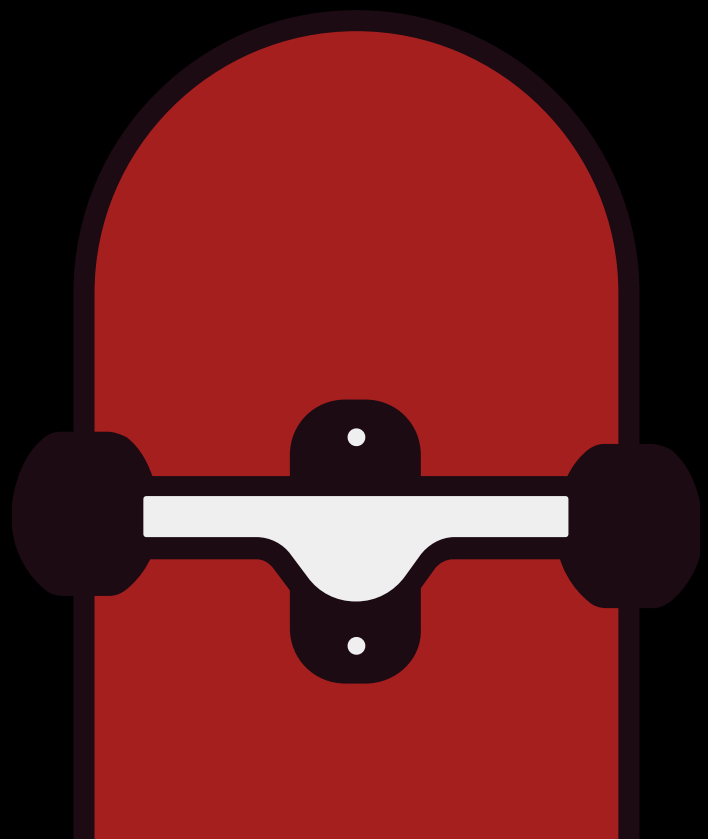
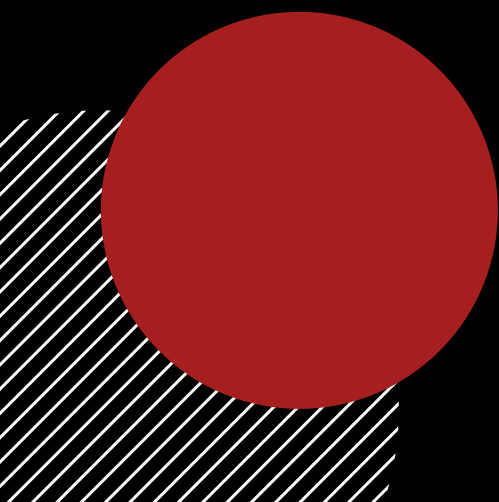




04  
22

# EMPATHIZE, DEFINE, IDEATE

SKATERIXX



# Introduction

The following document is a part of the Skatrixx project and it describes a considerable amount of the design thinking process. Other parts can be found in the next documents.

- **What do we use as software?**

- Design methods were depicted and created on Figma and the mind map was made on Miro

- **What was our goal at this stage?**

- Since we are adding some new features to the already existing Sktarixx app and improving the general design, the opinion of our target audience was crucial. We visited Area 51 a few times to directly talk with the skaters and conducted separate testing with interested participants as well.
- The goal of the testing and the interviews is to get to know our users better and validate the design decisions we make.
- A lot of questions were asked all throughout the months and ideas needed to be generated. We did that the best by using some of the CMD and UX methods.

- **What did we do?**

- **Research** - *Research was a must, from the beginning to the end: we looked into the data provided by the previous groups, made additional competitive analyses, interviews, and read many articles for inspiration.*
- **Emphatize** - *Interviews, Observation, User scenario/ Journey, Emphaty map, Storyboard, Persona, Cultural probes*
- **Define** - *Research, Mind map, Brainstorming, HMW, 5W and the H, POV*
- **Ideate** - *MoSCoW, Morph Chart, Design Specification, Mind map*



# Empathize

At the beginning of the project, we were given the research data made by the previous groups that worked on this project and analyzed all their documentation. The data in those reports included about 10 interviews, surveys, target audience definition, market research, and many more. We also had already defined features that were validated to be worked on and had to stick to all these guidelines.

In order to make the app our own style and to improve the existing features, of course, we had to add up to those research documents, work on improving the existing features, and get deeper insights. Also, to fully understand our target users, we once again visited Area 51 to both do an observation and to interview some more skaters.


The workflow was about gradually building the prototype and at the same time getting user feedback on whether they would have a tough time using the product.

Overall, we have about 5 interviews (concept and get to know our potential users) and 5 testing scripts (usability). For the concepting interviews, we had a base level prototype that we showed to some volunteers in the area and asked whether they see meaning in the features and would they use it. Almost all the answers we got were positive.

Based on these interviews, which serve as the most valuable data for our app, we derived **two Empathy maps**, that depict what the participant's feedback is, what they like/ dislike about the product, and some of their daily habits. They can be seen below.



Even though we already had some personas from previous groups, we decided to create our one, since we had different testing methods and to complete the design thinking process.



## Hans

Quote:

MY WHOLE LIFE IS CONNECTED WITH URBAN SPORTS, NOW I WANT TO GET MORE ADVANCED IN MY SKILLS OF SKATING

**Age:**  
18

**Nationality:**  
Dutch






**Occupation:**  
student

**Location:**  
Eindhoven, the Netherlands


**Character:**  
brave and adventurous

**Hobby:**  
Going out with friends and listening to music


**Personality:**

- hard-working; 
- friendly; 
- open for new stuffs 
- intuitive; 
- emotional; 

**Tech:**



**Brands:**



**Bio:**

Hans loves being outside with his friends and doing urban sports like roller skating. Now, he wants to learn skateboarding, because of the special energy that gives the board. However, most of the time he does not know what are his mistakes in doing the tricks. so he needs an app where he can track his tricks and see why they are not always successful. Also, Hans is a competitive person, so he wants to be at the top and to compete with his friends. He wants to meet other people who love skating and to share experiences.

**Motivations:**

- To be always on the top in any competition
- To have an application where he can learn how to do tricks
- To have fun

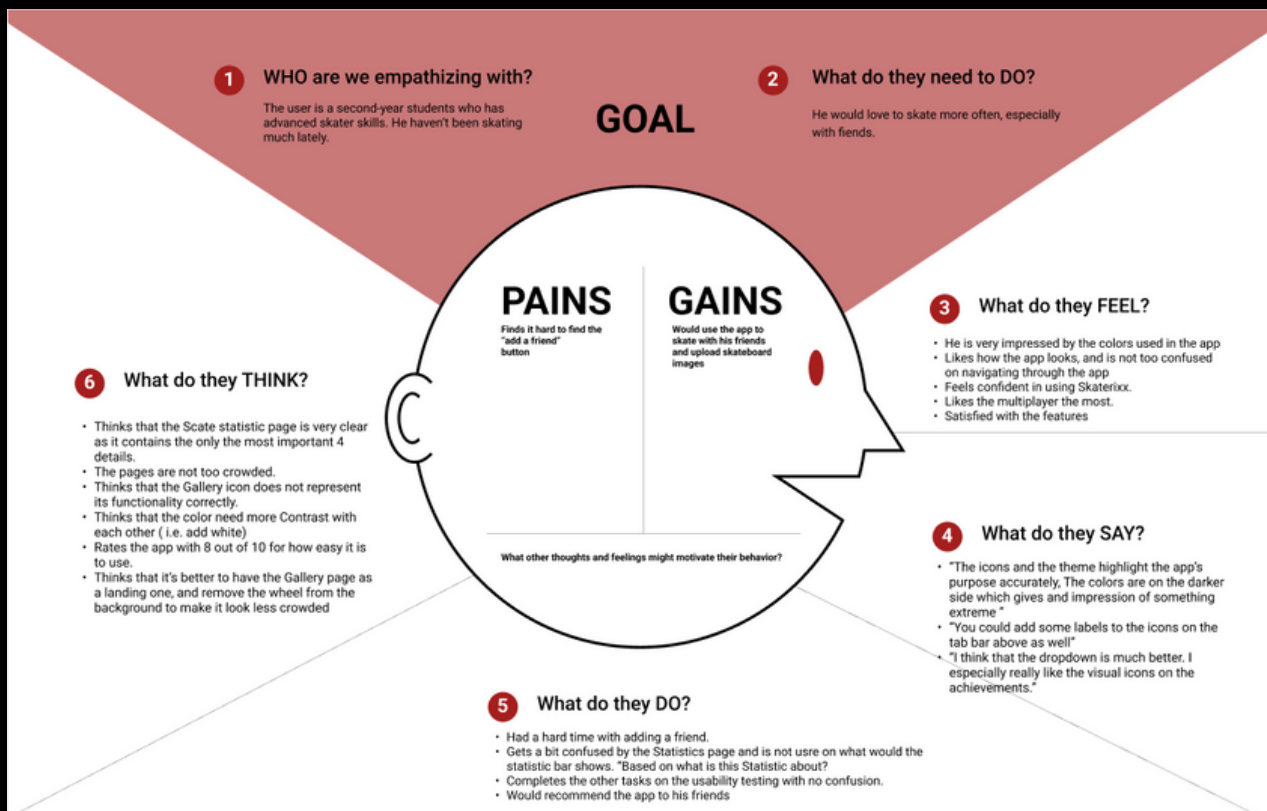
**Goals:**

- To get proficient in his skate skills
- To create more friends
- To compete with his friends

**Fustrations:**

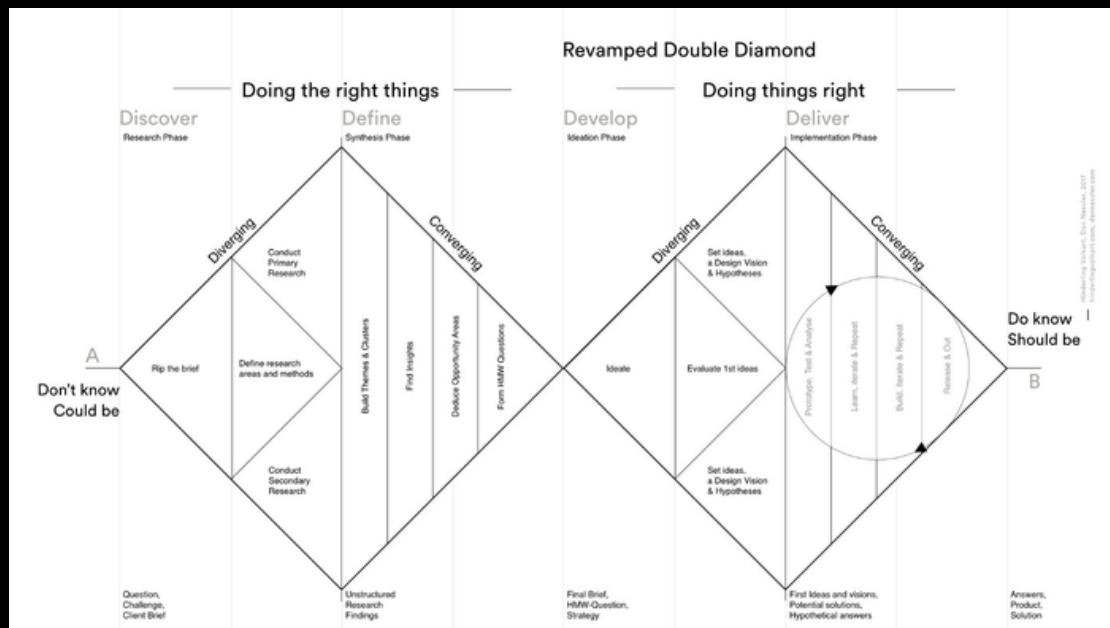
- does not know where he makes mistakes while he is doing the tricks





# Define

The design thinking technique we followed was the **Double Diamond strategy** model. First, we started exploring/researching the problem (with the feedback of teachers and volunteers). Then we brainstormed possible solutions and selected the best ones to be implemented, followed by more testing and validation.



Some of the problems we faced were:

- What can we do in order to improve the existing design?
- How can we give the skaters more freedom in using the app?
- How can we make the skaters feel more comfortable using the app?
- How can we make Skatrixx exciting and fun to use?
- How can we prevent users from getting confused when using our product?

How we worked is everyone contributing to this stage, as we formed the questions and problems definitions in long meetings discussing everything simultaneously.



## The 5W's & the H

- Who's going to use the app?

The main target audience is people who are beginners in skating, however, it will be for people who want to start learning skating or who are higher level.

- How are we going to evaluate their trick?

There is going to be attached an ESP32 that gives signals to the app through Wi-Fi or Bluetooth. Through them, we will understand if the trick is done correctly or not.

- How are we making it more exciting?

Having 3d visualization as well as having custom achievements where for instance they can change their 3d board to be with another wheel.

- When are the users going to use it?

While they are skating and after that to see their achievements or their friends and upload their skate.

- Where they can use the app?

They can use it when they are outside and they want to skate or be in Area 51.

- What is the main goal of the app?

The main goal of the app is to create an app for skaters, where the skateboarders can have a better experience while they are skating. The two main features of the app, one for them is the users to learn skating in an interesting and for entertainment by using some gamification methods. The other one is the skaters competing against each other and the one who did all the tricks correctly will win.

- Why the users will use it?

Because it is unique and entertaining. Moreover, it is innovative and modern.

## HMW

A lot of skaters, strongly believe that if there is an available platform that can provide video tutorials more and more people will be attracted to learn.

- How Might We: build a mobile app that will provide functionality for learning tricks for video tutorials?

According to the research we conducted, skaters really enjoy if they can connect with other skaters and sharing their setups with other skaters.

- How Might We: build a mobile app functionality from which skaters can connect easily and fast and upload images of their setups so that their peers can see them.

Most skaters are interested in a platform that can physically track their skating experience and provide them with real metrics of their skating attempts.

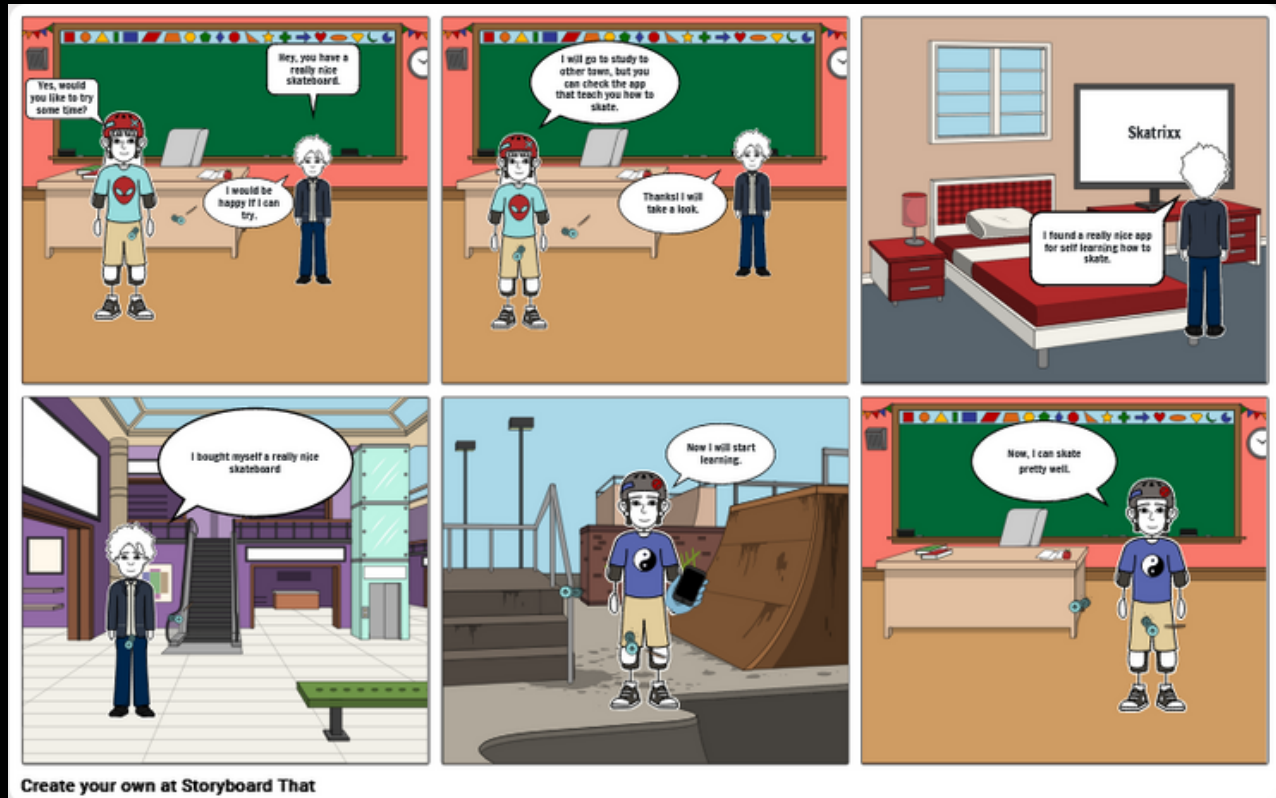
- How Might We: build a mobile app that can connect to a hardware module that can read data from the skateboard.

Regarding our research, skaters do not want to use their phones when they are skating.

- How Might We: build a mobile app that will provide a remote connection from the skateboard module with the mobile application and will independently.



## Storyboard



## Comparission with last version

		Skatrixx	Previous Version of Skatrixx
Product details	Gamification	Achievements based game with badge rewarding system and different types of difficulties. Customizing personal skateboard based on achieved badges.	Challenge games, Transpare reward system, Points in progression, Levels & Badge and page for collecting badge
	Actual game	It is lobby based where you can add people or join other skaters' lobbies. Basically, all people in the lobby can proceed tricks and the system will calculate their attempts and provide scale and ratings.	Pre rounds: for each trick you get a tutorial of the trick of 3 seconds, if you already know how the trick goes, you have rest. You have 1 minute for each trick. This always stays same. On the final round, the two players continue to play until one of them drops out.
	Game modes	There are two modes that you can choose from: solo or practice mode, where you can watch premade tutorials and try them and, in a level, based system and the lobby mode where you compare yourself with other skaters.	With online you only have the choice to play 1 game mode. If you create a custom game you can add your own challenges. This could be anything.
	Lobby's	Online based lobby's that a skater can join or create. You can invite other people to your lobby through specific code or QR code.	Lobbies can be online and offline. Offline lobbies can be compared to custom games. Online lobbies are created through matchmaking.
	Practice/solo mode	Is level based with video tutorials from which a skater can learn tricks and can try them for a period of 60 seconds without any rules and the system will inform the skater if he matches the trick and his last attempt metrics.	Practice tab where you play game alone with no time limit and rules, the focus here is on practicing tricks and preparing for the real game. Progress will also be tracked so that the user has a clear picture of his or her progress.
	Motivating	For every successful attempt the skater will unlock new level or difficulty level.	You will receive notifications (e.g. every week) that you have landed a certain trick a percentage more often than last week.





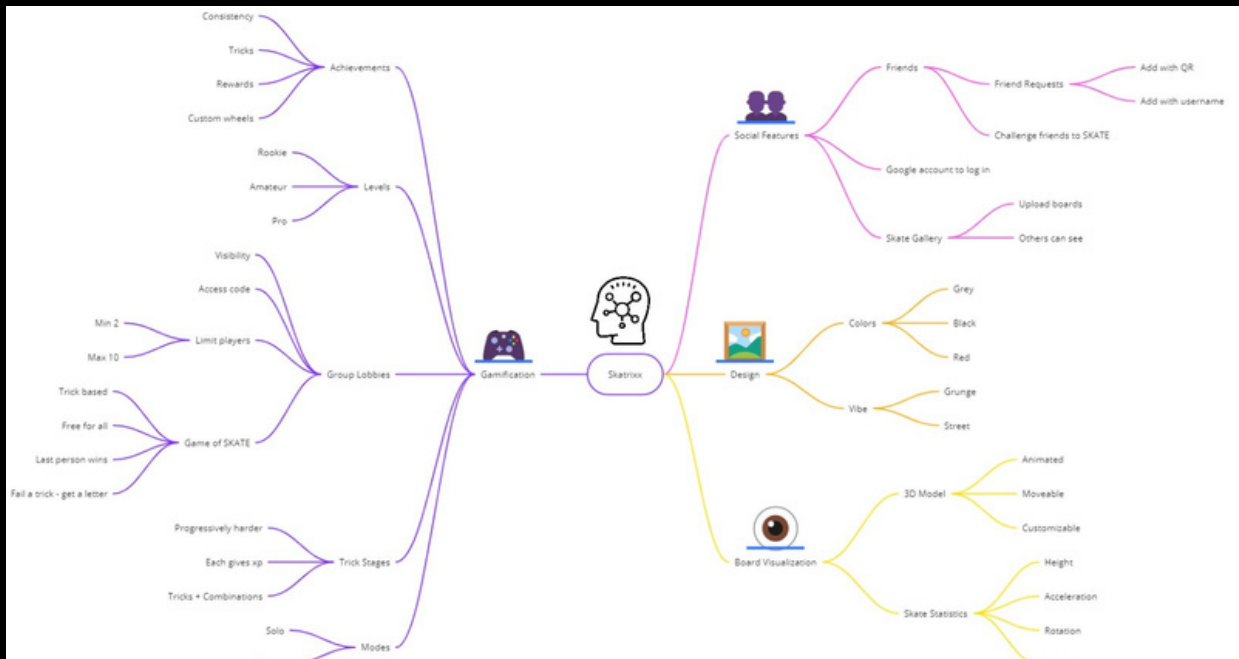
## Swot analysis

	Positive	Negative
Internal attributes of the organization	<div><b>S</b>trengths</div> <ul style="list-style-type: none"><li>• PWA - application, can be used on every device</li><li>• Simple, cool design, easy-to-use</li><li>• Big system with purpose to establish SKATE ecosystem ( solo game, SKATE game, profile, acheivements, skate statistics, friends connections, skate gallery</li></ul>	<div><b>W</b>eaknesses</div> <ul style="list-style-type: none"><li>• Project time lenght</li><li>• Quality of Hardware parts</li><li>• PWA is still in development stage</li></ul>
External attributes of the organization	<div><b>O</b>pportunities</div> <ul style="list-style-type: none"><li>• Make really good IoT system</li><li>• Make even more engaging the Solo game where users learn to skate</li><li>• Make SKATE game more powerful so that can inspire people to skate together using the app and compete</li></ul>	<div><b>T</b>hreats</div> <ul style="list-style-type: none"><li>• Hardware parts can not accurate enough</li><li>• System can't be used if you don't have internet conneciton</li><li>• System can have connection issues if your skate board is too far from your phone</li></ul>



# Ideate

The easiest and quickest way to generate many ideas was Mind mapping, as we quickly grabbed Miro and discussed what's potentially best to be added or removed from Skatrixx.



We kept the main idea of the app, yet ideated on how can we upgrade and make it even more interactive. The game now has two options for skating: Solo and a Group one. Originally there had to be 10 participants for a group game but we decided that it's better not to restrict the audience too much and let them decide the number of players. Now they can also just learn how to skate alone and unlock one of the 3 "Allyes".

## POV

"Design a <form of solution> to enable <users> in <context> to <perform activity> in/with <target performance>"



Design an IoT system including (a PWA application, Back-end server, and hardware system) to enable people who want to learn to skate or want to compete with other skaters to use a modern skate system where they can learn new tricks, perform great results, enjoy skate time with friends and share moments through skate gallery or make new friends connections, win new badges or skate add-ons that show their progress and reward them, with the purpose to create the modern skate ecosystem and the top trend among skaters.

## Concept

Skatrixx is an app made for skaters who have almost no experience to the ones who have very advanced skills.

The main idea is to attach an Arduino chip underneath the skateboard and it will detect the real-time statistic (after the skater performed the trick) such as height, rotation, speed, and airtime.

If the user is a beginner, for instance, the app will calculate the data received from the chip and suggest to them what aspects of the trick need to be improved(i.e the attempted trick needs to be done a bit higher). This is especially relative to the Solo game, where the user plays to complete tricks that are grouped into 3 categories of difficulty(Rookie's alley, Ambitious's alley, Expert's alley). The harder the trick gets, the more XPs they get, and according to that, the user collects various badges, which are on the Achievement page.


Every user has a profile that has a menu(right below the profile pic) with 3 options: the user has friends, a Gallery where they add pictures of their skateboards with some description attached to them, and a rankings area (Friends, Country, Word) and underneath are the badges the skater has collected.

The Group game seems to be the most appealing to the users since they can race with friends and win even more awards. Skaters can create groups or join already existing ones with up to 10 other skaters and the chip on the skateboard estimates who performs the best according to the data on the 4 elements. There is a page with a 3d model of the skateboard and the statistic of the trick attempt that the users can look at. To put it short, Skatrixx is a gamified progressive web app that brings the skaters in are 51 together and offers them fun times together while doing the thing that they like the most - skating.

The flow of the application is illustrated in the image below






























## User Scenario/Journey

 <b>Benny</b> <ul style="list-style-type: none"><li>• High school student</li><li>• Single, 17 years old</li><li>• Eindhoven, Netherlands</li></ul>	<b>SCENARIO</b> Benny is learning how to use skate together with his friends and Skatino seems to be the perfect app how to learn in a fun way.	<b>GOALS</b> 1. Become a good skateboarder. 2. Have fun with his friends. 3. Be amongst the best in his country. 4. Connect with other skaters					
<b>Action 1</b> <p>Benny download the app from Google play and creates an account. Then he goes ahead and explores what's on his profile.</p>	<b>Action 2</b> <p>As he sees that there is an option to add pictures of his skateboard, he rushes to upload his. He clicks on the "Upload" button that is on the bottom of the screen and selects the image.</p>	<b>Action 3</b> <p>Ben can add friends to his profile from the menu on the top and invite them to the lobby later.</p>	<b>Action 4</b> <p>After completing a trick successfully or having streaks, Ben gets set of certain achievement badges. They are displayed on his profile as well.</p>	<b>Action 5</b> <p>He goes to the lobby and joins the team that consist of his friends and invites some more.</p>	<b>Action 6</b> <p>He attaches the chip underneath the skateboard securely and connects the hardware to the phone, where he'll see the statistics like "height", "rotation" &amp; "speed" after performing the trick. He clicks play.</p>	<b>Action 7</b> <p>Or he can also just say it out loud and the app will automatically start the counter of the time that is different for each trick.</p>	<b>Action 7</b> <p>When everyone in the team is done doing their trick attempt, the app calculates the statistics of who performed the best. Then the winner team is chosen, and they get the XP's and badges in some cases.</p>
<i>"I can see on what place I'm ranked, based on my skills, that's so cool."</i>	<i>"Here I can collect all of my skateboard pictures in one place and I can even add a description to it."</i>	<i>"I can meet other skaters from my city and become friends with them."</i>	<i>"If I get 5 more badges I will be one of the intermediate skaters!"</i>	<i>"I can see that my friends are in team #23 from their profile pictures shown on the list"</i>	<i>"By collecting gems I can also get a certificate and actually put that on my LinkedIn"</i>	<i>"I'll try out the text to speech voice detection to start the trick counting"</i>	<i>"It's so fun and exiting to see how the app creates a dynamic racing environment for me and my friends"</i>
Opportunity for social comparison.	The user saves the memories of all of his boards.	Connecting to users with the same interest.	Since badges are shown on the profile, other users will see Benny's achievements by the badges.	The user can join whichever team they want to.	The user knows what exactly needs to be improved in order to do the trick better and compare it with his friends.	Since the users don't hold the phone while skating, they can interact with the phone with no need of clickig.	Group activities

With the **Morphological chart** (CMD Method), we categorized the features in the app and thought of possible solutions for each one. Here we listened and structured all the elements and pages, which made the brainstorming process more organized. The idea was to come up with a solution to each of these categories and present them visually.

## Morph Chart

FEATURE	SOLUTION									
Profile	 Log in	 Image Gallery	 Upload a picture	 Friends	 Ranking	 Profile + Badge XP's	 Second menu v1	 Second menu v2		
Lobby	 Lobby v1	 Lobby v2								
Levels	 Level Menu	 Trick Menu v1	 Trick Menu v2	 Trick Menu v3	 SOLO	 Trick Timer	 Skip to next	 VS		
Achievements	 Wheel Badges v1	 Achiev page	 Badge labels & Progress bar	 Unlock	 Special icons/Emojis	 Congrats alert				
Statistics	 Stats after trick v1	 Stats page, 3D model	 Save or Repeat							



## Stakeholder requirements

1. Create a cross-platform mobile application
2. Create a gamified concept for a mobile app for Skaters
3. Create IT system including (software and hardware connection)
4. Follow the Design Thinking process
5. Create user-friendly design
6. Create concept validation, usability testing
7. Read skate data from hardware system
8. Visualize skate statistics in the mobile application

## User requirements

1. Make the app more autonomous so the user can use their phone less
2. Make the text color and the background match so that everything is visible
3. Add a description of why you completed or not the trick
4. Make the trick attempt statistic to present only one value so that it is simpler
5. Put the Gallery page to be the landing one (as it seems to be the most interesting)
6. Use the colorful alleys elements on other pages as well, as it makes the app more look lively
7. Having a game would be more interesting especially if the user is an intermediate level
8. Adding labels to the icons
9. On the Friends page, make the adding the friend button more visible (same for Gallery)
10. If the user is a beginner, he could make friends through the app easier

**User flow Link:** <https://www.figma.com/file/wxuo4XgO9jTaLkISywrvpN/User-flow-skaterixx>

The Empathize, Define, and Ideate phases are constantly going to be continued and iterated over, as we keep making the product better and ask for the user's feedback.



## Sprint planning: Phase one

- **Sprint 1**

- Analyze previous groups' research, documentation and
- Design document
- Frontend setup
- Hardware Research
- Backend setup
- Initial UI draft
- Register/Log in Research
- Connect with friends' research
- Competitive analysis regarding skate games
- Sprint planning
- Low/High fidelity prototype

- **Sprint 2**

- Backend setup + deploy
- Initial Board visualization (Embedded)
- Applied research levels/tricks
- Connect with friends
- Profile friends' connections
- Levels basics
- Register/Log in research
- Profile UI

- **Sprint 3**

- SKATE game basics
- Achievements UI
- Logic Solo game
- Front-end Solo game – tricks
- Board visualization – last statistics
- Initial setup of profile skate gallery
- Achievement's logic – phase 1

- **Sprint 4**

- Achievements UI
- Skate 3D model visualization
- Hardware setup and connection
- Board visualization
- Solo game trick list – prototype UI
- Achievement's logic – phase 2
- Application testing, validation
- Troubleshooting
- Phase 2 planning



## Important links

- skaterixx previous -  
<https://www.figma.com/file/idWFEXv3EJhkir1gCu6Cg2/Skaterixx-Prototypes?node-id=1%3A13>
- skaterixx -  
<https://www.figma.com/file/xPccm5aQFLGmXnU8X67uyT/High-fidelity-Skaterixx?node-id=573%3A770>

