



Guidelines for Organising Information Based on Simulation Games

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ABSTRACT

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The purpose of this thesis was to provide a practical set of guidelines for user experience (UX) and user interface (UI) designers as an aid. This can be useful if designers need to organise items logically, such as clothing in an online store. The guidelines were paired with layouts. These layouts help to get a deeper understanding of the guidelines. In the theoretical section it was necessary to explore the terminologies the field requires. This theoretical part was followed by heuristic evaluations of three chosen games from the same genre.

During the heuristic evaluation, three chosen games were tested using three selected evaluation criteria. The test results and the research study inspired the guidelines and layouts. The layouts were created in Figma, and the images within the layouts were created in Adobe Photoshop.

The key findings indicate that UX and UI can be inspired by exploring UI solutions in different fields, resulting in a more creative outcome. Further research and testing are required to reach a deeper understanding. Testing different genres of games and games played on different platforms might provide this.

Key words: user experience, user interface, guideline, layout

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1 INTRODUCTION

In this thesis, I introduce guidelines for organising information. By information organisation I mean placing similar items under the same category. The item can be anything within a website or application. For example, products in a webshop, or list of appointments in a calendar application. With the help of these guidelines, the designers can create layouts, where the users can find what they are looking for easily. These guidelines are based on research and testing of how items are organised in certain simulation games. The item can be any in-game collectible, purchasable, or placeable object, for instance, a chair or a gemstone. This interest of mine came from my personal experience playing video games. In life-simulation and farming simulation games, where the player has to collect and search among hundreds of items, it is difficult to find one exact object. Particularly, when the player does not remember the name of the object, searching for that one item is possible only with its associated words.

I find this topic useful because organising an extended amount of material in a way that the individual parts are easy to find can be challenging for anyone. With this work, I wish to help user experience (UX) and user interface (UI) designers who find themselves in situations where logically organising items is required. This knowledge can be applied to other areas than games as well. For instance, to online stores, habit tracking, and time management applications, just to name a few.

I have decided to find out how simulation games organise their in-game items and other information. I did not only have this idea because of my personal experience with them, but also because of their popularity, wide user base, and positive effect on mental health (Johannes, Vuorre & Przybylski 2021). Video games have increasing popularity across the whole population of the world. As of 2022, the global games market is worth \$184.4Bn, and by 2025, this can grow to 211.2Bn (McDonald 2023). Earlier, the target audience was teenage boys, and even though stereotypes still exist, adults and female players joined this group as well. Currently, the proportion of male and female players is nearly equal (Vermeulen & Van Looy 2016). Because of the large variety of people

playing games, it can be stated that games are overall well liked and enjoyed. This is why it can be useful to explore what games have to offer from a user experience point of view.

I attempted to find these guidelines through research and heuristic evaluation. The user experience point of view largely contains the user interface as well, because if there are problems in the user interface, then the whole user experience might be affected (Angelo, Clementius, Chandrawan, Anderies & Iswanto 2022). In the end, the thesis will provide layouts, through which the guidelines will be illustrated, so they can be understood easier.

2 USER EXPERIENCE BASICS

2.1 User experience

It is important to explain some concepts and terms in the beginning because if the goal is to make a product enjoyable for the users, the designers have to understand the different components that can help during the process.

At first glance, the meaning of user experience might seem easy to understand. Simply, it is how a person feels while interacting with any system, product (virtual or physical), or service (Hodent 2022). If the person, using the product, can easily execute the task the product was created for, then the person most likely had a good experience while using the product.

According to Hodent (2022), most UX designers define UX as a mindset where the user and the user's impression of the products are in the centre, including such factors as perception and previous experience among others. According to Nichols and Chesnut (2014), UX has a huge role when it comes to making people's lives more enjoyable, and this enjoyment is what designers try to provide.

Factors, such as the user's perception can be influenced by the UX mindset. UX mindset is about focusing on the potential users' interest over the companies' interest. It considers the users' best interest, trying to provide the best possible encounter with the product from start to finish by paying attention to limitations and capabilities of users. (Hodent 2022)

2.2 User experience design

User experience design is the process of creating any product with different methods while keeping the user in mind, making the product the easiest for the user to operate and enjoy. There can be other factors that can influence the design. For instance, how much time, money, and other resources were

provided to the design team. These factors can make the job easier, or more difficult for the designers. (Allanwood & Beare 2014)

User experience design is usually developed in teams. It is most practical to create designs this way because there can be several approaches, ideas, and background knowledge. Also, it is easier to split up the work among members of the team. (Allanwood & Beare 2014)

These characteristics of the UX field are important to understand, because beginner designers might expect everything to work on the first try. Even if they are provided with guidelines to base their ideas on, those ideas have to be discussed, revisited, tested, and improved multiple times.

2.2.1 The characteristics of good design

Through the lens of UX, a good design is most importantly user-centred. Design thinking is applied while creating the designs. This includes mainly five big stages: empathise, design, ideate, prototype, and test. These stages are not just coming one after the other, but certain stages repeat themselves until the desired outcome is reached. This is called an iterative process or iterative design. (Cirucci & Pruchniewska 2022)

Apart from user-centred mindset, design thinking, and the iterative process, designers also have to keep in mind Peter Morville's honeycomb model, which can provide guidance for designers on the attributes of the final product (Morville & Sullenger 2010).

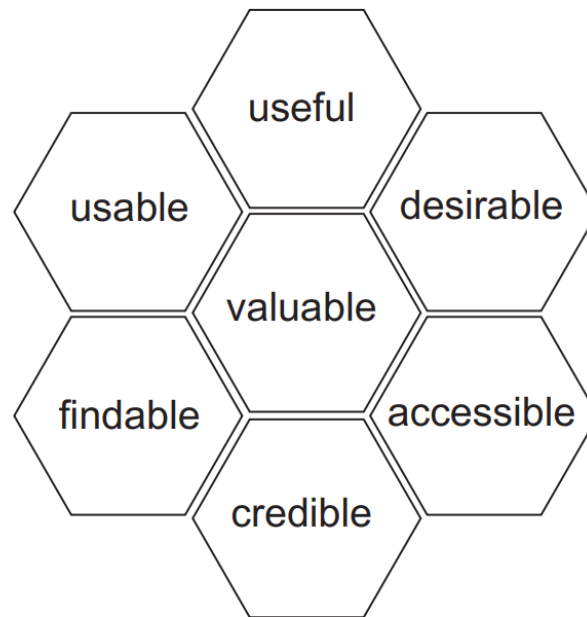


Figure 1. User Experience Honeycomb (Morville & Sullenger 2010)

It can be seen on Figure 1. in the centre, that design should be valuable. It has to prove itself worthy of the attention of the users. Around this, the other criteria are arranged. The design has to be useful, meaning that it has to be practical for the target audience. Desirable means that it has to be pleasant to look at. Accessibility means that the product has to provide some solutions for different ranges of abilities. By credibility it is meant that the product is worthy of the users' trust. Findable means that the different functions of the design can be reached easily. And finally, the product has to be usable, so that the users can execute the tasks they use the product for. (Cirucci & Pruchniewska, 2022)

According to Hodent (2022), good UX is intuitive, and at the lowest level, users can accomplish their goals with the design, and at the highest level, it can improve their lives. It means that, for instance, if on a flight-booking app the user can book a flight, the app has good design because the user could search for flights, choose from the recommended options, pay for the ticket, and get the ticket. But if the same app would offer hotels, car rental options, or information on the local public transport, and the user could see even the weather for the time of the trip, then the app saved a lot of time for the user by providing information, that the user would have to look up later anyway, this way improving users lives.

2.3 User experience design in games

Game developers use different UX evaluation methods in different phases of the game development. As a part of Bernhaupt's book, a case study conducted by McAllister and White (2015) shows that UX evaluation methods were used as late as the beta version of the game. As they argue, it makes sense on one hand because the game is looking as close to its final form as it can, but on the other hand, from the production point of view, it is already too late to find out about problems. (Bernhaupt 2015)

It is interesting to know what evaluation methods developers use and which phase of the development process because some games are so beloved. This might not be because of how the UX is conducted, or how visually pleasing the user interface is. But if UX and UI elements of the game are not satisfactory, it might take away from the whole game experience (Angelo et al. 2022).

Since this thesis is more focused on the players and their experience, it is more important to look at this from their angle. The motivation of a player can differ from each other, for instance, one plays out of escapism, the other for social interaction, to name a few (Cheah, Shimul & Phau 2022). No matter the players' initial motivation behind deciding on a game, the UX will become important once they actually play the game. Users only care if the end result satisfies them or not, they might not even be aware of the meaning behind UX.

3 USABILITY AND SIMULATION GAMES

3.1 Usability

According to Steve Krug (2014), the first law of usability is “don't make me think”. By this, he means that the design should be understood immediately, users know what to do from first glance, for example, where to click, or tap. Users should know what will be found after clicking on a button as well. (Krug 2014)

Designers can use some solutions to make it easier to navigate in their design. For example, by making clickable areas obvious. This can be reached by making all the buttons with similar purpose the same size, shape, and colour. This way confusion can be avoided, and the user will be able to distinguish buttons from general text. Naming the buttons with one or two words, that are self explanatory, is advised. (Krug 2014)

Examples for the above mentioned attributes will be seen later among the guidelines of this thesis as well. By making the design simple, the user will be able to use it effectively. Otherwise, if there are things to figure out constantly, the users might lose patience, and sooner or later they will give up, and will look for another application or site. But this is just the tip of the iceberg.

A more detailed explanation can be found in usability heuristics. In 1994, for the first time, Jakob Nielsen articulated the 10 usability heuristics, which are the following:

1. Visibility of system status: users should always know what is going on if they click on a button. Is the page still loading? Was the purchase successful? The design needs to inform the users.
2. Match between the system and the real world: The language of the design has to be understandable by the users. Avoid using jargon.

3. User control and freedom: If, and when, the user makes a mistake, for instance, misclick a button, the design should provide an escape from this situation. This can be an emergency exit in the form of a back button, home button, or similar.
4. Consistency and standards: The same design should contain similar things with the same look. As far as placement, it helps to look at designs that are accepted already. For instance, where to place window-closing buttons, or search bars. If they appear in a new place than usual, the users will spend more time searching for them.
5. Error prevention: When error happens, it is important to inform the user what the error is about and how to solve it. But it is more important to prevent these errors by giving information to the user.
6. Recognition rather than recall: The design should avoid depending on the users' memory, instead strive for simplicity instead of overloading information.
7. Flexibility and efficiency of use: Have available shortcuts to more advanced users, who can apply them.
8. Aesthetic and minimalist design: Have enough white space in the design without unnecessary information.
9. Error recovery: Error messages should be clear for all users. It has to state the problem and offer a solution as well.
10. Help and documentation: In best case, the design is self explanatory, but documentation has to be available to help if necessary. (Nielsen 2020)

With the help of these guides, the designer can create an environment where the users will be able to click around, and know what to do, and where they find what they are looking for. In this thesis, to discover what solutions games can offer to ensure that the player can easily find a desired item, I need to test the chosen games. Oftentimes, there are countless in-game items in simulation

games for the players to choose from. It might be worth looking into the solutions of some games, and see which of these solutions can be placed in a different environment, for instance, an application, or a website. I have selected three, out of Nielsen's ten heuristics: visibility of system status, recognition rather than recall and flexibility of system status. The exact method and the meaning behind these three heuristics are described in a later chapter.

3.2 Simulations and simulation games

Although, one might think that simulations and simulation games are the same, the purpose of them are different, even though they have some shared properties. Apart from their name being similar they both have elements from real life, but in different doses.

It is important to differentiate between simulations and simulation games because the game examples for heuristic evaluation are of the simulation game genre. In the following the differences are introduced.

According to Sauv , Renaud, Kaufman and Marquis (2007), simulations and simulation games have different attributes. Although it is interesting to learn about these, it might be too far from the point of this thesis. But to offer some definition, I will attempt to summarise it here.

The point of simulations is to teach. Therefore, it is crucial that the simulation is as accurate as possible. This way real life mistakes can be avoided. Also, simulations offer the possibility to try out different scenarios, which in real life would not be possible. (Sauv  et al. 2007)

Games have different attributes than simulations. Simulation games have attributes from both simulations and games. They are similar to simulations in a sense that they try to mimic a part of the real world, but without the need to be accurate. It can, but not necessarily have to contain any teaching attribute. (Sauv  et al. 2007)

Similarly to other games the main purpose of simulation games is to have fun. The reason behind simulation games being fun is that the player is able to experiment without consequences.

3.2.1 Difference between simulations and simulation games

The most important difference is that simulations are based on reality, while games are based on fiction (Sauvé et al. 2007). While simulation games have life-like elements, the aim is not to perfectly copy reality, deep connection with it is not important. It is providing a field of freedom to the user, where the user can try anything, within the possibilities of the game, without real consequence, only for the sake of fun.

3.3 Organising information

This thesis is looking into organising information in games through some game examples. The concept of organising information in this thesis means how the items are categorised, and how easy it is to find them. The items are in-game objects, which are used for decorating in-game environments. Items are, for example, furniture, statues, and trees.

This is part of the UI, where the player can navigate through different areas of the games. From a players' point of view, this is important because effective UI can be a factor of how much the player is enjoying the game (Angelo et al. 2022). If the UI is confusing, or it takes plenty of time until the player finds an object, then it takes away from the general experience of the game.

By analysing games, which have such a large user base, other professions can learn something too. Therefore, examining games and the solutions they apply can be useful for UX and UI designers. In this thesis, the focus is on the solutions that are dealing with how to arrange an extended amount of in-game items. The results can be useful for other areas than games as well, for

instance, in applications or websites, where users are in need to find certain items to view, or to purchase.

3.4 Worldbuilding and decorating

Today, a lot of games include creating something in-game, and have the possibility of decorating those. In one example of this thesis, The Sims 4, the player gets to build houses and different types of community lots. Both, the building and decorating, can be a lengthy process, especially if the player needs to spend a long time finding certain items.

First, the player needs to build the shell of the house. Once the walls are up the decoration can begin. The player can place windows, doors, furniture, and plants in the garden. This is the biggest and lengthiest challenge. Fortunately, there are thousands of objects to help the players.

This thesis is focusing on the decorating part of the game examples. In particular, how easy it is to find items, if it is obvious to the player what is behind certain buttons, and so on. More detail about this in the following chapter.

4 METHODS

In the followings, three selected heuristic evaluation methods will be introduced, through which the information organisation in the game examples will be tested.

As it was presented in a previous chapter, according to Nielsen (2020), there are 10 usability heuristics used as guidelines. Although these heuristics were not developed with games in mind, they are useful when it comes to evaluating interface designs in games (Federoff 2002). It would be too extensive and impractical to use all of them in this thesis.

4.1 Chosen evaluation criteria

Out of the 10 usability heuristics, I have selected three, which are the following:

- Visibility of system status
- Recognition rather than recall
- Flexibility and efficiency of use

According to Nielsen (1992), three to five different usability heuristics are necessary to find enough problems during testing. After logically thinking through what I will need to test, these three appeared to be able to bring the best result, and to discover the most problems. The aim of the heuristic evaluation in this thesis was not to do the complete usability evaluation, but rather learn about the information organisation.

In this thesis, “Visibility of system status” means, if the player knows what he will find behind a button before clicking on it. If there is information given when hovering over a button, or description under the button, or any other indicator.

By “Recognition rather than recall” it is understood if search results are satisfactory or not. If the player does not remember the name of the object, but searches on an associated word, will the object be found or not. For example,

the player is looking for a particular table, but the name of the table is a fantasy name, and does not include the word “table”. If the player does not remember the name of the item, but makes a search on a word associated with it, will the search be successful or not.

When talking about “Flexibility and efficiency of use” this thesis means to find if there are multiple ways of looking for objects. If there is a search bar, visual search options, and filters to narrow the results.

5 GAME EXAMPLES AND RESULTS

5.1 Game examples

For this thesis, three games will be introduced and examined, how information organisation, or more precisely item organisation, is applied. The three games are the following: The Sims 4, Stardew Valley, and House Flipper. I selected these games because they are from the same genre, but they have enough differences in concept and style that they can give a deeper understanding and can provide different ideas. Examples for how item organisation is applied can be the forms it has in different games and how many choices the game offers to the user to find these items. The games will be viewed through the frame of the three chosen evaluation criteria described in the previous chapter.

5.2 The Sims 4

The Sims 4 is the latest version of the simulation game hit The Sims, developed by Maxis, and released by the video game company Electronic Arts. The first game in the series, The Sims, was released in 2000. Due to the great success of the first game, The Sims 2 and 3 followed, with other related games like The Sims Medieval and SimCity, just to mention a few. The Sims 4 was released in 2014. (The Sims 4)

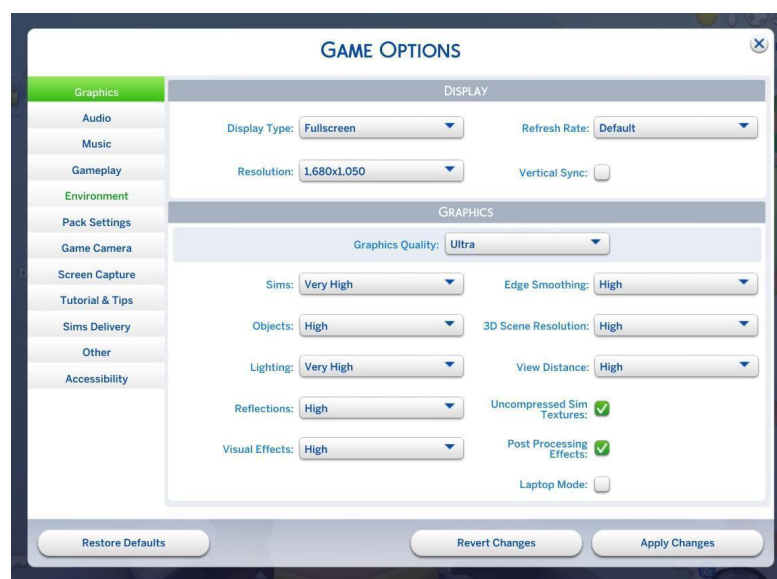
During the game the player can create different buildings for the virtual people called the sims. These buildings can be family houses, or community lots. The player has a free hands on everything, from layout to decoration. There are add-on contents completing The Sims 4 base game. Different add-ons have different amounts of items coming with them. Some add-on packs have only items to decorate houses with, some have only clothing items for the sims, and some have both kinds. The smallest add-ons are the Kits, all containing 23 items on average. The Sims 4, as of the time of writing this thesis, has 63 add-on contents in total, most containing more items than the Kits. This can add up to thousands of items for the players to browse through. (The Sims 4)

The game can be played in different ways depending on personal preferences. In the game there are different Modes for that. Build Mode is the most important from the point of view of this thesis. Build Mode is for those who like to create an environment, family houses, and other lots like restaurants, parks. It gives the option to just enjoy decorating existing builds, or even to renovate other players' buildings.

5.2.1 Interface and characteristics

It is important to see the characteristics of UI solutions of the game examples because it can affect the outcome of the heuristic evaluation criteria. Characteristics can be the buttons if they are differentiated from general text, colour environment, and overall size of the UI elements.

The interface is coherent all through the game using the colours of the game, blue and green, with some additional colours. The style of the buttons is coherent as well. When something is selected the icon either gets coloured in, or will have a green background. The size of the interface is reasonable, and it can be changed in the settings.



Picture 1. Selected button turns green, text of hovered on button turns green (The Sims 4)

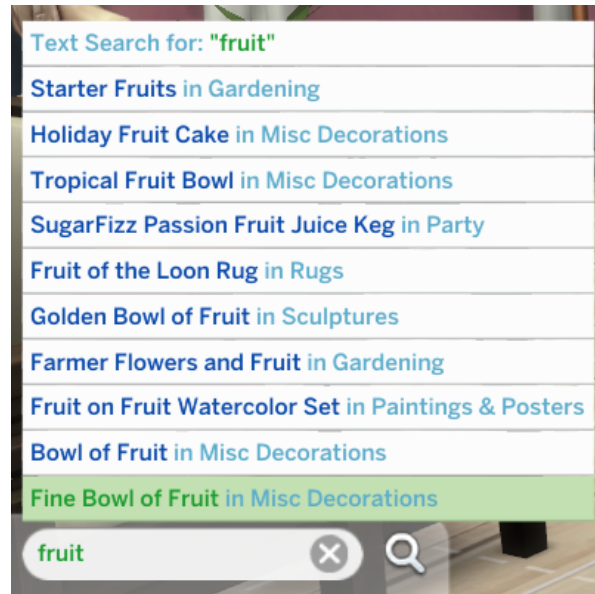
5.2.2 Usability heuristics

Regarding “Visibility of system status” the player knows what will be found behind certain buttons before clicking on them, no matter the area of the game. Even if the button is an icon, or some other visual, when hovering over it a text pops up, describing what the button means.

In the case of hovering over in-game items the name of the item is shown, along with detailed description and other relevant information. The information can be regarding which add-on content the item belongs to, and what colour options are available. These properties can be important when filtering among the items.

To look into the criteria “Recognition rather than recall”, I attempted to search on a specific fruit bowl item with a fantasy name: Bountiful Platter. There are thousands of objects in the game, therefore, it is impossible to remember the name of every item. This is why it is important to see if searching on words associated with the items will be of help or not. This item does not have the word “fruit” in its name, nor in the description, but while looking at the item the player can recognise them.

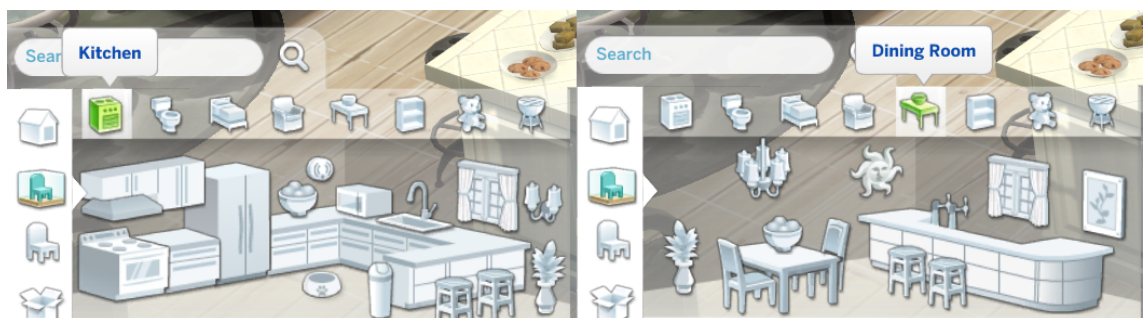
When I made a search on the word “fruit” in the search bar, I got recommendations of items from different categories. The player can choose from the list, which category seems the most probable to contain the object. On Picture 2 the search results are shown as recommendations.



Picture 2. Results after typing the word “fruit” in the search bar (The Sims 4)

The recommended options were not satisfying. Using other words associated with the object brought the same result. Only the words “bountiful” and “platter” brought success. It can be stated that with the help of the search the player can not always find the right item. The player has to remember at least a part of the name of the item.

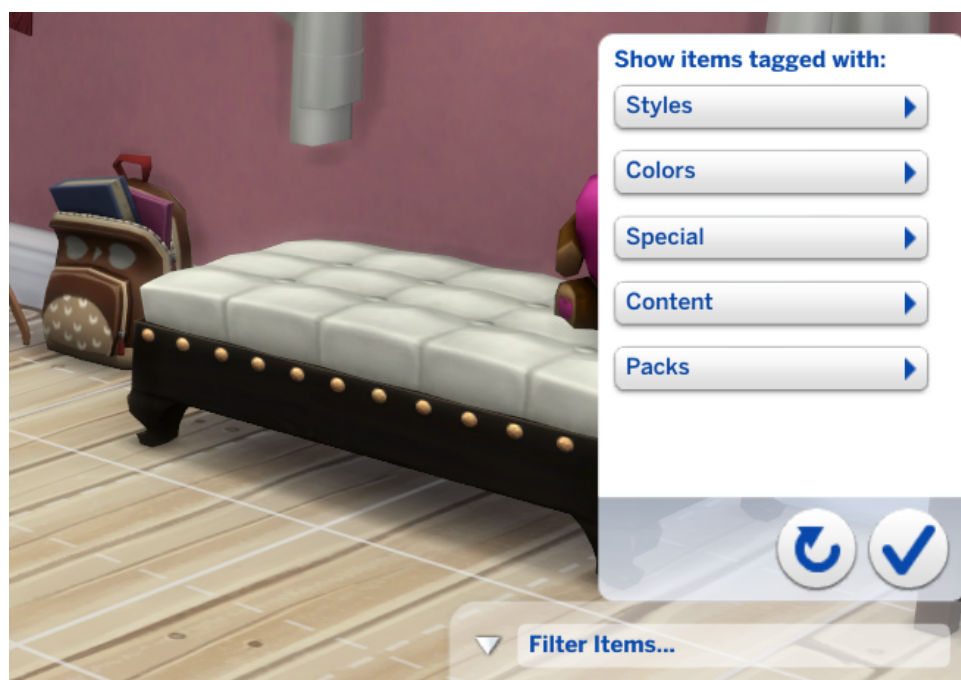
From the point of “Flexibility and efficiency of use” other search options can be tested to narrow down the list of items. There is a visual search option available in Build Mode. Players can look for items in different ways: Objects by Room or Objects by Function. As the name suggests, in Objects by Room the player can select which room he wants to decorate. The fruit bowl would most likely be found in the Kitchen or Dining Room areas.



Picture 3. Visual search option: Objects by Room: Kitchen and Dining Room
(The Sims 4)

In the visual search there is a fruit bowl seen in two rooms. The fruit bowl in both cases was named Misc Decorations. No matter which decorative item the player clicks on, the result will be the same list of items. Other than the visual search, the game is offering filtering options as well.

The player can filter by different things, for example, colour, style, or the add-on content the item came with. As a result, the only items left in the list are tagged with those filters. (Picture 4)



Picture 4. Filtering in Build Mode (The Sims 4)

On the fruit bowl item there are bananas and oranges. Therefore, filtering can be done by the colour of those. The result is every shade of yellow and orange of every item in the Misc Decorations category. Some items have multiple yellow and orange swatches, so the player may end up with more items listed than originally.

In conclusion, it can be stated that while the visual search option is a great idea, filtering can be counterproductive among the items. Searching on more obvious items can be easier, but during this test it became clear that the game is relying on the player's memory too much in some cases.

Table 1. Results of Heuristic Evaluation In The Sims 4

Interface and characteristics	Visibility of system status	Recognition rather than recall	Flexibility and efficiency of use	Learnings for own design
Coherent UI in colour and style	Hovering indicates clickable areas	Word search results in recommendations	Visual search option is available	Information and indication when hovering
Size of UI elements are reasonable	Hovering shows few words of information	Word search relies on player's memory	Filtering is available and diverse	Visual search option
Size of UI can be adjusted	Hovering shows more information	Word search is difficult in some cases	Filtering can be counter-productive	Optimise filtering

In the tables “Learnings for own design” mean the most important discoveries after the heuristic evaluation. These discoveries I include in some way to my guidelines and layouts.

5.3 Stardew Valley

Stardew Valley is a farming life-simulation role-playing game (RPG), created by “ConcernedApe” Erik Barone, from music to the animations in 4.5 years. The game was released on February 26th, 2016, self-published by ConcernedApe. Even though the game was created by him alone, during the updates the creator had some help. (Stardew Valley)

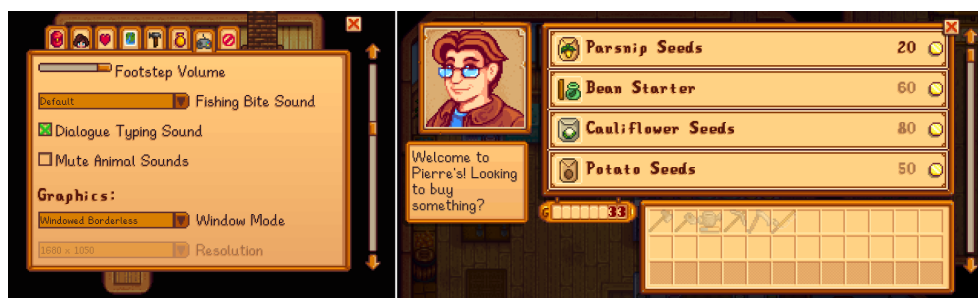
The game starts with the player inheriting a farm in Stardew Valley from his grandfather. The farm is quite run down with a small farmhouse on it. During the game the player has the chance to improve the overgrown farm, tend to plants, farm animals, create items of collected raw materials, and discover the village and its people.

One big part of the game is collecting different items through different activities. These items can contribute to collections, quests, renovations, and as payment for services. As the player improves the farm and collects enough items, there is opportunity to improve the house too, and decorate with collected, purchased, and created items. The fact that the player has to collect items and they are not provided will be important in the heuristic evaluation.

5.3.1 Interface and characteristics

The game UI and the items look like pixel art. Apart from some exceptions, the colour of the items is limited, they use shades of a few colours, many of them are monochromatic. Monochrome coloured item means that it has shades of only one colour.

The monochromatic approach is valid when we look at the UI elements of the game. The UI is simple and clear, using the same colours and style across different areas of the game, for instance, settings and shopping (Picture 5). The size of the UI is sufficient and it can be changed.



Picture 5. UI elements of settings and Pierre's Shop (Stardew Valley)

5.3.2 Usability heuristics

"Visibility of system status" in this game is detailed. A few words can offer guidance when hovering over something. Although, this is different in case of items. When looking at items in different areas of the game the player is provided much more information. The information is always relevant for the

situation. For example, the player can see the price when purchasing something. Another example is when an item is already owned, hovering shows the effect it makes on the character if consumed, if the item is consumable.

Regarding “Recognition rather than recall” this game has a solution fit for the gameplay. In Stardew Valley the player can not make a search on items, there is no search bar. The reason is that the main gameplay is to collect raw materials, and craft items from them. Using a search bar would be difficult because the player might not even have every item yet. Instead of a search option, the player can build a system himself, where he can sort items as he sees fit. This method provides a versatile possibility for the player.

Apart from the small sorting area the player gets at the start, the player can craft chests to store items into. The player can craft as many chests as he wants, he can set different coloured chests for the different items, and even a board can be crafted, which can indicate the type of items the chest stores. All these options can make finding items faster. (Picture 6)

The player can purchase catalogues as the game progresses. There are two different catalogues. The player can use these non-craftable items he finds in these catalogues for decorating. The items in the catalogues are sorted by the game. There is separate space for wallpapers, floors, tables, and chairs. In spite of the many different items, there is no option for search in the catalogues either. Even the name of the items is very similar. Because of the lack of differentiation between items and the missing search bar, it can be more difficult to find items in the catalogues.

It is hard to test out “Flexibility and efficiency of use” in Stardew Valley because there is no search bar anywhere in the game. The way the items are sorted depends on the player. Although, there are some collection lists available in the game. For example, there are lists including dishes the player cooked, the items he collected. These lists are for information and for tracking.

For the most part in Stardew Valley the speed and way the player finds the collected items is based on the personal sorting system of the player, and the

efficiency of labelling groups of chests. Effective storing can be reached while using the chests in different colours, and the boards to mark what kind of items the chests contain. (Picture 6)



Picture 6. Example of effective sorting system (Stardew Valley)

Table 2. Results of Heuristic Evaluation In Stardew Valley

Interface and characteristics	Visibility of system status	Recognition rather than recall	Flexibility and efficiency of use	Learnings for own design
Coherent UI in colour and style	Hovering shows few words of information	Search is not available	Could not be tested effectively	Possibility to create own sorting system
Size of UI elements are reasonable	Hovering shows more descriptive information, relevant to situation	Player can create own sorting system	List of items is available, showing collected items and information	Tools to make custom sorting more effective
Size of UI elements can be adjusted		Available tools to create effective sorting system		Owned items listed separately
		Certain items are found in catalogues		

5.4 House Flipper

House Flipper is a first-person house renovation simulation game, where the player can have the relaxing experience of giving new life to a run-down house by renovating and furnishing. The game was developed by Empyrean and published by Frozen District and PlayWay S.A. on May 17, 2018. This game has some downloadable content (DLC) content as well, and House Flipper 2 is in the making already, with a possible release in 2023. (House Flipper)

One way to start playing is to accept projects. These projects teach the player to do minor changes in a house, for example, cleaning up and replacing furniture using the tablet. The in-game tablet is the main area where the player can select items, view tasks, and upgrade building tools. After accepting a task,

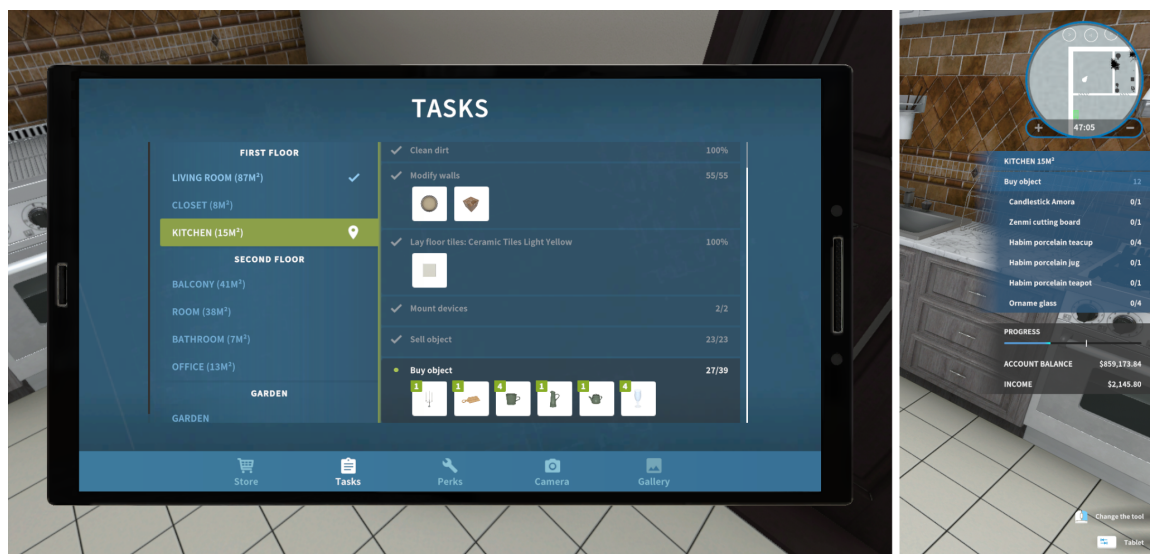
the required changes are visible for the player all the time in the tablet and when building.

The other way to play is to buy a house or apartment. The player has the freedom to do anything with these purchased buildings, except replacing the outside walls. The player can decide to what extent the renovation will be executed. A simple clean-up can be enough for some, but for others renovation and decoration to the fullest is enjoyed the most.

5.4.1 Interface and characteristics

This game is very informative. Offering tips at every step in a non-distracting way while informing the player of the progress. The tasks are represented in two areas of the game: in the tablet while viewing the tasks and when building. These tasks are always visible for the player (Picture 7).

The UI elements of the game use mostly green, blue, and grey in different combinations. The UI elements have good size, but they can not be adjusted. Active buttons are differentiated with colour change. (Picture 7)

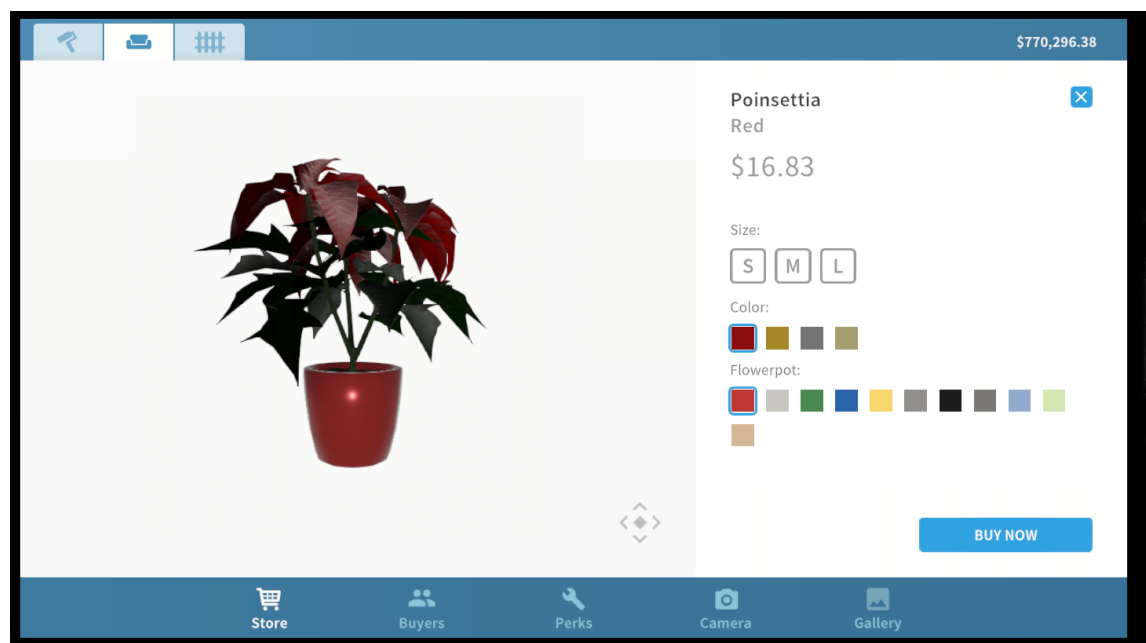


Picture 7. UI elements of the tasks on the tablet and while building (House Flipper)

5.4.2 Usability heuristics

In this part, I concentrate on the store area of the in-game tablet because this is the primary place to view and to purchase items (Picture 8). Regarding the “Visibility of system status” part of the test, I have discovered that hovering over buttons does not provide much information, although there is indication when hovering over a button.

To see the “Recognition rather than recall” aspect of this test, I chose an item to see how easily I can find it during the search. This time I tried to find a certain plant called Poinsettia in the tablet (Picture 8). I selected this flower because it has a name that is difficult to remember and very specific. The flower itself has different colours, the colour of the pot can be selected separately.



Picture 8. Item presented in the tablet (House Flipper)

To find the item I tried to search for the words associated with the item like “flower”. As a result, items appeared with the word “flower” in their name. Doing a search on words other than the name of the item had the same result.

I find it important to mention that when the player starts to type in the search bar it offers results as the player types. When I started to search for the name of the

flower “Poinsettia”, it was enough to type the first three letters to get the item I was looking for, because the game automatically filled out names of items while typing. This autofill function can be a useful feature of search bars. If the player remembers just a part of the name, three or four letters are enough to get the item. In conclusion, the player has to remember the name of the item at least partially to get results.

Regarding “Flexibility and efficiency of use” the game has a search bar and the player can use filters during the search. Although the filters offered limited results in the case I have tested. To get a better result, the player has to remember the name or a part of the name of the item.

I did not find any other way than the search bar and filtering to look for items. There is an option to manually click through the labels, and scrolling until the desired item is found. The results indicate that the name or the place of the item has to be remembered.

Table 3. Results of Heuristic Evaluation In House Flipper

Interface and characteristics	Visibility of system status	Recognition rather than recall	Flexibility and efficiency of use	Learnings for own design
Coherent UI in colour and style	Hovering does not show information	Word search offers some recommendations	Filtering is available but limited	Tips can be useful
Size of UI elements are reasonable	Hovering indicates clickable areas	Word search relies on player’s memory	Manual scrolling leads to find item	Show results while typing in search bar
Size of UI elements can not be changed	There are tips to help the player	Results showed while typing in search bar		Filtering has to be diverse

5.5 Results

As a conclusion of this test, I selected my final design choices, these will be included in the guidelines and layouts. These design choices are based on the “Learnings for own design” columns of the tables introduced previously. The information found in those columns are based on the heuristic evaluation and the reviewing of the UI solutions and UI characteristics.

The final design choices are the following:

- Coherent and flexible UI
- Indication and information pop-up when hovering over a button
- Traditional word search and visual search option
- Custom sorting
- Diverse filtering

6 WEBSITE EXAMPLE

As the outcome of this thesis, I have created a website example where the guidelines are applied and layouts are introduced. They are based on the results of the heuristic evaluation of the game examples discussed in the previous chapters and the findings during the research phase. To indicate that the guidelines offered here are not only valid for games, I made the website of an online store as an example. The goal of this is to provide guidance to the designers. Especially those, who are finding themselves in a situation where organising plenty of items is needed. The guidelines will help designers to create a system with creative solutions and ways to ensure that the items they have organised will be easy to find. The layouts were created to help to understand the guidelines even more.

6.1 Guidelines and layouts

I created the layouts of this chapter in Figma, which is a web-based design tool. The images in the layouts I created in Adobe Photoshop, which is a software used for image creation and photo editing. Creating the layout design in Figma was sufficient. It supported the creation of the layouts in a way that arranging the different elements of the layout was easy with the help of Smart Selection, built in rulers, and alignment tools. Changing size and attributes of elements was fast and effortless in the Design panel of Figma. All the ideas were easy to execute.

Coherent UI is one feature common between the three game examples. Therefore, I found it important to represent it in the layouts. Buttons with the same type should be the same size, shape, colour, and style of text. Same type means that the buttons have the same function, they belong to the same hierarchy level. For instance, buttons in the header area look the same. The overall colour palette of the design should not be overwhelming. Using a few main colours is enough. The following layout on Picture 9 shows that hovering over certain elements has to indicate clickable areas which are represented as

outlines around buttons. When hovering over a button, it is encouraged to show additional information in the form of a pop-up as well.

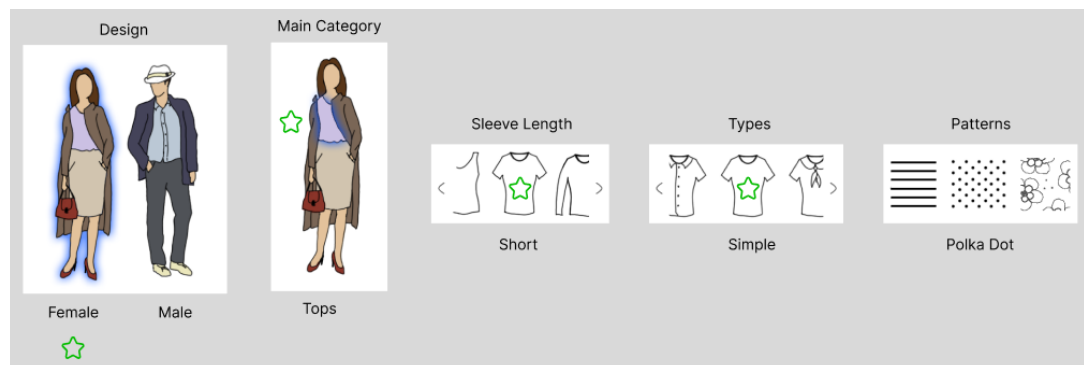


Picture 9. Coherent UI, indication and pop-up when hovering

A visual search option can be seen on Picture 9. This concept was inspired by The Sims 4. This idea can be placed in a website or even in an application, making the search more fun and visually pleasing. There are other visual search solutions in existence. These are powered by artificial intelligence (AI) or based on image search. Nordstrom is a great example for visual search (Nordstrom). Their website offers outfits to customers for different occasions. The customer can select the occasion and can browse through the pictures of the outfits and shop the items the outfit has.

First, in this game-inspired concept the customer would choose between clothing design optimal for females or males. After this, there would be the possibility to choose from accessories, bottoms, tops, and more. From this point the search can go into more detail if the customer wants to. In case of looking

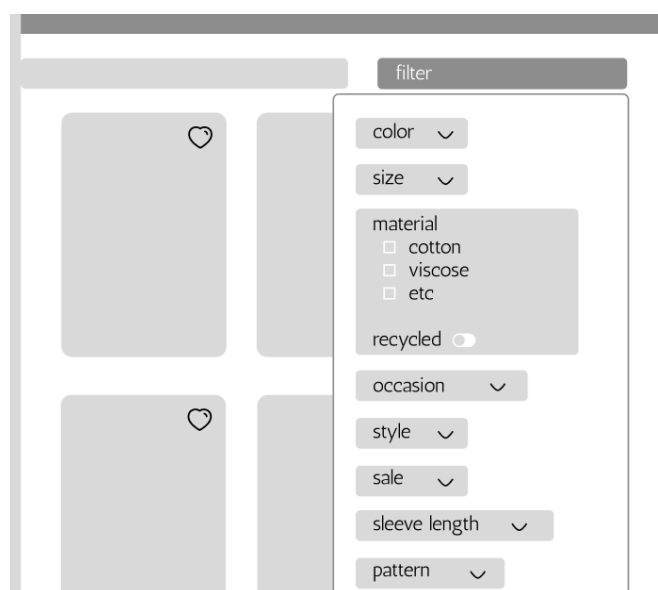
for tops the customer can choose between different sleeve lengths, types of shirts, and patterns. (Picture 10)



Picture 10. Visual search option steps

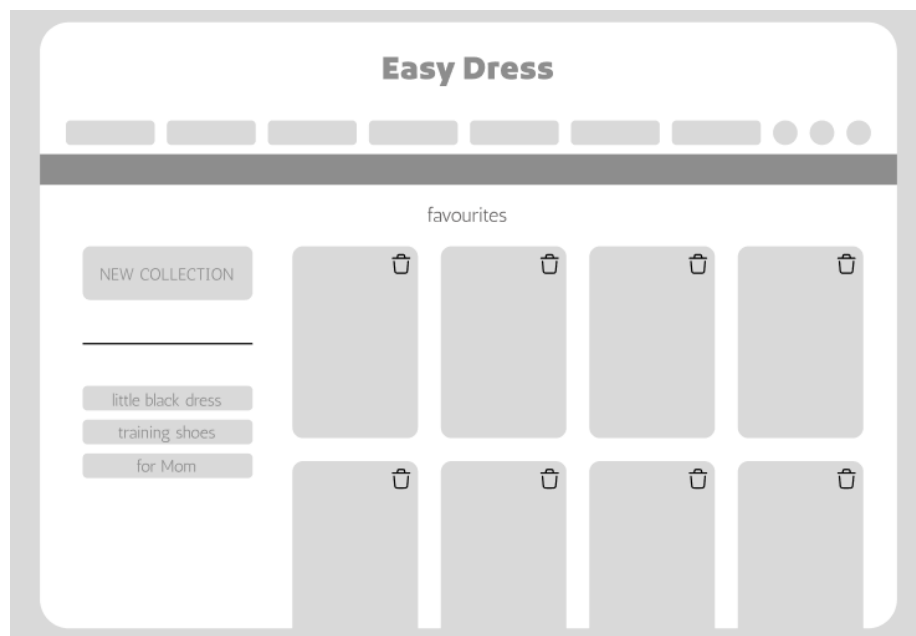
The visual search results and the word search results can be filtered further. I learnt during the heuristic evaluation that detailed filtering is key, and the different items have to be tagged correctly. Although the tagging might not be the responsibility of a designer, it is worth mentioning.

In the filter there can be options for choosing between attributes already available in the visual search, but also others, which cannot be represented easily in the visual search. For instance, size, material, or if an item is on sale. (Picture 11)



Picture 11. Detailed filtering option

During the testing of the games one feature found in Stardew Valley was the option where the player could create his own system for sorting items. There are examples for similar solutions already in existence in online stores. In the example I offer the customer would have the possibility to create collections among the items he marked as favourite. Even if there are hundreds of items saved as a favourite, by sorting them into smaller and custom made categories, the customer would be able to find the items faster (Picture 12).



Picture 12. Custom sorting among favourite items

As checkpoints, the list of the guidelines is the following:

- Keep the UI coherent: buttons with same function have same size, colour, and shape
- Make the sizing of the UI available
- Simple colour palette
- Indication when hovering with pop-up information
- Search by word option with autofill while typing
- Visual search option if applicable
- Detailed filtering option for both search options
- Make custom organising available
- Provide tools to make custom organising easier (colour options, titles)

7 DISCUSSION

In this thesis, the goal was to come up with guidelines based on games that can be applied within the UX and UI field. These guidelines were supported by research findings about user experience design and heuristic evaluation of selected games of the same genre.

Bringing some features from these games to a different field seemed fruitful. I found that basing layout concepts of games is useful, it provides a new point of view and fresh ideas for some problems designers might face during their career.

The research process was lengthy, and even though UX design is more and more important, I have had difficulties finding fresh and reliable sources. During my research I found too many articles and books based on ideas that might be outdated. While they are effective there is not any problem, but with the changes in technology, and the needs of people, soon there might be a need for new approaches as well.

After the research phase, the chosen games were tested with the help of three heuristic evaluation criteria. These criteria were set for the precise need of this thesis and the games they were used on. The chosen three game examples were of the same genre, but all with their unique idea. During the test, the same methods were used on all three games to get the best result. More research and testing is needed, examining other game genres, platforms, and other fields than games to discover more ideas for effective information organisation.

In the last phase the guidelines and the layouts were created, based on the research and the results of the heuristic evaluation. Because these three games are played on computers it was logical that the layout concept has to be as well. This is why the layout concept is a website of a made-up online clothing store and not an application. Because hovering was an important part of the game examples, I found it necessary to include this function, and on an application-based concept on a mobile device hovering with a cursor is not typical.

Working on this thesis I have learnt that looking into an unexpected area for solving a UX or a UI problem can be useful and can bring new ideas. There might be a need for more testing, but the results in this thesis can provide a good start. More testing would be necessary on other game genres and platforms. Testing different games on different platforms might provide more ideas for UX solutions and UI layouts, offering a more thorough result.

The research, the heuristic evaluation results, and the showcase of this thesis can be helpful for UX and UI designers in a way that they can apply the guidelines introduced in the showcase, which can make their work easier. Furthermore, they can get inspired to look for solutions in unlikely places.

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