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How psychology can be used to influence user behaviour in UI and UX design

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Abstract

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The thesis defines UX and UI design, as well as the psychological aspects of both designs and how it can affect user behaviour. The study's ultimate goal is to incorporate UI and UX knowledge, as well as psychological methodologies, into the final project – prototype of the application. The objective of the application is to report environmental issues to the local government, such as trash on the street, broken benches, or other vandalism in the city. Points earned for each completed report can be redeemed for a prize.

The work includes a visual representation of the prototype, as well as descriptions of the implementation process and user experience research.

The prototype functionality is based on the psychological techniques described in the paper, such as pattern recognition techniques, reward of the self (gamification) and, to some extent, reward of tribe, allowing the user to create trash collecting events and invite other users to clean the city together, thereby creating a network. Aside from the main functions, prototype has a secondary function whose purpose is to subconsciously get the user to think about nature and proper waste recycling. The design also focused on the potential users with disabilities, so the contrast in colour and font was considered.

Keywords: UX, UI, pattern recognition, variable rewards, gamification

Tiivistelmä

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Opinnäytetyössä määriteltiin käyttäjäkokemus- (user experience, UX) ja käyttöliittymäsuunnittelu (user interface, UI) ja molempien psykologiset näkökohdat sekä se, miten voi vaikuttaa käyttäjien käyttötapoihin. Tutkimuksen tavoitteena oli yhdistää UI- ja UX-osaaminen sekä psykologiset menetelmät opinnäytetyön projektiin eli sovelluksen prototyyppiin. Sovelluksen tarkoituksena oli ilmoittaa paikallisviranomaisille ympäristöongelmista, kuten kadulla olevista roskista, rikkinäisistä penkeistä tai muusta ilkeästä kaupungissa. Jokaisesta täytetystä raportista saadut pisteet voi lunastaa palkinnoksi.

Työn tutkimusmenetelmiin kuuluivat kyselytutkimus, persoonien tunnistaminen, kilpailija-analyysi ja käytettävyydestaukset. Kyselytutkimukseen osallistui 34 henkilöä. Seuraavan kerran käyttäjien mielipiteet otettiin mukaan testauksen loppuvaiheeseen.

Prototyypin toiminnallisuus perustuu UX-tutkimuksen aikana saatujen tulosten lisäksi myös opinnäytetyöraportissa kuvattuihin psykologisiin taitoihin, kuten hahmontunnistustekniikoihin, itsensä palkitsemiseen (pelillistäminen) ja jossain määrin myös heimon palkitsemiseen, jolloin käyttäjä voi luoda roskienkeräystapahtumia ja kutsua muita käyttäjiä siivoamaan kaupunkia yhdessä ja luoda näin verkoston. Päätoimintojen lisäksi prototyypillä on toissijainen toiminto, jonka tarkoituksena on saada käyttäjä alitajuisesti ajattelemaan luontoa ja asianmukaista jätteen kierrätystä. Suunnittelussa keskityttiin myös mahdollisiin vammaisiin käyttäjiin eli esteettömyyteen ja saavutettavuuteen, joten värin ja fontin kontrasti otettiin huomioon.

Avainsanat: käyttöliittymäsuunnittelu, käyttäjäkokemus, hahmontunnistus, pelillistäminen

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List of Abbreviations

| | |
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| AI: | Artificial Intelligent. This is an area of modern science concerned with the development of methods for teaching computers, robotics or other analytical systems to think like humans. |
| UI: | User Interface. The part of a software that allows the user to interact with a digital product. |
| UX: | User Experience. These are techniques for analysing a person's actions in order to create a prototype that will form the basis for a final digital product. |
| ATM: | Automated teller machine. It performs a basic banking function, such as cash withdrawal. |
| SEO: | Search Engine Optimization. The techniques that allows to increase the traffic of the visitors on the webpage. |
| App: | Application. The application is a software program with the primary purpose of performing a function for the user, and in some cases for another software. |
| Em: | This is font size One em in a 16-point typeface is 16 points. |
| AR: | Augmented reality. This is a technologically improved image of the real physical environment generated by the use of digital visual components, sound, or other sensory stimulation. |
| VR: | Virtual reality. This is a technology that models visual in order to create a three-dimensional environment for the user to experience. |

1 Introduction

The modern world has been engrossed in the web. There is no need to leave the house or to make an effort for meeting new people, converse with old friends or buy a service or product. Everything arrives at your door quickly and effortlessly just with the touch of a finger. The usability of a website or app is now very important in online business. The user can easily go to a competitor if there is something that users do not like or can't find. The work explains how certain psychological techniques can help keep user to use a digital product and encourage to take action. Any marketing book can tell that a satisfied user would not only return for further service, but also can tell others about the positive experience.

For the topic I chose "How psychology can be used to influence user behavior in UI and UX design". I'm interested in psychology, and I believe it's one of the most fundamental concepts for any designer to grasp. I've even met designers who studied psychology before deciding to start a career as a UX designer. The thesis covers not only what UX and UI design is, but also how some user habits unite into groups, allowing designers to affect the decision-making to some level.

I present an application I created using the earlier explained psychological techniques in the thesis at the end of the work. The idea for the app came to my mind when I moved to Germany. Unfortunately, a sofa on the street or a freshly painted graffiti is common here. That's when I had the idea to create such an app, so that city residents could share information about trash so that the municipality of the city could take action. At the beginning of the UX research, I conducted a survey with 34 participants and used the results to create a persona that gave me the best idea of a potential user. I also completed a competitive analysis and included all the highlighted strengths into the prototype. The result of my UX research is a high-fidelity prototype, that was created through the stages of prototyping, from paper prototyping to a high-fidelity prototype.

2 User Interface design

The term "user interface design" refers to how the finished product should look, i.e., the visual aspect of the product. This definition includes the structure, colours, fonts, branding and interactivity, everything the user sees while using the product. It makes no difference what tool a designer utilises to create a design. First and foremost, a designer needs to know how to use colours, typography or other visual content.

Creating a design is like telling a story. A designer accomplishes this using images, colours, fonts and effects. Design, like writing a book, has the purpose of capturing the audience's interest. A good designer must intrigue the user's interest so that they stay on the page and want to know what happens next. Everything should work together, whether it is large images or small details, a lot of information or animation. Everything must interact together to tell a single story. (1.)

Who, what and how - these three questions will help with writing a story. First and foremost, it is necessary to comprehend who the user is, to identify the behaviour and habits. This would help to understand what differ the person from the same individuals. At this point, the designer must consider why the user should care about the story and whether the user has a good grasp. The last thing to keep in mind is how to visualize the story and which technique to employ. (2.)

2.1 Aesthetics

Users often experience an aesthetically pleasing design as one that is more user-friendly. Massaki Kurosu and Kaori Kashimiri of Hitachi Design Center conducted a study with 252 participants, testing 26 different ATM UI designs. The study found that users gave higher grades to designs that were aesthetically pleasing rather than ones that were significantly more useful but not as appealing. Kashimiri and Kurosu came to the conclusion that a user is significantly impacted

by the aesthetics of any particular interface, even when evaluating the functionality. (3.)

During my studies and at work I was doing user experience testing and discovered that users are more concerned with the style, colour or size of the button than with functionality. Even the smallest design can detract from the necessary functionality testing, because of this UX testing includes three stages of the prototyping and wireframing. The first begins with a paper prototyping or digital sketch in black and white colours, the next step is medium-fidelity prototype with functionality and a minimal design. In the first two stages UX designers must ensure that nothing distracts the user from functionality testing. The final step of testing is a high-fidelity prototyping when the functionality has been thoroughly tested and all changes have been implemented. On this step the user needs to evaluate not just functionality, but also the design and give the feedback on the used colour, visuals, interactions etc. Users are often more tolerant of minor functionality issues if they like the design, but not to the major one. The designer's job is not only to provide functionality to the user, but also to create an aesthetically pleasing design that includes typography, visuals and layouts.

Raunak Trikha, a designer with years of experience, outlined the seven rules for creating an aesthetically pleasing design in his article:

1. Light is always emitted from above. Shadows can be used to make objects appear more three-dimensional, but don't place shadows where they cannot physically exist, as this may cause dissonance to the user.
2. Use muted colours, and if colours aren't absolutely necessary, stick to black and white. Colour can be used to draw attention to what needs to be highlighted.
3. Use the whitespace between the elements; too close placement gives the impression of a tangled mess, and it is easy to become confused about what belongs to what.

4. Use not only weighty animations, but also think of micro interactions. The basic principle of micro interactions is action-reaction. Even the smallest interaction can attract the user's attention and leave a positive impression of the digital product.
5. Make a point of emphasis. Highlight what should be the first thing that the user notices. This can be a picture, text, word, button, or anything else. A well-placed accent will draw the user's attention.
6. Instead of making the user think, design so that the user feels smart. Don't overcomplicate the design; instead, make it so that the user can easily and intuitively find everything.
7. Make design be consistent. People are used to existing patterns. Use a similar and repetitive pattern so that users can quickly become accustomed to the design and begin the action that brought them to the web page. (4.)

2.2 The influence of colour

Colour is a visual element and a language that designers use to communicate with users. The process of evaluating a product begins with the manipulation of colour. It allows the designer to maintain focus rather than eliciting negative emotions. One important rule for beginner is to use only two colours and remember that colour cannot exist alone, it must work together with the rest of the content. (5.)

10 reasons to use colours:

- improve the visual search
- identify details by contrast
- to emphasize significance
- to organize content
- branding

- incorporate significance
- enhancing the intuitive design
- conveying mood
- differentiating between combinations
- expressing comparison.

(6.)

The emotions evoked by seeing a colour are typically subjective and dependent on the person's background and culture. A designer should constantly keep in mind the cultural significance of colour when designing for different countries. For example, in Europe, white is traditionally associated with weddings, whereas in China, white is related with funerals and death. A designer should always consider who the design is for before deciding on a colour palette to avoid unfavorable reactions.

2.2.1 Colour palette

Variety of colour combinations can be used in the design. Warm colours with red pigments are associated with light, fire and the sun. They create an impression and consider vibrant and energetic colours, whereas cold colours with blue as a core, are seen to be relaxing and reliable. Bright colours are commonly used to capture attention, but they should not be used excessively because they might visually confuse or irritate the user. Pale colours with more than 65 % white are usually associated with tenderness and widely used in wedding design. Pale colours are an excellent base and can be balanced and contrasted with more saturated colours. Dark as the base colour of black creates atmosphere and is great for contrast, it can also add drama and mystery. Underneath the selection of the appropriate colour may be an idea to guide the user in the proper direction or to stir some feelings. Overuse of colour or an incorrect colour combination can elicit negative emotions in the user, prompting them to close the visually irritating page. (7.)

Johannes Itten, one of the masters of color, studied the work of designers and artists in the early 1920s to learn about the relationship between hues and colours. His research resulted in the colour circle, also known as the twelve-part colour circle as shown on the Figure 1. The three primary colours in the center - red, blue and yellow. The secondary colours are created by combining the two primary colours. Johannes Itten suggested drawing lines and forms inside the wheel to find a combination of colours, achieving a visual, emotional and symbolic approach to colour. (7.)



Figure 1. Itten's colour wheel (7, p. 22.).

The ability to harmonize colours requires years of practice unless a designer is born with this gift. A lot of research has gone into how humans see colours and their combinations. Many various apps with computer-generated information can be found on the Internet to assist in generating colour combinations or colour matching. However, as with all computers, emotions are not involved into the selection, and the final decision is always made by the individual who design. Designer should always know who the users are and think about colours in advance before the implementation stage.

2.2.2 Colour and psychology

Colour can undoubtedly influence people's subconscious and may evoke different emotions such as anger, sadness, joy, irritation, passion and happiness. Psychologists study how colours, hues and combinations affect the human behaviour and can motivate a user to take an action, for example to buy a product. Unfortunately, science has not fully understood how a certain colour can predict a decision or influence a person's behaviour. Every person is unique, each of us perceives colours differently; for example, some people prefer blue because it is associated with family, while others dislike green because it is associated with bad memories. All have different habits, families and cultures. Designer who understands the psychology and habits of users can only try to anticipate reactions and create a palette that evokes the desired result by bringing together users who have a lot in common. (7.)

2.3 Typography and layout

Along with colour, typography is also important in making an impression. Designer can use various types of typography, whether futuristic or classic, to create a mood and elicit associations in the user. A designer should avoid using tough-to-read fonts since the user's emotions are transmitted to the text, making it more difficult to understand. Figure 2 demonstrates an example of a difficult-to-read font created with MADE The Artist Script Regular -font.

Designers should avoid using tough-to-read fonts since the user's emotions are transmitted to the text making it more difficult to understand.

Figure 2. MADE TheArtist Script Regular -font.

But it's not simply the right font that plays an important role; the key to success is to keep the language usage simple. The user will be able to understand and remember more easily if simple words used. It's always a good idea to break up the text into paragraphs and use headings. The designer also must be aware that

most long text and especially instructions, are not read by users. Users usually search by scrolling across the page and scanning for the key words or phrases in the content. The designer should not only research for the key words before to start designing, but also try to highlight the content that the user should notice, for example by changing the colour or using a bold font. However, the designer should avoid using too many distractions and highlights on the page, as this can disturb and confuse the user during the search.

The amount of empty space between elements, as well as the layout, should not be underestimated. Many users have preconceived ideas about where and what they want to find on the page. The positioning of elements on the website has an impact on a user's perception of a product, in addition to colours, font and visual design. The user can quickly tire if they need to jump from place to place reading the content of the page. It's also crucial to understand if the audience reads from right to left or left to right. According to studies, people pay attention to the center of the page and only then translate the look at the sides. The right usage of the white space can visually separate sections as well as connect similar ones, that assist the user scanning the page and keep the eyes focused on what's of interest. Typeface, colours and layout should all complement one another. If any of this is done in excess, the user will experience negative emotions. (8.)

2.4 Responsiveness

The number of web pages and application are constantly growing. There were ten million pages online at the start of the new millennium. In the last 20 years, the number has risen to more than 1.75 billion (9). People nowadays use devices of all sizes, from massive screens to small mobile phones. More and more are using mobile devices to browse the Internet. Every member of the family now has own devices or even multiples. Today's society is so technologically advanced that even small children expect a new tablet from Santa instead of a book or toy. It's no surprise that developers are attempting to create responsive content that adapts to devices of various sizes, such as desktop, mobile and tablet, at the

design stage. The developers' primary goal at this point is to create a user-friendly page that adjusts as the screen size changes.

User-oriented companies always consider the responsive design of the mobile and computer website versions. Studies of user behaviour in E-commerce have shown that a higher percentage of people make purchases using a computer. Although a mobile device can be used to search for and add items to a shopping cart, the final payment usually is made on a computer. (10.)

The following should be considered to help build a responsive design:

- Use “em” instead of “pixels” in font size. The “em” scale with a size of the screen and considered a mobile-friendly.
- Blocks width and height in %.
- Use the unique image and proportions for each device. Test how the images will display in landscape and portrait modes.
- Determine the device for which the design will be created and develop a list of media query breakpoints. Table 1 demonstrates a list of media query breakpoints from small mobile sizes in portrait mode to wide screen desktop. (10.)

Table 1. List of devices with different resolutions.

| Resolution | Devices in different modes |
|-------------------|-----------------------------------|
| 320 pixels | mobile in portrait |
| 480 pixels | mobile in portrait + landscape |
| 600 pixels | small tablets in portrait |
| 768 pixels | large tablets in portrait |
| 1024 pixels | large tablets in landscape |
| 1280 pixels | desktop |
| 1440 pixels | wide screen desktop |

Responsiveness is part of user interface and user experience design. It's difficult to imagine a well-designed website that isn't responsive. It's not just the content

of the page that can change depending on the size of the device there is also some of the effects for the desktop don't work properly on mobile. The designer's goal is to research user needs and behaviour on mobile and desktop and provide, if necessary, with a unique content for various screens also considering the difference in interactivity.

2.5 Interactivity

The interactivity is taking special place in UI. It's difficult to imagine a webpage without animations, everything is shining, spinning and glowing. It was developed incredibly in past few years; the next step one can imagine a possibility to touch or smell the digital product. While the importance of smell has long been recognized by many businesses and widely in use. Hotels and stores engage perfumers to create their own scents in order to make people associate the product with it. Maybe in the future, people will be able to purchase a perfume in online shops and smell it by pressing the "spray fragrance" -button.

Sound is also one of the forms of interactivity that designers frequently use to interact with a user and to alert to the necessity of taking a specific action. For example, before deleting something, a designer uses an alarm sound to ensure that the user is paying attention and considering the action. However, the designer should not put too much sound on the page, as this would take away the element of surprise. (8.)

The designer can indicate that the object is interactive by using a different colour, font or underline it. For instance, if the user hover with a mouse on the button, it may change colour or size. The animation can serve multiple functions, including visual effect, attracting attention, demonstrating how the user should interact with the content and providing feedback from the system on taken actions. The animation can also be as navigation, informing the user of the direction in which the user should or are moving.

Across the internet designers providing with a breath-taking animation, everything is only constrained by the developer's imagination. Developers are working hard to incorporate AR and VR into development. The essential thing is to restrain and not to use too much of everything, that can terrify the user and increase the loading time of the page.

3 User Experience design

“Good design is actually a lot harder to notice than poor design, in part because good designs fit our needs so well that the design is invisible”. This quote belongs to user experience design guru Donald Arthur Norman. In the early 1990s, Donald Norman coined the term "UX".

UX design is a process that involves researching and analysing the user and their behaviours in order to create an experience that helps to interact with the product. UX design is used to produce both digital and physical products, from teapots to artificial intelligence applications. The end result of the UX design is a product that solves the user's problem, as well as make the users see the value in using the product. In the first place, the designer should avoid attempting to cover the entire user base. There's always the possibility that user who visits the page or uses the app will have own ideas about design of the interface and interaction with the product. According to the studies, designer may succeed by focusing on only 10% of the audience. Delivering a well-thought-out and intuitive design to those 10% of users will earn the respect and love of a small group of people who will already be helping the product thrive. If the designer aims for a broad audience, the product may lose its intuitiveness and become extremely difficult to use.

The following are the most important rules for user experience design:

- Define features and requirements.
- Design.
- Test.

- Redesign.

If a function exists and no one complains about it, it is successful and will continue to stay so. A good user experience designer is ready to hear and respond to customer feedback. It is also critical to grow your own skills and be open to new technologies. The designer should keep in mind that the primary goal of new technology is to simplify the task and reduce the mental burden on the user. (11.)

A competent user experience designer should have two qualities: objectivity and empathy. Empathy is required to comprehend the requirements, goals and frustrations of users. Objectivity helps to analyse the product objectively and find and correct defects. (12.) User experience is not a skill that comes naturally to everyone; in order to succeed in this field, designer must first acquire a lot of theory, as well as practice interacting with a potential users.

3.1 Research in User Experience design

The UX designer's work requires research. A designer can't give people anything meaningful unless understands the challenges users trying to solve. The designer must ask a lot of questions, listen to the user's wishes and react appropriately in order to understand what features a new product must have to satisfy user's needs. (13.) Research is required to learn more about the user: lifestyle, habits, preferences, dislikes, anything else that distinguishes the user from the researcher, because if everyone were the same, there would be no need for research. Figure 3 presents an empathy map, a tool that researcher can use to understand a user's motivation and environment.

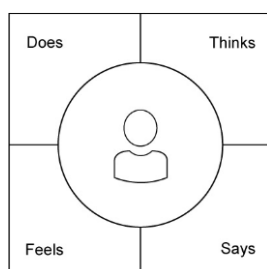


Figure 3. The empathy map.

The map includes 4 sections what can be filled by answered on the following questions:

- Does. What are the daily activities and behaviours at home and at work?
- Thinks. What is important and what does the user think about? What are the concerns/ aspirations?
- Feels. How the user feel? What make to feel good or bad?
- Says. What the user talk about? Whether the conversation topics change depending on the environment?

Product design, integration, branding, usability and functionality all fall under the umbrella of user experience design. In new product design, user experience design covers the questions "why," "what for" and "how."

Why would a user want to use this product in particular? The designer is attempting to understand the user's motivation for using this particular product by answering this question. This is the first step in comprehending the idea. What is the purpose of the product? What are people able to do with this product? The answers to these questions will assist the designer in thinking about the product's functionality and working to improve it. Finally, the "how" question, which will aid the designer in the design of the final product. In the final step, the designer considers the product's aesthetic appeal. (13.)

It is necessary to consider the questions for the users before beginning the UX research, whether the research will be qualitative, in which users are interviewed face-to-face, or quantitative with distribution of questionnaires, and whether other researchers will be involved. Face-to-face surveys are most effective when conducted by two researchers, with one person asking the questions and the other writing down the answers. Someone should always be present to not only listen to and write, but also to observe the respondent body language. Unfortunately, research has shown that respondents do not always answer honestly, frequently avoiding answering, possibly because they do not want to offend the questioner with an honest answer. (14.)

In the future, more AI will be used in UX research. However, this does not mean that many developers will lose their jobs; AI will make developers' work more productive and efficient, while also reducing manual work. In his video, Jakob Nielsen explains whenever people answer a computer's questions, they are more honest than when they answer a question from researchers. More truthful responses aid in the collection of more accurate statistics and the handling of real data. AI assists in the recognition of a person's facial expressions and the use of that information to improve and speed up work. (15.) Facial recognition is already in use in the retail sector in China. All the user has to do is choose a product, scan a smile, and enter a code. It's simple and fast.

3.2 Wireframing and prototyping

It is always necessary to gather information about the user, to create persona, before beginning with a prototype or wireframing phases. Determine the user's wants and needs. Put yourself in the shoes of the user, with all the problems and concerns. Asking questions, interviewing, listening, researching, analysing, comprehending and attempting to find a solution. This are the essential techniques of UX designer. As a result, it is the designer's responsibility to solve the user's problem.

The first goal of prototyping is to translate ideas from the head into functionality and conceptualize it. Prototyping allows you to show a workflow or demonstrate a specific use case. The second goal is to show how the functionality works. First and foremost, the UX designer must decide who will see the prototype. Depending on the user, a low-fidelity, medium-fidelity or high-fidelity prototype can be displayed. The prototype can be used for a variety of purposes. It can simply be to demonstrate an idea, to research and test an idea or to sell an idea. (16.) Figure 4 shows the main screen at different stages of prototyping.

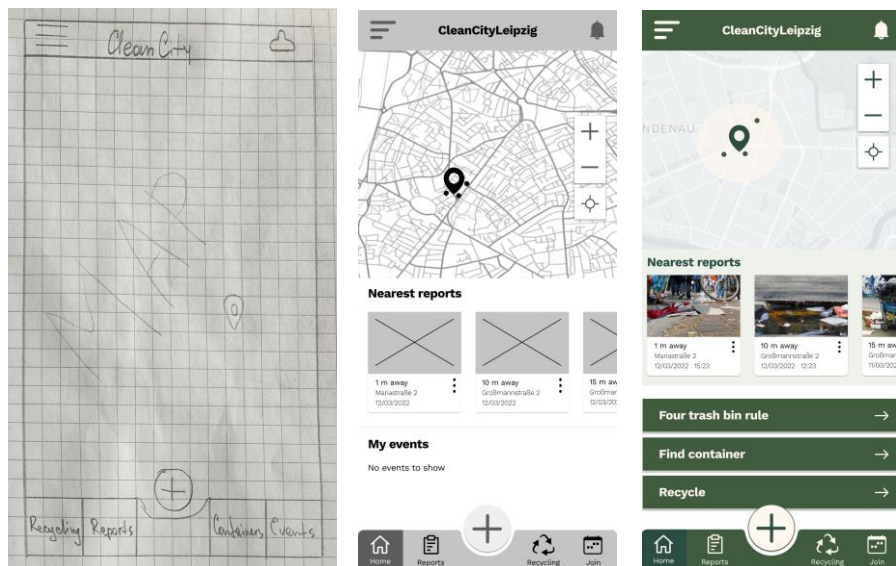


Figure 4. Screenshots of low-, mid- and high-fidelity prototypes.

The only difference between a prototype and wireframing is that the latter is a skeleton of an idea, a sketch without details. It is typically made on paper and takes little time and money to complete. A prototype is something that comes after and is built on top with all the improvements and interactions.

3.3 Inclusive design

The term "inclusive design" refers to a design that considers the unique needs of the user. Inclusive design includes accessibility, that means designing for disabled people. According to the World Health Organization, over 2 billion people are disabled (17). The accessible design doesn't just cover the people with a permanent disability, the range is much wider due to the fact that there are temporary or situational disabilities. Temporary disability is one that person can recover, for example, someone has broken an arm and can only use one hand. Situational disability can be a noisy place, where person cannot hear properly. (18.) Figure 5 shows six categories of disabilities.



Figure 5. Six categories of disabilities.

The following factors should be considered while designing for accessibility:

- typography
- image
- colour and contrast
- animation
- focus elements
- obvious navigation
- feedback on action

Designers who want to verify their designs for disability compliance can use the Web AIM tool, which lets them to check whether a website is created in a way that allows people with disabilities to use it, for example by determining whether enough colour contrast has been used. (18.) Figure 6 shows the contrast ration of two colours. Contrast ratio means the difference in brightness of two colours. The ratio starts from 1:1 (white on white) and end on 21:1 (black to white). For the good colour combination the contrast ratio should be at least 4.5:1.

Contrast Checker

[Home](#) > [Resources](#) > Contrast Checker

The image shows the WebAIM Contrast Checker interface. It features two color selection boxes: 'Foreground Color' with hex code #3C584D and 'Background Color' with hex code #EEF2EA. Both boxes include a 'Lightness' slider. A double-headed arrow indicates the relationship between the two colors. Below the color boxes, a green-bordered box displays the 'Contrast Ratio' as 6.87:1. A 'permalink' link is provided below the ratio. Under the heading 'Normal Text', the WCAG AA compliance is marked as 'Pass' (green) and WCAG AAA as 'Fail' (red). A sample text box contains the sentence: 'The five boxing wizards jump quickly.'

Figure 6. WebAIM contrast checker.

3.4 Difference between UI and UX design

The demand for UI and UX design professionals has recently increased. Companies understand that providing a user-friendly service requires more than just frontend and backend programming. Companies hire experts who are concerned to customer satisfaction and the improvement of the user experience. Although the UI and UX designers are different professionals, in most circumstances, one person does both jobs.

In general, the differences can be stated as follows: the first provides the foundation and functionality, whereas the UI designer brings aesthetically pleasing design. Usually, the UI designer is not involved in the early stages of UX research. UI designer is engaged when the functionality necessitates of design. Figure 7 shows the steps involved in the creation of UI and UX designs at various stages.

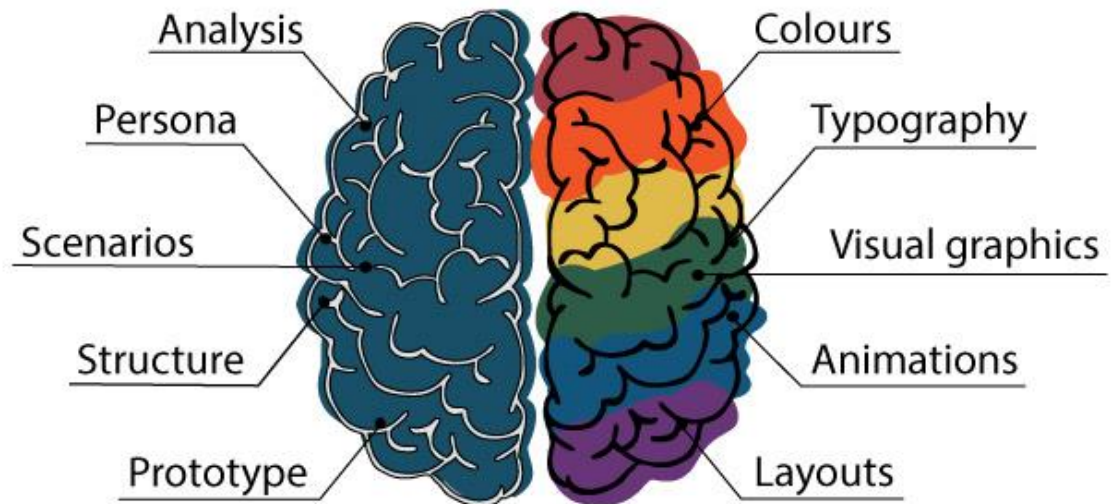


Figure 7. Different steps in UX and UI design.

4 The use of psychology in the design process

Each of us has had experiences that have enabled our brains to process information much faster. The user perceives and sees the product through his or her own eyes, relying on stereotypes that influence the decisions and impressions. The designer cannot be certain that the design will be accepted by the user in the manner desired; this is why analysis and testing are performed. Understanding the user's psychology will assist the designer in evaluating the results as accurately as possible, continuing to work on the product, and ultimately providing a product that the user will want to use.

The designer plays a role of communicator. The goal is to implement even the most complex technologies in an easy way and provide the user with a user-friendly product. Communication between the developer and the user is essential for good design and understanding of the product. The designer must learn to observe, see, and analyse himself and others. The designer is unable to anticipate problems and errors that may harm the user. Feedback is always valuable, but not only to the designer about the product. The designer should plan so that the user can also see the feedback on made action. For example, if the

user press "send" -button, and as a result, the message on the screen "thank you for your message". The feedback will provide the user with the understanding that the activity was correct; otherwise, the user can try to fill in the same field numerous times and may conclude that the form does not work properly. The designer and the user have vastly different product knowledge. Designer understands the created product, whereas user understands the task at hand. The lack of feedback leads to unnecessary speculation and thoughts. (19.)

4.1 Gestalt principles

Gestalt is a German word that means shape, form, or figure. Gestalt psychology studies human perception of the world and how human brain processes shapes and combines them in a certain way or order, this assists designers in understanding how people process visual information. There are more than ten principles in Gestalt, but four on Figure 8 are the most well-known.

1. The first principle proximity states that a person perceives objects next to each other as part of a single group. Designer can use this principle by applying the white space between components or grouping them together. For example, the header should always be near the associated text so that the user interprets the text and header as one group.
2. The common region principle says that person perceives objects as a one group if they are in the same enclosed area. For example, a card that enclosed a bunch of different elements in one place.
3. The principle of closure states that the human brain attempts to fill in the gaps by drawing lines and forming an image to perceive a complete image. This principle is frequently applied in logo and icon design.
4. The fourth figure-ground principle states that person can see only items in the foreground or background. This principle is useful for highlighting objects on a dark or light background and for creating contrast.



Figure 8. Gestalt principles.

Knowing that the human mind can unconsciously enhance product perception, the designer can employ gestalt principles to build a more intuitive product that allows consumers to better comprehend the functionality and interface, allowing the designer to implement rather complicated applications. The proper use of the principles can assist the designer in focusing and redirecting attention to a certain object, pushing certain actions and, on some levels, manipulating the user.

4.2 Pattern-recognition design

The human brain is continuously attempting to explain anything that is unknown based on prior experience. Years of Internet use have formed in our brain how certain element or a specific page should look like. If a person sees something for the first time, the brain instinctively uses learnt behaviour to try to find a pattern. A pattern is a solution established by a designer to a usability problem that is so successful that it is adopted by other designers. The search bar, for example, is something that most of the Internet user familiar with. If someone asks to visualize it, our memory will instantly draw a picture of the input with a word "search" and a magnifying glass. The image of the search input was formed in our minds as a result of viewing search bars on many pages, maybe with a slightly different in design but the same functionality. The user can easily become confused if standard input changes its appearance; for example, the typical magnifying glass will be replaced with a lighthouse icon, and "search" will be changed with "find it if you can." And this, in turn, can cause the user to lose confidence in the website or application and simply close a page.

Nowadays user can complete the difficult tasks with a help of the years of experience in web. Money transfer or filling the tax form can be made with a minimal cognitive effort, but there are also designers who use a dark pattern. This means that the designer is aware that users can blindly follow a pattern without thinking or analysing, because of this some tricks are used to influence user action. I read about a case in which a designer placed hair on an ad's image so that a user accidentally tapped the screen while trying to swipe a hair off a mobile screen. I've also experienced some cases myself where airlines include extra services in the ticket price or change the price to the next price category, if I just simply press the "continue" button without thinking and end up paying for services that are completely unnecessary. On the ethical side, the designer must decide whether to use patterns to create a user-friendly interface or intend to mislead and use in financial gain.

4.3 Variable rewards

Our brain releases dopamine whenever a person is curious and discovers something new, receives a reward, or get a like on a recently posted photo. The dopamine boosts motivation and goal-directed behaviour, without which a person cannot survive. Dopamine not only boosts motivation, but it also induces hyperfocus, allowing people to concentrate and be productive. This means that by placing the user in this state, the designer will be able to easily manipulate the user's behaviour. The user can complete multi-functional tasks more easily with a high dopamine level. It can also be beneficial for E-commerce platforms because it is easier to sell a product to a satisfied customer.

However, studies have shown that giving a user a predicted reward reduces dopamine production. The designer must plan ahead how and under what conditions the user will receive a reward, as well as focus on interaction between user and interface. Knowing this, a designer can create a product that will trigger a dopamine shot in the user's brain and involve in development variable rewards. There are three types: rewards of the hunt, rewards of the tribe and rewards of the self.

4.3.1 Rewards of the hunt

People didn't need to hunt mammoths to survive for centuries, but we still have the instinct. The hunting for knowledge, as well as people's curiosity, is what keeps us survive. People are always looking for information, and the easier it is to find, the more likely they are to seek it out. How often does a user begin reading something and then loses track of how far he or she has wandered from the original page because the reading was so engrossed? Jumping from one page to another, reading headlines, clicking the links, we all are racing for the knowledge in the web. Not surprisingly, blogs have long been employed the reward of the hunt in SEO as a means of increasing site traffic. While reading, the user may unintentionally click on the link to the product described in the article and now the turn of nice-looking website with attractive images and "one click" purchase option, and the user will become the proud owner of the oven that roast the greatest pizzas in town.

4.3.2 Rewards of the tribe

People are social creatures who want to build their own network, be recognizable amongst other and get feedback for approval. This formed in humans many millennia ago, when it was difficult for one individual to exist in a severe condition. In order to live in a commune and have a chance to survive, people had to be accepted by others. Similarly, we are now attempting to gain acceptance from other people, despite the fact that survival is no longer our primary concern, we still crave for a reward of tribe.

Many different platforms, from Instagram to various training applications, employ the reward of the tribe these days. Would Instagram be as engaging if the likes and comments features were disabled? I don't believe it would. Users post personal photos and write insightful texts solely to gain social approval, unconsciously checking the account more frequently after the posting. Each time getting a new shot of dopamine after receiving the new likes and comments.

4.3.3 Rewards of the self

People are naturally driven to new challenges, the successful completion of which leads to growth and a positive attitude. Something that makes the user to be proud of itself and motivates to perform better the next time. Different kind of the sport applications using the reward of the self, that show the user how many kilometres have been cycled or run today. This motivates users to perform better next time, to reach a certain goal, to improve all the time. The designer can further motivate the user by adding the reward of the tribe and combining two rewards in the app by giving the user the ability to share completed goal and collect a recognition from the friends.

Gamification is one of the tools that motivates user and assist to complete a most complex tasks in a playful way. Most language applications use gamification to motivate users to use the app by rewarding with points for each test passed or, if the user fail, offering to buy points for a fee to continue using the app. Marc Robert explains in his video how even the most difficult task can be turned into a game. In gamification manner, the user is willing to go through challenging stages, to lose and start from the beginning in order to achieve the goal. Mark Robert also discusses a study he conducted that involved two groups. Both groups completed the same task, with the exception of one condition: one group was allowed to continue without penalty, while the other was penalized with a point deduction. The results were analysed at the end, and it was discovered that the group with no penalty had twice as many attempts to accomplish the task, as well as a greater completion percentage. He stressed that individuals who were not afraid to make mistakes were twice as effective at reaching their goals. (20.)

Personalization, or the ability for the user to create an avatar, is another crucial aspect of gamification. As a result, the user gains an identity, that allows the users pretend to be someone else and maybe learn new things from a different perspective. The impression of having an avatar connected to the user can lead to more active engagement and influence the best results. The quantity of differentiation and detail in avatars is determined by the design, although

research reveals that more particular avatar options improve the process' performance. (21.)

5 CleanCityLeipzig UX research

I had an idea for the application and imagined a mock-up in my head, but before I could begin prototyping, I needed to figure out exactly "Who my user is?" "What motivates my user?" and "How I could design such an app that the user would use it on a daily basis?". I intended to design an app that would not only encourage users to send in reports, but would also inspire them to clean up the trash by rewarding them with points. What motivates the user to collect trash and send reports? Do users want to earn rewards in the form of coupons for shop discounts, or should the app display a list of users with points to instil a sense of competition in the user? I was wondering if it would actually motivate or irritate my user. All these questions were answered by UX research. I began with a survey, then after analysing the responses and creating personas. After first steps I moved on to a competition analysis, from which I highlighted the positive features I would like to utilize in my app. After that, I had a better idea of what the user wanted to see in the application and began working on prototype stages.

5.1 Survey

I started my work on the UX research with a survey. Before to send a survey to the participants, I asked myself: "What I wanted to know from the user?", "What personally motivates me to create a survey?". There is one technique "5 why's" - method that allows to dig deep to the root by asking "why" 5 times. Here is the five "why" and the answers:

- Why you need this survey? I want to know who my user is.
- Why you need to know about your user? I want to understand the behaviours and get into the shoe of the user.
- Why? I want to understand what will motivate user to use the application.
- Why? I want to know what functionalities I need to add to the app.

- Why? I want to create a simple and user-friendly app, that user will use on a daily basis.

The survey was sent on 18th of February to the group of residents of city of Leipzig. The time for filling out the form was till 6th of March. During this period 34 replies were received. The form was made in Google form and included following questions:

- General questions such as gender and age.
- Questions whether the survey's participant had ever collected trash or reported about rubbish to the municipality of the city, and what motivated them to do so.
- Rewards and individual expectations for sent trash reports.
- The survey also had a question about additional functionalities for the users, such as displaying containers on the map or getting notification about the status of the sent report.
- Personal data and what other information the user is willing to share in order to use all of the app's features.
- At the end, the questions about the desktop application "Mängelmelder Stadt Leipzig" from the city of Leipzig and experiences with it. The survey also included the question what would be easier to use for the user – mobile or desktop version of the application.

The survey was made in a question form in German. I decided not to do a face-to-face interview, because my German skills are not strong enough to keep up a fluent conversation. The survey's goal was to collect information about potential users and identify what would inspire them to use the app.

The survey covered people of all ages, although the majority group was group of 30-40 years old participants. Both men and women were present in equal numbers. I specifically asked about gender to see if gender variations would affect sensitivity to the trash in the city, but the study revealed that both men and women have the same attitude about rubbish in the city. I received the response that 33 people have ever picked up trash on the street. The survey indicated that participants not just want to see their city clean, but also care about the environment, animals, and want to set a good example for their children.

According to survey 26 people (76.5 percent) were interested in receiving rewards for points. When I asked what else could motivate participants to use the app, people mentioned things like a certificate, free parking, public transportation tickets, swimming pool or zoo ticket, vouchers for recycling center for green waste disposal. I found a certificate idea interested. At this point I was thinking that children also can be a user. However, the idea of a certificate can increase motivation for the kids to use the app. During the survey, I also discovered that while the reward was not the primary motivator for adults to use the app, ecological aspect one of the primary motivations.

I was intrigued by the response from 28 users who stated that they would not be motivated to see the number of points earned by others in order to compete for first place in the table. I expected that a competitive spirit would be one of the motivators for using the app, but it turns out that users are more motivated by receiving rewards than competing against one another.

Only 15 people were willing to share their location in order to use all the functionality of the app. On the question about the displaying the name in the app, no one answered "yes". Because I gave users multiple options in this question, the responses revealed that 26 respondents want to use the app anonymously, while 15 respondents are able to display a nickname in the application.

On the question "What personal details are you willing to fill out in the registration form in order to use all of the functionalities?" users can select multiple answers at once. I was surprised by how many users responded positively and are willing to share personal information. 19 answers was to email address, 14 answers to name, 15 to gender, 13 to age, and only one person was willing to share an address. In addition, 11 participants marked that they want to remain anonymous.

I also questioned about app's potential functionalities. One feature was to show on the map location of container of the glass or clothes and 32 people said they would use it. In addition, I asked if participants wanted to be notified about the status of the sent report and 28 people said they want to get the notification.

I also found it intriguing that just two persons out of 34 were familiar with "Mängelmelder Stadt Leipzig" application. Despite the fact that this application has been around for half a year and has been featured in the local newsletter. And the final question I asked was whether users preferred to use a mobile app or a computer, and 28 people said they preferred the mobile app.

5.2 Persona

A persona is a written profile of a common user. The creation of a persona allows the designer to imagine the user and gain insight into how the user will engage with the app. The key to preventing the developer from acting as a potential user is to specify personas. The more specific the personas are, the more effective it becomes as design tools.

After analysing the survey results, I went on to design a persona. As I wrote earlier when I was reading the survey's result, the idea came to me that not only adults can use the application, but also children. In Germany is a very strong desire to think about the environment, and the app could be not only the tool for sending reports, it also can have an educational function. I created two personas, one young boy Marten (Appendix 1) and adult Marika (Appendix 2). Both personas are concerned about the environment and the harm that trash and plastic cause to both nature and animals.

I created two personas of different ages to see if there was a difference in motivation between the ages. I considered the scenarios for using the app and I realized that the motivation is not that different, and that the main reason is still that the personas want to make the city cleaner. The only difference is that the child is still learning about recycling, so because of this I wanted to include an educational information about recycle and waste separation. This information will also be useful for adults, because during the study I learned that even adults do not always know how to properly sort the trash into different bins.

5.3 Competitor analysis

During my research, I checked at potential competitors as well. Competitor analysis is needed to identify the weaknesses and strengths of competitors, that help to improve the usability of the product, as well as to find out how relevant the product is on the market. I found three applications similar in idea to mine during the search and since after the survey I could already better understand the user's needs, it was easier for me to determine what features the user would like to see in the application.

Table 2 demonstrates strengths and weaknesses of application “MyCleanCity” for city of Haag.

| Strengths | Weaknesses |
|-----------------------------------------------------------------------------------------------------------|--------------------------------------|
| the splash screen with tutorial and a language selection | the app do not save the sent reports |
| possibility to login as a guest with a limited functionalities | |
| the app shows the location of the containers. The user can also make a report if some container is broken | |
| the app has a categories and tips of how to recycle | |
| the user can invite the friends to use the app | |
| the main page has four buttons with a main functionalities of the app | |
| the app has a feedback and FAQ sections | |

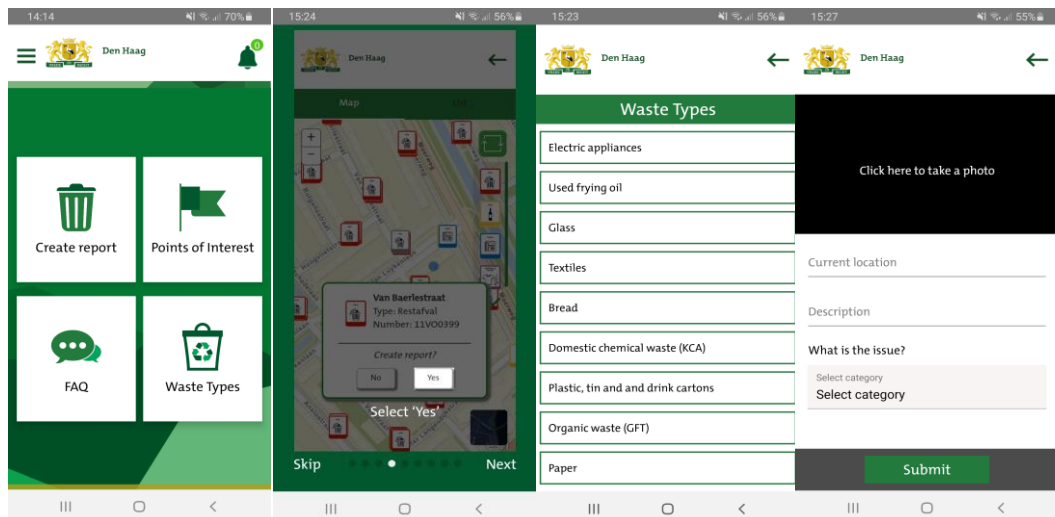


Figure 9. Screenshots of the application "MyCleanCity". (22.)

Table 3 has a list with a strengths and weaknesses of UK's application "Love Clean City", that cooperates with a different environmental service of the country.

| Strengths | Weaknesses |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| the app has a report section where the user can see the sent reports as well as other reports near the user's location. The user can also see the report's status - category, status, and completed | for submitting a report, a description and an email address are required. |
| a function - notifications and news from authorities | |
| the report can be saved as a draft and send later | |
| the user has the option of taking a picture, adding one from the gallery, or sending a report without a picture | |
| the user is notified, when the report's status is updated to "complete" | |

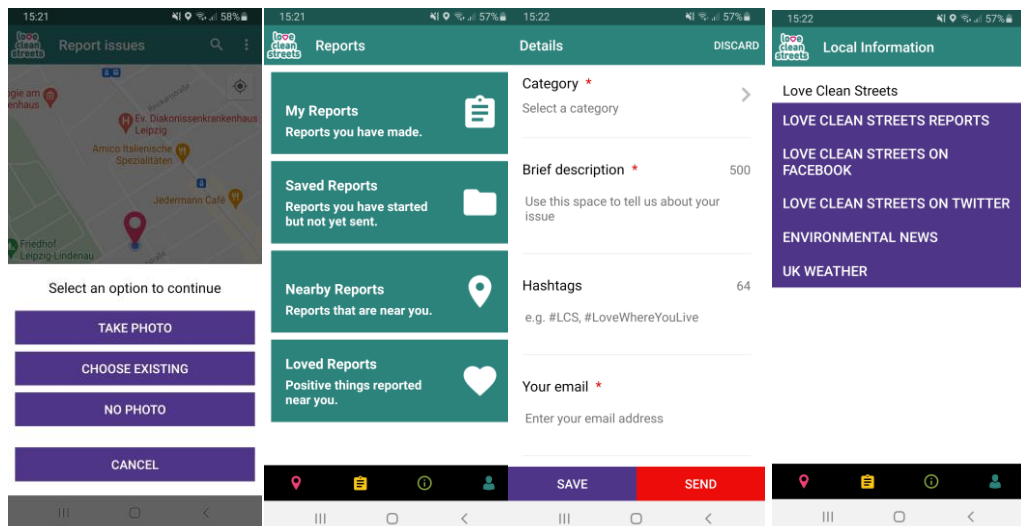


Figure 10. Screenshots of the application " Love Clean Streets®". (23.)

Table 4 displays a strengths and weaknesses of Litterati application. The application was created for people who desire to have a positive impact on nature by cleaning up the environment.

| Strengths | Weaknesses |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------|
| the app has instructions with illustration on how to take a picture and fill out a report | the app has a lot of useless and misleading content |
| the user not only send a report, but also can pick-up the trash and get points for it | |
| can view the list of the users, as well as a collected point of the users | |
| nice illustrations | |

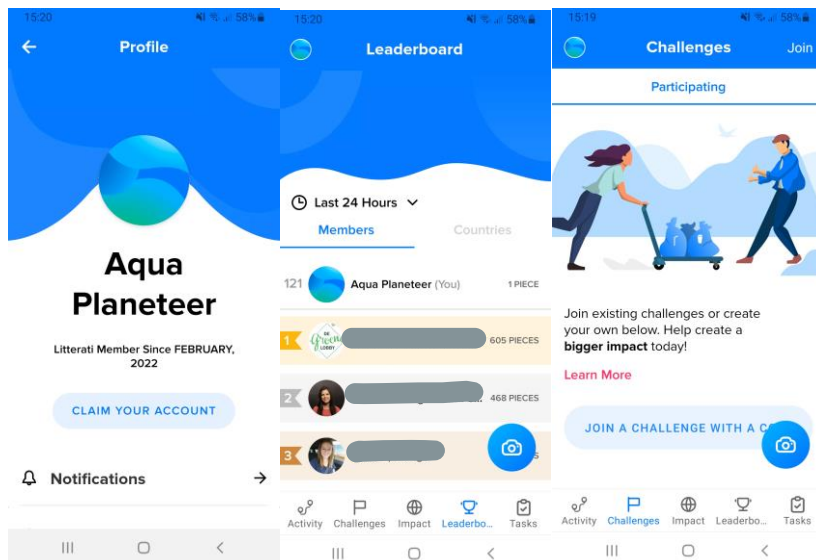


Figure 11. Screenshots of the application " Litterati". (24.)

I highlighted the following points after competitor's analysing:

- The user has the option of picking up the reported trash and mark it as "complete" (to get more points than just sent the report).
- The scale showing the number of points received in My profile and the number of points required to receive the reward. The reward could be a shop discount coupon or certificate.
- The user can organize trash collection events and ask others to join.
- The app will show the location of containers in the city.
- The user can save the report and send it later, as well as view all sent reports and see the status.
- Status notifications and news from authorities

6 CleanCityLeipzig prototyping

After conducting UX research, I moved on to the prototyping phase. I went through every stage of prototyping, beginning with paper and pencil and ending with a high-fidelity prototype. During the prototyping process, I also conducted testing. At the beginning of each testing, I told the story of the app and idea behind it. I asked the testers to imagine being the user. During the testing, I described situation in which the tester could use the application and was asked to perform a task. I observed, questioned, and documented all comments and ideas. I spoke

with testers to gain a better understanding of their motivations, desires, and concerns. Unfortunately, as I stated earlier in the thesis, not all tests were constructive. Perhaps this was due to the tester's desire not to offend me, despite the fact that I stated at the start of testing that I would be happy to receive any comment, positive or negative, as it would only help me create a more refined prototype. Nonetheless, a few comments assisted me in revising the functionality and refining the prototype.

6.1 Low-fidelity prototype

The low-fidelity prototype I began with a rough sketch of the concept and the main features that I would like to see. The original design changed slightly during the prototyping phases, and I added a few new features as well. I originally planned to have a main screen with four buttons representing the app's main functions, but I redrew the screen and decided that on the main screen, I would only have the map and the "create report" button, because I calculated that if I instantly provided the user with a button to click, the number of user "clicks" and extra pages would be reduced by at least one. The paper prototype's tab bar contains the buttons for the remaining functions (Figure 12):

- Recycling. Contains all relevant recycling information and in addition the location where this waste can be disposed of.
- Reports. With a list of the sections - new report, saved report, sent reports, nearby reports (Figure 13).
- Containers. Displays a map of all available containers, the user able to filter and search for the needed container.
- Event. It has possibility to organize an event and invite other users to join the user in collecting trash.

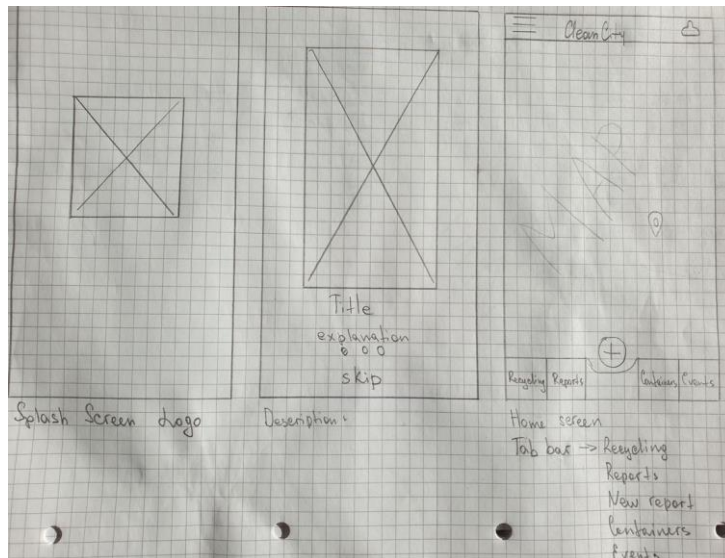


Figure 12. Low-fidelity prototype.

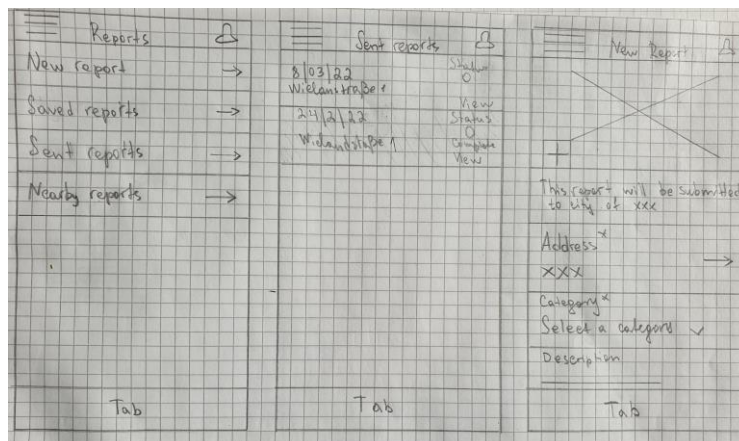


Figure 13. Low-fidelity prototype. Reports.

6.2 Mid-fidelity prototype

I started prototyping phase by copying ideas from low-fidelity prototype to Figma environment. Figma is a prototyping and wireframing software for macOS and Windows. I used mainly grey hues to keep the testers' attention on the functionality rather than the aesthetics. During the prototyping phase I imagined to be a user and considered what would motivate me to use the app. According to the UX research, the primary motivator for users is to make the city cleaner,

but I wanted to add further motivation to the app to encourage users to submit reports more frequently. As a result, I developed the concept of a reward. I visualized not only the final step of the reward, but also gave to the user to view the path that leads to it. I was using the gamification technique to stimulate the user's interest and motivate them to reach the goal. The user can see the total number of points earned for each report, as well as a progress bar that shows how many points are needed to get the reward. I also included statistics, so the user can see how many points were earned and how many reports were sent. Figure 14 shows a profile page where user can find all the information about the points and received awards.

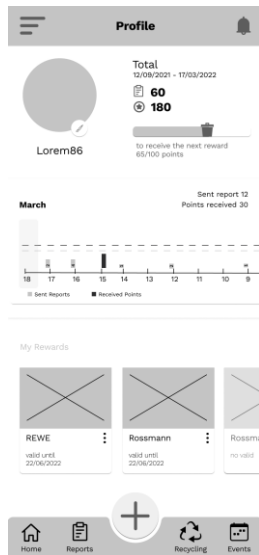


Figure 14. Profile section's screenshot from Figma file.

I also wanted to create a sense of community by using the event feature, as well as displaying on the main screen the reports that are sent close to the user's location, so I want to give the feeling that the user is not alone, there are many like-minded people who willing to share their environmental concerns with. Figure 15 displays the events within the user-specified radius, as well as a calendar showing the dates for which the events are scheduled.

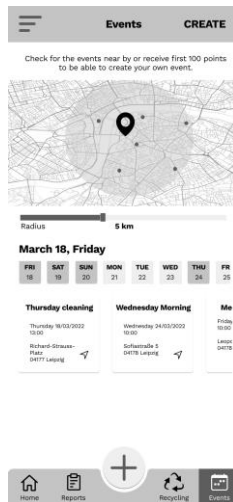


Figure 15. Screenshot of the event page.

In addition to the sense of community, I wanted to give the user the opportunity to provide feedback to the city, so that the user feels that the opinion is valued. Feedback is a useful feature for listening to the user to improve the app's functionality. I also design several scenarios in which the user need decide, because the ability of making decision is necessary from a psychological standpoint. Figure 16 shows the login page where the user can login, register or continue as a guest with limited functionality. The ability to choose for oneself gives the user a sense of control over the situation on a subconscious level.

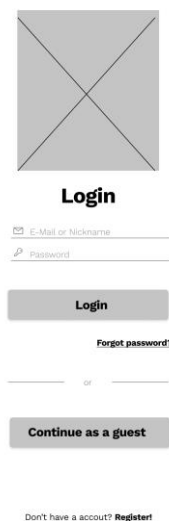


Figure 16. Screenshot of the login page.

My next step after the design phase was testing. I was able to test 3 people. I conducted two tests in person, sitting next to the tester, and one online. I can't say whether there was a difference between online and offline testing because offline testing provided me with constructive feedback as well. I was able to learn more about the potential user and improve the application's functionality as a result of the feedback I received. So, for example, one of the testers mentioned a problem with garbage sorting, so I devised a section where the user can alphabetically search for a product or scan the bar code, and the application will tell what kind of garbage it is and information how to recycle. Another tester responded positively to the idea of locating containers, but also requested that the location of the recycling centres need to be included, so I came up with the idea of including not only the address of the container, but also working hours and a phone number where the user can contact the personnel.

Following user feedback, I modified the original medium-fidelity prototype by adding new features, rearranging content, and adding new objects on some pages, all while attempting not to overburden the page with unnecessary objects. I also left blank space between the different sections to help the user see the borders between them. After making all of the changes, I moved on to the next phase, which required me to decide on visual aspects such as colour palette, typography, and images, because the next phase includes not only feedback on functionality, but also an evaluation of the application's visual component.

6.3 High-fidelity prototype

The selection of colour was the first step in designing the high-fidelity prototype. I chose green for the one of the primary colours, because according to studies, green is a colour that people associate with nature. For the second primary colour I decided for floral white. The secondary colour I selected a dark green to use it as a font and one colour from emblem of city of Leipzig. Figure 17 shows four colours I chose. During the colour selection I used a colour generator to help me match a colour scheme. I also verify the contrast index of primary and secondary colour in WebAIM. The contrast ratio between the dark green and floral white was

8.87:1, and the lighter green has a contrast ratio of 5.14 with floral white. Following colour selection, I moved on to the aesthetics of the prototype, which required to identify what type of graphics I would require for the application. I created the illustrations with Adobe Illustrator. I used the four colours I chose earlier, in addition I added other hues using the same colour generator.

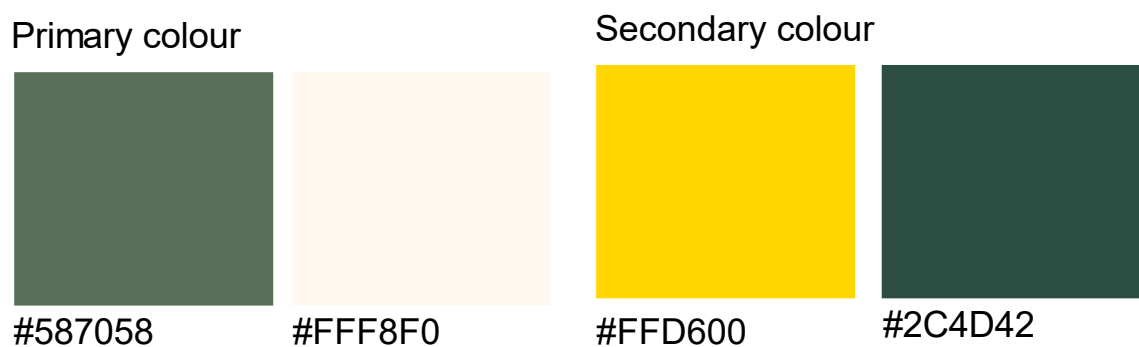


Figure 17. Primary and secondary colour selection.

I started the testing process after finishing the design of the last part of the prototype. I've completed five testing. I created a scenario before testing the high-fidelity prototype, which I followed during the tests (Appendix 3). I made significant adjustments to the prototype after three testing and performed the remaining two testing with an upgraded version. The key point in the early tests was that the name "Events" in navigation tab was confusing for the testers because they were not sure what they expect to see on the screen. Furthermore, after opening the screen, the testers did not fully comprehend what it displayed and how they could interact with the content. I changed the name to "join" and made changes to the screen design. Figure 18 shows on the left side the first version before testing and on the right side the updated version of the event screen after three testing.

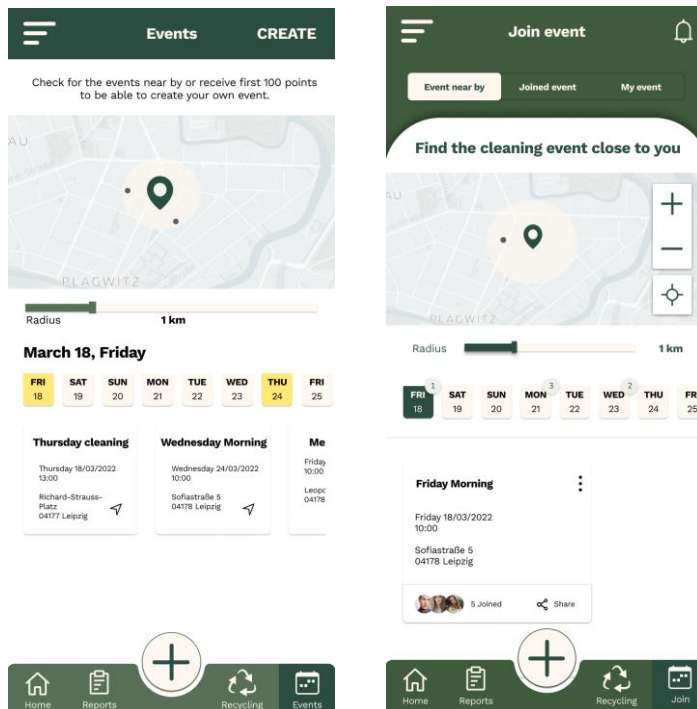


Figure 18. The event screen before and after testing session.

I made adjustments to the „Event“ -screen and showed them to the other two testers. After changes two testers had a better understanding of the screen idea and were able to answer on my question and to complete the tasks.

During the planning phase, I considered using avatars for each user. My first and fourth testers, on the other hand, said avatars were unnecessary. I still wish to have the option to personalize the user's profile, and instead of an avatar, I included the option to upload a photo. I purposefully did not include a photo selection option on registration phase so that the user would not lose time selecting picture and could add it in "Profile" screen later. During the testing I also noticed that everyone chosen to use the app anonymously. One tester stated that she wants to learn more about the app before registration. I even notice that testers were not taking much attention to the warning text, just pressing "Continue as a guest" -button.

There were no big functional changes compare to the mid-fidelity prototype. The report sending stays the same as it was planned on the very early stage, as do all of the screens for waste separation and container location finding. The main

functional improvements were made to the home page and the events page. Appendix 4 contains screenshots of the final version of the prototype created from Figma.

7 Conclusion

Don't make me think! I came across this motto in one of the books of UX professional Steve Krug and I think this is something every designer should keep in mind in their work. Now, whenever I'm working on a design or testing a product, that motto comes to my mind. It's something that every designer should consider while creating a digital product; try to remember that the user who will be using it was not part in the design process and it's every designer's job to create an intuitive design that reduces the amount of time the user spends searching or wondering what to do next. For myself, with my new experience of communication and learning more about human psychology, I realize how different people are, even though we can share the same habits or be grouped with others who share similar behaviours.

Working on this project has been an interesting experience and I have learned a lot about design and psychology in design. I was able to conduct the user experience research and go through all stages of prototyping, including testing. The work provided impetus and demonstrated to me that I had chosen the correct path for my future development. I would like to review the design of the prototype after some time and contact the city of Leipzig and discuss the possibility of collaboration. I am confident that the application will encourage residents to reconsider their relationship with trash. After all, it is entirely within our power to change our behaviour and make the planet a better place to live.

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Persona Marten

NAME

Marten



Goals

- loves biology and wants to be an oceanologist in the future.
- wants to make a contribution to save the environment.
- parents taught Marten how to recycle different kind of trash. Now he wants to teach the younger sister about it.

Demographic

♂ Male 10 years

📍 Leipzig

Pupil

Quote

“I saw a movie on how plastic kills ocean wildlife when I was in aquarium with my class. I'd like to contribute in any way I can to making the world a better place. I also feel responsible to set an example for my younger sister.”

Background

Marten is living with his family and one dog in house in Leipzig. He also has a smaller sister, who always is curious to know what Marten is doing. Marten's parents presented him a puppy since he has always been interested in nature and animals. He read a lot of books on the ocean wildlife and dreaming about swimming with dolphins. His favorite animal is the turtle, and his father told him that they will visit a turtle habitat next year. Marten has also learned that there are numerous volunteer opportunities to work and help animals, and he plans to volunteer as an adult. Marten attempts to avoid using plastic in shops, and he asked his parents to buy him a water bottle that he can refill. He also goes to the park with his family once in two weeks to clean up trash. His parents have told him that he must be environmentally conscious because this is where he will be living in the future.

Skills

Football



Drawing



Motivations

Marten wants to continue picking up trash with his parents, and he's considering organizing a trash pick-up day with his classmates next month.

Frustrations

He is very concerned that many adults are not interested in the environment

Technology



Persona Marika

NAME

Marika



Goals

- takes an active part in making the city cleaner
- wants to raise awareness about the risks of plastic among her friends and coworkers
- tries to reduce the amount of plastic she uses to minimum

Quote

“I am really concerned about the condition of the city; my parents taught me not to throw trash in the street when I was a child, and I am saddened when I see young people throwing trash in the park.”

Demographic

Female 37 years

Leipzig

Single

Marketing Assistant

Background

Marika moved to Leipzig 15 years ago from a small town. She studied marketing in university and now works for a small company. She enjoys going to yoga and running in the park, as well as meet with her friends. Marika enjoys traveling, her most recent trip was to India, where she was concerned about the condition of people's homes and the amount of trash on the streets. She would like to be a part of the people who take care of environment and the city. She discovered that Leipzig has a "clean police," who seek for enormous amounts of trash in the street and try to find out who put it there so that they may clean it up.

Skills

Piano



Motivations

Marika understands that by warning others about the dangers of plastic, she can help reduce the amount of plastic. She wants to make the city cleaner so that it can be held up as an example to the rest of the world.

Frustrations

She is concerned about the amount of garbage produced around the world, as well as the fact that many people are unconcerned about the environment, and some are unaware about trash recycling.

Technology



Scenario

Good day,

I would like to welcome you on the testing session.

I assume you already know why I asked you to come today. As I told you before I would like you to test the prototype of the university final work. The session would take around one hour. During the testing I would like you to think out loud and explain me every step you make and what you think at the moment.

I also want to mention that you cannot make anything wrong here. You can freely say and press anything you feel right. I'll also ask you to assess how you feel without thinking that it is my work and you afraid to hurt my feelings in any way. I would greatly appreciate all feedback. This is the only way for me to improve my prototype.

I hope this is fine for you, if I will make a note during the session and write down all the things you mention. Do you have some question?

Login screen

So, let's begin the testing. First of all I would like you to have a look at the Login page. What you see here? The next step I would like you to sign in the app.

The Home screen and first report

We are on the home screen now. Could you please tell me what you see here?

Good. Now I would like you to send your first report.

I have a question before you press "Close" button. What you think where the page will navigate you?

Reports screen

Now I would like you to have a look on a report. What the options you see here. Could you please check your sent reports? Explain me what you see here. The next question would be about the points your received. Could you show me the place where you can check the total amount of the points you received?

Portfolio screen

Good. Could you please tell me the amount of the points you have? What is an amount of the points you need to receive to get your next reward? How you can check how many reports you sent this month?

Now, imagine you are in the REWE shop and you want to get your discount on cashier. What you will do?

Event screen

I would like you to press on Join button. Could you tell me what this page shows and what you can do here?

Could you please tell me what you can see on the information of the event? Is where anything else you think is important to display on event info. Could you please join the event. I would like to ask you to show me how you will create your own event.

Recycling screen

And at the end I would like you to test "Recycling" -screen. Imagine you have a battery, but you have no idea how to recycle it. Could you show me where you will search for the information?

Do you have any questions? I would like to thank you for your valuable feedback.

