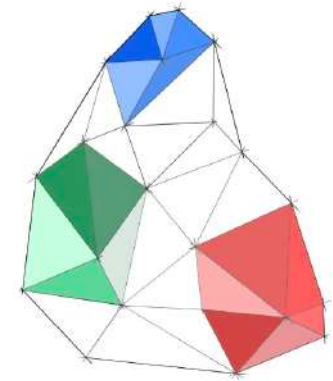
Our product went through several ideation phases before reaching its final form. These included modifications to color palettes, module shapes, or visualization displays. We discussed the possibility of having different types of data visualization.

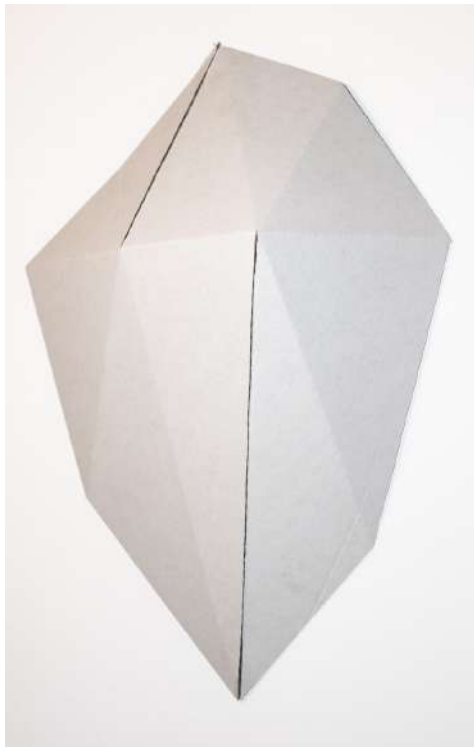
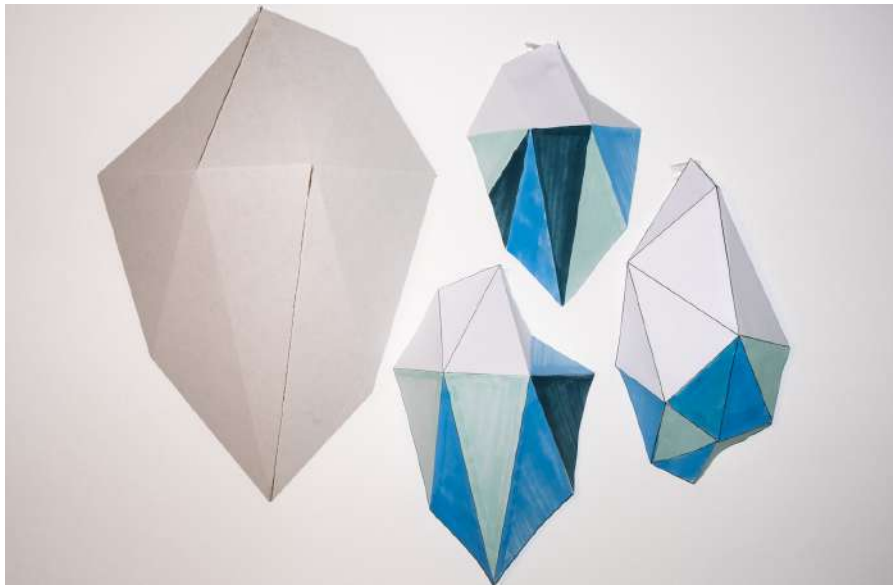


Our first option was to section the module into different areas that would correspond to areas of the home. However, we did not believe this option to be scalable or adaptable to homes with different numbers of water sources. The second option was having the module display daily fluctuations of water usage across the home. The second option was to have monthly fluctuations. For the last two options, we debated how individual room consumption would be displayed. We finally agreed on a lit-up icon that would activate when touching the structure.



Color palettes varied throughout the conceptualization process. We debated on which color scheme could best convey a sense of urgency while remaining aesthetically pleasing. We experimented with opacity changes, gradients of blue, or the addition of the color red. Finally, we chose red as it is universally recognized as the “danger” color, which is the state we wanted to convey to our users..





Technological references

Wireless charging

Although wireless power was invented over a century ago, it wasn't feasible until recently. Cota is a wireless energy technology similar to wifi. The power receiver chip sends a weak signal to the transmissor when the device needs energy, which triangulates its exact position to send back power.

Colored E-ink

Advanced colored E-paper (aCeP) is a high quality display that can show hundreds of colors. Colored pigments in the CMYK scale are contained in microcapsules, which are reoriented through different voltages to create images.

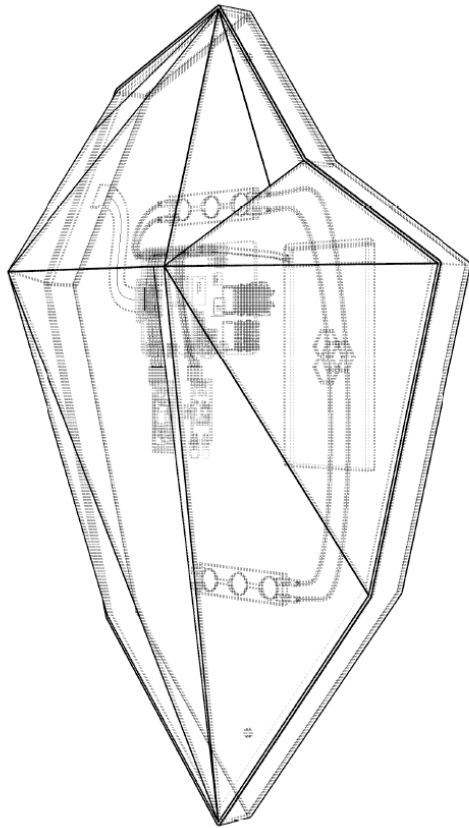
Electrochromic ink

Organic electrochromic polymers are screen printed and coated into flexible plastic surfaces. This are formed from high performance organic components and Lithium ions, which then results on a highly conductive membrane, that then is cured with UV radiation.

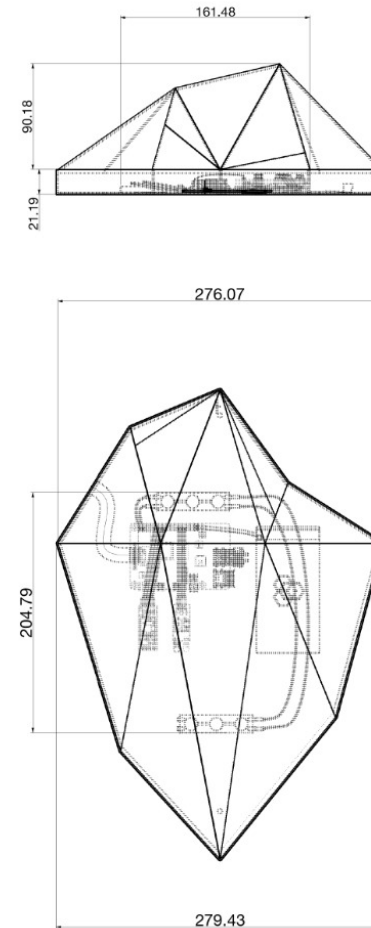
Water sensor

Phyn Plus is a high definition pressure valve analysis that detects leaks in real time. It measures the unique pressure waves of each water appliance to understand the state of the pipes. It then connects to an app, house's pipes state is shown as well as the water expenditure.

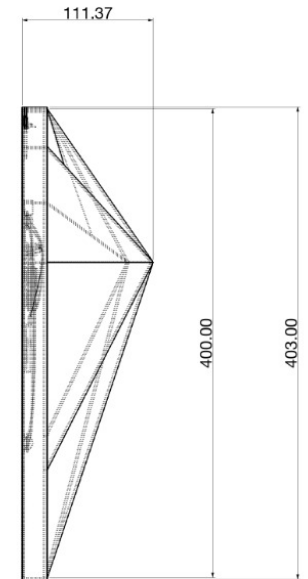
Technical drawings

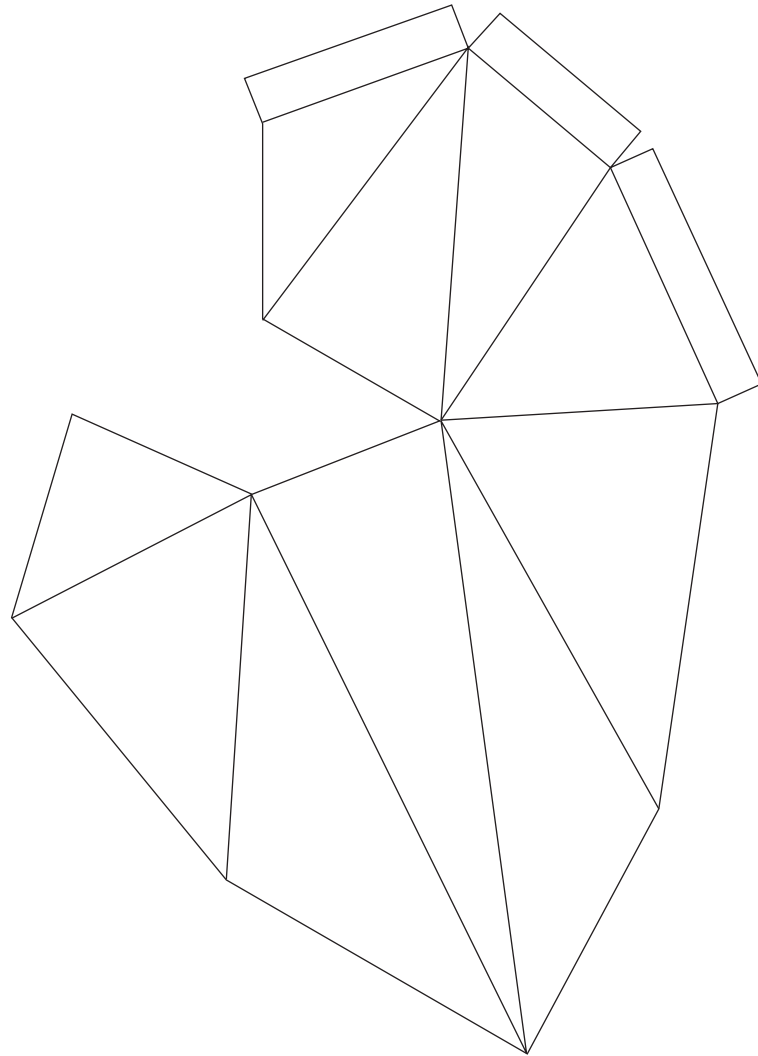


General perspective technical view of the product with all its components.



General dimension of the product. Lightbox containing the electrical system, acrylic for the area light and e-ink lampshade.





Unfolded surface of the e-ink lampshade, ready to be assembled and inserted in the lightbox through the flanges.

Touchpoints

Product



The product allows the user to see how much water is being used in the household. It detects if it's decreasing or increasing and if it's getting close to get the family being fined. It also allows visualization of consumption on specific rooms and their percentage on the total.

Mobile application



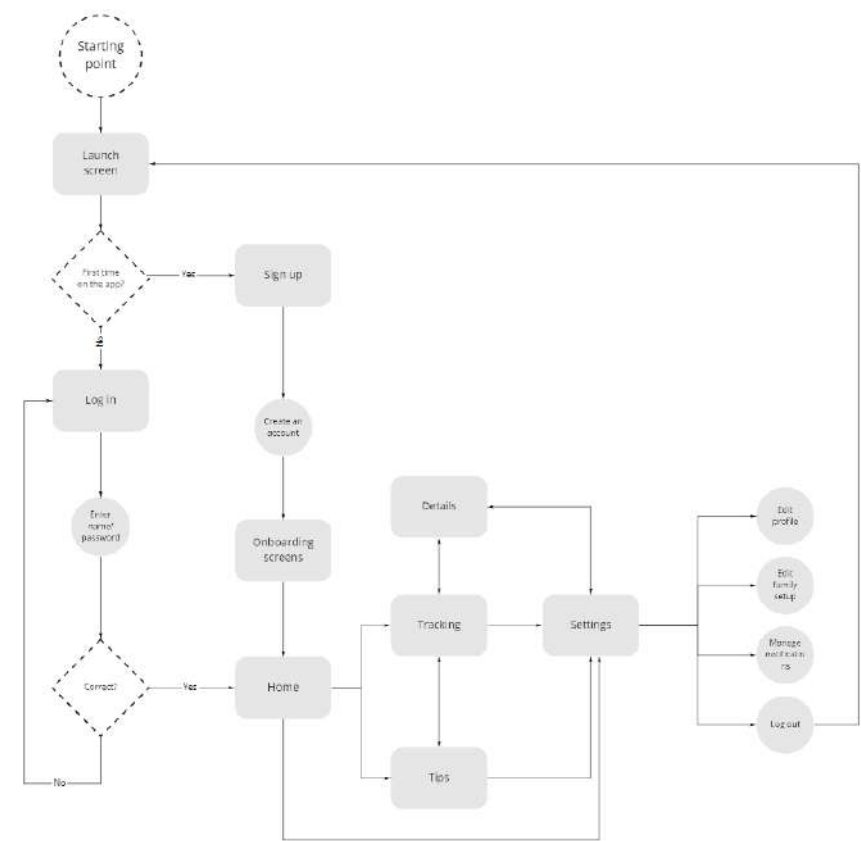
The mobile application serves as a support to the product. It gives specific data on water consumption per room and per appliance, as well as suggestions on how to effectively improve their behaviour. It also allows the users to manage their household and sensor information.



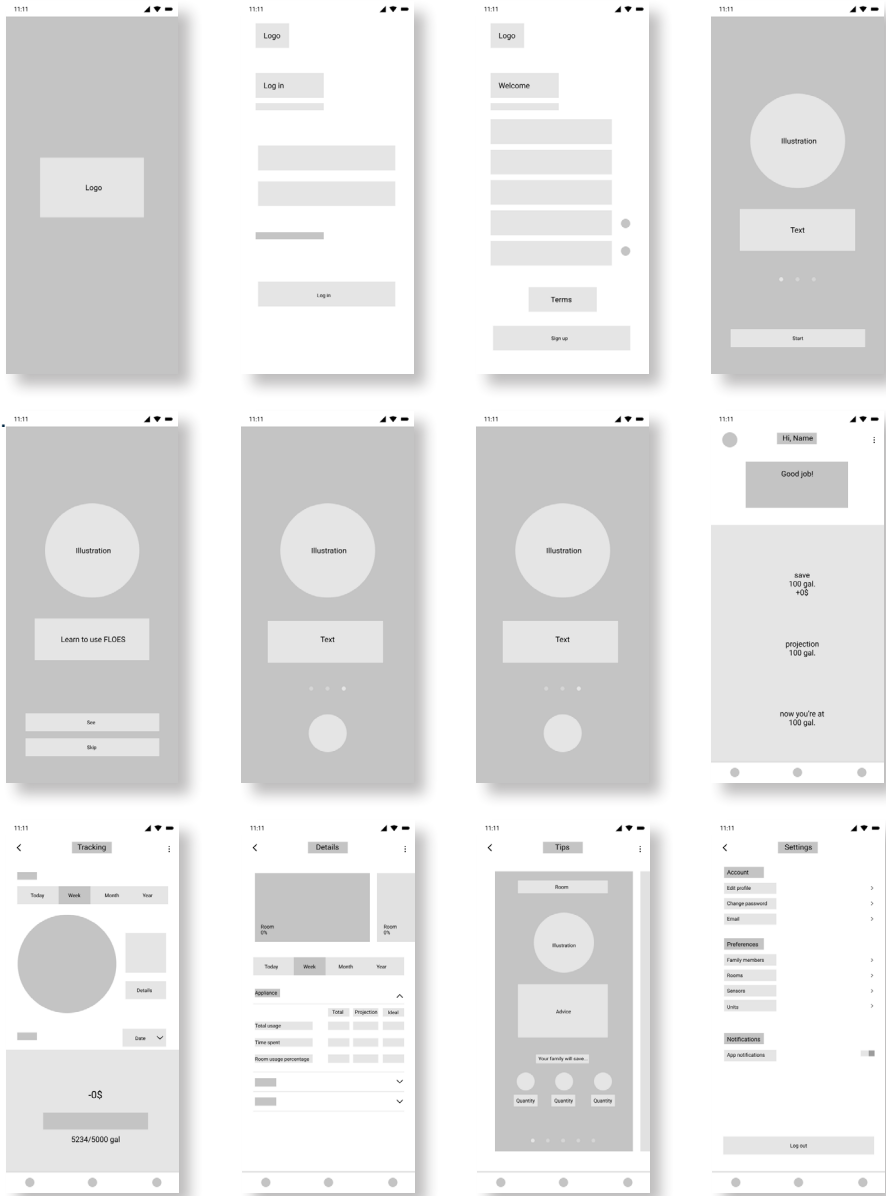
Website

Facility managers can purchase FLOES, check the families' total water consumption in order to apply fines, as well as send the total data to the government.

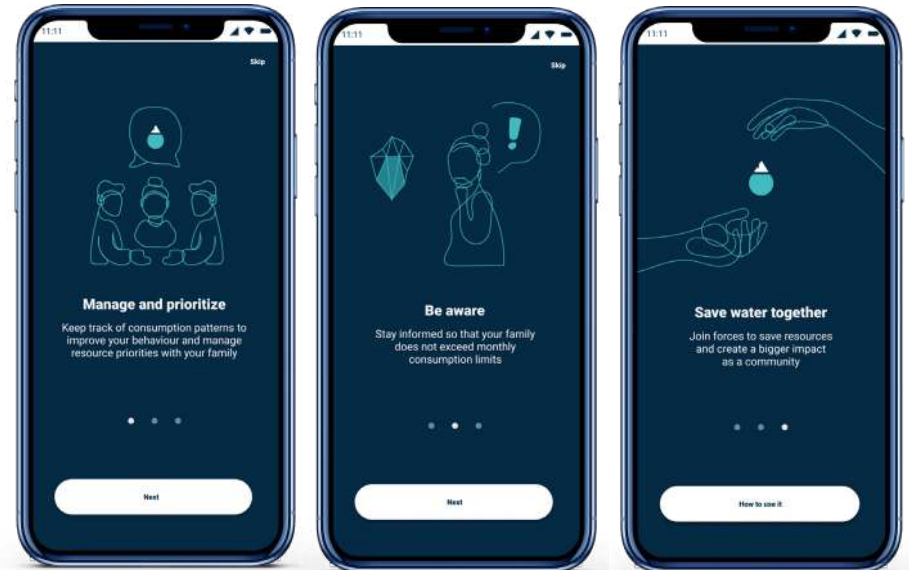
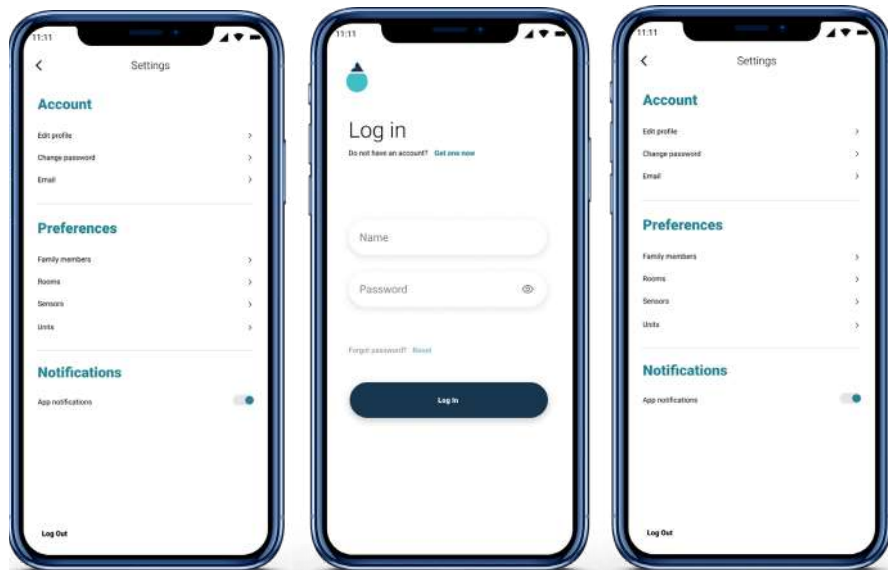
User flow



Wireframes

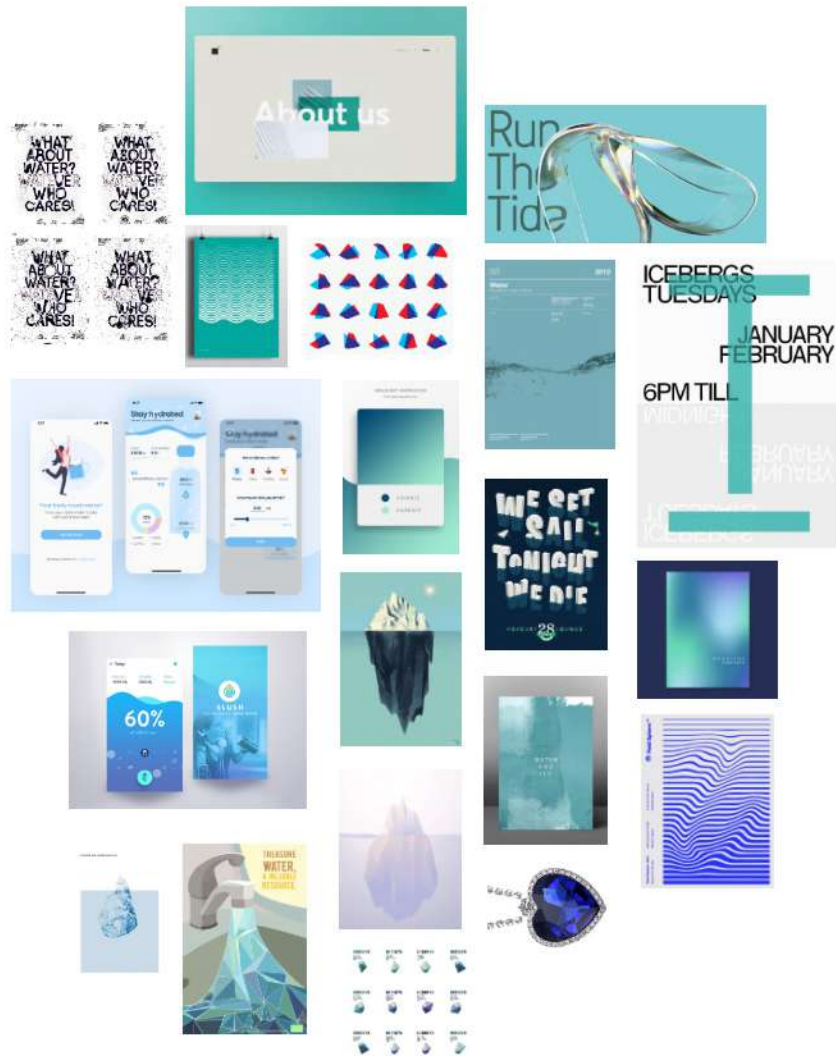


Mockup

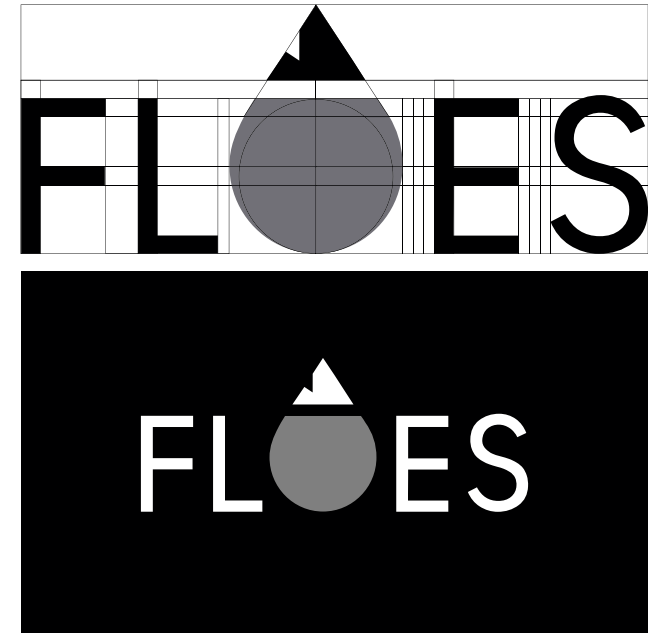


Check the mockup

Visual moodboard



Logo construction



These technical tables show the logo with the construction grid and its version in black and white.

We merged the drop and the idea of the jagged iceberg with one part rising above the sea.

Typography

Solomon Sans

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

^~^1234567890

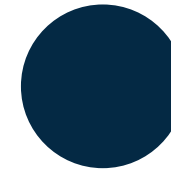
Bahnschrift

ABCDEFGHIJKLMNOPQRSTUVWXYZ

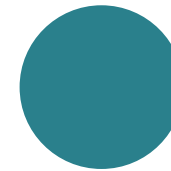
abcdefghijklmnopqrstuvwxyz

^~^1234567890

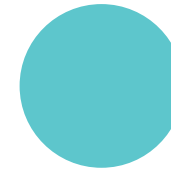
Color palette



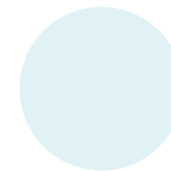
#052a44
RGB 5 42 68



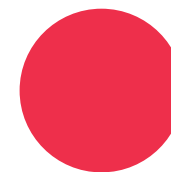
#29808e
RGB 41 128 142



#67cbd1
RGB 108 196 205



#e8f5f9
RGB 232 245 249



#e9233f
RGB 230 38 64

Brand identity

NAME	FLOES
PAY OFF	Change consciously
USP	Our product helps with the difficult task of saving water and managing resources, because it monitors and suggests the right directions to follow. Above all, it considers the user as an active part of the process
USER BENEFITS	Helping the planet and saving money while doing it
PROMISE	FLOES will help you to learn and do the right thing together with your family
MARKETING GOAL	Increase product sales and number of followers on social media
COMMUNICATION GOAL	Water brings people together
TARGET	Young people who share space and resources

Domain

floes. ---

✓	floes.app	Maggiore sicurezza	14 €/anno	♥	👤
✓	floes.co	Premium	40 € + 28 €/anno	♥	👤
✓	floes.in		12 €/anno	♥	👤
✓	floes.io		57 €/anno	♥	👤
✓	floes.me		19 €/anno	♥	👤
✓	floes.fr		10 €/anno	♥	👤
✓	floes.us		12 €/anno	♥	👤
✓	floes.dev	Maggiore sicurezza	12 €/anno	♥	👤
⊘	floes.info		Non disponibile	♥	👤
✓	floes.ca		12 €/anno	♥	👤
✓	floes.store		48 €/anno	♥	👤

For our domain we could easily use a more general solution, such as floes.us, for all the United States, or a specific solution to California: floes.ca.

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