Switching to an electric vehicle with the help of a smartphone app

Popular science thesis summary by Axel Friberg

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Global warming is one of the biggest threats facing our planet and humanity today. Electric vehicles can prove to be a great help in combating this threat. However, the adoption rate of electric vehicles is still quite slow. The goal of my thesis was to design an easy to use smartphone application that aims at helping people with switching to an electric vehicle.

To slow down the effect of global warming one thing we as a the human race must do together is to lower our reliance on fossil fuels. Especially when it comes to doing short trips, such as to the supermarket and commuting. Thomas Koch at the one-man company Sirgomez Engineering AB has noticed that most people drive alone in their big five seat fossil fuelled cars to and from work. To change this he has started to build a prototype of a one seated electric commuter vehicle in his garage. The prototype is a three wheeled vehicle that aims at having a range of 80 kilometres and a top speed of 90-95 kilometres per hour. Some people have expressed concern to him about the fact that they are not sure that an electric vehicle (EV) will have enough range from their them and fit their daily needs. This brought about the idea of creating an smartphone application that can help with proving for a vehicle owner that they could manage their daily trips on an EV. This idea is the background for my thesis. Create an app that is easy to use and that can help people make the switch to an EV.

When creating software you need to consider that you are creating the software *for* someone. A fairly common fault in software development is that the finished product almost requires you to have been part of the development team in order to understand how to use the software. To avoid this and develop an app with the user in mind, a *human-centred design* (HCD) process was used in the creation of the app in this thesis. HCD is an approach to design that puts the human needs, capabilities and behaviours first and then designs to meet those. What this mean is that you want to involve the person that will actually be using your product in your design process as quickly as possible and as often as possible. This is for example done using interviews, surveys and creating prototypes with things like pen and paper that user can test before you start writing code.

After user interviews and surveys were conducted a couple of main hurdles were found that stopped people from getting an EV. The users thought:

- They have too high initial cost.
- I don’t know about charging stations that are close to me.
- I don’t know if the range on EVs are enough for me.
- I don’t know enough about EVs.

The app that was created tries to help the user overcome these obstacles by allowing the user

to track how far they drive. It shows statistics on how much money would be saved on fuel and how much lower the CO_2 emission would be if they had an EV. Displays a map showing the location of charging stations. Shows a list of different EVs along with their price and range. And finally, a list of facts about EVs the user might not have know before.

Hopefully the results of this thesis will educate about what the hurdles needed to overcome are for people thinking about getting an EV. And also, after some further development, that this app will help some people in making the switch to an EV.

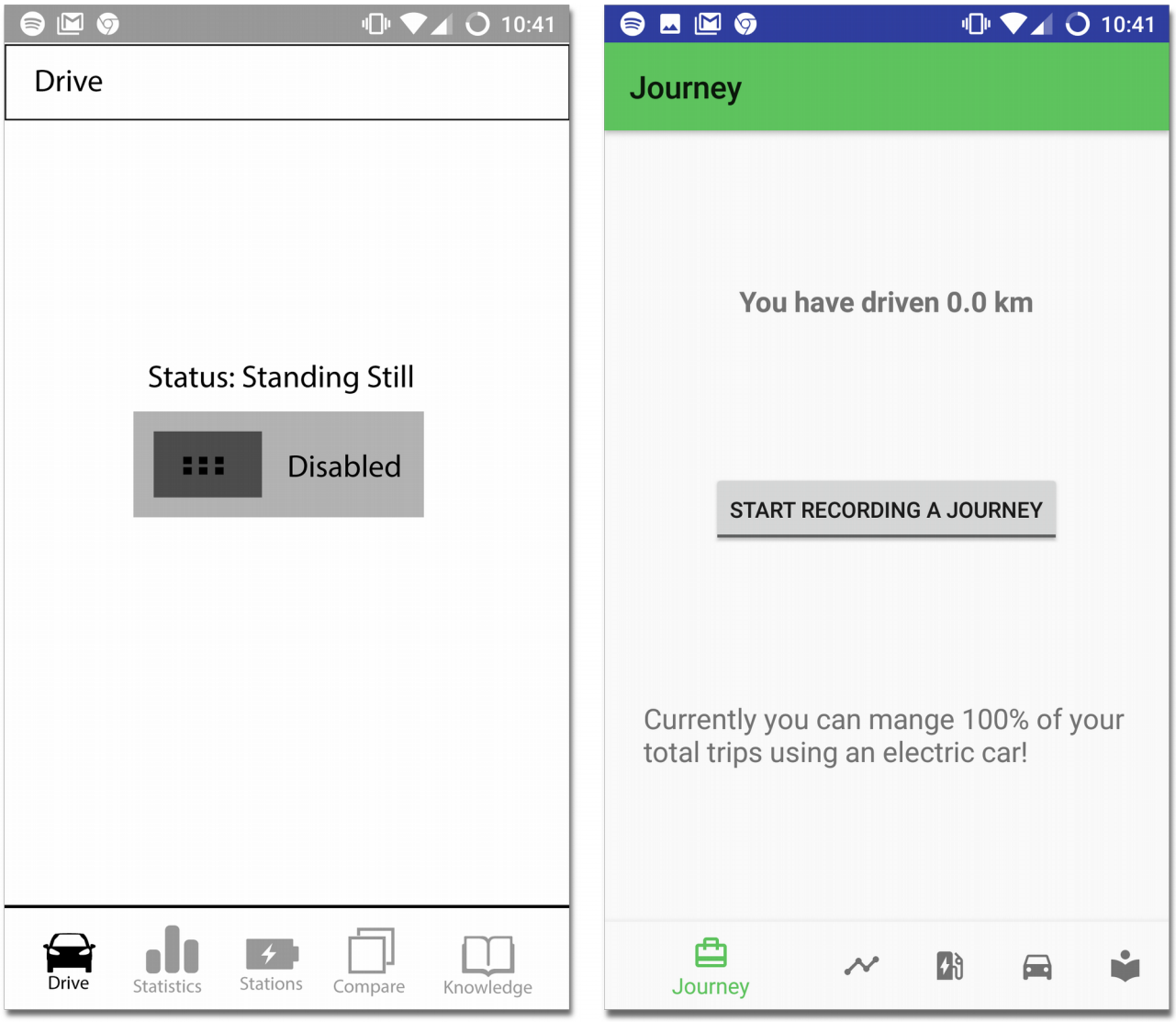

Illustration 1: To the left, the start screen of the first prototype. To the right, the start screen of the final prototype.

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