# Medical Devices Startup

Digital healthcare for ostomy patients

**Case Study - Extended Version** 





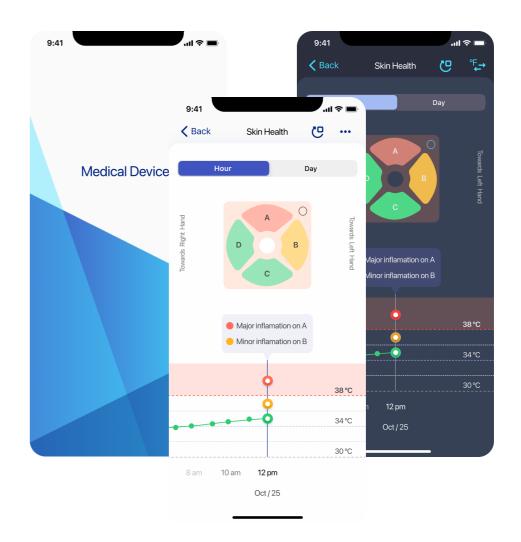
## **Project Overview**

### The product

A specialized Medical Devices Startup focused on supporting ostomy patients with innovative tech.

### **Project Duration**

From the understanding to the delivery of high-quality mockups and prototypes, the Product Design team worked a total of 12 weeks.







## **Project Overview**

### The problem

We worked with an existing app that had an existing database about the users that were already interacting with the product. The main challenge was that this app didn't have all the needed features and most of the existing ones needed some updates to successfully meet the users' needs.

### The goal

A native mobile application that provides a clear and easy way for ostomy patients to be aware of their general health while living with this condition through the connected monitoring system.

Quick access to the educational material assigned to patients based on relevance of their current symptoms, and visualizations of the data gathered by the wearable devices.





## **Project Overview**

### **Our Role**

The work began by taking all the existing information that the app already had and using it to analyze, compare, and research even more about the user's needs. The team had to work hand in hand with the health professionals and other stakeholders so the final product was satisfactory in every possible way.

### Responsabilities

This project involved discovery, research, user interface design, and prototyping stages.





## Understanding the User

- User Research
- Personas
- Problem Statements
- User Journey Maps





## **User Research**

### **Summary**

We started the research by reviewing existing documentation and data. Since a version of this app already existed, and it had active users, we were able to validate our desktop research with actual user behaviors. Among the existing documents, we were also able to review surveys, affinity maps, high-level profiling of users detected by the Medical Devices Startup, empathy maps, and a user journey map.

With the previous data available and the interviews we conducted with stakeholders, we refined the existing documents and created the three main profiles of users in order to understand and establish their needs. Then, we translated those into a list of new features to implement. Once these new features were validated by stakeholders and users, the information architecture was created.





## **Pain Points**

### **Notifications**

The user needs to be informed about the most important situations regarding their ostomy bags and their health, such as, leaks or high-temperature detection. But it is also important to not saturate the user with excessive alerts.

### **Variability of conditions**

There are many variables within ostomies. Users often need more personalized attention and resolution of questions. There are things that can be solved with general content, but sometimes the user will need to contact a professional.

### **Clear understanding**

On many occasions, the user is new to both ostomy and to the use of digital applications for health care, so it is necessary to use clear language, create an intuitive and friendly interaction and add educational sections.

### Lack of action

Informing the user about situations or changes in their condition and health is a great benefit. However, this can fall short when the person doesn't have a clear understanding of what to do or how to react to an alert or notification.





### Persona



If I leave the house I need to carry a backpack full of things in case something happens to my ostomy.

### **Anne**

- **•** 41
- Tornoto
- **T**eacher

### Bio

Anne is an artist and art teacher for children. She lives with her two dogs and when she is not working she is at home exercising and painting. Anne has had an ostomy bag for 11 years and although she now is used to it, getting out of her house is still a logistic challenge

### **Goals & Motivations**

- Increase her self-confidence.
- Find groups of people who are going through a similar situation.
- Use tools and innovations that improve her routine.

### **Frustrations**

- Cannot fully accept her body.
- Feels that she can't relax if she is not at home.
- She feels limited in terms of activities that people her age can do without problem.





## **User Journey Map**

Use with no device Phases of the Product discovery **Onboard** Order Introduce info Use with device Diagnosis Delivery Sharing Journey Check heart rate · Receive confirmation that the order · Open the health section Read about ostomy apps Login Request supplies Receives a fever alert App data creates value for her · Receive an ostomy Doing · Compare the app with similar • Fill out the onboarding 1 and 2 is about to arrive · Answer the form to know more · Go to the skin check data · She wants to share the app with diagnosis products · Receive the suppliers · Realize that there is inflammation people with more ostomy patients · Install the app for the first time Thinking · What does this imply? Looks for specific features . I hope this app brings me more · Will this take a long time? · I hope the delivery times are short · What will be the added value of this · What should I do to improve this · How should I read this data? · Could this help me to support my · How can I adapt to this · I want a friendly and easy benefits I would like to constantly · Will I have to buy the products products? situation? Thinking · Will I have an inflammation? medical history? condition? · what will make me a good fit for monitor my health How do I transfer the information · Will the app need more information • I want to be relaxed and let the app • the app could help many people like about me to know if my health is ok? these products? from my device to my cell phone? · What can I do to deal with this? to tell me if there is something I Feeling Pain Points Uncertainty · There are many similar options · Long onboarding and · Not fully understanding the · Not sure if the app is trustworthy if . It is not so easy to connect the Not understanding why she receive Not fully understanding the Not all ostomy patients can use the app Overwhelmed **Pain Points** • She has used health care apps process steps or the result data and she do not fully understand why registration processes it is the first time that suppliers are devices certain alerts visualizations · Try to find the best information · She has searched many app options without knowing if you · Devices are constantly will be able to use the app • Not being able to verify that the before expectations disconnected request process was successfully done

### **Opportunities**

### Opportunities

- · Receive recommendations
- Enter a community

### Opportunitie

- · Clarity in what the product offers
- Reviews and recommendations

### Opportunities

 Explaining the benefits of filling in onboarding and
 patient data

### Opportunities

- Add tutorialsUse images
- Create appropriate graphs for each health metric

### Opportunities

- Add contact methods with the healthcare company
- Give feedback to the user during the process and at the end of it

### Opportunities

- Let the user know how updated the data is
- notify the user if the connection has been lost.

### Opportunities

- Ask for more information from an alert to make a better result
- Give the user informative content at the end of the flow

### Opportunities

- Add usage tutorials
- Save a report on anomalies

### Opportunities

- Add a community or reviews section
- Being able to contact other patients directly





### Persona



For me the most important thing is my health and that is why I try to find more options to improve my day.

### **Amelia**

- 72
- Buenos Aires
- Marketing director (Retired)

### Bio

Amelia is a retired professional who lives with her husband. She was diagnosed with cancer 3 years ago and although she is now cancer free, she has to wear an ostomy bag. Her condition has helped her to appreciate life a little more and she now tries to travel and discover new places.

### **Goals & Motivations**

- An active life.
- Have someone she trust so she can share her questions and concerns about the ostomy bag.
- Be informed about new ostomy recommendations.

### **Frustrations**

- Having to constantly worry about her bag.
- Not knowing if she is hydrated enough.
- Feeling that her family has to take care of her because of her condition.





## **User Journey Map**

ostomy condition

Phases of the Journey	Diagnosis	Product discovery	Onboard	Use with no device	Order	Delivery	Introduce info	Use with device	Sharing
Doing	Task • Receives an ostomy diagnosis	Tasks  Makes a research about products that can improve her life Finds and download the best apps	Tasks • Login • Fill out the onboarding 1 and 2	Tasks  • Add amount of drinks  • Check dehydration	Tasks • Request supplies	Tasks Receives a notification Receives the suppliers	Tasks  Checks output tracker  Checks hydration tracker	Tasks • Compares data in the dashboard	Tasks  Use the app daily to check your hydration  She shares this app with people who have the same problem
Thinking	Thinking  • What limitations will I have in my life?  • Will I depend on other people now?	Thinking  • will it be very difficult to use this app?  • will I have to make a lot of changes to my routine to use smart products?	Thinking  I hope this app helps me to be outdoors  I prefer not to invest a lot of time in the app if it doesn't work for me	Thinking  This feature is really simple, I hope it works well.  This would help me leave home with more confidence.	Thinking  • I would not like to complicate my routine with smart devices  • I hope they are comfortable and discreet	Thinking  • She hopes it's not very different to what she's used to  • Hopefully I can easily use it outdoors	Thinking  I am very happy to be able have a lot of data about my condition  Now it makes more sense to understand dehydration	Thinking  • It is more valuable to see several data together, this way I can understand the relationship between everything that happens with my ostomy	Thinking  It's good that there are tools that make life easier for us  If it works for me, it will surely work for someone else
Feeling	-	•••••••	• • • • • • • • • • • • • • • • • • • •			•••••••••••••••••••••••••••••••••••••••		•••••	
Pain Points	Pain Points	Pain Points  • Fear of not being able to keep up with medical technological advances	Pain Points Long processes Many questions	Pain Points  • She needed a little help to fully understand the visualizations  • Sometimes she forgets to add her drinks to the app	Pain Points  • Lack of feedback when ordering devices, especially the first time	Pain Points  • She is afraid to do more registration steps in the app  • At first she did not understand when the devices were already connected to her cell phone	Pain Points  • She does not register 100% of the drinks she consumes  • Sometimes she doesn't bring the cell phone with her	Pain Points  • She would like to share this with her doctor	Pain Points  • Measurements are not always 100% accurate  • She has more needs that are not cover in the app
Opportunities	Opportunities  • Show her the medical advances that will help her with her	Opportunities  • Add instructions or tutorials	Opportunities  • Trust more in the app so she could worry less	Opportunities  • Reminders  • Tutorials	Opportunities  • Add notifications  • Add a support chat	Opportunities  Device Connection tutorial Fewer manual device	Opportunities  • Generate general reports after a specified period	Opportunities  • Downloadable reports	Opportunities  • Notify active users whenever there is feature update in the app

about the ostomy

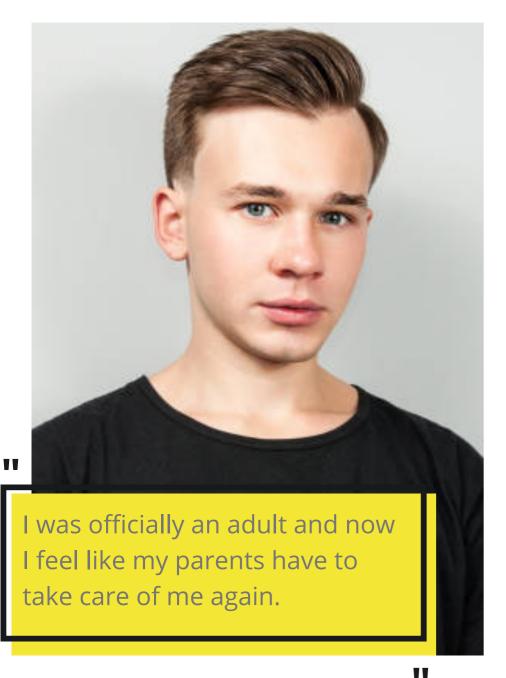
registration steps



Configurable reminders



### Persona



### Oliver

- **2**2
- Utah
- **S**tudent

### Bio

Oliver is passionate about extreme sports. He recently suffered a motorcycle accident and since the surgery he has had to wear an ostomy bag, he is still not used to the idea of having a bag and just wants to know when he will be able to return to his outdoor activities.

### **Goals & Motivations**

- Being able to do the activities and sports he likes.
- Have a better understanding of how he could improve his situation.
- Not feeling alone and isolated with his situation.

### **Frustrations**

- Feels lonely and misunderstood.
- Needing help to change your bag seems annoying.
- He no longer enjoys hanging out with his friends so much.





## **User Journey Map**

Use with no device Phases of the Product discovery Introduce info Use with device Diagnosis **Onboard** Order **Delivery** Journey · Add amount of drinks · Asks for the delivery date . Find products to better cope with the Request supplies · Adds his smart products to the app Open the health section Go through a specific event Login Doing • Fill out the onboarding 1 and 2 Check dehydration · Receives shipping details · Edits the usage specifications · Go to the skin temperature Receives an ostomy researches technologies that could Receives the suppliers according to what his doctor · Compare current temperature with diagnosis help him to have an easier ostomy recommended for his specific yesterday's temperature · Has surgery Thinking Thinking I hope that filling in this information What is the difference between a How can I live with a bag · what could ostomy apps · The process is quite simple · He feels good that there are already · If I put any incorrect information, will · He always has his cell phone with attached to me? do for me? will make me have more · I begin to understand more traditional product and these innovations in this area. I receive an alert? Thinking him so he feels better now. . I don't think it's enough to personalized and valuable about each topic related to products? . Will I be able to see patterns in my · Other people go through this? Is it more uncomfortable to use health with this app? make me feel hetter · Can I do something to get back · I feel better knowing that to normal as soon as possible? these metrics are ok **Feeling** Pain Points Frustration He feels that the apps are very · He is not completely sure · He doesn't want to depend on · He still does not know what features · He have trouble connecting · Not sure when everything is · He uses fahrenheit but he also wants Sadness **Pain Points** demanding for a correct tracking what to answer in some apps every day to look for in his ostomy products devices the first time properly connected to compare in celsius

### **Opportunities**

### Opportunities

· Feeling limited

- · Show him that life goes on normally
- Give him recommendations of tools to easily understand the condition

### Opportunities

- · That the app is a support tool rather than a new responsibility
- Make the app a way to facilitate the understanding of the ostomy

· He already has many instructions

from his doctor

### Opportunities

- · Have the possibility to return to the onboard form later
- · To use simple words and illustrations

### Opportunities

- · Track most of the values using automatic sensors
- · Inform the user when the views are not updated

· He feels that many times he will

forget to enter the values

### Opportunities

 Make clear that the sensors will help him to "forget" more about his condition but also always have the important alerts present

complications since he is barely

understanding the generals

### Opportunities

· Device Connection tutorial

### Opportunities

· Notify user when some importante data is missing or when there are connection problems

Opportunities

- · Be able to dismiss a false alert
- To have the option to change metric
- · Compare values by weeks and days

· Sometimes his temperature rises due

to the environment

ostomy bag

Opportunities · Open a communication channel to listen to user recommendations

· He is not fully adjusted to using the

· He still feels he has physical limitations

Sharing

· Perceive value in the app and use it

Write a blog about your experience

with the app as a support tool

· If more people know about the

invented and I will feel better

ostomy condition more tools will be





# Starting the Design

- Information Architecture
- Paper Wireframes
- Digital Wireframes
- Usability Studies



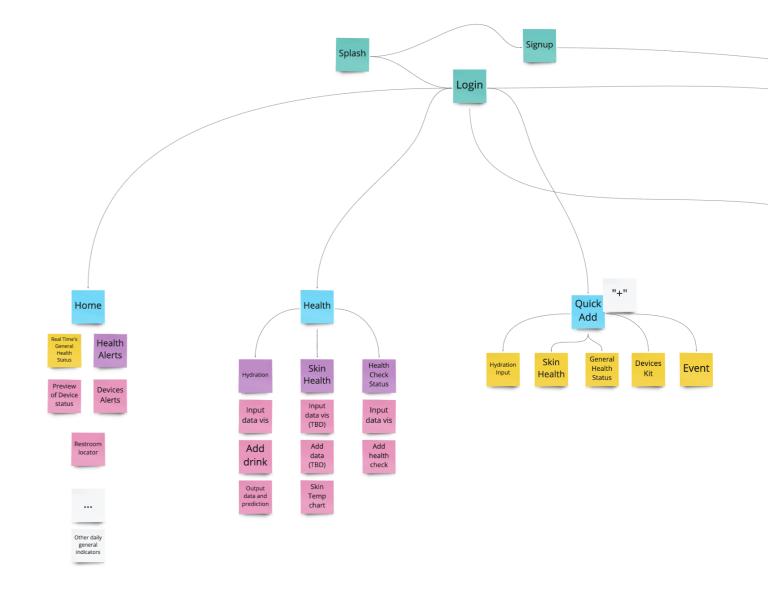


## Information Architecture

### **Process**

Since it was necessary to add many different but related features to the app, the first step in the interface design had to be the information architecture.

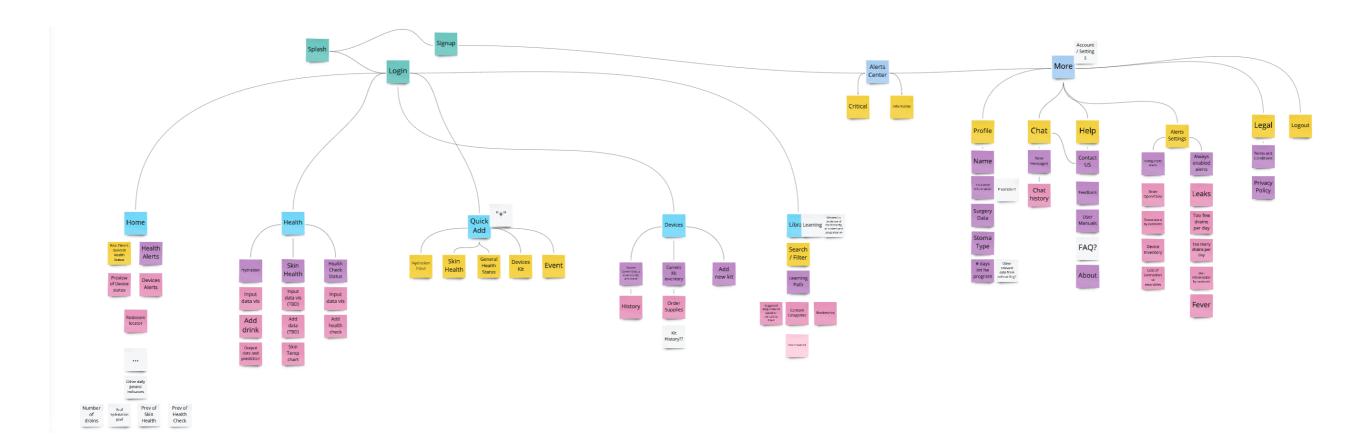
Some of the features were really sophisticated so they had to be divided into subcategories in order to create better navigation paths. For easier navigation, a quick add button and a tap bar were implemented since this stage.







## **Information Architecture**



### **Alert settings**

For an easier understanding, all the alert specifications are configured from the settings part.

### **Support chat**

The technical support chat is currently located in settings, however, it is intended to integrate a medical support chat with quick access



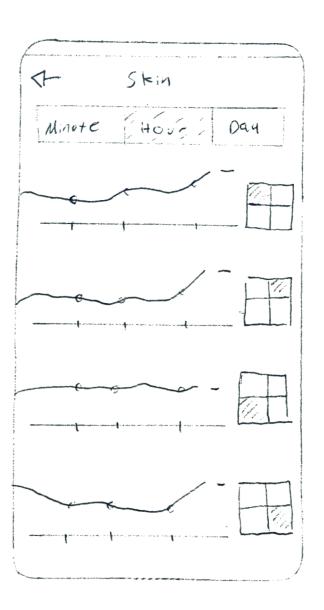


## Paper Wireframes

### **Process**

The first approach to visual proposals was the paper wireframes. A quick wireframing process was important for the following reasons:

- Internal checks in the design team
- Set the basic navigation components
- Establish the most elaborate ideas
- Validate concepts with stakeholders and users





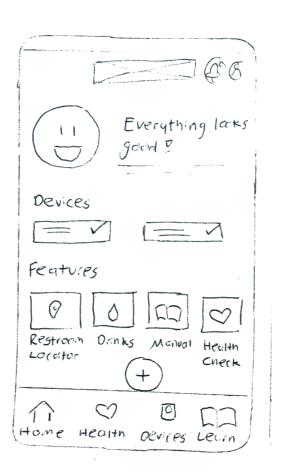


## Paper Wireframes (Option 1)



### **Main navigation sections**

We created the tap bar component to have easy access to the main sections. In order to avoid responsive problems, we left 4 main sections and a quick add.



### **Visual images and illustrations**

A key need was to communicate the most important things through visuals and text, so big icons were placed at the top of the homepage.

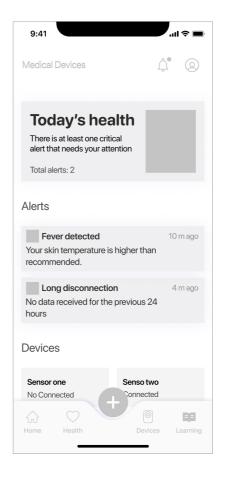




## Digital Wireframes

### **Process**

After establishing the bases and making sure the needs of the stakeholders were met, we created the digital wireframes to optimally layout all the elements and functionalities.







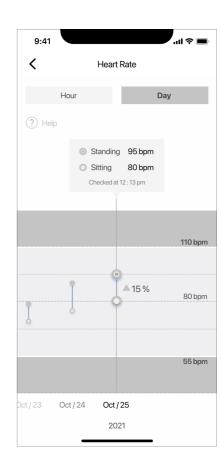


## Digital Wireframes



### **Knowing more about the patient**

Throughout the app a series of questionnaires were implemented that would give better results for the user and also train the algorithm for future improvements.

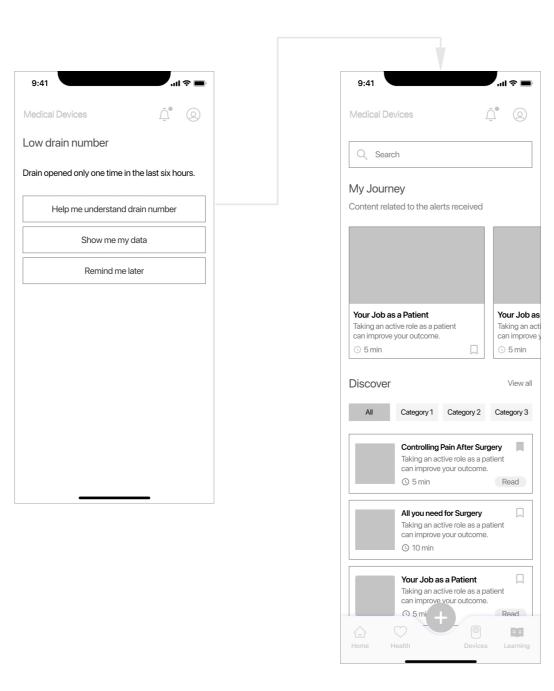


### **Data visualization**

The data being turned into a visual format is the core part of the app since this is where the user really understands the relevant information related to the ostomy.

## Digital Wireframes

Each alert contains actionable options so the user can track and understand the symptoms.



The app offers personalized educational content that is directly related to the user symptoms.





## Findings

### **Usability Study**

After testing the wireframes with a group of specialists, the findings were:

- The user will be able to edit certain goals and recommendations to match their personal needs.
- It is necessary to create forms after some alerts, so the user can obtain better learning material.
- A tutorial for health visualizations needed to be added.
- Devices must have the possibility to customize the orientation so the user could match this with the way they wear it.
- A glossary of terms is needed.
- Suggestions must appear when the user gives an alarming response in the forms.
- The quick add component must be scalable.





# Refining the Design

- Mockups
- High Fidelity Prototype
- Accessibility

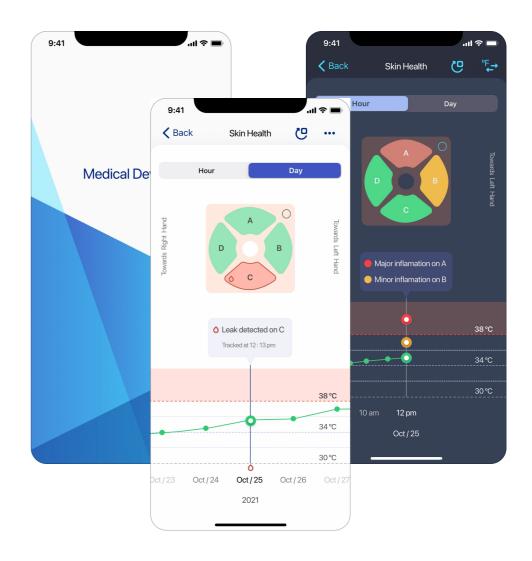




### **Process**

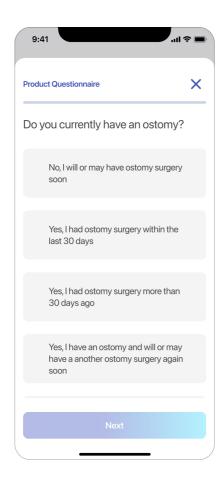
We created the final mockups once the most crucial elements and functionalities were refined or validated.

The mockups are very useful to present stakeholders and the development team with a complete vision of what the final product will look like.



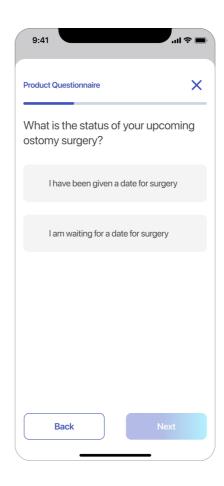






### **Onboard surveys**

Onboard questionnaires to get information about the user and provide better content.



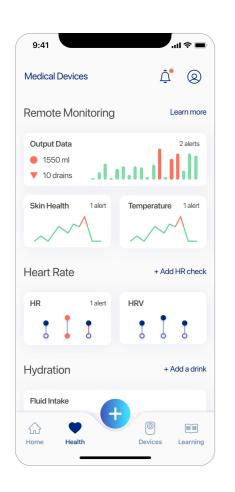


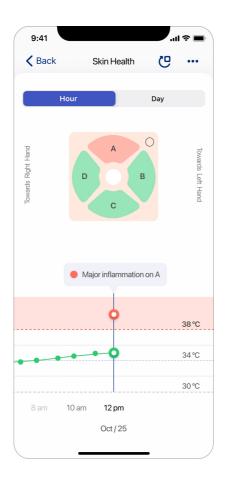
### Flow division

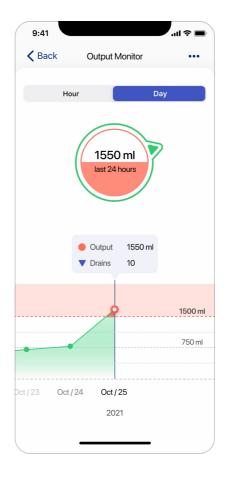
Different screens depending on what the user has answered in the previous question.

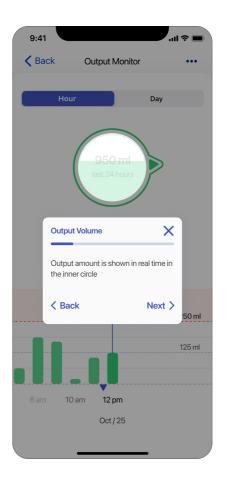












### **Health dashboard**

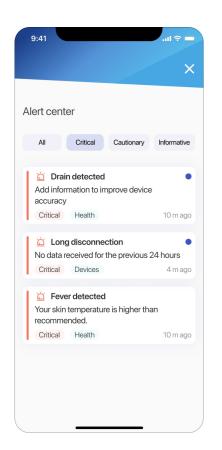
Summary view to compare the latest health data on one screen. Each graph can be expanded for more details.

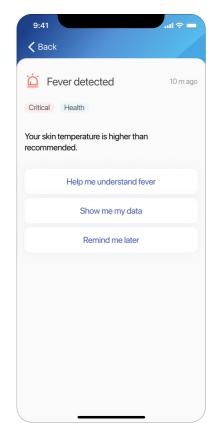
### **Visualizations and tutorials**

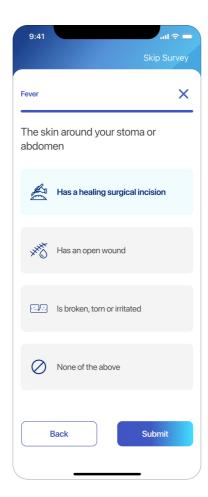
Friendly visualizations and the option to see a tutorial to better understand each part of the graph.





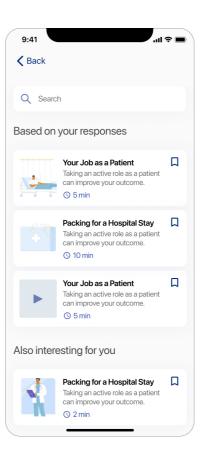


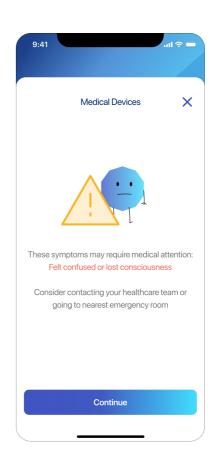




### **Actionable alerts**

Each alert has a series of suggested actions so the user can know what to do based on each symptom.



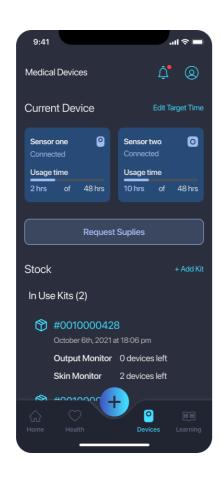


### **Health recommendations**

At the end of each flow, the user receives content recommendations and, if an alarming response was detected, an alert screen also appears.

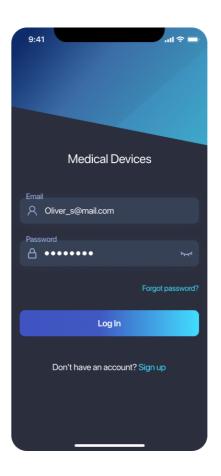






### **Custom colors**

For development practicality, each color has its dark mode equivalent.



### **Blue tints**

The blue tones help with contrast and make a more varied color palette.

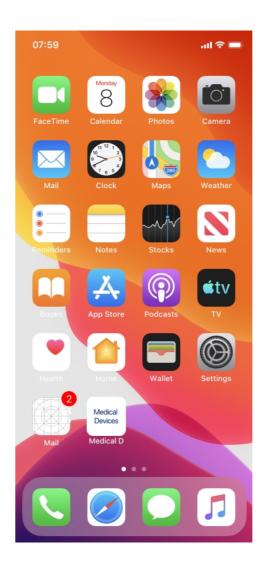




## **High - Fidelity Prototype**

### Prototype Link

Medical Devices Startup prototype







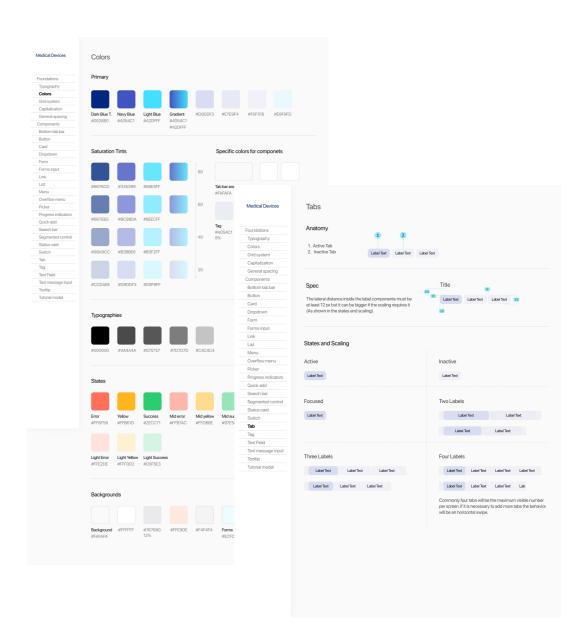


## **Design System**

### **Process**

We created and documented all the components used in this app. The design system was a fundamental piece of the process because the project started with an iOS native app and later an Android app was also required.

The documentation of all the components was also important for a correct transition and adaptation to the dark mode screens.







## **Accessibility Considerations**

### Accessibility in current features

- We used native fonts so the user always has the option to see the largest text sizes if they have it configured accordingly.
- We created an equivalence of colors to make sure that the dark mode met the requirements for enough contrast.
- The color codes used in the app are used to communicate statuses, but they are still always accompanied by text or descriptions.





## Going Forward

- Takeaways
- Next Steps





## **Takeaways**

### **Impact**

The Medical Devices app has a very special impact on the lives and routines of users. Being able to visualize, understand, and take actions based on information presented directly improves the day-to-day lives of patients. This app allows the users to relax more in their daily activities by trusting that any anomaly will be detected by the sensors.

### Learnings

- It's important to plan functionalities that will aid with future data accuracy.
- It's necessary to have good communication with the dev team so that each designed feature has optimal impact.





## **Next Steps**

### What's next?

- Create a report section with the option to download a summary of the health data.
- Analyze and train the algorithm from the current form responses and learnings section.
- Test the latest version of the app.
- Add a web panel.
- Adapt flows to have different roles in the app.





## Thanks for tuning in!



