MAXEM®

Featuring Max de Mooij

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INTRODUCTION

This document contains my progress of the assignment for Maxem about making homes more sustainable via an interactive app. More information about this app will be specified.

Maxem is a product from Cohere. It's meant for people with solar panels and an electric car. Maxem can manage energy from solar panels to the house, to the car or to the grid. By managing it the correct way, Maxem can charge the car up until 50% faster.

The main goal of Maxem is to help people to become 100% self-providing and sustainable.

About Cohere

Cohere is the company that invented Maxem, the product where I'm designing an app for. What does Cohere do and what are they focusing on? Our debriefing specified the following:

"Over the past 100 years, our society has learned to function with fossil fuels. Our cars, our houses, our industry: they all depend on burning petroleum, gas or coal. This is all about to change in a relatively short time; within the next 20 years our society should become 100% sustainable.

At Cohere, our goal is to make your home 100% sustainable. We do this by controlling energy at home with our product Maxem®. This is an energy control system controlling how your car charges. This may be at full speed, using fossil fuel or at exactly the amount of power your solar panels generate.

Maxem® allows the user to check the home energy consumption, its car charging process and its solar panel energy production. The user can change the settings of Maxem® system to make sure that his car charges with the electricity from the panels if possible."

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PROBLEM STATEMENT

The problem statement is the main question for my research. The answer to this question will be the foundation of my solution for this product (spoiler: an app).

How can Maxem users become self-providing?

To be able to answer this question, I need to know everything about solar energy and grid energy, including average energy usage.

"Your assignment is to design an interface for the people in the household and user(s) of the car. The interface should support the goal of minimizing the use of fossil fuel, while the users maintain a modern lifestyle."

USER RESEARCH

The target Audience

The users that will be using Maxem are mostly early adapters. People who like new gadgets that influence the way they live.

Interview with a Maxem customer

My user research is based on the research of my classmate Orkun. He spoke a Maxem customer and was so kind to share the results with me.

The next questions are asked by Orkun and answered by Maxem client Alex Thorne.

General questions

What's your age and your current job?
34, ICT-Consultant

Do you have an electric car and/or solar panels?
Both, Tesla Model S.

How long have you been using them? (electric car and/or solar panels)
The car and solar panels for 2 years. While purchasing his Tesla he came in contact with Cohere and from there on they handled his solar panels and Maxem.

Questions about Maxem

What do you think of the Maxem product? Do you find it useful?
He is really pleased with it. He said that he'll be getting a 4th version of Maxem that will support solar panels. Load balancing is a big thing for him. He also charges his car during the weekends since it costs less. See the next point for further motivations.

What got you interested in it?
He is really interested because he is aware of his usage and thinks that unnecessary consumption is a waste and not good. He also likes that Maxem takes manages the load balance, which results into him not having to worry about his usage. In the end he would like to have Maxem handle as much as possible without having to worry about things. That's his primary interest, his secondary interest is the data and the visualization of it. It's a fun and interesting thing to see his progress.

How often do you look at the statistics of Maxem?
Aside from Maxem he also makes use of fitness devices and apps (running). Apps he uses are My Fitness Pal and Runkeeper. He finds that these apps present his data in a useful and desired way. He likes to see his results and during his workout sessions he likes it that they give him progress updates.

What's the most relevant and useful information you want to get from Maxem?
He doesn't really feel a sense of control. But he would like to see which car charged and how much they charged. He misses that when he charges his car at home, and keep in mind that someone else could also charge there, he isn't able to export the charging data just about his car. He wants this for his accounting for his company.

Recognition between isn't supported by Maxem and it's also not able to recognize what the battery status is of the car, since it doesn't have access to the cars data. He said the charging stations don't know any of this data.

Now you have Maxem, do you feel a sense of control with Maxem over your electricity consumption?
When he has an empty battery in his car his priority would be to charge his car fast to reach a minimum of 100km rideable battery. After that he would like to have the car charge at a normal or slower rate. He also wouldn't like to share his personal data or that of his car. Because if he only shared his cars data Cohere would also gain access to many other things from him, which is too much data.

He would like to have the Powerwall, since it would help him to live a more green life. Right now his solar panels aren't providing enough energy for him, so he sends it back to the grid. He would like to live of the grid, but for that he would need a bigger roof or better solar panels. That would be something for the future.

Questions about the car

What's the average distance you travel with your car?
He uses his car for his work and private use, which results in +/- 50km and at most 100km. He doesn't worry too much about his battery status.

How often do you need to charge your car?
His cars battery is almost always full and he doesn't worry about it. But let's say he has a long trip ahead of him he is always able to use the Tesla Super Chargers, so

nothing really to worry about. In the future he would like to get more Tesla cars, especially the newer models. He mentioned he is planning on having 3 electric cars. This is something he also sees as a problem, since Maxem can't separate the cars while charging. It also creates a problem with the load balance of Maxem. (Not sure how this works but...) Maxem has a kWh limit and with a house and 3 cars charging it can easily reach the limit, causing the cars to charge at a really low rate.

Bonus question

What does your ideal product look like?

Gas and water are things he would also like to have kept track of with Maxem. He prefers to have 1 device and app to manage all of this and show him what's going on. Water consumptions is pretty high in his house. He mentioned about working out and his children, but there was some noise going on in the background. People take long showers sometimes, so lots of warm water going to waste. (He mentioned timelocks or something to prevent this, but I'm not sure what he specifically said about this)

P.S. money is no problem for Alex.

User Goals

To understand what users want to be able to do with the app, I formulated user goals based on the user research. These points are crucial for users:

- Becoming self-providing and more sustainable
- Insights in energy usage
- Faster charging time for the electric car
- Saving money is additional

In my concept, this will be the key values. Knowing this will help me to build a user centered design.

ENERGY USAGE STATISTICS

The goal of gathering the following statistics was to see if and how the system could save the user money by directing solar energy to certain areas (like the home electricity, the boiler, the house or the grid). Also I want to know how the energy balance on average is between the incoming energy of the solar panels and the energy usage of the home and the car. That way, I can understand the fundament of this assignment.

As a surprise, I have converted every number and statistic in this document into an excel sheet which calculates energy consumption, energy win, money loss and money win based on the amount of solar panels and persons you set.

If a teacher is reading this, and considering to buy solar panels, then this excel sheet might be handy for you. Every outcome is based on an adjustable variable.

Yes, I went in major nerd mode for this.

Average Energy Usage

I want to start with facts and numbers. How much energy does an average person consume a year? Disclaimer: these numbers can heavily vary depending on the type of house and the person living in there. These numbers are from “Milieucentraal”:

1 person – 2420 kWh
2 persons – 2920 kWh
3 persons – 3430 kWh
4 persons – 3920 kWh
5 persons – 4420 kWh

(Milieu Centraal, 2016)

Per day

Because my app will be used on a daily base, I need the statistics and predictions for one day too. So I divided the yearly energy usage by 365 to get the daily usage for 1 person: 6,63 KWh

Activities

Where does that number come from? What are we doing on a day of high energy consumption? Well, we’re using the following devices:

Washing machine	0,9 kWh
Dishwasher	1,5 kWh
Television	0,6 kWh
Laptop	1,0 kWh
Router	0,5 kWh
Fridge & Freezer	0,8 kWh
stand-by	1,1 kWh
Microwave	0,12 kWh
Lights	0,12 kWh

Additional persons

Every additional person in the house will use these devices too:

Laptop	1,00 kWh
Microwave	0,12 kWh
Television	0,20 kWh
Lights	0,50 kWh

(NUON, 2015)

Electric car

Every Maxem user has an electric car, which hasn't been counted in the previous numbers yet. So what is the capacity of a Tesla?

A Tesla model S has a battery capacity of 85 kWh (verbruiken.nl, 2014)

I assume that a user drives 50 KM a day, based on my classmate Orkun's user research study.
1 KM is 0,2 kWh (verbruiken.nl, 2014), which means that (if the car wasn't charged somewhere else during the day) the car consumes 10 kWh a day. Which is more than a whole house consumes.

The price of grid energy

To know what the users will earn and spend with their solar panels, I need to know what they pay per kilowatt-hour to the energy company. During the day and during the night. It might be more cheap to use energy over the night and put the solar energy into the grid.

1 kWh = €0,22 (Energiesite, 2016)

The price difference between night and day electricity is 2 / 3 cents a kWh. (Essent, 2016)

Okay so that is a very greedy price. No need to focus on that difference. Always using the washing machine might save you €30,- a year. But the same goes up for using the washing machine when the sun is shining.

Solar Energy

What does a solar panel produce?

1 solar panel (of 255 watt) produces 224 kWh a year. (Energiesite, 2016)

That means that a solar panel produces 0,61 kWh a day. (Geas, 2016)

So the average person would need 14 solar panels to compensate for just the house. And an additional 20 solar panels to compensate for the electric car.

Solar Energy back into the grid

How much money do you get when your solar panels put energy into the grid? It appears you don't **get** money until you have put more solar energy **into** the grid than the amount of energy you have consumed **from** the grid.

So if you consumed 4.000 kWh in a year, and your solar panels have delivered 1.000 kWh to the grid, you only have to pay for 3.000 kWh.

If you consumed 2.000 kWh in a year and your solar panels have delivered 3.000 kWh to the grid, you don't have to pay your energy bill of 2.000 kWh, and the energy company will pay the remaining 1.000 kWh, but only for 0,08 cents for every kWh.

This only applies for The Netherlands. In other countries, you may not even get money back or be able to compensate on your energy bill.

(energieleveranciers.nl, 2016)

(NUON, 2016)

(Gaslicht.com, 2016)

The rules in The Netherlands concerning the financials of this topic will not change until 2020. Jan-Willem strongly believes that companies will no longer financially compensate people for providing solar energy into the grid.

(Energiesprong, 2015)

Gas usage

Gas is also energy. But it's more expensive energy than electricity. Gas is used to heat the water and to heat the house (in most cases).

An average person uses 790 m3 gas a year. 290 m3 of this gas is used for warming up water. (Milieu Centraal, 2016)

The remaining 500 m3 gas is used for heating the house. (Milieu Centraal, 2016)

So what does gas cost? It costs €0,65 for 1 m3 gas. That's way more expensive than the €0,22 for electricity. (Energiesite, 2016)

Meaning that the average household pays €513,5 a year for gas.

With an electric boiler, you would use 1.900 kWh more a year, which costs €418,- a year extra.
Or it's free if the solar panels are being used to heat the water.

So a user can save €100,- by buying a solar boiler and an electric boiler. Or the user could save €513,- if the solar panels are used to heat the water. But then the user has to buy energy for the rest of the house, which is ultimately equally expensive as buying energy from the grid to heat the water.. Anyway, I'm thinking too far ahead again. That's my thing, sorry.

The point is, the user saves money by going electric and going solar instead of burning gas, which is expensive and bad. Especially bad if you bought an electric car and solar panels to be able to say that you're sustainable. Bad you. Don't use gas.

Conclusion

In the Netherlands it doesn't matter where the solar energy goes to (money wise), because the energy company lets you subtract the energy you've delivered to the grid 1/1 from your energy bill.

But that's only when you **don't** deliver more to the grid than what you get from it. So if your solar panels have put 3.000 kWh's **into** the grid, and you used 1.000 kWh's **from** the grid, the energy company will pay you for 2.000 kWh's. And that's just 0,08 cents on average. In this case, the user could save money by installing an electric boiler or solar boiler, so the energy that's left from the solar panels can be used to save gas. Because gas is 0,65 cents.

All of this would be highly profitable if the user didn't have an electric car. The electric car consumes so much energy that the user will never (for the next couple of years) put more energy into the grid than they will get out of it. So for the next 4 years, the user doesn't have to worry about energy going into the grid (moneywise).

But after 2020 (and right now in foreign countries), it will matter (moneywise) where the solar energy goes to, because according to Jan-Willem, energy companies will give nothing or just a tiny bit back for the amount of energy you put back into the grid.

Let's stop talking about money. After Skype call with Jan-Willem, the goal of this app became more clear. Money isn't the focus right now. The focus of Maxem is to help people in becoming self-providing. This is what users from Maxem also want, according to Orkun's user research. Money is not the most important for people with an electric car and solar panels. The most important aspect for these Maxem clients is to become self-providing. This won't save people money right now, but in the future it will.

REQUIREMENTS

From the scenario I made for User Experience, I concluded that the app should be primarily fast and easy to use, because most users will be using it after a full workday and don't want to be overthrown by decisions and complicated statistics.

MOSCOW Analysis

To prioritize the requirements for the app, I made a MOSCOW analysis. This is useful to define the things an app MUST have, the things it SHOULD have, the possible things it could have for in the future and the things it would have if time allows.

Must have:

- Clear energy & money insights.
- Help in becoming self-providing.
- An option to quickly charge the car.
- A super fancy design.

Should have

- Home energy advise based on recent energy usage.
- An option to set a maximum charging percentage for the car.
- Support for Tesla power banks.

Could have

- An integration with apps like Toon for better insights and advice.
- An option to see how much money Maxem has saved the user.

Would have

- Achievements.

Job stories

Based on the User Goals, the Statistics Research and the MoSCoW analysis, I created job stories to specify the user needs.

The job stories are great to know the time and the reason of the user needs. This allows me to design the app for the most suitable situations the user will be in.

The weather

When I wake up, **I want to** see on which hours of the day the sun is most active **so I can** plan energy consuming activities for that time.

The car

When the car is low on battery, **and** I need to use it in a couple of hours, **I want to** charge it quickly so I can use the car as soon as possible.

When the car is low on battery, **and** I need to use it in a couple of hours, **I want to** charge it quickly so I can use the car as soon as possible.

Statistics

When I have time, **I want to** see the balance between grid energy usage and solar energy usage **so I can** see the progress of becoming more sustainable.

When I'm curious, **I want to** see how many solar energy has gone into the grid **so I can** see if I'm self-providing or not.

Advice

When my energy consumption is not sustainable, **I want to** get advice **so I can** become more sustainable.

THE CONCEPTS

To show all the user goals, requirements and thoughts, I made a wireframe that shows the first stage of my concept. It has the three main features (insights, fast charge and becoming self-providing).

At The Next Web conference, I spoke a developer from the Toon app (the main competitor of Maxem). I asked why the app didn't have user control regarding the management of the solar energy. His answer: "users don't want that many responsibility". This was confirmed by Orkun's user research. His respondent Alex doesn't want to manage his energy. The system should do that.

Jan-Willem was briefing us about the app which would allow the user to manage his/her home energy. I had a discussion with classmates who said "the user must have control over the energy management, because that was the briefing". In my opinion, the users' wish always trumps the client's wish. Otherwise, what would we be User Experience Designers for? As long as the goal is clear: become 100% sustainable.

So I decided to let the system do all the work. After running the numbers, I discovered that most the solar energy will be used, no matter the distribution. The only factor that makes a difference is the timing of energy consuming tasks. If those are done at sunny hours, it would make the user more self-providing than if they were done during the night.

Concept 1

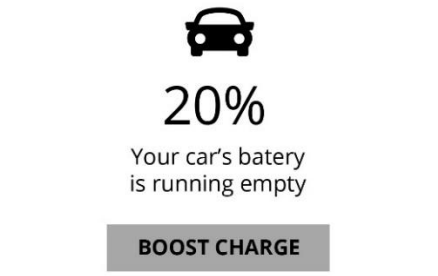
On the next page, you will find a digital wireframe of my first concept. It's a one page scroll app.

This concept was based on saving money. **However** at the same time I was working on this concept, **I discovered that saving money is not the main goal of Maxem users and of Maxem**.

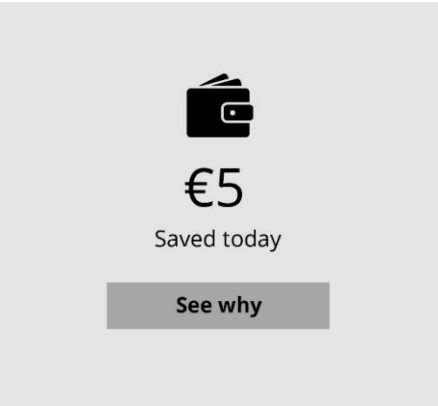
- WIREFRAME ON THE NEXT PAGE -

The point of the app is to manage solar power and to quickly charge the car with it. To do that, you need… sun!

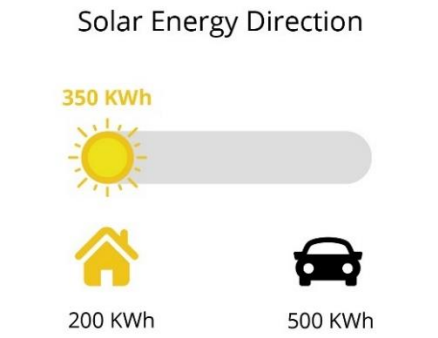
It's therefore good if the app can tell you how many solar power is available.



When the car has a low battery, the option to boost the charging time becomes available.



It feels good to see the amount of money you've saved or earned. It's a reward for your energy management with Maxem.



It's now visual where the solar power is going to. But I want to make this section more detailed by adding grid power usage. Also, I want to know if it's possible to split solar power.

Figure 1 Wireframe of my first concept

Concept 2

Because money didn't appear to be the main issue, I pivoted my concept towards something more sustainable and self-providing. I found that becoming 100% self-providing is still a dream, but in order to get as close to this goal as possible, the system could use some help from the user. That's why I kept the weather forecast in this concept.

The drawings have a weather forecast immediately on the home page of the app:

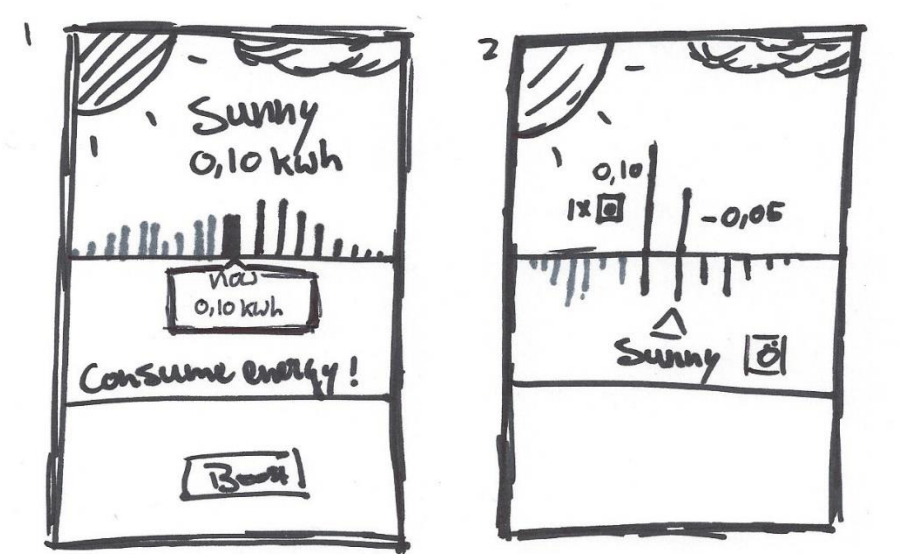


Figure 2 Sketches of my second concept

Pro's

1. The user can plan his/her high energy consuming activities on hours when the sun is shining.
2. All information is immediately accessible.

Con's

1. The screen gets too busy
2. It's more interesting to see the difference between the home energy usage and the income of solar energy, because that will urge people to minimize the home energy consumption as much as possible

Concept 3

But the solar energy forecast should be easy to access, and it should be related to the home page, because it's interesting to weigh the amount of solar energy for the next hour(s) to the amount of grid energy usage. It gets confusing, right? Don't worry, I found a creative and fun solution without compromising the usability.

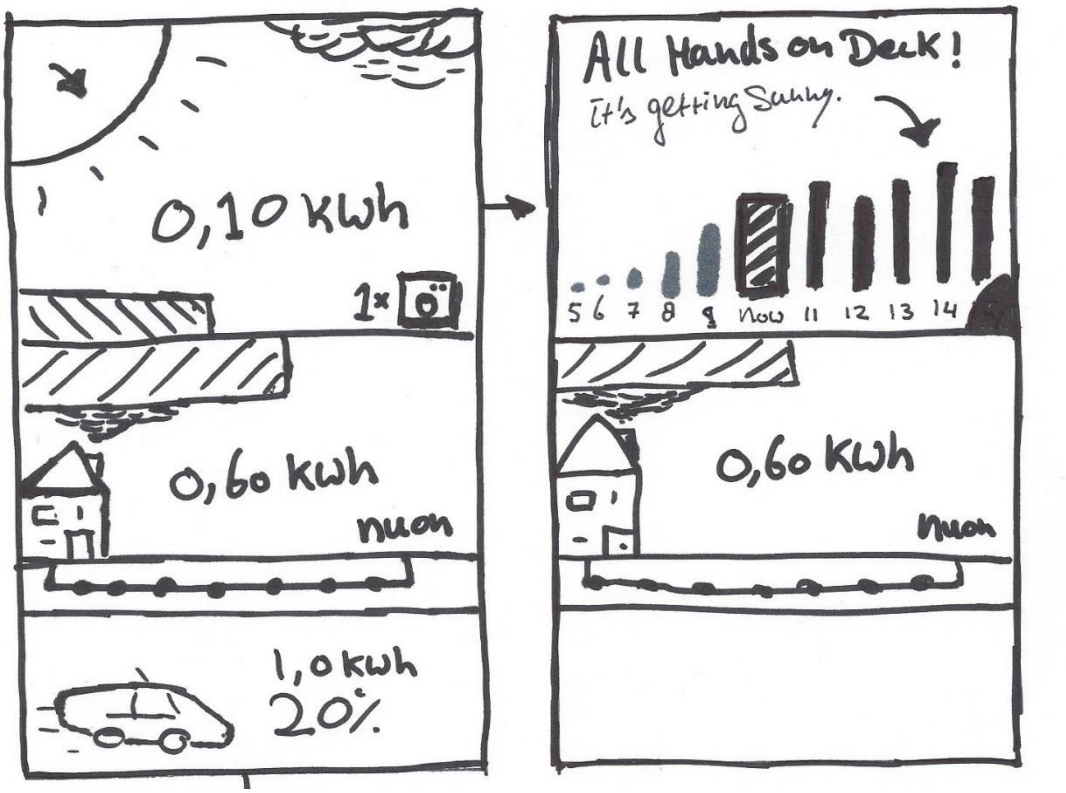


Figure 3 Wireframe of the Home screen

When the user swipes the sun in the upper-left corner down, the solar energy forecast will appear (as shown in the right screen).

That way, the most important information (solar energy income and grid energy usage) can be displayed at the home page immediately.

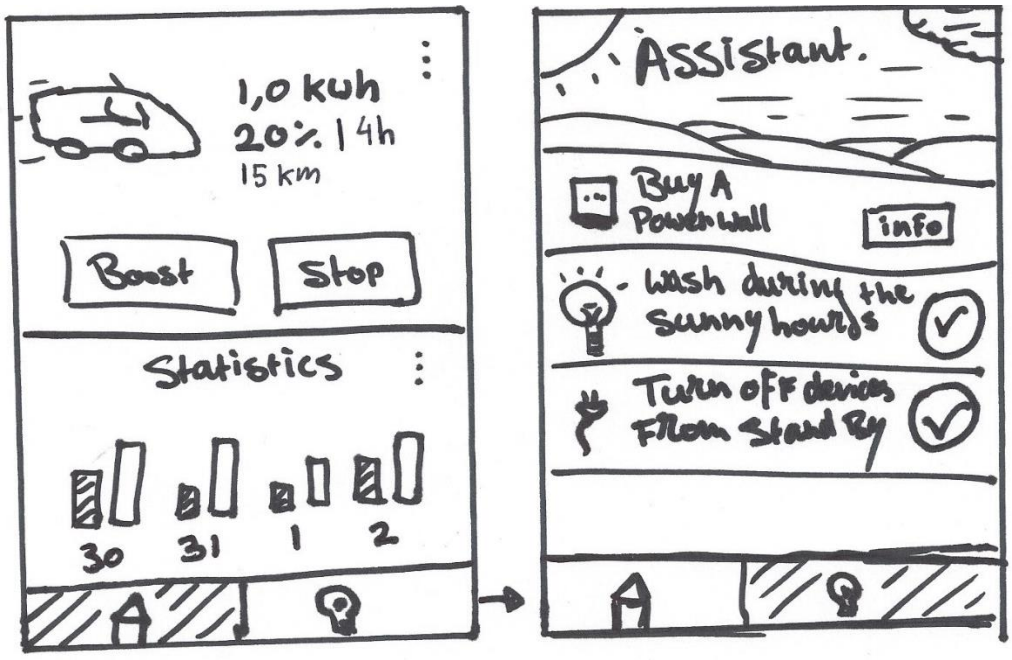


Figure 4 Home screen scrolled down

Pro's

1. It shows the amount of kWh's the sun produces on this very moment.
2. It also shows the amount of kWh's the house is using from the grid.
3. The solar forecast is in reach of one swipe.

Con's

1. The wireframe looks busy.
2. The one screen scroll makes it unordered

The con's are not big enough to make a new wireframe, because they can be easily dealt with when I'm working on the visual design. In the conclusion on the next page, I will describe how the cons are fixed.

Touch points

As you could see in the previous concepts, I based my ideas and sketches on a smartphone app. I will work the smartphone app out in a visual design, and the other touch points will remain food for thought.

Smartphone app

Why did I choose to design a smartphone app? Because the smartphone is the most-used device that the user almost always carries with him/her. It also can provide all the data and interaction the user needs.

Tablet app

When a smartphone app is fully designed and developed, it doesn't take much effort to optimize the app for tablets. Early adapters are likely to have an iPad laying around which is used quite often.

Smartwatch app

In my opinion, the smartwatch is a nice add-on to Maxem, but not necessarily important for the user. It can be handy to see statistics from the house on your smartwatch, but in order to optimize the app for smart watch, a lot of data has to be left out because of the size of the smart watch.

Conclusion

Concept 3 is the winner, because as explained, it displays the most valuable information first and has the second most valuable information ready behind one swipe. This is the key information that will help people to become more sustainable.

To keep everything clean and clear, I divided the app in 4 main parts:

- The home screen
- The car screen
- The Statistics screen
- The Adviser

The first three parts' purpose is clear, but what does the adviser do? It gives relevant advice based on the energy consumption and production of the house and car. The adviser will help the user to become more sustainable and self-providing. Maxem already has the user's data, so analyzing it and giving personal advice is a relatively easy and user friendly feature to build in.

THE VISUAL DESIGN

Figure 5 Final Design of the Home Screen

The Style

The main question that Maxem will have is “why didn’t you use our style guide?” First of all: sorry, for that! I tried, really!

Maxem is a company that predicts and shapes the future of sustainability by emphasizing green energy, made and consumed by the people at home. The product is innovative and high-end.

Shapes

I want to make the app feel modern and light. Because it’s about sun, light and energy. When thinking about sustainability and sun, I think about organic shapes. To keep it clean, I use abstract shapes. So the shapes shouldn’t be very detailed, flat and sharp. That’s why I use waves as dividers in the design. The waves can also be interpreted as hills.

Colors

Green energy is mostly sun and wind. The sun is often associated with Yellow & white. The wind or air is associated with light blue.

A perfect day to generate solar energy is a day with a light blue sky and a big white sun.

Knowing that, I want to use light blue and white as my key colors.
I also want to use a negative color for grid energy, because we want people to barely use that. Red is too heavy for the design, so I went with pink. Okay, it’s also considered the color of love, but it cuts both ways. In this case, pink is the big contrast with blue and white. It’s a heavy color, not a light color.

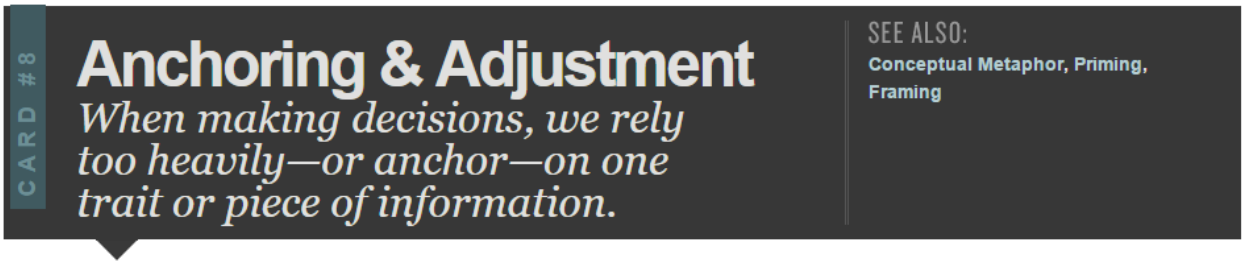
Made for early adapters

Early adapters like new and experimental products and designs. That’s why I want to avoid a classic design. So I made it a little playful with the sun and grid bubbles which are interactive.

Mental notes

The mental notes are cards that each describe an insight into human behavior and suggest ways to apply it to the design. (Anderson, 2015)

The sun and grid bubbles are delighters. It's a fun interaction to swipe them up and down, which reveals more statistics.



"When should I turn on the washing machine?" Decisions that involve energy consumption will be more easy when there is a clear insight in the upcoming weather.

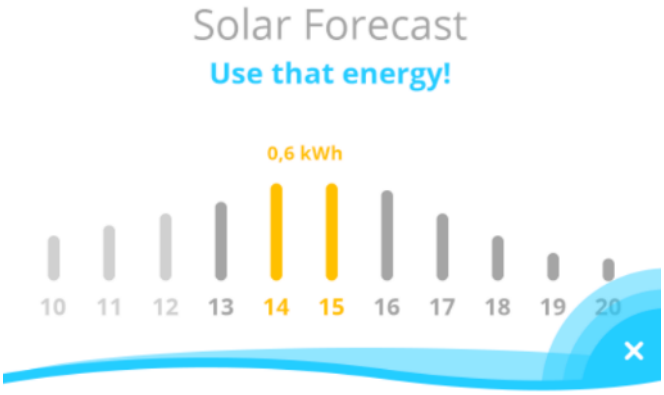
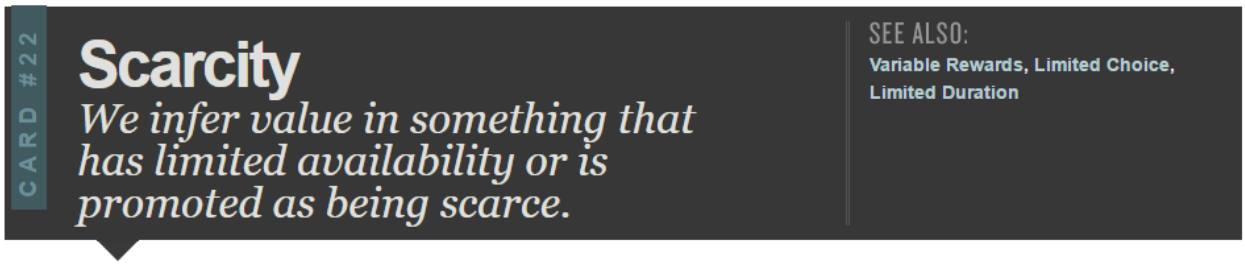


Figure 6 Solar forecast

I've put a lot of effort in making the design aesthetically pleasing. To achieve this, I decided to create a new style from the ground up.



Solar energy is scarce, comparing to the grid energy. That's why I decided to visualize the contrast between the two energy sources on the home page.

Figure 7 Bar graph of energy sources on the home screen

Micro-interactions

Most micro-interactions are very basic and don't need a micro-interaction specification in my opinion. However, there is one micro-interaction which I wanted to specify: the swipe-able sun which reveals the solar forecast.

Figure 8 Micro-interaction: the sun

Trigger

The arrow indicates interaction. I also made the arrow move slightly back and forward and I made the solar rings move too. A user who's new to the app will have to discover what's behind the interaction. After people have discovered what's behind the interaction, the trigger to use it will be the need of solar forecast.

Rules

The user must swipe the sun down, to the right or diagonally down-right.

Feedback

When the user starts swiping (also called dragging), the sun will expand.

Loops & Modes

This micro-interaction can be used whenever the user wants to use it.

TESTING

To make sure my app is clear for the users, I need to test certain features. I'm not going to test wireframes, because most users won't understand them and it's hard

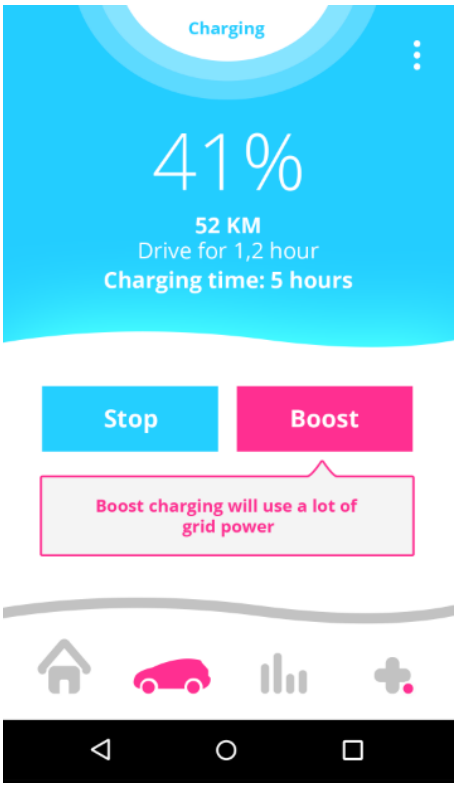
Testing Goals

Before testing the app, it's good to know what I'm actually testing. And it's good to know when the test was successful. Let's review per screen the goals.

Home Screen

The first feature I want to test is the diagonal dragging. The user can drag down the sun and drag up the purple energy bubble, which will reveal more statistics. I want to build in an arrow inside the bubble that points towards the swipe direction. The bubble and the arrow also have to move. If these triggers are clear for regular users, I can move on with perfecting the design. If not, I will test a pagination approach.

The second feature I'd like to test is the bars in the middle of the screen. Is that clear? Does the user know what it stands for?



The Car Screen

The third feature I want to test is the boost charging of the car. Does the user realize that boost charging the car will only use energy from the grid?

Fourth feature: is it clear that the user can program the charging pattern of the car? For instance: the car should use boost charge until 40%, then it should charge on solar energy.

Test methods

It's important to know which test methods can help me to answer the research questions. Therefore I specified the test methods.

Think aloud

Every feature will be tested via "think aloud". Users will get to use the interface for the first time and speak their thoughts. That way, I can see and hear if the interface is easy to understand and if the user can learn it very quickly.

Eye Tracking

Also I want to use an eye tracker to see if the information is clearly organized. If the heat map displays clear big heat points, the information will be easy and quick to see. If heat is all over the screen, than the information isn't clearly displayed.

Testing device

I need to make a prototyp, so the users can interact with it. I wanted to test the app on a mobile device, but the time didn't allow me to make a mobile prototype. Also eye tracking is not possible on a mobile device right now. So I made an InVision prototype which simulated a mobile prototype on the computer.

Test Results

After spending a day in the test lab at the University of Amsterdam with Orkun, we managed to perform a think aloud test and eye tracking test with 5 participants. I made a visual design for the tests, because in my opinion, you can't perform user testing with wireframes. When it comes to testing interaction, visual clues matter a lot.

Results for think aloud

A couple of small things came to light, which are fortunately easy to change.

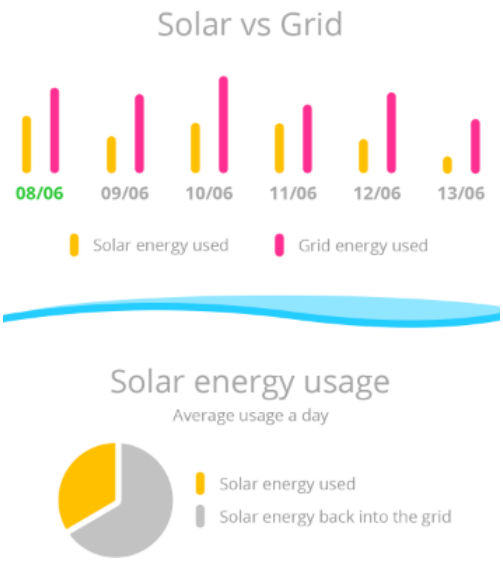
The price

Is this 4 cents or 40 cents? Some people had trouble defining this as 4 cents. This is easily solved by changing the number to €0,04 cents.

Charging time

Is the car charging for 5 hours, or is it fully charged in 5 hours? This question won't come to mind when the text is "Charged in 5 hours".

Statistics



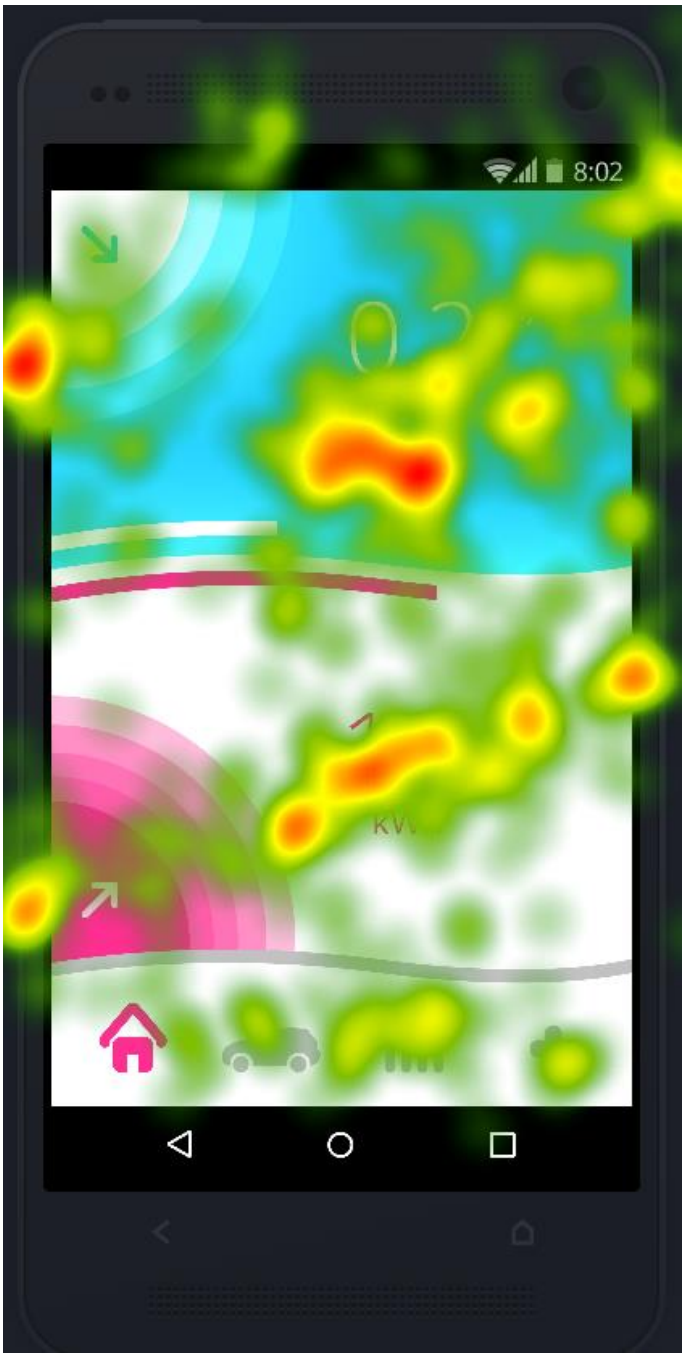
The statistics weren't always clear for everyone. Some people wanted to click on a certain day and some people didn't know the relation between the first diagram and the second diagram.

How can I fix this? By going back to the drawing board.

Results for eye tracking

It's quite interesting to see if the most important information and UI elements catch the user's attention or not. Small note: sometimes, the eye tracker is off by a centimeter. But we can see through that.

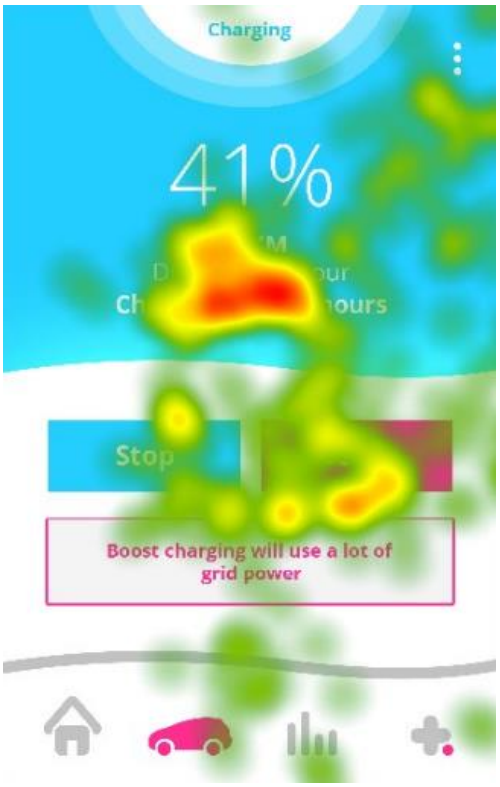
On the next page, you'll see a heat map of a specific screen. Red means a lot of focus from many users and green means little focus of a few users.



Home Screen

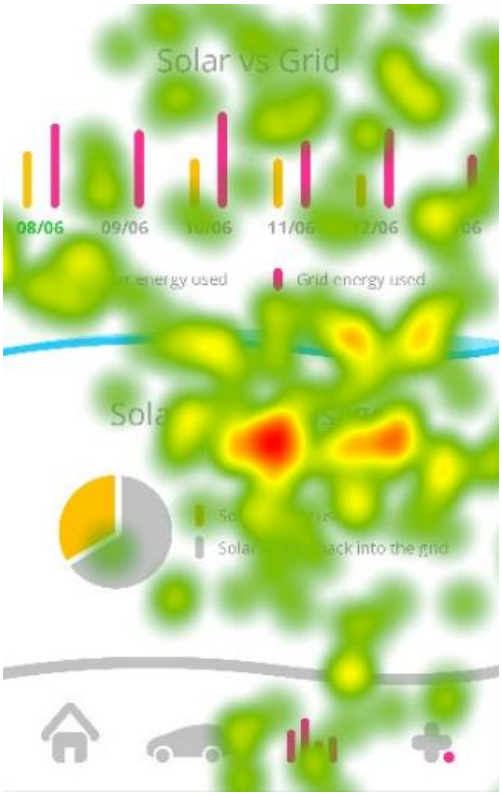
The user's focus lies on the important information and UI elements. The circles catch attention, as well as the information about them.

This picture shows the exact points different users looked at, and in which order. I'm showing a small picture to keep the overview, because it's quite chaotic:



The car screen

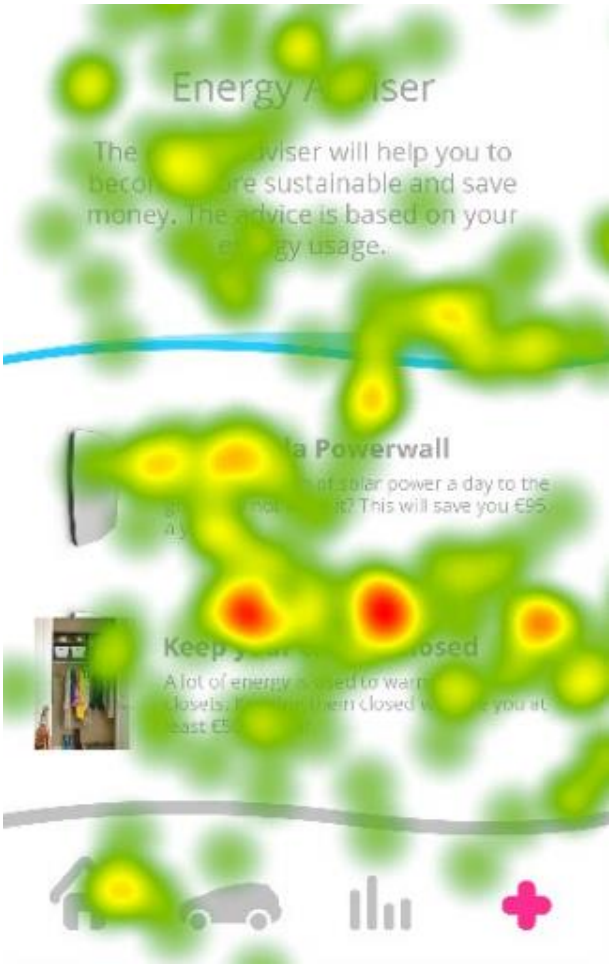
What's interesting to see is that the information below the 41% is read very well. The same can't be said for the warning under the "Boost" button. So I need to emphasize that more, because users need to know the consequence of boost charging.



The statistics screen

As you can see, the eyes are all over the place. Is that a bad thing? In this screen, it's fine. The statistics are meant to be compared and scoured.

However, 1 spot caught my attention. The red spot on top of the text "Solar energy usage". The big red spot means that people are looking at this title way longer than to any other element on the page. Which means that people could have trouble figuring out the meaning of the title and the meaning of that section. How do I know for sure? I asked them. But that heatmap is cool too, right?



The energy adviser

This heatmap looks good to me. Most of the focus is down at the content. The images don't seem important, but it's a nice to have.

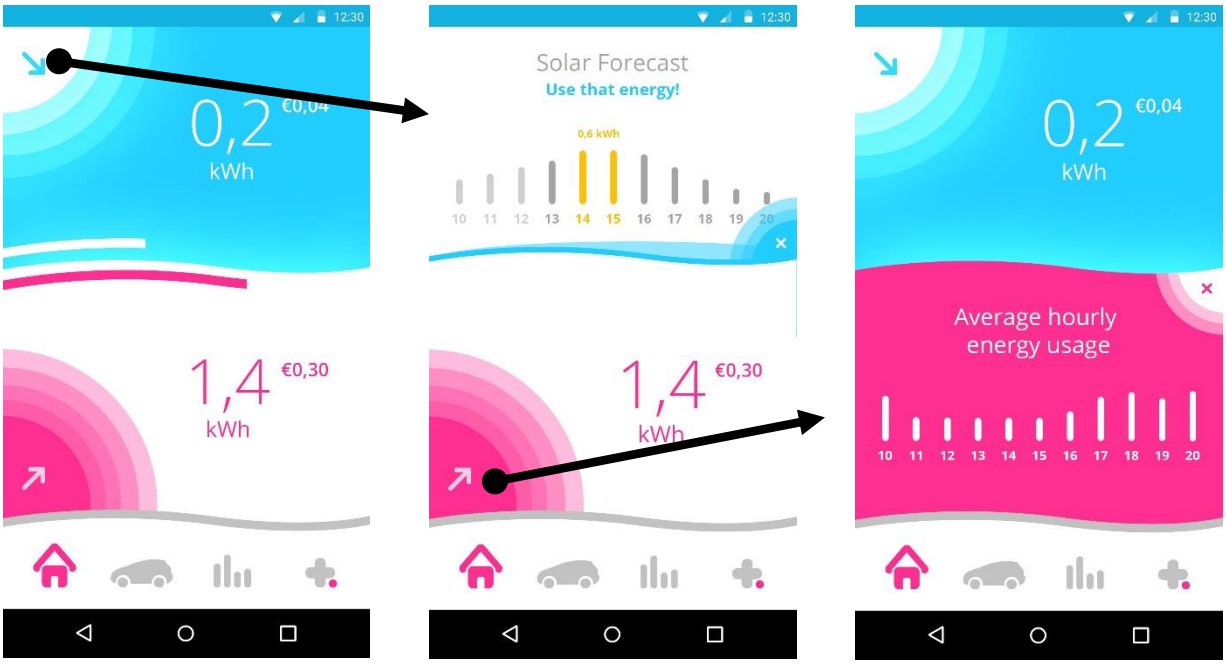
THE FINAL APP

Now I've covered all the details and test results, lets jump to the final designs. I will show the wireflow and the link to the prototype.

Wireflow

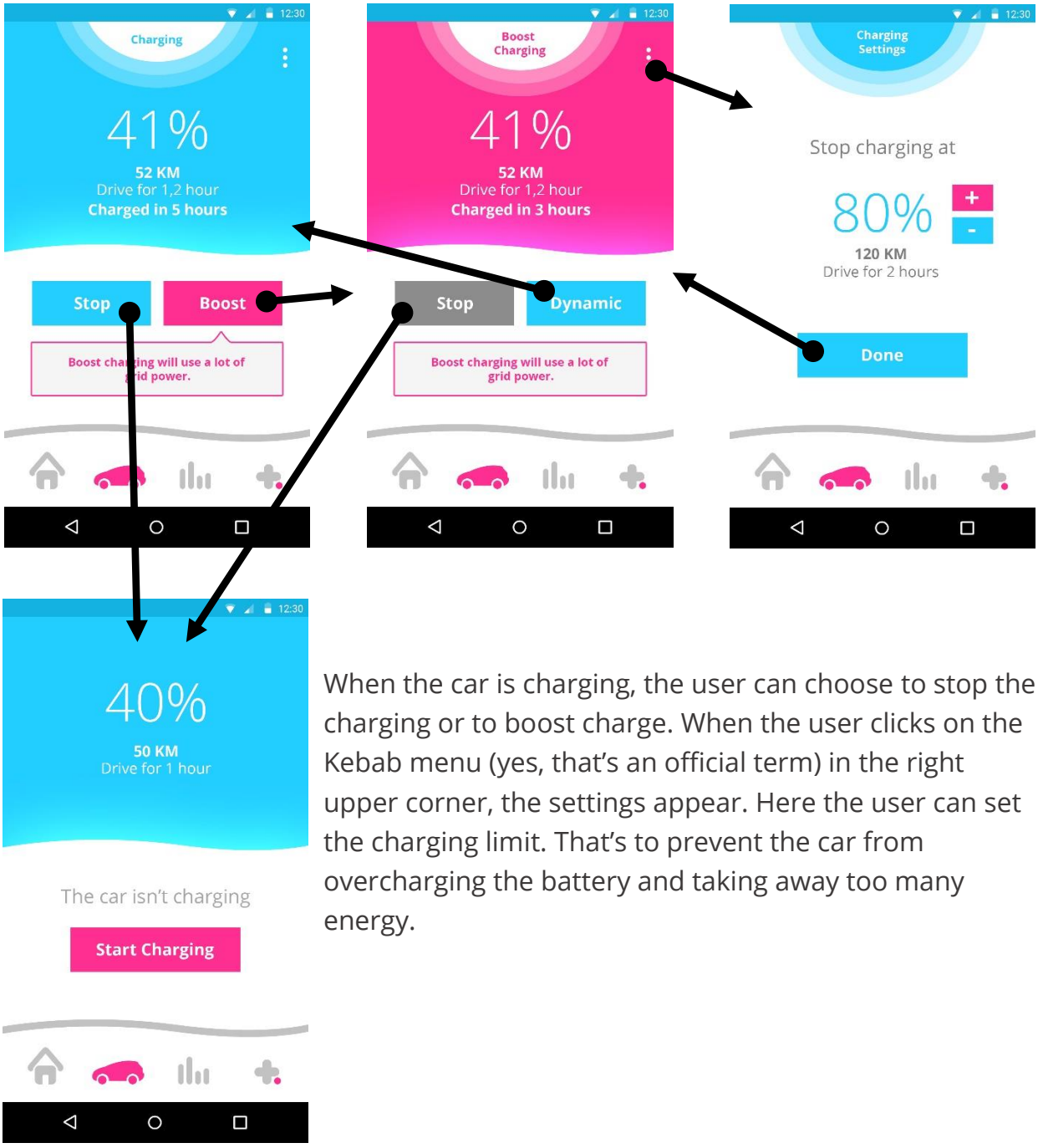
To show all the screens and the relations and interactions between them, I made a wireframe.

Home screen



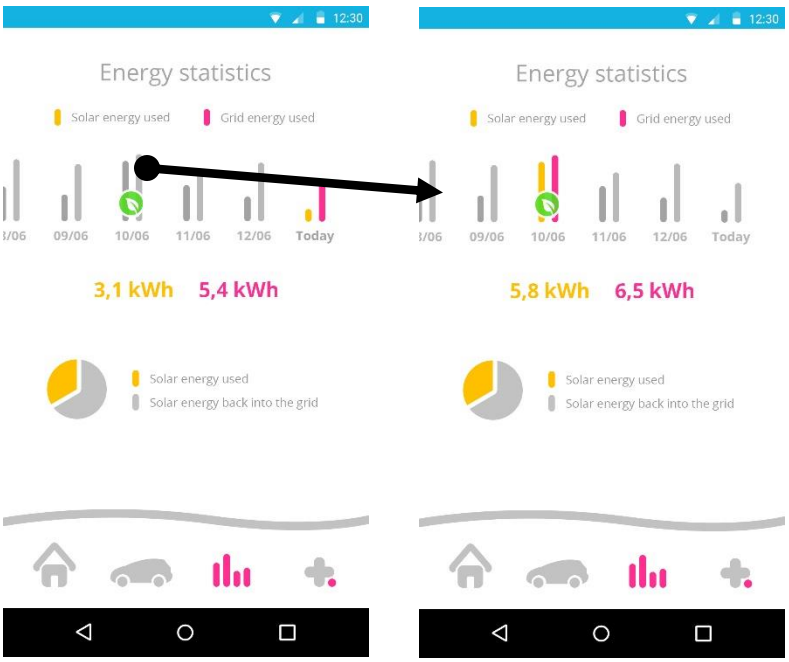
The first screen is the opening screen. From there, you can see real time how much energy is coming from the solar panels and how many energy is used from the grid. When the sun in the left hand upper corner is swiped down, the solar forecast appears. When the Grid bubble in the left hand lower corner is swiped up, the hourly energy usage is shown.

Car screen



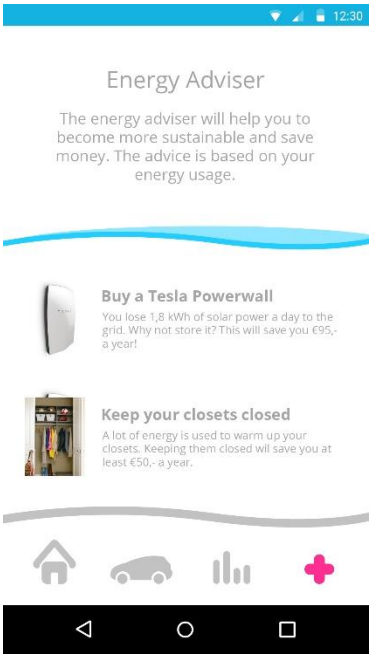
When the car is charging, the user can choose to stop the charging or to boost charge. When the user clicks on the Kebab menu (yes, that's an official term) in the right upper corner, the settings appear. Here the user can set the charging limit. That's to prevent the car from overcharging the battery and taking away too many energy.

Statistics screen



If the user taps on a certain day, the app will show the energy consumption of that day.

The adviser screen



There is no 'jumping' on the adviser screen (going to other states of the screen), so I can only show the one and only adviser screen.

The Prototype

I used two methods to show the mechanics and interactions of the app. InVision is the first method, where you can interact with the app. And for the more advanced animations on the home page, I created a motion design (a static video).

Invision

I used InVision as prototyping tool, because it's easy to use and it can be used on a smartphone. Keep in mind that the advanced interactions on the home page can't be prototyped with InVision nor other prototyping tools in a such a short notice.

Link to prototype: https://invis.io/Z37MCTI68

Animation

For the advanced transition, I made an animation in Adobe After Effects. It's not interactive, but you can see what happens if it was interactive.

Link to video: https://youtu.be/05PHIIUHe_A

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