



How to Design a User-friendly Mobile User Interface with the Power of Visual Usability

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ABSTRACT

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The goal of this thesis was to design a mobile user interface with the power of visual usability. The aim was to create an application that would be simultaneously user-friendly and attractive. The research data was collected from literature and expert interviews, user interviews and user tests. The thesis consists of a theoretical and a practical part.

The theoretical part studies the relationship between visual design and usability, and their effect on the user experience of mobile applications. The theory works as the framework for the practical part, which was carried out as a project. In the project, a mobile application prototype for pet owners was designed. User interviews were conducted and the interview findings indicated that there was a need for a mobile application for pets. Based on the interviews a first version of a digital prototype was designed, which was tested by users.

The findings from the user tests indicated a few usability problems in the prototype. Despite the usability problems, the users were overall pleased with the visual design and they reacted spontaneously with positive reactions to the prototype. Based on the findings, the prototype was fixed and iterated further to its final form.

Further research is required to develop and improve the prototype and more user testing should be conducted. There should also be different versions of the prototype for other phones and platforms than Android to find other possible usability problems. All in all, the result shows that the goal of the thesis was achieved. By implementing the acquired learnings from the research in the project, it was possible to design a user-friendly and attractive mobile user interface with the power of visual usability.

Key words: visual usability, visual design, user interface, mobile app, user-friendly

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1 INTRODUCTION

This thesis studies how to design a user-friendly mobile user interface with the power of visual usability. The goal of the thesis is to find answers on the benefits of visual design, and how it can be used to increase usability in mobile applications (apps). The focus is on studying the relationship between visual design and usability and how they affect each other. The reason for researching visual usability is to learn more about the topic and to develop new skills to be able to consider users and usability better in projects. Additionally, the goal is to grow as a designer and to step out of the comfort zone by facilitating interviews and user tests the first time alone. Another goal is that the thesis would work as a concise and up to date guide for other creative professionals in their work. The aim is to help others to implement visual design elements purposefully in mobile user interfaces to increase usability and user-friendliness.

The thesis consists of a theoretical part and a practical part. The practical part is carried out as a project, which works as a concrete example on how to incorporate visual design in a user interface. During the project, a mobile app prototype was designed for pet owners. The purpose of the app was to provide a quick way for pet owners to find important health related information and help for their pets in emergencies. The research data for the thesis has been collected from literature, expert interviews, user interviews and user tests. The theoretical part begins with studying visual usability and by presenting gestalt principles, consistency, hierarchy and personality and how these can be incorporated in mobile app design. Afterwards visual usability tools are presented and how these tools can be used to apply colour and other visual elements correctly in the user interface. In addition, the topics accessibility and user-friendliness are introduced. Afterwards, the design process of the mobile app project is presented. In the end the project results are evaluated and ideas for future development and research are discussed.

2 FINER USABILITY THROUGH VISUAL DESIGN

The purpose of this thesis is to prove and to demonstrate how visual design is not only used for making apps look attractive, but how it is essential for the usability as well. With visual design the focus lies on the aesthetics of an application, on how, for example, images, colours, and fonts are placed purposefully in a user interface to increase usability. (Usability.gov) Usability on the other hand refers to how well an app works for users in a certain context and how well a specifically defined goal can be achieved. Usability measures the effectiveness, efficiency and the satisfaction. In design projects usability is measured during the whole app design process to ensure the best possible usability for users. (Interaction design foundation).

According to Jesse James Garret, expert in information architecture and user experience, there are five different planes which build up the user experience. Visual design and usability are affected by how well these planes are utilised. He discusses the planes from the view of websites but they are equally relevant for app design as well, which is why they are presented next from an app point of view. The five planes are from the bottom to top: Strategy, Scope, Structure, Skeleton and the Surface (Figure 1). (Garret 2011).

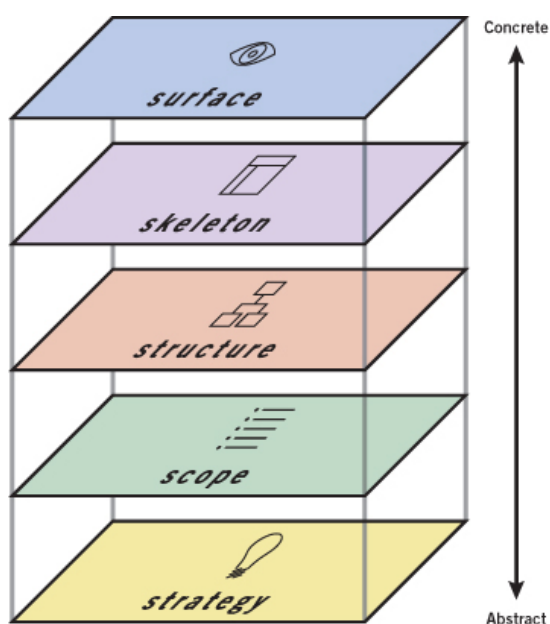


FIGURE 1. The five planes of the user experience (Garret 2011)

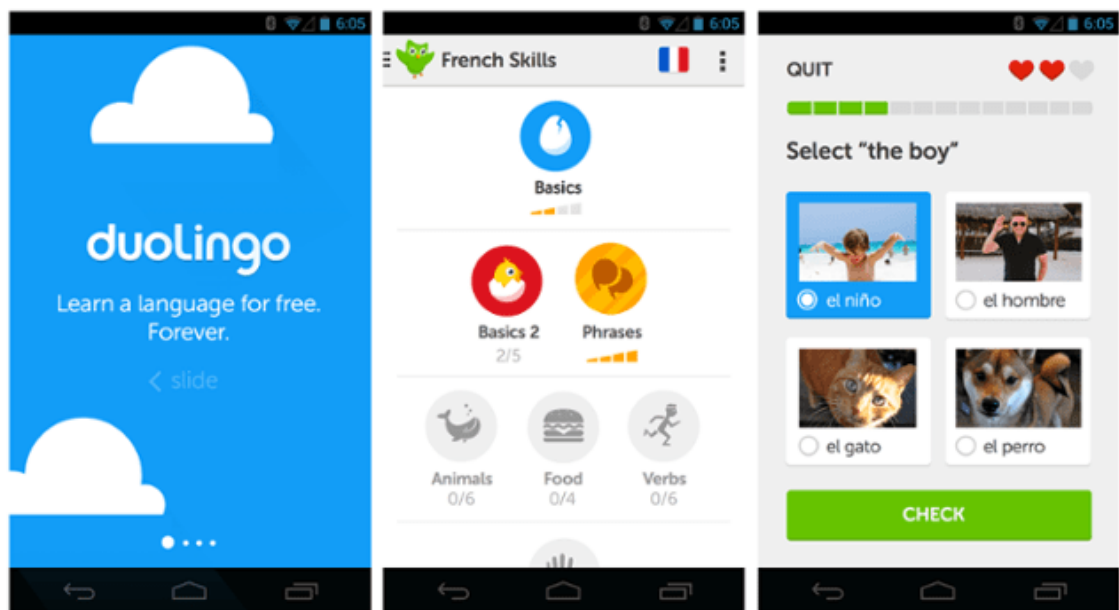
The strategy plane is what is considered first in a design, the plan on how for example a business and their users would benefit from an app. The scope level on the other hand decides all the features and functions that are included in the app structure. The structure plane is a more abstract level, which define how users move between pages. In an app the structure would determine if users move between screens in a desired way. The structure also defines how well functions and features work together in the app. The skeleton plane is the structure of how all the visual elements are placed on the surface level. The skeleton plane assures that the placement of everything is logical and efficient and that the user can for example find the shopping cart button. The surface plane includes the visual design for example images, text, icons and elements that have a function, such as clickable buttons. (Garret 2011). The design process of the thesis prototype will be presented later, which follows a similar idea of Garret's five planes.

Tania Schlatter, a visual designer and Deborah Levinson, a user interface designer, introduce the term "visual usability" in their book *Visual Usability* (2013). The term was found fitting for the purpose of this thesis, because the want is to combine visual design with usability as Schlatter and Levinson have. Visual usability is used as a term in this thesis because it sums up the idea of combining visual design and usability together by not separating them from each other. The goal is to show how visual design and usability go hand in hand in interface design and that both are needed together for making a successful end result.

Schlatter's & Levinson's book is insightful, because they have researched how visual usability can increase the value and the user-friendliness of apps. The book provides practical design advice on how to implement visual usability in user interfaces, which was found useful and has been implemented in the mobile app project. In this chapter the book's terms: consistency, hierarchy and personality will be introduced that according to Schlatter & Levinson affect visual usability in user interfaces. The terms will be presented from the view of various designers. Additionally it will be presented how these terms have been incorporated in the mobile app prototype.

2.1 Consistency

According to Mads Soegaard, founder of the Interaction Design Foundation (2020), consistency in user interfaces assures that users know what brand they interact with. He says that consistency builds trust between the brand and the users (Soegaard 2020). According to user experience and user interface designer Maria de la Riva (2018), a language mobile app called Duolingo is a good example of an app where consistency has been applied well. She says that all the elements in the app such as buttons, type and illustrations are designed to work consistently and visually together. She also states that the colours, the lighting and the object shapes are consistent throughout the app and the app website. The consistency makes the app easy to navigate and gives a professional feel. (de la Riva 2018). Picture 1 presents the visual design of the Duolingo mobile user interface.



PICTURE 1. The mobile language app Duolingo works as a good example of the implementation of consistency. (de la Riva 2018)

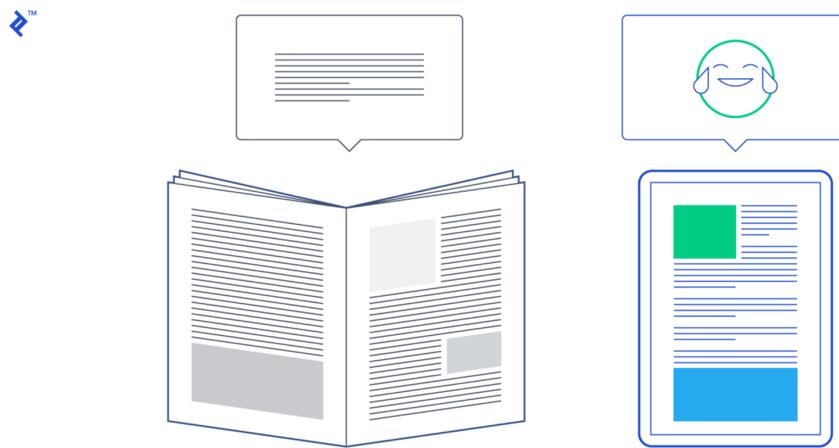
2.2 Hierarchy

Lidwell, Holden, and Butler states in their book *Universal principles of Design* that “hierarchical organization is the simplest structure for visualizing and understanding complexity.” (Lidwell & Holden, Butler 2010). Difficult things are easier to grasp by organising them logically. (Lidwell, et al. 2010). According to Pascal Potvin (2019), Design lead at IBM, visual hierarchy is the building block of a successful product and helps users focus on elements on the screen in their order of importance. Picture 2 shows one of his examples on how hierarchy can be established through, for example, typography. (Potvin, 2019). User experience designer Miklos Philips shows in picture 3 how colours can be used to create hierarchy and how to highlight elements in the user interface(UI). According to him, colours can be used to make an interface subconsciously attractive to users. (Philips 2019)

Hierarchy
Not as big here
This is even smaller.
And this is the smallest of the small. Usually the size of body text.

PICTURE 2. An example on how to use hierarchy with different sized text to highlight the order of importance (Potvin 2019)

According to Potvin, designers that are able to evaluate business goals and to consider their users at the same time are more likely to succeed in organising a visual hierarchy (Potvin, 2019). Potvin’s advice has been considered in the prototype designing process, where the prototype and it’s hierarchy has been compared to other similar apps in the market, so that the prototype could compete with its competition. The target users have been taken into account by involving them actively in the design process.



PICTURE 3. Colours can be used to highlight user interface element and to steer how users interact with the UI (Philips 2019)

2.3 Personality

As Andy Pratt and Jason Nunes states in their book *Interactive Design* (2012), the personality of a product is commonly determined through the product branding. According to Pratt & Nunes, a brand's personality can be described similarly to that of people, with adjectives such as funny, serious and charming. They say that the reason why people love or hate a brand comes down to how it makes you feel, like in human relationships. Additionally they mention that text, audio and video in a mobile app shows what the brand has to say. The use of colours, fonts, images and the tone of text communicates the tone of voice. What a brand says, in what tone and how users react emotionally to it equal the personality of the brand. (Pratt & Nunes 2012, 152)

The Cambridge dictionary states that "product personality is determined by how a product looks and how it is perceived" (Cambridge dictionary 2020). According to Don Norman, there are three levels of design that affect how we perceive products: visceral design, behavioural design and reflective design (Norman 2004, 63). Normans' design levels were found valuable for the mobile app prototype, because they provide a psychological and historical aspect on how humans perceive colours and shapes. Picture 4 shows an illustration of Norman's design levels.

Norman's first level of design, visceral design, refers to what kind of emotional response we get from what we see. He states that evolution has made humans attracted to bright colours, rounded shapes and symmetry. According to Norman, these visceral principles are biologically wired in humans, and therefore consistent for people across the globe. (Norman 2004, 65–68). Norman's visceral principles have been applied in the mobile app prototype so that the UI would be attractive to as many users as possible. In the prototype a bright red colour has been used as the base for the colour palette and rounded shapes have been used in icons together with symmetrical placement of UI elements (Appendix 4).

Norman's second level of design, behavioural design, focuses on the use and the performance of apps. He says that if an app does not fulfil its purpose, appearance or anything else will not matter. According to him successful behavioural design requires an understanding of the actions and behaviours of users and customers. He says that when you understand the user, the UI can be correctly designed to support the users in achieving their goals and tasks, and therefore fulfil its purpose. (Norman 2004, 69–73). The behavioural aspect in the mobile app prototype is that it has been designed specifically for pet owners, based on their specific needs that were found out during user interviews and user tests. The prototype has a meaning and fulfils its purpose for the users.



PICTURE 4. Visualisation of Don Norman's design levels. (Kirmaier 2019, 32)

Norman's third level of design, reflective design, can be seen as a personal level of design. According to him, people use their reflective level to analyse if they like a product or not, and how the use of the product affect how they see themselves and others. He says that customer relationships are a good example of how reflection works. He gives an example that if a user has a bad experience with an app, but the customer support goes out of its way to help and solve the problem, it can make them loyal customers in the future. This can also make them recommend the app and share their positive experience to others. He says that reflective design is about creating personal and long-term customer experiences. (Norman 2004, 83–88). If the prototype would be developed further to a real app, this side would be considered more. Based on the user tests, the app was received positively by the majority, which indicates on a positive reflective level among the users.

3 VISUAL USABILITY TOOLS

In this chapter a few of Schlatter's & Levinson's (2013) essential visual usability tools and principles will be introduced to be able to produce a usable and a user-friendly app. The visual usability tools that are brought up in this chapter are layout, colour, typography, imagery and controls and affordances. The visual usability tools are presented from various designers' point of view. In addition, it will be shortly presented how these tools have been incorporated in the mobile app prototype. The mobile app prototyping process will be explained in more detail in a later chapter.

3.1 Layout

According to Leonardo Moreno, senior user interface designer at BCP, "the layout is the structure that supports the visual components of an interface" (Moreno 2020). He states that a correctly designed layout helps users find what they are searching for (Moreno 2020). In the following sub chapters Gestalt principles, white space and grids will be presented that in different ways affect the layout.

3.1.1 Gestalt principles

According to Renée Stevens, designer, Gestalt principles combine the science and psychology of sight and they explain how the human brain understands messages and images as a whole (Stevens 2020). According to Eleana Gkogka, digital product designer, Gestalt principles can help people understand the connection between visual design and psychology. Gestalt principles are a group of visual perception principles originally developed by German psychologists in the beginning of the 20th century. (Gkogka 2018). There are seven different gestalt principles that affect user interface design (Figure 2):

- Proximity: When elements are placed near each other they are considered more related than if they would be placed further from each other.

- Common fate: Elements that move in the same direction are more related than elements that go in another direction or does not move.
- Continuation: Elements placed in a line or a curve that bends softly are more related than elements that do the opposite.
- Similarity: If elements look visually similar they are perceived as more related than if they would look visually dissimilar.
- Closure: When an object is incomplete the human eye can fill int the gaps and see it as a recognisable form.
- Common region: Elements in the same area are seen as a group.
- Symmetry: If elements are symmetrical(the mirror image of another object), they are seen as related.

(Gkogka 2018).

In the mobile app prototype, for example, the proximity and the similarity principle have been incorporated in the icons in the navigation. The icons can be seen as a group, because they are close to each other and they have the same colour and icon style(Appendix 4).

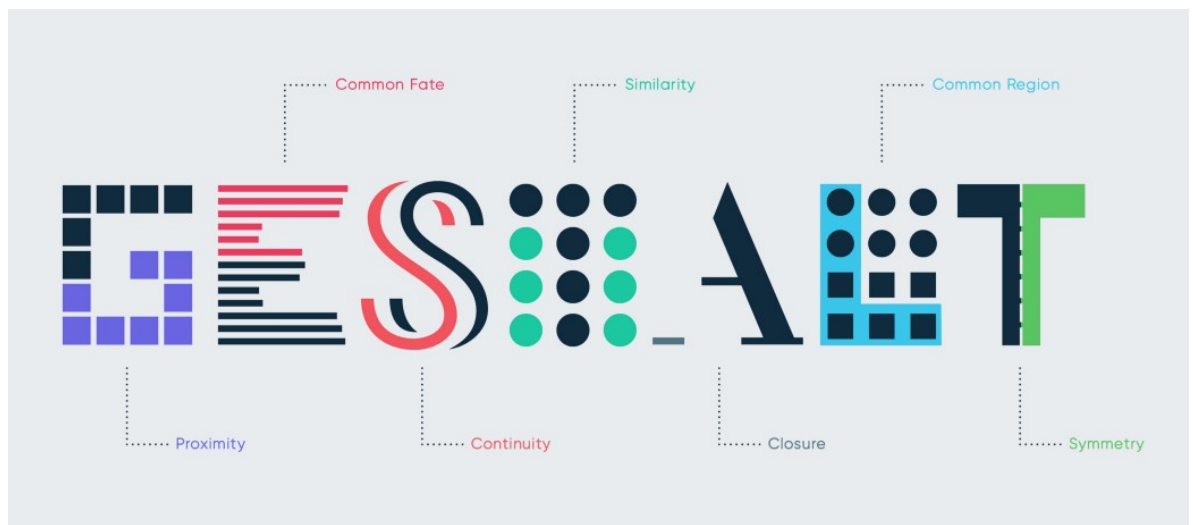
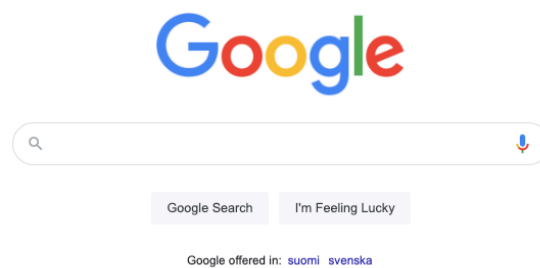


FIGURE 2. The seven gestalt laws that affect UI design. (Gkogka 2018)

3.1.2 White space

According to Soegaard, white space refers to the space between visual elements on the screen, including the space between readable characters. He says that the term “white space” can be misleading, because the space itself

can be of any colour, texture, motif or even an image in the background. According to Soegaard, people get irritated if there is too much information available and that white space is an excellent tool for giving users a breathing pause in the UI. He also presents that there are two types of white space, micro and macro white space. Micro white space refers to the small spaces between, for example, lines and paragraphs and it has a direct effect on the readability of content. Macro white space on the other hand refers to the vast space that surrounds the key layout elements and the area around the whole layout. As a good example of the implementation of white space, he mentions the Google.com website (Picture 5). (Soegaard 2020). In the mobile app prototype, white space has been used, for example, on the front page and on the emergency page so the UI would not look cluttered (Appendix 4).



PICTURE 5. Soegaard explains that google.com is a good example of how white space has been used successfully in a user interface. (google.com)

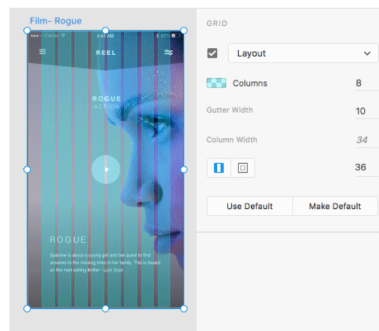
3.1.3 Grids

According to Stevens (2020), a grid can be seen as the skeleton of a design. She says that a grid works as a guide for designers on how to place text, images and other content, for example, on a screen. Grids are not intended to be visible in the final design, but designers can make them visible in design programs such as Adobe XD and Adobe Photoshop. Grids help users predict how information is placed. (Stevens 2020). Based on learnings from the university

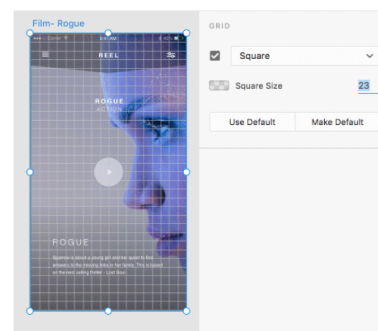
and the practical training, designers commonly use mobile prototyping software for designing and testing a mobile app before it is launched as a final app. Prototyping software include different grids that are helpful in the design process. Next a few grid types are presented that the Adobe XD prototyping software provides.

Adobe XD provides two types of grids; layout grids and square grids. Layout grids can be used to define the underlying structure of a design and for seeing how components look in different breakpoints of the screen, which is practical for responsive designs (Picture 6, a). Square grids are helpful in giving a quick picture of measurements in the interface, when laying out text and objects on artboards (Picture 6, b). Artboards are used for representing the mobile screens in an app in a design software and content and elements are laid on top of it. With artboards it is easy to duplicate and delete screens and modify them. It is also possible to create and use custom artboard guides. Custom artboard guides (Picture 6, c) are useful for positioning and laying out objects precisely. These are practical for targeting small areas on the screen, for example, aligning text objects on the same horizontal guide. (Adobe 2019).

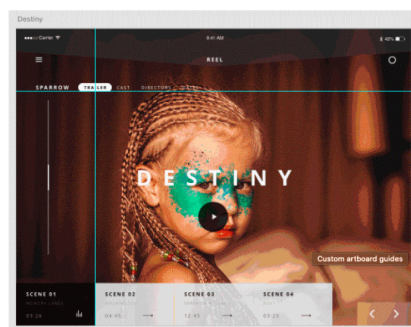
6 (a)



6 (b)



6 (c)

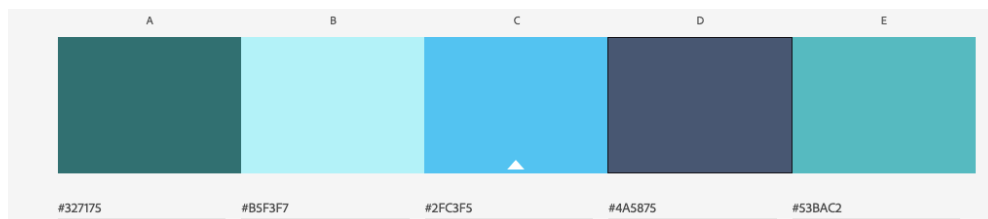


PICTURE 6. Screenshots of a layout grid 6(a), a square grid 6(b) and a custom artboard guide 6(c). (Adobe 2019)

3.2 Colour

According to Soegaard, colours can be a powerful tool in provoking and creating emotional responses in users. He says that bright colours give a sense of energy and catches the attention first, which is the reason why, for example, the main information and the key action buttons are usually brightly coloured and have the most contrast. He states that duller colours and smaller contrast can be beneficial for areas where the user's attention is not needed immediately, such as navigation. He explains further that colours are helpful in drawing the user's attention to a specific part of a screen, and plays an essential part in usability and readability. (Soegaard 2020). According to Mika Keski-Kapee, Art Director at Kaski Creative Agency, colours can be used to emphasise parts of a site and make it logical and coherent (Keski-Kapee 2020).

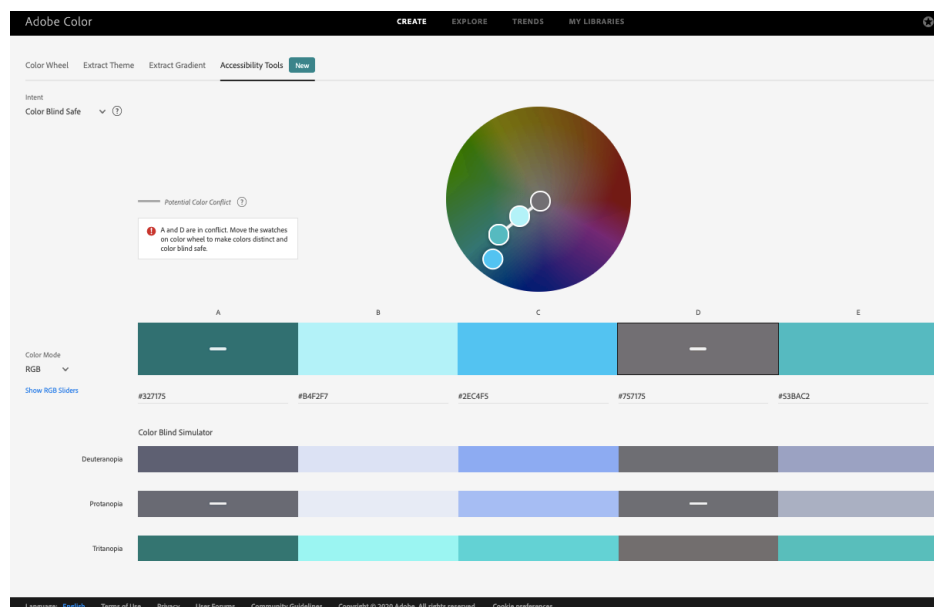
According to Soegaard, it is recommended to use a monochromatic colour scheme (Picture 7) for creating a balanced colour palette. He says that a monochromatic colour scheme consists of a single colour, but with variations of tints (white is added to a colour), shades (black is added to a colour) and tones (grey is added to a colour). (Soegaard 2020).



PICTURE 7. Example of a monochromatic colour scheme. (Adobe Color)

According to Schlatter & Levinson (2013), when colour is used in interface designs, it should not be used as the only way of highlighting elements, because not all people see colour in the same way. Schlatter & Levinson emphasises that designers need to remember that an app needs to be accessible also by colour blind and visually impaired users. They recommend that designers should run the colours through an accessibility test. (Schlatter & Levinson 2013, 208).

Adobe has its own accessibility tool called Adobe color, which designers can use to choose a colour palette that is colour blind safe. If colours are in conflict with accessibility, the site shows an alert and displays white lines on the colours. When no colours in the palette have white lines, the site tells you that the colour palette is accessible. The tool is easy to use and you can see simultaneously how a colour palette affects three different types of colour blindness, deuteranopia, protanopia and tritanopia. Oxford languages define the different colour blind states as following: deuteranopia and protanopia causes confusion with greens, reds and yellows and tritanopia causes confusion with greens and blues. (Oxford languages) With Adobe color it is possible for a designer with normal vision to get real time information on how colour blind people experience colours. Picture 8 shows the Adobe Color tool in practice. In the prototype the Adobe color tool was used for making sure that the colour palette is accessible for colour blind users. The final colour palette in the prototype was not monochromatic, but Soegaard's idea was implemented. The final palette used mostly different shades of red and as an extra accent the colour green, and grey as a dull colour for inactive icons. The end result feels balanced, even though it was not completely monochromatic as Soegaard recommended.



PICTURE 8. The Adobe Color accessibility tool is beneficial for choosing colour palettes that are safe for colour blind people. (Adobe Color 2020)

3.3 Typography

According to Ina Saltz, art director and designer specialised in typography and editorial design, when it is time to choose a final typeface for an app it is paramount to consider a few things to avoid mistakes. (Saltz 2019, 158–159). A typeface is a collection of fonts that have different weights and styles. As an example, this thesis uses the Arial typeface. The body text uses the regular font and titles use the bold font. Picture 9 illustrates the Arial typeface.

Typeface name

Arial

Font name

Style and weight

Regular

The quick brown fox jumps over the lazy dog

Italic

The quick brown fox jumps over the lazy dog

Bold

The quick brown fox jumps over the lazy dog

Bold italic

The quick brown fox jumps over the lazy dog

PICTURE 9. Arial typeface. The picture shows the name of the typeface, font names and the style and weight of the fonts. (Arial font family)

Saltz states that type should be chosen accordingly depending on the purpose of the app. If it is made for banking services, the type should be formal, whereas an app for children requires a more playful type. (Saltz 2019, 158–159). According to Keski-Kapee, fonts can be used more creatively, for example, on campaign sites targeted for the youth or in connection with product launches.

If the aim of the site is to provide a lot of information quickly, then the fonts should be more composed for better readability. (Keski-Kapee 2020).

According to Saltz, the readability of the app should always be considered. She says that designers should not overestimate the amount of time users are willing to spend while reading. Users do not usually have time or willingness to read for a long time. She states that when reviewing typefaces it is paramount to consider what kind of medium typography designers originally designed the typeface for. She says that light emitting surfaces such as mobile devices typically produce a “glowing effect”. This is caused by a noticeable light from the

screen that enters our eyes. To prevent bad readability on light emitting surfaces she advises to have a heavier shape and slightly more distance between letters. (Saltz 2019, 18). According to Stevens, for example, the typeface named Georgia was designed to specifically be readable on screens. On the other hand, a font called Didot was designed to be used at larger text sizes, which would make it inconvenient to be used on mobile screens and cause bad readability. (Stevens 2020)

According to Schlatter & Levinson, when choosing a typeface for an app, it is important to always consider the platform that is used. They say that mobile platforms such as Android, iOS or Windows support a different amount of typefaces. They say that it is up to the designer if you want to play on the safe side or use more creative fonts. The risk of using more creative fonts is that they will not be visible to everyone, and that some people will see a default typeface instead of the designers chosen font. (Schlatter & Levinson 2013, 154—157). When designing the mobile app prototype, the advice from Saltz was followed. The typography was chosen from Adobe Typekit's UX Font pack that has been designed specifically for screen displays and user interfaces. (Adobe fonts 2020).

3.4 Imagery

Imagery (visual images) that are used in an app should be determined by the audience you want to communicate with. If people use an analytics app they expect to see tables and charts and if they want to find a certain business in the city, they would most likely want to access a map with photos that helps them find their way. Imagery should work hand in hand with the purpose of a product, and be related to one another. Through imagery the user experience can be bettered and a brand's visual language can be expressed. (Material Design 2020).

Complex subjects and messages that are difficult to explain with words can be made understandable through imagery. When imagery is placed, for example, in a UI, it is practical to choose a focal point for the imagery. A focal point refers

to an important area in a picture and assures that imagery will look right in various sizes, where cropping needs to be made. Picture 10 illustrates how a focal point has been chosen for a picture, and how the picture has been cropped. (Material design 2020).



PICTURE 10. Focal point. (Material design 2020)

Designers should consider visually impaired or blind users, when it comes to imagery. Imagery can be made accessible by including alternative(alt) text in images in mobile apps. The alt text is added in the html code of a picture, so that when a screen reader notices it, the picture is read aloud to the user. In this way the user is able to experience pictures through their hearing. (Material Design 2020). The imagery for the mobile app prototype is focused on animal pictures. The user can add a photo of their pet to the pet's own profile and the animal news page has articles with animal photos.

3.5 Controls and affordances

According to Schlatter & Levinson (2013), controls and affordances are important in making an app functional. Controls are all the elements that users can use to interact with data in a user interface, for example, clickable buttons in a mobile app. How visual design has been used in the design of the controls determines the user-friendliness. If controls have been poorly designed users will not know what they are, what they do and how to use them. Affordances refer to how users recognise the controls. (Schlatter & Levinson 2013, 165). According to Kirmaier, an example of an affordance is how a button is expected to look

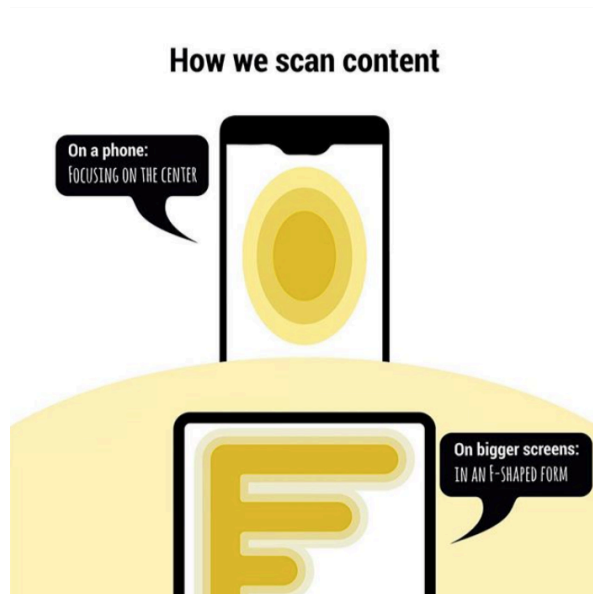
visually and how it should work. Buttons should have a similar style and be distinct from unclickable text, and when the user clicks on it, something should happen. (Kirmaier 2019) In the mobile app prototype, controls and affordances have been considered by making buttons and navigational elements look different from the content.

4 HOW TO CREATE USER-FRIENDLY VISUAL DESIGN

“75% of judgements on a site or app is based on aesthetics” (J med life 2016) and “ 94% of first impressions are design related” (Sillence, Elizabeth & Briggs 2004, 663–670) says Gabriel Kirmaier, user experience designer and consultant in his book UX bites. (Kirmaier 2019, 149, 151). Based on this data, visual design has a paramount role in how an app design is perceived by users. This chapter will present how visual design can be used to create a user-friendly design. The Merriam-Webster dictionary defines the word user-friendly as “easy to learn, use, understand, or deal with” (Merriam-Webster 2020). This chapter will present how to achieve a user-friendly UI by considering visual usability in the design process. Practical tips will be presented through literature and expert interviews.

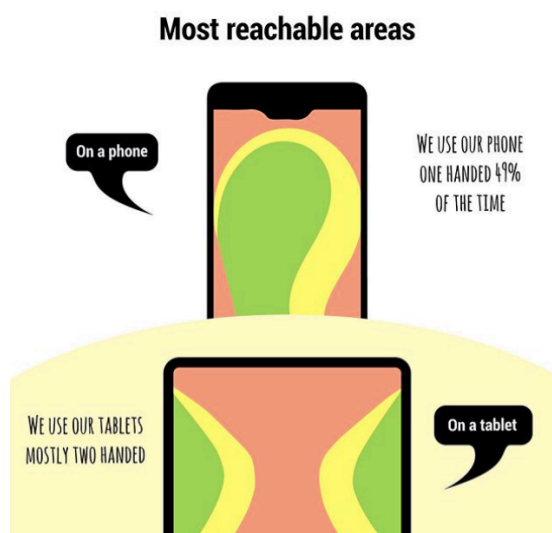
4.1 User-friendly placement of graphical elements in the UI

When thinking about how to place elements in the user interface, it is important to take a step back and think about how people use their phones. This will help with designing the visual design correctly. People have different sized phones and different sized hands. Some people use their phone with one hand, whereas some use both. Gabriel Kirmaier brings up two topics regarding how people use mobile phones in his book UX bites: scanning and reachability. With scanning he refers to how people read content from screens. People tend not to fully read from screens but they scan content quickly to find what they need. Through heat maps and research it has been possible to form common patterns of users' behaviour. Picture 11 illustrates the most common patterns of how people scan content. On smaller screens the focus is on the middle of the screen, whereas on bigger screens people tend to scan the site in an F-form. (Kirmaier 2019, 120–121)



PICTURE 11. How people scan content on phones and tablets. (Kirmaier 2019, 120)

According to Kirmaier, when it comes to reachability, the size of the screen affects which areas on the screen are the easiest to reach. About 50% of people use their phone with one hand. Picture 12 illustrates reachability on screens with different colours. Green stands for okay areas, yellow for cautious areas and red for difficult areas. (Kirmaier 2019, 122-123). In the prototype design the reachable areas have been considered so that the most important navigational elements and content is in the most reachable areas.



PICTURE 12. Most reachable areas on phones and tablets. (Kirmaier 2019, 122)

4.2 Visual usability from the perspective of Finnish companies

To be able to get a holistic understanding on visual usability and its practices, the aim was to find information about how visual usability is produced in 2020 in the creative industry in Finland. Expert interviews were conducted with Mika Keski-Kapee, Art Director from Kaski Creative Agency and Annika Halonen, user experience and user interface (UX/UI) designer from Collapick. During the interviews various questions were asked regarding how visual usability is used and implemented in design and mobile projects, and how visual elements can be used to improve usability. Questions were asked about, for example, what kind of value visual usability has produced for clients, how mobile apps are designed and how end-users are involved in the design process. The interview questions can be seen fully in appendix 2-3.

According to Keski-Kapee, the most important things to consider in projects are usability, structure, responsiveness, appearance and scheduling. He says visual design can be used to improve usability in various ways, for example, symbols and graphics can be used to support the design and colours can be used for emphasis. When it comes to choosing the right font, it is important to consider the purpose for which a design is made for, to be able to make the right decision.

At Kaski, value has been produced for clients in many ways through, for example, redesigns of old interfaces, where an old interface has been updated to be modern and to work responsively on all devices. Keski-Kapee mentions that clients have been excited about how the end result has felt just right for their company and that the redesigns has also made the clients stand out from the competition in their industries.

As Halonen states, the first thing that is done at the beginning of a mobile app project at Collapick, is to map out what kind of mobile application will be designed. She states that it is important to know what kind of platform the mobile app will be designed for, before starting a project. After this, it is time to map out the client's needs.

The mobile app design process at Collapick usually consists of four to five workshops with the client. First a concept is designed and then wireframes are drawn. After this a user interface (UI) model is designed, where all the visual elements, text and the right pictures are in place. After this the UI model is made into a clickable interactive prototype. For designing and prototyping, Halonen uses a software called Figma, where it is possible to design and prototype in the same app. She says that through Figma, her work has become a lot faster. Before she used the combination of the SketchApp and InVision, which took longer when pictures from Sketch had to be brought into the InVision prototyping software.

According to Halonen, visuals have a big significance for usability and, for example, simplicity, hierarchy and gestalt laws affects it. She states that the visuals and the usability cannot be kept as two separate things. Even if a mobile app would be well built, without the visuals it would not matter. With visual design it is possible to consider colour blindness and to support accessibility. With enough contrast and big enough text it is possible to improve usability. Halonen states that a good mobile app is simple, and designed with a minimalistic style. She says that a good example is the Airbnb mobile app. It is simple, but not boring and it has been brought to life with fonts and pictures, and it does not have unnecessary visual decorations. Unnecessary visual decoration eats away from usability. As Halonen states, a mobile app is usable, when it has been designed for a clear purpose and does not have all possible tools and functions. She gives the Mobile pay app as a good example. It is easy to use and you can easily create an account, choose a sum and send money to a friend. With three clicks you are able to achieve the wished function and the usage of the app is clear.

In regards to how mobile app users are involved in projects, Halonen says that it depends a lot on the client, if there is a possibility to consider the users. Sometimes clients are unwilling to pay for user testing and user interviews. This has led to situations where a project has been made without the user's participation in the process. Usually customers have space in their budget for interviews and user testing. In these cases workshops and interviews with the target group have been organised and users have, for example, been asked to fill questionnaires.

Sometimes a pilot project has been made and then events have been organised, where the result has been presented to end users, who then have been able to comment on the mobile app. Halonen states that she would always like to do projects where it is possible to organise user testing and user interviews, because she feels it gives the best project results.

According to Halonen, for a mobile app to be user-friendly, it has to be easy to use, it has to have a clear purpose and it should follow common conventions for platforms. For example, an Android app should be designed to work and look like an Android app, when it comes to navigation and elements. According to Halonen, an example of a user-friendly mobile app, is Wolt, a food ordering app. It has good animations and functions. Gamification has been applied in the app, which gives a sense of surprise for the user. The cherry on top of the user experience is the excellent quality of the customer service, which is quick to answer and solve problems. The user has been considered during the whole ordering process.

Regarding how value has been produced for clients, Halonen gives an example of a project made for a construction company. Through Collapick's construction mobile app, the client was able to speed up processes on construction sites. They were able to follow the completion of the projects and to easily delegate tasks to others. According to Halonen, Collapick has gotten good feedback from the clients. They have been able to develop customer's ideas through workshops and they have gotten kudos for being honest if a function does not bring value to the client and their end users. At Collapick, the aim is to always develop the best possible end product both for the client and for the users.

5 MOBILE APP PROTOTYPE DESIGN PROCESS

In this chapter I present the design process of the mobile app prototype. The project was completed in the span of two months and the design process was quick. At the start there was a planning and research phase. After this, a first prototype was designed based on information collected from user interviews, expert interviews and research. Then the prototype was tested by users and based on the gathered data, the prototype was iterated to its final form. In the end, the results and the final visual design are presented.

5.1 Planning

Before starting to design the prototype, I made a practice project to practice the mobile app design process. The practice project gave ideas on how to execute the prototype and what mistakes should be avoided. I learned a new prototyping tool called Adobe XD, which was easy to use and practical. The practice project was designed during an Adobe XD Daily Creative challenge in May 11- May 22, 2020. The challenge was hosted by Howard Pinsky, a Senior XD evangelist at Adobe. The task for the challenge was to design a concept, where various design elements would together make up a social media app. Picture 13 shows the visual design of the practice project. During the practice project the focus was more on the visual usability than the user-friendliness. In the final prototype project, user-friendly design was used to achieve better results. The practice project was used as a base for the final prototype and a similar design style was followed.



PICTURE 13. Picture of the Artify practice project. (Andersson)

After the practice project, I started to plan the thesis prototype. To find inspiration for a user-friendly mobile app, I used a book called “Interactive Design for screen” (2019). It features a wide collection of extraordinary app designs that stand out in functionality, accessibility and visual design. The book’s preface was interesting, where Artur Konariev, a founder and a product designer of Wadoo Agency, describes the importance of considering UX and UI design already in the project planning phase. His company follows various steps in design projects and a few of them were picked to be implemented in the prototype design process. The implemented steps were: understanding the client’s needs, creating paper sketches and brainstorming, testing the prototype and lastly iterating and producing a final polished version of the prototype. (Flamant” 2019, 7).

Additionally, I implemented advice from Kirmaier regarding brand research. He mentions that it is good to study the competition and he provides a free Competitors map template in his book UX Bites, which was used in the project. The map is shown in picture 14 (Kirmaier 2019, 100). The competition was analysed by

looking at different pet apps and checking their functions and visual design. Pet apps were downloaded on the phone to see how they work.



PICTURE 14. A competitors map to map out the competition (Kirmaier 2019)

To be able to understand the user's needs, I conducted qualitative research in the form of one-on-one interviews. Andy Pratt and Jason Nunes presents practical advice regarding how to conduct user interviews in their book *Interactive Design*. They recommend to ask open-ended questions so that users find it easier to share more about their lives and work. They say it is important to not only get opinions regarding the design but also about who the users are and what they do in their daily lives. This will result in better data for the design process. (Pratt & Nunes 2012, 55). Gabriel Kirmaier compms the importance of user interviews in his book *UX Bites*. He thinks interviews are important at the beginning of a project. Interviews reveal information you would not have known otherwise. He recommends that user's answers should be taken with a grain of salt, and not too literally. (Kirmaier 2019, 98). I followed the advice by Pratt & Nunes and Kirmaier in the user interviews.

5.2 User interviews

I conducted one-on-one user interviews with pet owners to find out what kind of apps they would find useful. Five people of different ages participated in the interviews. The interview questions were about the mobile apps they use in their

daily lives and visual usability was tested by asking questions regarding the visual design of their favourite apps, how they think the visual design contributes to the usability of the apps and if the apps could be improved. The spontaneous reactions of the users to the visual design was used as the core data in analysing the success of the visual usability. I asked additional questions about the ownership of pets: what kind of pets the users have, how they find information related to their pets at the moment, what kind of information they would like to find and what they would do in a pet emergency. The pet questions were used to gather data on whether a pet application was needed or not.

Figure 3 displays the age and the gender of the interview participants. In one of the interviews, two people were interviewed at the same time, a female and a male. This could have affected their answers slightly, since they might get influenced by each other's answers. The three other interviews were conducted separately one-on-one. The interviews were conducted in the form of distance video calls. This was an efficient way to provide a safe environment for participants during the COVID-19 pandemic.

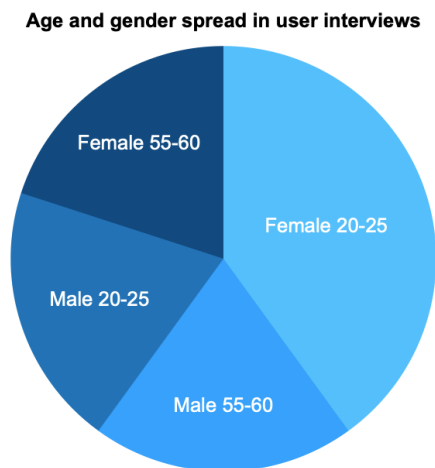


FIGURE 3. Age and gender spread in user interviews among five participants

The interview findings indicated that there was a need for finding information regarding pets and to get knowledge about how to react in emergencies.

The interviews helped to find the direction for the mobile app and to understand user needs. Figure 4 shows how the users find information regarding pets at the

moment, figure 5 shows why the users need a pet app and figure 6 shows the answers to what the users would do in an emergency regarding their pet.

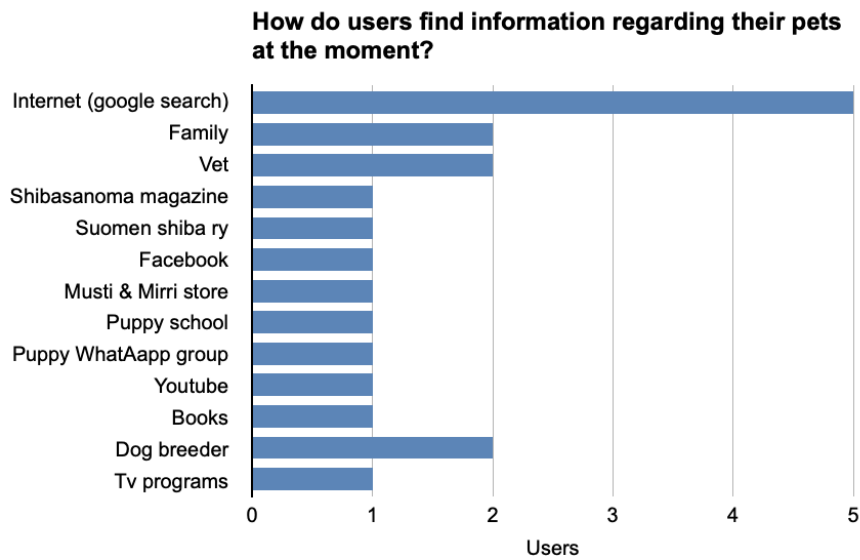


FIGURE 4. Visualisation of how users find pet information at the moment.

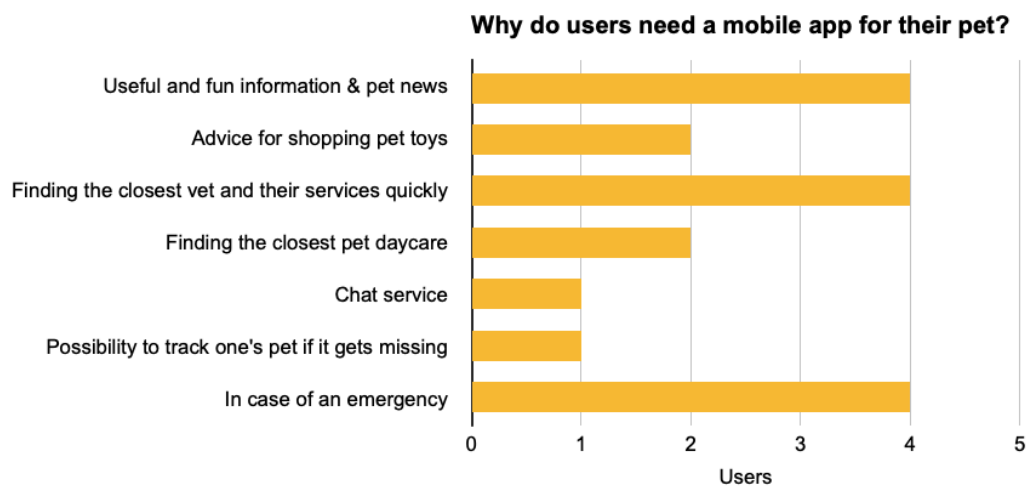


FIGURE 5. Visualisation of why the users need a pet app.

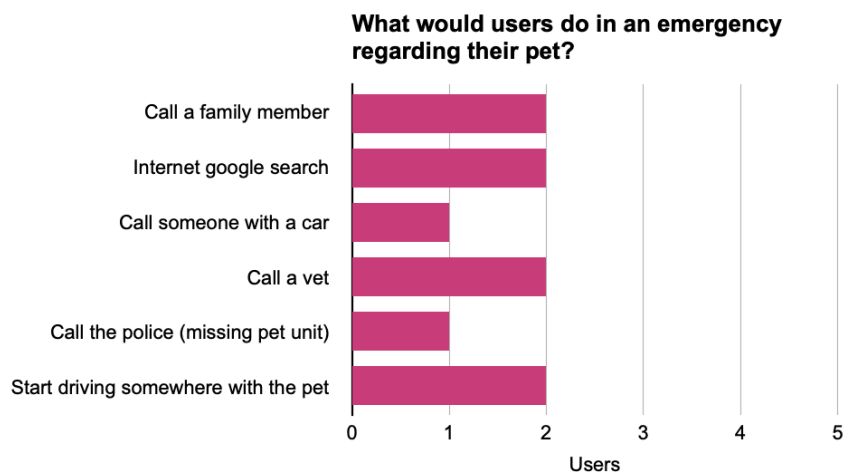


FIGURE 6. Visualisation of what users would do in a pet emergency.

From the interviews, information was also collected regarding the visual design and the usability of the users' favourite mobile apps. The aim was to collect ideas on what kind of features from the apps could be implemented in the prototype to make it usable and user-friendly. The users had many thoughts regarding successful visual design and usability, for example, a good app icon, coherent fonts, colours, flat design and a well working menu. Regarding content it was mentioned that it should appear chronologically and that there should not be too many posts or information. The option for filtering and hiding content was also brought up.

Based on the users' ideas the main features of the app prototype were defined. Firstly, the app provides useful, fun and customised information that is relevant for pets health and tips on what to buy for them. The information is customised based on the user's own pet profile, which they create in the app. Secondly, there is an emergency page in the app, which through a button connects to the closest vet available in the area. Thirdly, there is a map, which displays the closest vets, animal hotels and day cares. It is possible to find your pet on the map in case it goes missing.

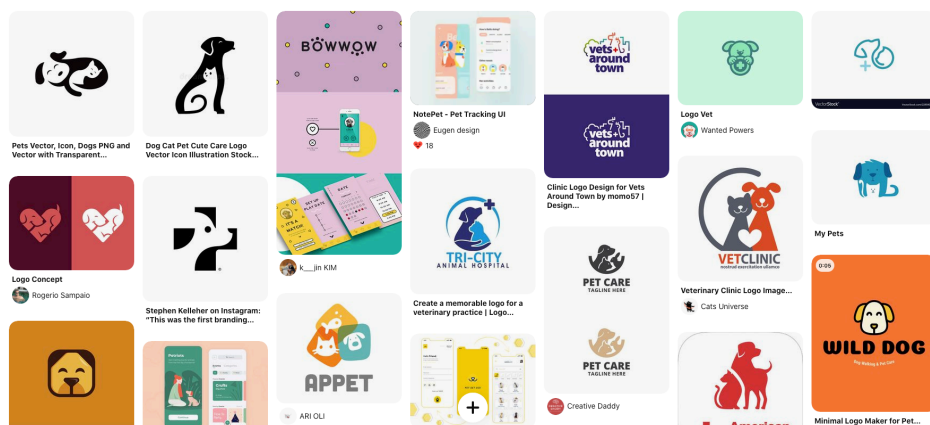
5.3 Competitive research and benchmarking

After defining the features of the app, I compared them to other similar apps' features. This ensured that the prototype would not be a copy of an existing app and that the user-friendliness and the visual usability could be ensured by getting ideas from apps with the same target group. I filled in the competitors map template by (Kirmaier 2019) that was presented in an earlier chapter (Picture 15). Two pet apps were found that provide virtual vet meetings for pets and that were the closest to the prototype idea of providing immediate help for pets inside the app: First vet and Djurhjälpen. A few other apps were found that had features that were wished for the prototype. The emergency app 112 Suomi has an emergency button/number for people. A similar emergency button for pet emergencies was implemented in the prototype. A missing pet app gave the idea of providing an option for finding your pet in the prototype.



PICTURE 15. A filled in version of the competitors map. (Kirmaier 2019)

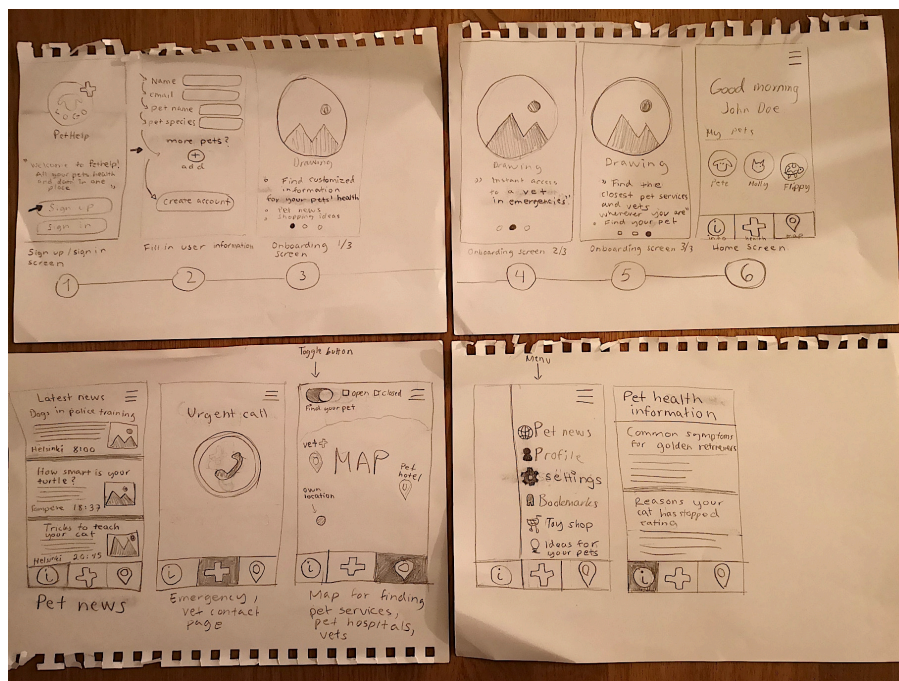
After filling in the competitors map, I made a mood board for collecting visual design inspiration for the prototype (Picture 16). A lot of pet app concepts uses a dog and a cat in their logos. The idea of combining the cross symbol with a pet was the idea that won in the end, and the final prototype app icon has a cat as the motif. The idea was to communicate that the app is an important app for pets' health and for pet owners.



PICTURE 16. A screenshot of an inspiration mood board made with the Pinterest website.

5.4 Sketching the prototype draft

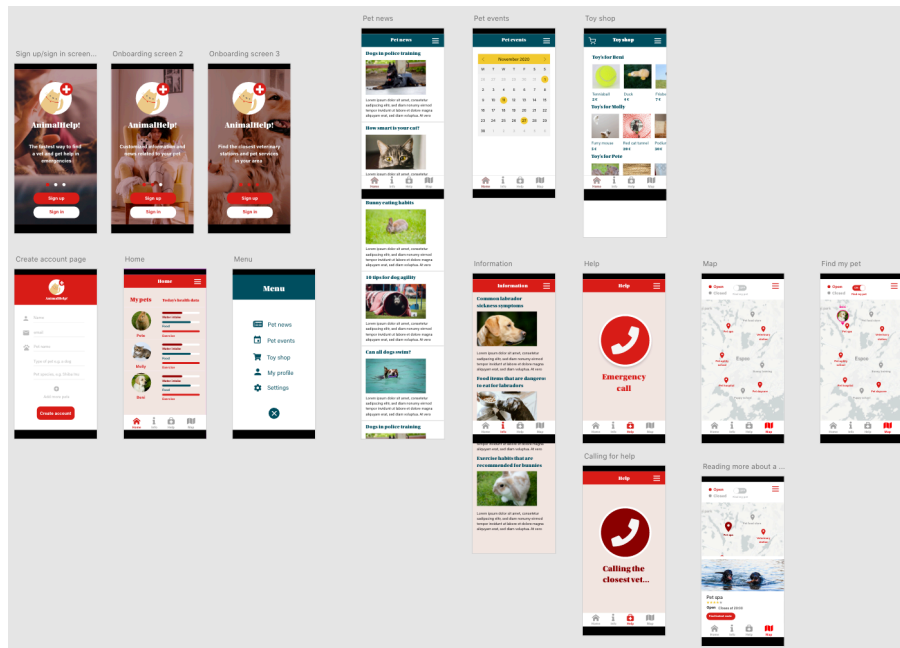
After researching and benchmarking I started the brainstorming and the sketching of the prototype screens; the sign up/sign in screen, the onboarding process, the start screen, the navigation and the main features (information page, emergency button and the map) (Picture 17). During the sketching phase visual usability was considered by making the design simple from the start and by thinking how to implement the visual usability tools correctly. The implementation of imagery, layout principles, type and controls and affordances were sketched out. Later in the digital draft, colour and type was tested, by going through different colour palettes and typography choices.



PICTURE 17. Paper sketches of the screens for the mobile app prototype

After the sketches were finished it was time to ideate a name for the app. After researching in the Apple App store, Google play store and Huawei app gallery I chose the name AnimalHelp! After the name was set, the sketching process was continued digitally in the Adobe XD prototyping software. With Adobe XD it was possible to view the design in real-time on the phone, which made the design process efficient and it was easy to make changes to the design. Picture

18 shows the mobile screens for the digital prototype draft. After the screens were designed, a clickable prototype was made by linking all the screens together.



PICTURE 18. Screenshots of the digital prototype draft. (Andersson)

5.5 User tests

To be able to test the prototype I shared a web link with the users. In Adobe XD it was possible to make a link specifically for user testing, where the prototype is shown without any hints for where the user should click. This gave a more realistic view on how the users would use the app. Before the user tests were conducted in practice, I volunteered to participate in a remote user testing for Tampere University. The idea was to put myself in the role of a user and to learn what kind of app would be good for remote user testing. The user testing was conducted through Zoom, a meeting app. The test was led by a facilitator and there were other people that observed the test. During the test I was asked to complete a set of tasks alone on a website.

The experience was beneficial and the same formula was implemented in my user testing sessions. I conducted user tests for the prototype with five users,

because according to Kirmaier, five users are enough. He says that 80% of usability issues will become visible through five users and then the pattern will start repeating itself. (Kirmaier 2019, 87, 98). Figure 7 displays the age and the gender spread of the participants in the user tests.

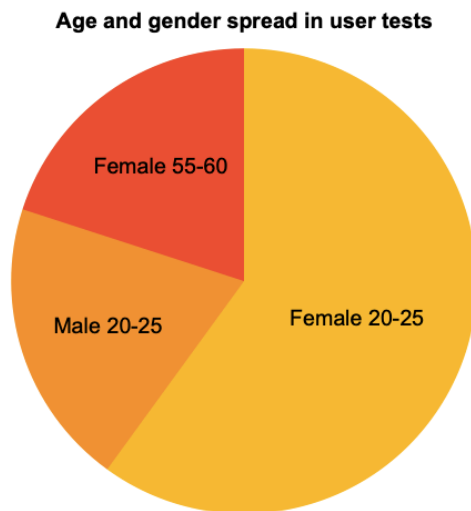


FIGURE 7. The age and the gender of participants in the user tests.

Four of the user tests were conducted remotely, three through the Zoom app and one through the Skype app. One test was organised live. Skype was used once because one user already used it in the interview and the phone screen could be shared also in the app. Zoom was used for three other users.

After the meeting had started, I sent the prototype link and the meeting link to the user and asked them to share their phone screen, so it was possible to see where they click on the prototype. During the test the user was given the following set of tasks to complete in the prototype:

1. How do you find information about the app before joining the app?
2. What would you do if you want to join the application?
3. Search for pet services that are available in your area
4. Find the pet news from the application
5. How would you use the application in an emergency? What would you press on?
6. Your pet is missing, find your pet with the app

7. You want to find more information regarding your pets. What would you do?
8. Find the pet spa and find more information about it

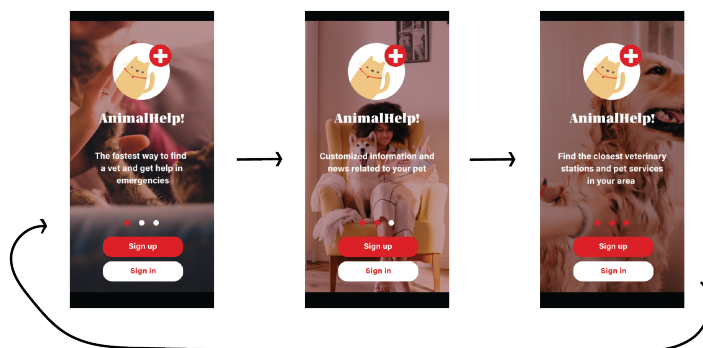
Visual usability was considered in the user tests by analysing the verbal and the emotional responses the users had to the prototype. The focus was on spontaneous reactions that came when the users interacted with the prototype. During the remote testing I had to rely a lot on the user's voice, because I did not always see the face of the user, only the phone screen. This is something that could be improved in future testing, because the facial expressions could reveal more of the visual usability of an app than only the voice can. After the user had completed the tasks in the prototype I asked a few interview questions to get additional data about the visual usability. The users were asked to explain their opinions of the visuals of the application and how they feel it affected the user experience. They were also asked to explain how they feel the usability of the app worked and if there is something unnecessary in the app that they would like to remove.

The plan for the user tests was that all the participants would do the test on an Android phone, since the prototype was designed to fit the dimensions of an Android phone screen. Three out of five test sessions were tested on Android phones, and the prototype worked well in these sessions. Two of the tests did not go as planned. During one test session there were technical problems, where the user was not able to download the Zoom app on their Android phone. Because of this, the user switched to another phone, an iPhone. Since the prototype was not designed to fit the dimension of an iPhone, the prototype did not work well and half of the prototype was hidden. But the user found a way to zoom out the prototype so that the testing could be continued. Because of the zooming the prototype was miniscule on the iPhone screen, which affected the whole test. In another test, the prototype did not load in the user's phone browser. Because of this, the test was held on the user's computer, which did not give the most reliable results on how the user would use the app on their phone. The user clicked with the computer mouse instead of tapping and dragging with their finger.

All in all, the user testing went well and none of the test sessions had to be cancelled or interrupted. The majority of the users reacted positively to the prototype and the tests provided useful information about the state of the prototype's visual usability. The tests revealed usability problems in the UI, which I fixed in the final version of the prototype.

5.6 Results

From the user tests I was able to pinpoint six key usability issues (Figure 8). Firstly, the onboarding screens in the prototype had an issue. When the users swiped through the onboarding screens, they could not go back to the previous screens. There were some difficulties with fixing the problem, because there were a limitation in the interaction possibilities in Adobe XD, but it was possible to make the onboarding screens work so that always when you get to the third screen and swipe, you can go back to the first onboarding screen (Picture 19).



Picture 19. Illustration of how the linking between the onboarding screens were fixed. After the user reaches the third screen and swipes, the first onboarding screen will be shown, so that the user can start from the beginning.

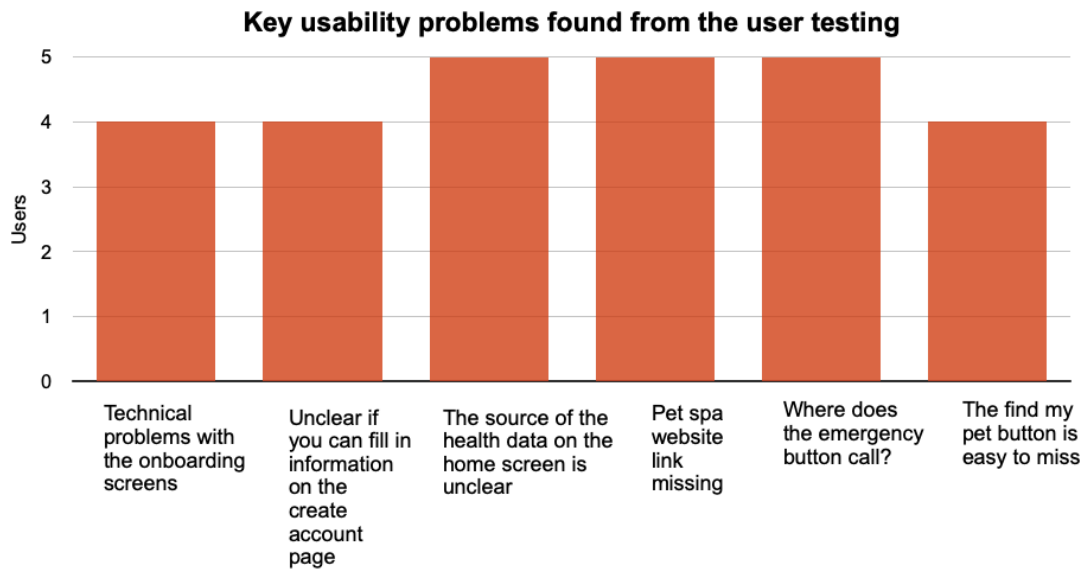
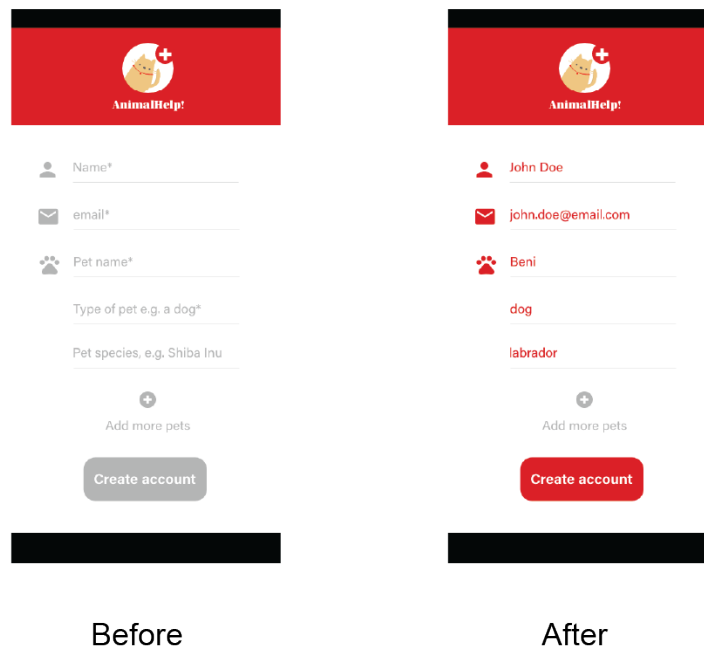


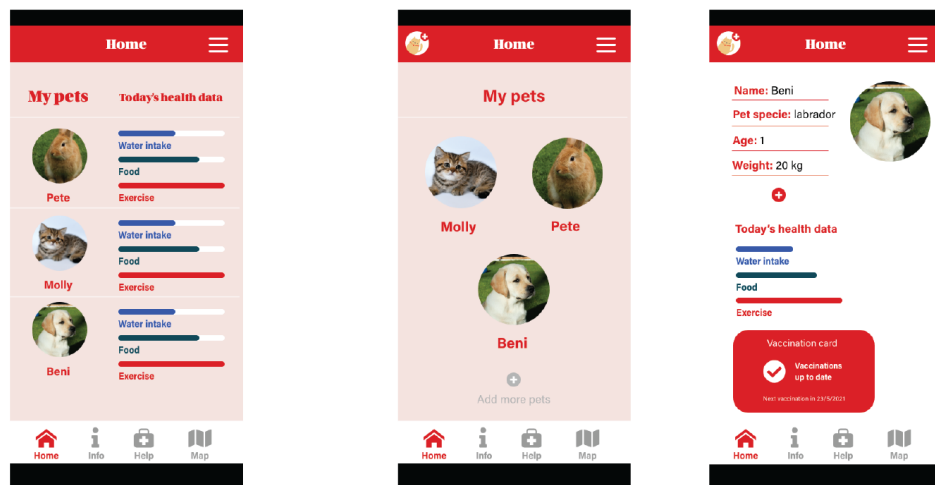
FIGURE 8. The chart displays the six most common usability problems that were found during the prototype testing sessions.

Secondly, it was noticed that the create account screen caused confusion. Many of the users tried to write down information on the screen and they thought they interacted with a real coded application. A couple users thought there was a problem with the page and that they could not proceed with creating an account. To fix this problem, another screen was added to the prototype, so that when the user clicks on the form it shows that the form has been filled out. The create account button is greyed out first and when the form is filled out the button is red, so it is clear for the user that they can proceed by clicking the button (Picture 20).



Picture 20. Screenshots of how the create account page looks before tapping it and after. The second screen was added to the prototype to clarify that the form has been filled out. This way the user knows that they can confidently continue the test.

Thirdly, the home screen, where the health data of the user's pet is displayed, caused confusion. The source of the data was unclear. The users wondered if it was something they would add themselves or if it was something that the app would collect automatically from the pet, through the pet's microchip or a custom collar that goes with the app. Three users had an idea that if you press the picture of your pet, a page would appear where you can see the pet's information. A couple of the users mentioned that it would be nice to have, for example, the pet's vaccination information there. Based on this, the homepage was rearranged so that the health information of the pet is behind the pet's picture. This resulted in a more minimalistic design of the home screen (Picture 21). Another thing one user mentioned in the home screen, was that you cannot add any pets when you are inside the app, only when you are creating an account. Based on this, the same add button that is visible on the create account page, was added to the home screen.

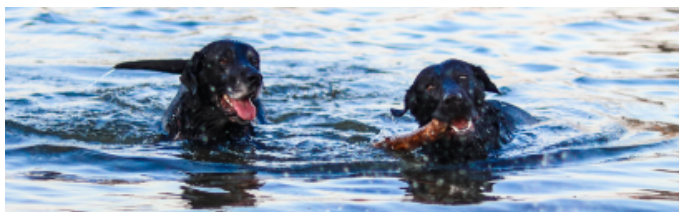


Before

After

Picture 21. Screenshots of how the home screen looked before the user tests and how it looks after it was changed based on the test results. The home screen was fixed so that when the user clicks on a pet picture, it goes to the pet's own information page that has, for example, their vaccination information.

Fourthly, when I asked the users to find the pet spa in the map, all of the users pointed out that they would like to have a website link, which would take them to the pet spa's website. I followed the users advice and added a website button beside the find fastest route button (Picture 22).



Pet spa

★★★★★

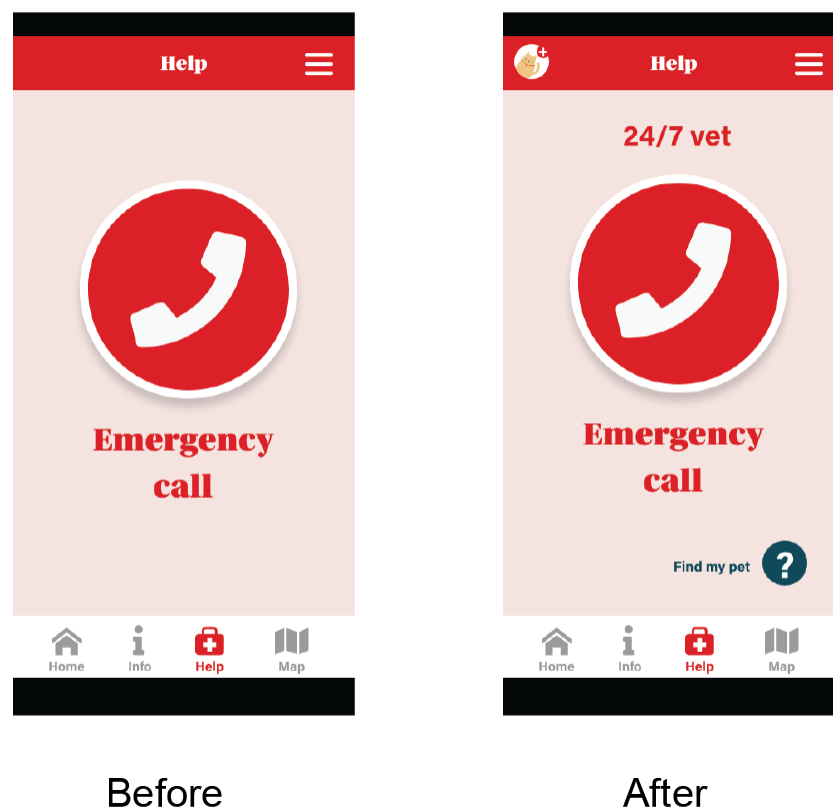
Open Closes at 20:00

Find fastest route

Website

Picture 22. A screenshot of a website button that was added based on the user test results.

Fifthly, the help page was a bit unclear for the users and they wanted to know what will happen when they press the emergency button. A more describing text “24/7 vet” was added above the button. This signals to users that they will get help straight away when they press the button. Sixthly, the find my pet function did not work as planned. Many of the users missed the find my pet button on the map, and they struggled with finding the function in the app. Three of the users wanted to have the find my pet function on the help page, which then would connect to the map. This fix was implemented to the prototype. The fixes can be seen in picture 23.



Picture 23. Screenshots of the help screen before the user tests and after. In the final version an additional text 24/7 vet text was added together with an additional find my pet button on the help page. The find my pet button connects to the map.

In addition to the key usability issues that were found, there were some other technical issues that were noticed in the prototype, which were fixed. The pet events and the toy shop screens had some glitches in the design. The header and the footer did not stay in place while scrolling and it was not possible to turn off the find my pet function in the map. And when the button was on it was not possible to press the pet spa location.

Regarding the visual design of the app, a couple users liked the AnimalHelp! logo. They were a bit disappointed that the logo could not be seen inside the app. One user recommended to add it to the header, so the logo was added to almost all the headers in the app. Regarding the colours in the app one user wondered why the colour yellow had been used on only the pet events screen. I decided to change the yellow to the dark green colour that is used on the other screens in the menu for a more unified look. Additionally, the colour of the review stars on the pet spa page was changed to red, so the colours are now even more coherent in the app.

The prototype received positive feedback during the tests. Users liked the visuals, for example, the colour scheme, the pictures and the logo. A comment was given about how, for example, colours are used well to show where the user is inside the app, red for the main pages and green for the menu pages. One comment was received about how the colour scheme does not take away from the usability. The majority of the users felt that the functions in the app were practical. Even though there were some usability problems during the test, it did not bother the users that much. Because of the users' input and development ideas I was able to make the app better and to design a prototype that was user-friendly with the power of visual usability. Picture 24 shows the final prototype design AnimalHelp! and appendix 4 presents the design in more detail.



PICTURE 24. The final visual design of the AnimalHelp! mobile application prototype. (Andersson)

6 CONCLUSIONS AND DISCUSSION

The aim of the thesis was to find out how to design a user-friendly mobile user interface with the power of visual usability. The goal was to find out the benefits of visual design and how it could be used to increase the usability of mobile apps. Additionally the aim was to research how user-friendliness could be achieved in the design. By applying visual usability tools and by following design principles recommended by professionals in the field of visual usability and user experience, it was possible to achieve a user-friendly and usable UI. By involving users in the whole prototype design process it was possible to improve the visual usability of the prototype. The results revealed how much the user-friendliness of an app is the result of successful visual usability.

The aim at the start of the thesis process was to learn more about visual design and usability and to develop new skills to be able to consider users better in the design process. The research phase and the prototype project gave new insight to the topic of visual usability and in the future it will be easier to consider users in the design process and to create user-friendly visual design. I learned new skills regarding the facilitation of user interviews and user tests, and a new prototyping tool. A few other goals were to grow as a designer and to provide a guide of visual usability to creative professionals that would be helpful in their work. The prototype project developed my design skills and it was a valuable learning experience. The thesis will hopefully work as a useful guide for others to help them implement visual usability and user-friendliness in their projects.

The goals of the mobile app prototype was achieved based on the majority of the users' positive feedback about the prototype design. The prototype was also iterated based on user feedback to be even better. But there is room for improvement and since the AnimalHelp! app was only made as a prototype, it is unsure how the app would work in real life as a coded mobile application, which people would use in their daily life. Regarding the functions of the mobile app prototype, there are some pages that should be developed in the future, for example, the information page, the help page, the pet news and the pet events. Various development suggestions were received from the users regarding these

pages, but I decided to only implement things that the majority of the users mentioned. There was not time to make every change that was suggested in the prototype. Another thing that should be further developed is how the prototype would work on different platforms and phone screens. It would be possible to find more possible usability problems if the app could be tested on all the platforms and phones that people use. Additionally, the name of the app should be researched more deeply and changed if needed, to avoid any copyright infringement, if the prototype would be published officially in an app store.

Moreover, there are a couple of things that could affect the reliability of the prototype results. The gender and the age spread of the people in the user interviews and the users tests were quite narrow. Many of the participants were in their twenties, so a wider picture of how, for example, elderly pet owners or children would use the app was not available. There is also a need for more user testing to be able to make the mobile app prototype even better and more fitting for a variety of users.

In addition, visual usability and user-friendly design should be researched even more from different point of views to get the most accurate results. Ethicality should be considered regarding, for example, how users' personal information is processed correctly and safely in the case when interviews or user tests are recorded. During the thesis process interviews and user tests were not recorded to avoid problems with ethicality. For example, personal messages that users received on the phone screen during the tests would not be seen later. The users were warned before they shared their phone screen to mute possible conversations and notifications. This is something that would be extremely important to remember if the phone screens would be recorded in the future. Also it is important to consider how video recordings are safely stored and destroyed.

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PICTURE REFERENCES

FIGURE 1

Garrett, J. (2011). The Elements of User Experience: User-centered design for the Web and beyond (2nd ed.). New Riders.

FIGURE 2

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FIGURE 3-8

Figures designed by the author, charts and tables made with the help of the Apple's Pages app.

PICTURE 1

De la Riva, M. (2018). Updated on 20.9.2018. Read on 31.10.2020. <https://careerfoundry.com/en/blog/ui-design/the-importance-of-consistency-in-ui-design/>

PICTURE 2

Potvin, P. (2019). The fundamentals behind visual hierarchy. Published on 10.4.2019. Read on 9.11.2020. <https://uxdesign.cc/the-fundamentals-behind-visual-hierarchy-4323c85fb186>

PICTURE 3

Philips, M. (2019). Design Principles: an introduction to visual hierarchy. Published on 23.6.2019. Read on 12.11.2020. <https://uxdesign.cc/design-principles-an-introduction-to-visual-hierarchy-902d58e1c7b3>

PICTURE 4, 11–12, 14–15

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PICTURE 5

Screenshot of google.com. <https://www.google.com/>. Retrieved 12.1.2021.

PICTURE 6

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PICTURE 7–8

Adobe Color. (2020). Adobe. Read on 13.8.2020. <https://colour.adobe.com/create/colour-accessibility>

PICTURE 9

Arial typeface. <https://docs.microsoft.com/en-us/typography/font-list/arial>
Picture assembled by the thesis author.

PICTURE 10

Material Design. (2020). Imagery. Read on 20.8.2020. <https://material.io/design/communication/imagery.html>

PICTURE 16

Screenshot of a mood board made with Pinterest. <https://fi.pinterest.com/anni-kaandersson1/thesis-app-inspiration/>

PICTURE 13, 17-24

Pictures by the thesis author

APPENDICES

Appendix 1. User interview questions in Finnish and Swedish. And an added translation to English.

1/2

Interview questions in Finnish

1. Minkälaisia mobiiliapplikaatioita käytät päivän aikana?
2. Mikä on suosikki mobiiliapplikaatiosi?
3. Voitko kuvailla miksi applikaatio on suosikkisi, keskittyen appin visuaaliseen puoleen?
4. Voitko kuvailla millä tavoin visuaalinen puoli applikaatiossa toimii?
5. Millä tavoin applikaatio vaikuttaa tunteisiisi?
6. Voisiko applikaatiota jollain tavalla parantaa?
7. Onko sinulla tai lähipiirilläsi lemmikki?
8. Liittyen lemmikin hoitoon, oletko ikinä kohdannut tilanteen, jossa olisit tarvinnut nopeaa vastausta ongelmaan?
9. Millä tavoin löydät tietoa lemmikkiisi liittyen tällä hetkellä?
10. Minkälaista tietoa haluaisit löytää lemmikkiisi liittyen?
11. Mitä tekisit hätätilanteessa lemmikkiisi liittyen?

Interview questions in Swedish

1. Hurdana mobilapplikationer använder du under dagen?
2. Vad är din favorit mobilapplikation?
3. Kan du förklara varför appen är din favorit, genom att beskriva appens visuella egenskaper?
4. På vilket sätt fungerar den visuella sidan i appen?
5. Hur påverkar appen dina känslor?
6. Kan appen på något sätt bli förbättrad?
7. Har du eller din omgivning ett husdjur?
8. Gällande omhändertagandet av ditt husdjur, har du någonsin mött en situation där du behövt ett snabbt svar till ett problem?
9. Hur hittar du information gällande ditt husdjur för tillfället?
10. Hurdan information skulle du vilja hitta gällande ditt husdjur?
11. Vad skulle du göra vid en nödsituation gällande ditt husdjur?

Interview questions in English

2/2

1. What kind of mobile applications do you use during the day?
2. What is your favourite mobile application?
3. Can you describe why the application is your favourite focusing on the visual aspect of the app?
4. Can you describe how the application affects your feelings?
5. Could the applications be improved somehow?
6. Do you or your family have a pet?
7. Regarding the caretaking of your pet, have you ever encountered a situation where you would have needed a quick answer to a problem?
8. How do you find information regarding your pet at the moment?
9. What kind of information would you like to find regarding your pet?
10. What would you do in an emergency regarding your pet?

Appendix 2. Expert interview 1, Keski-Kapee. Questions in Finnish and an added translation to English.

Interview questions in Finnish

1. Mikä on mielestäsi tärkeää ottaa huomioon visuaalisen suunnittelun projekteissa, kun suunnitellaan verkkoa ja mobiilia varten?
2. Millä tavoin mielestäsi voi parantaa käytettävyyttä visuaalisen suunnittelun avulla käyttöliittymissä ja verkkosivuilla?
3. Minkälainen rooli visuaalisella suunnittelulla on Kaskella?
4. Minkälaista arvoa on pystytty tuottamaan asiakkaille (ja heidän asiakkailleen) visuaalisen suunnittelun avulla, mobiilia ja verkkosivuja ajatellen?
5. Minkälaista palautetta olette saaneet asiakkailta visuaalisen suunnittelun toteutuksista?
6. Minkälaisia ongelmia on pystytty ratkaisemaan visuaalisen suunnittelun avulla webissä ja mobiilissa?

Interview questions in English

1. What do you think is important to consider in visual design projects, when designing for web and mobile?
2. In what ways do you think usability can be improved with visual design in user interfaces and websites?
3. What kind of role does visual design have at Kaski Agency?
4. What kind of value have you been able to produce for clients (and their customers) through visual design, focusing on mobile and websites?
5. What kind of feedback have you gotten about visual design executions from clients?
6. What kind of problems have been solved through visual design in web and mobile?

Appendix 3. Expert interview 2, Halonen. Questions in Finnish and an added translation to English.

1/2

Interview questions in Finnish

1. Mikä on mielestäsi tärkeää ottaa huomioon kun aloitetaan mobiiliapplikaatio projekti ja itse suunnitteluprosessin aikana?
2. Millä tavoin mobiiliapplikaatioita suunnitellaan Collapickilla?
3. Millä tavoin mielestäsi voi parantaa käytettävyyttä graafisten elementtien avulla mobiili käyttöliittymissä?
4. Millä tavoin mobiiliapplikaatioiden käyttäjät otetaan huomioon mobiiliapplikaatioiden suunnittelussa?
5. Mikä sinun mielestä tekee mobiiliapplikaation käyttöliittymästä hyvännäköisen?
6. Mikä sinun mielestä tekee mobiiliapplikaation käyttöliittymästä käytettävän?
7. Mikä sinun mielestä tekee mobiiliapplikaation käyttöliittymästä käyttäjäystävällisen ja antaa hyvän käyttökokemuksen?
8. Minkälaista arvoa on pystytty tuottamaan asiakkaille (ja heidän asiakkailleen) mobiiliapplikaatioiden avulla?
9. Minkälaista palautetta olette saaneet asiakkailta mobiiliapplikaatioiden testosta?
10. Oletteko tehneet kokonaisia visuaalisia ilmeitä mobiiliapplikaatioihin?

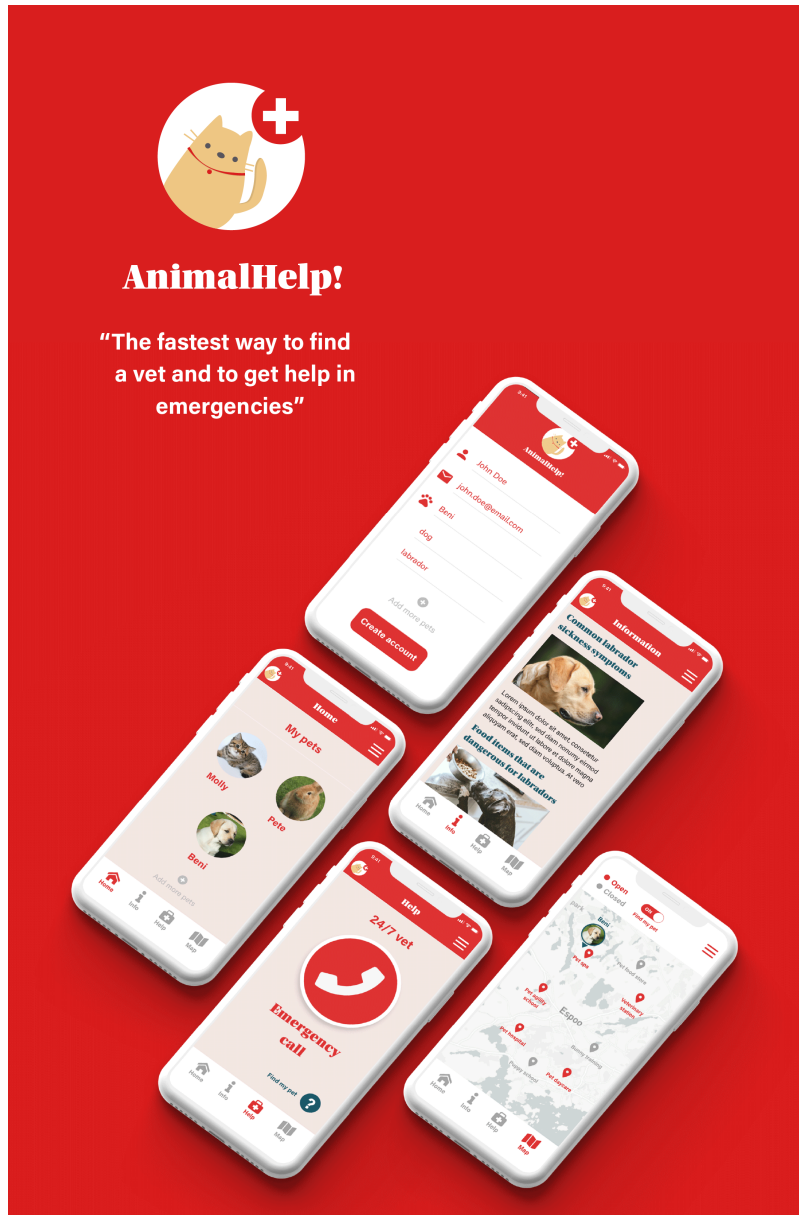
Interview questions in English

1. What do you think is important to consider when starting a mobile application project and during the design process itself?
2. How are mobile applications designed at Collapick?
3. How do you think graphical elements can be used to improve usability in mobile interfaces?
4. How are users of mobile applications taken into account in the design process?
5. What do you think makes the user interface of a mobile application good-looking?
6. What do you think makes a mobile application's user interface usable?

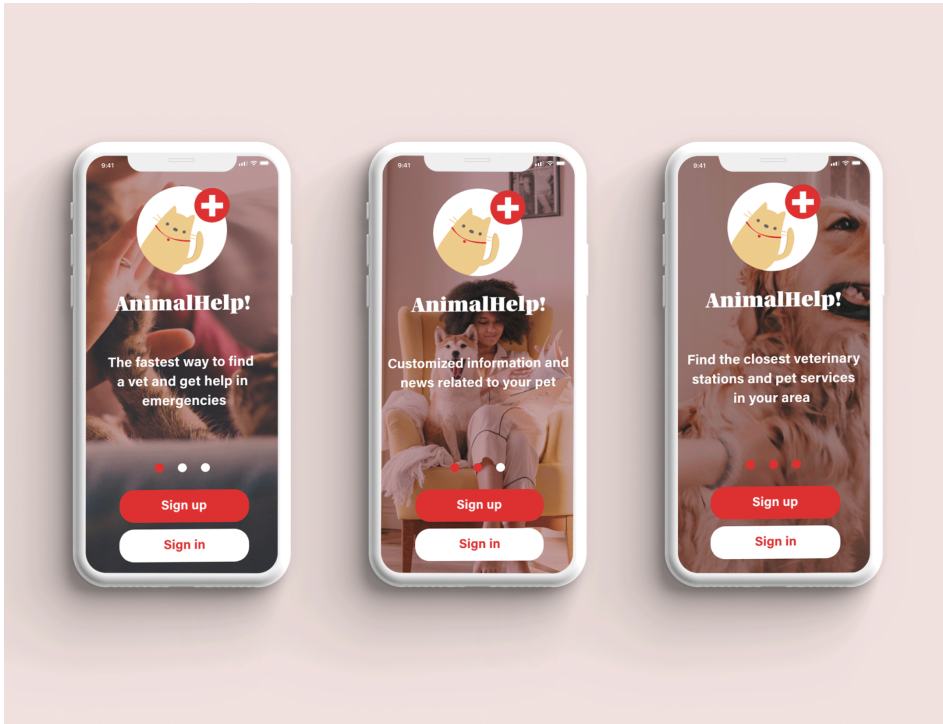
7. What do you think makes the user interface of the mobile application user-friendly and provides a good user experience?
8. What value has been created for customers (and their customers) through mobile applications?
9. What kind of feedback have you received from customers about the creation of mobile applications?
10. Have you made complete visual designs for mobile applications?

Appendix 4. The final visual design of the AnimalHelp! prototype

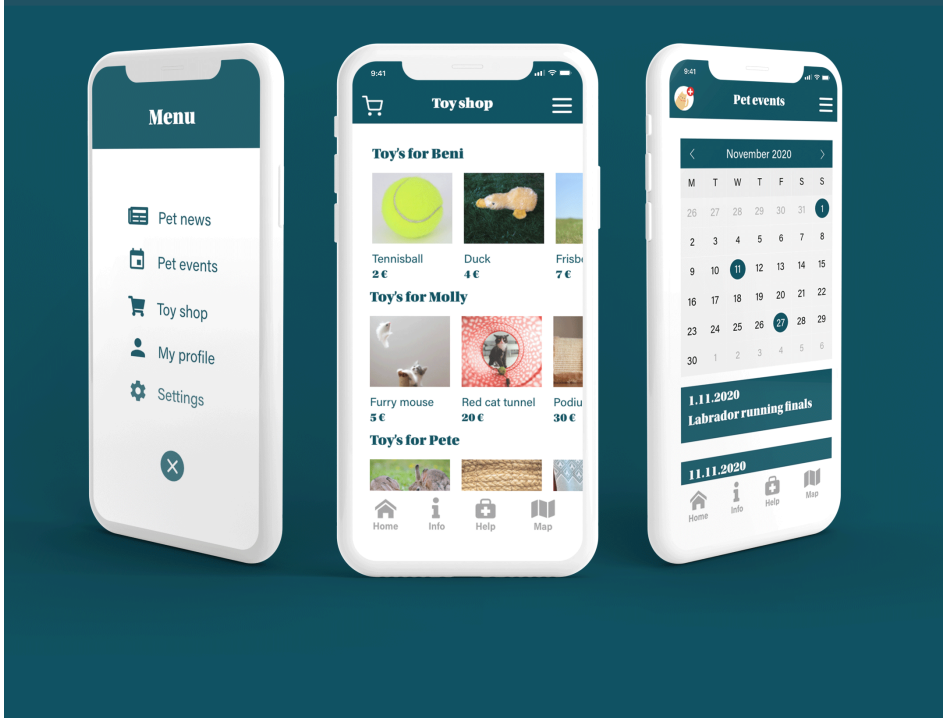
1/3



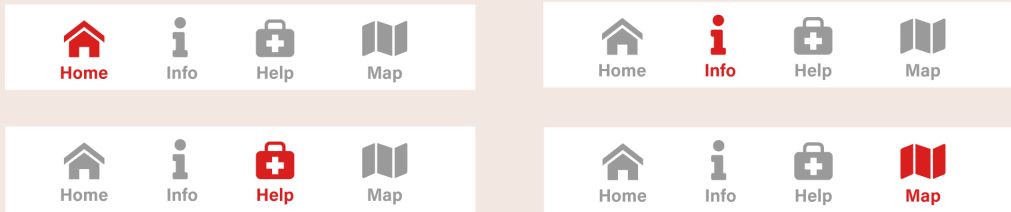
**“Find the closest veterinary
stations and pet services
in your area”**



“Customized information and news related to your pet”



Navigation



Typography

Utopia Std

ABCDEFGHIJKLMNOPQRSTUVWXYZ
NOPQRSTUVWXYZ
abcdefghijklm
nopqrstuvwxyz
1234567890

Acumin Pro Regular

ABCDEFGHIJKLMNOPQRSTUVWXYZ
 NOPQRSTUVWXYZ
 abcdefghijklm
 nopqrstuvwxyz
 1234567890

Acumin Pro Regular

ABCDEFGHIJKLMNOPQRSTUVWXYZ
NOPQRSTUVWXYZ
abcdefghijklm
nopqrstuvwxyz
1234567890

Color palette

Primary colors



R 217 G 30 B 30
 #D91E1E

R 31 G 80 B 94
 #1f505e

Secondary colors



R 131 G 4 B 8
 #830408

R 242 G 226 B 223
 #F2E2DF

R 154 G 154 B 154
 #9A9A9A