Web Based Card Sort

User Experience Design for Multi-Modal Interaction 2017

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ABSTRACT
This paper introduces user experience technique - card sort. Card sort is a low-tech method used for structuring websites and various products. Furthermore, the paper describes different card sort types, their advantages and disadvantages. Lastly, it deals with the card sort software which was created for the User Experience as a team project at the Aalborg University. Using the software, card sort was conducted and analysis performed.

CONTENT

Card sort is one of the User Experience method used to help design or evaluate architecture of a system. In other words, to give people a sense of what the experience might be like before the design itself is available. During the card sorting session, participants have to organize cards into categories in a way, that makes sense to them. Also, they might label the categories as well, depending on the type of the card sort [2, 4].

This reflection paper tries to explain various card sorting types, furthermore, it deals with the process of developing our own card sort, analyzing results, and lastly, the conclusion which includes reflection upon the suitability of selected methods.

The term Card Sort covers wide variety of activities including grouping or naming various objects or concepts. This is usually represented by physical or virtual cards on the computer. The outcome of Card sort consists of qualitative and quantitative data. This provides information about the: Categories – groups and their names, Relationships – concurrence and similarities, Terminology – how people call things. This information is used to decide which items should be grouped together, how navigations should be organized and what labels should be used to describe the objects in the best most natural way to people who will be using the system. Real world examples where card sort is handy for instance: organizing a navigation on a website, organizing layout of the computerized touch-screen scales in supermarkets, etc. [4]. Card sort should be use early in the development of projects, because it helps to explore wide questions about the target users and may reveal questions or uncertainties that can be solve further in development phases [3].

Output from the card sort can be divided into qualitative and quantitative results. Quantitative results provide in-depth detailed analysis which is used to find patterns, investigate differences between user groups and get a statistical evidence [2]. Qualitative ones consist out of participants' comments, observations and interviews. All these methods provide valuable insights which cannot be obtained from quantitative results alone [8].

Main advantages are [8]:

- Simplicity – Card sorts are easy for organizer and participants
- Cheap – Typically it costs just material needed to create cards, labels and time. Nor that when the card sort is performed on computer.

- Quick to execute – several sessions can be performed in short time period, so significant amount of data can be obtained quickly.
- Well known – card sort has been used for over 10 years.
- Proof check – Users from the target group are involved, final product should be easier to use.
- Good foundation – It is a good starting point in early development phases of a product.

Disadvantages consist of [8]:

- Does not consider users' tasks – it may lead to a structure which is not usable in real app, because card sorting is an inherently content-centric technique.
- Different output – Card sort may provide almost consistent results or they may differ widely.
- Analysis can be time consuming – Sorting is quick, but analysis can be time consuming, especially analyzing qualitative results.
- Surface characteristics only – Participants not always consider what the content is about.

There are several possibilities how card sort can be classified. First option how card sort can be divided is to: Open sort which can be seen on Figure 1 and Close sort on Figure 2.

Figure 1 - Open card sort.

Figure 2 - Close card sort example.
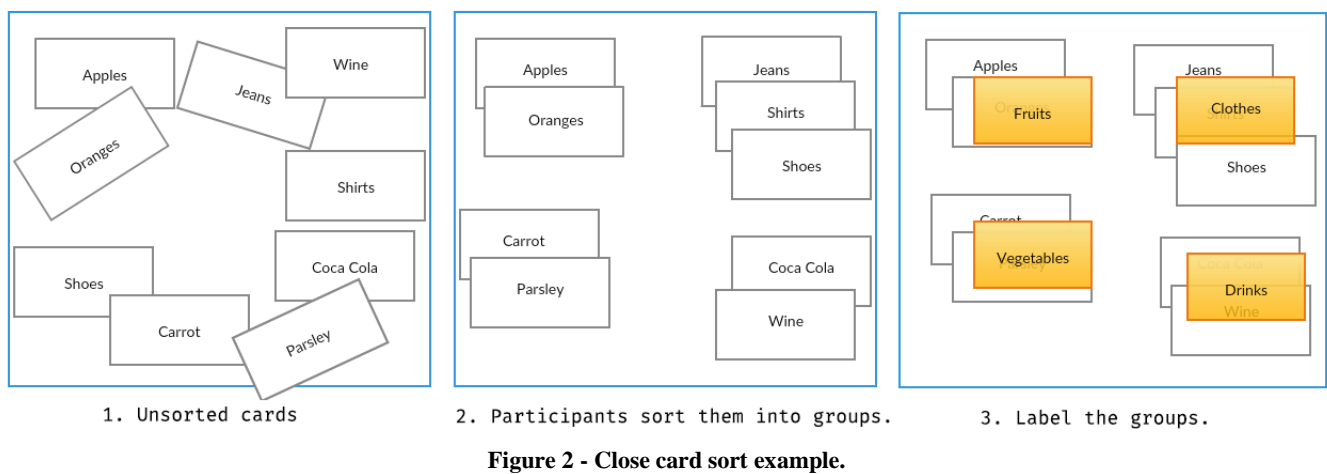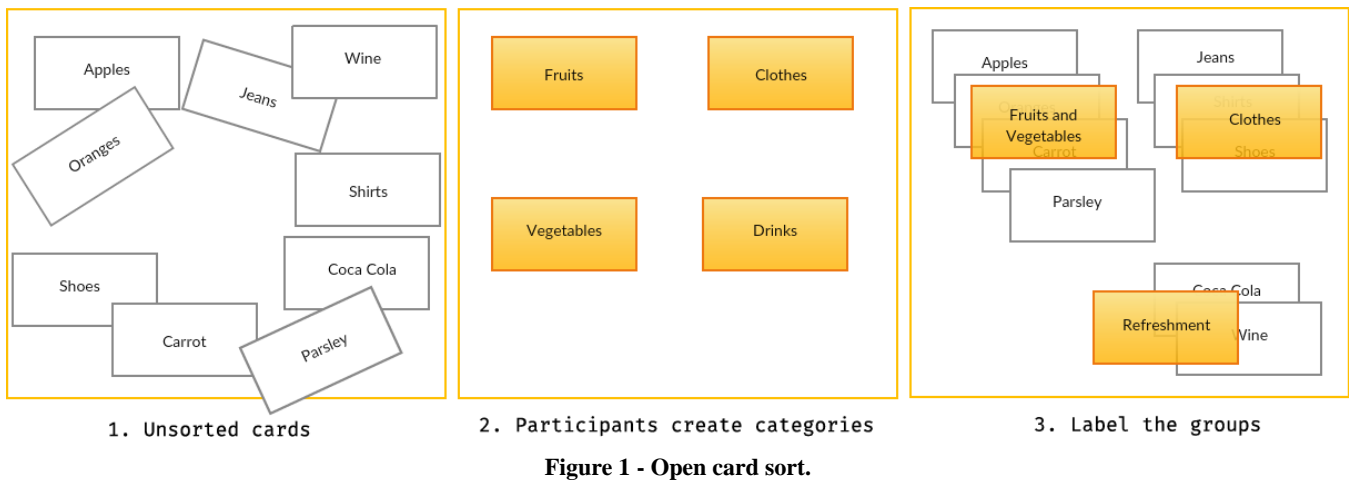
In **Open card sort,** participants sort cards into categories that make sense to them and name the categories by themselves. Open card sort is similar to the open-ended question in traditional approach, where people give answers and are not constrained with one response type. Open card sort should be used when we want to find out how people understand our concept. Moreover, find out where people expect to look for the information, generate idea for structure of website or get the idea how different user groups think. On the other hand, **Close card sort,** gives people premade categories to sort the cards. It is used for locating ambiguous labels and reducing the categories which have been ignored. More subcategories card sort can be classified into are **Face-to-face** or **Remote, Manual** or **Software used** and **Team** or **Individual** one. Starting with the latter one, Software is based on virtual app, usually in the computer. On the other hand, the Manual one (Figure 3) uses paper cards written manually. Face-to-face card sort is performed in real-time with participants, the opposite is the remote card sort which does not require presence of facilitator, it is aimed to get large amount of quantitative results. Last subcategories how card sort can be classified are Team or Individual. Team sort uses small teams usually 3 to 4 persons, whereas individual as its name says - provides more data and it is less time consuming [2, 6].
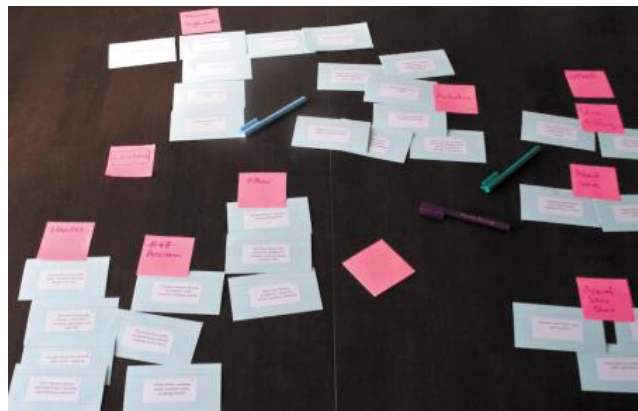

Figure 3 - Manual card sort [2].

In order to create an effective card sort and get the useful output, following procedure is recommended [2].

1. Firstly, it is important to decide what we want to learn.
2. Decide on method, which card sort type would be the one, we can learn the most from it.
3. Choose a content.
4. Identify target group and invite participants.
5. Perform the card sort and store the data.
6. Analyse and evaluate output.

In this card sort we wanted to verify whether the website of Aalborg municipality makes sense to potential visitors and observe if our participants would place the categories into the same subcategories as they are currently in municipality website. Lastly, get the ideas about new categories' names. The reason why this website was chosen is that its category tree contains various encapsulated categories, which on my opinion are confusing.

For the method, we decided on open card sort, since it is far by most common and it is ideal for our objective [2]. We wanted it to be super effective, which means get the most results with the minimum spent time. Thus, the path of the "least resistance" is used individual, remote software based card sort.

After research of available online card sorts, we came to the conclusion that the best way will be to create our own software, since the accessible options are limited. They often offer only several runs for free as trial ones. Usually it is not possible to perform session remotely and results have to be processed manually.

The software created by us is a website (Figure 4), which is located on our server, thus it is available nonstop. Backend of the website was built in scripting language PHP 7 with Codeigniter framework. For the visual part of the frontend HTML 5 and CSS 3 was used. Additional frontend logic was implemented with Javascript and jQuery library. Results are stored in MySQL database as JSON objects which allows adjusting the data to make them compatible with supplementary software to perform statistical analysis [5].
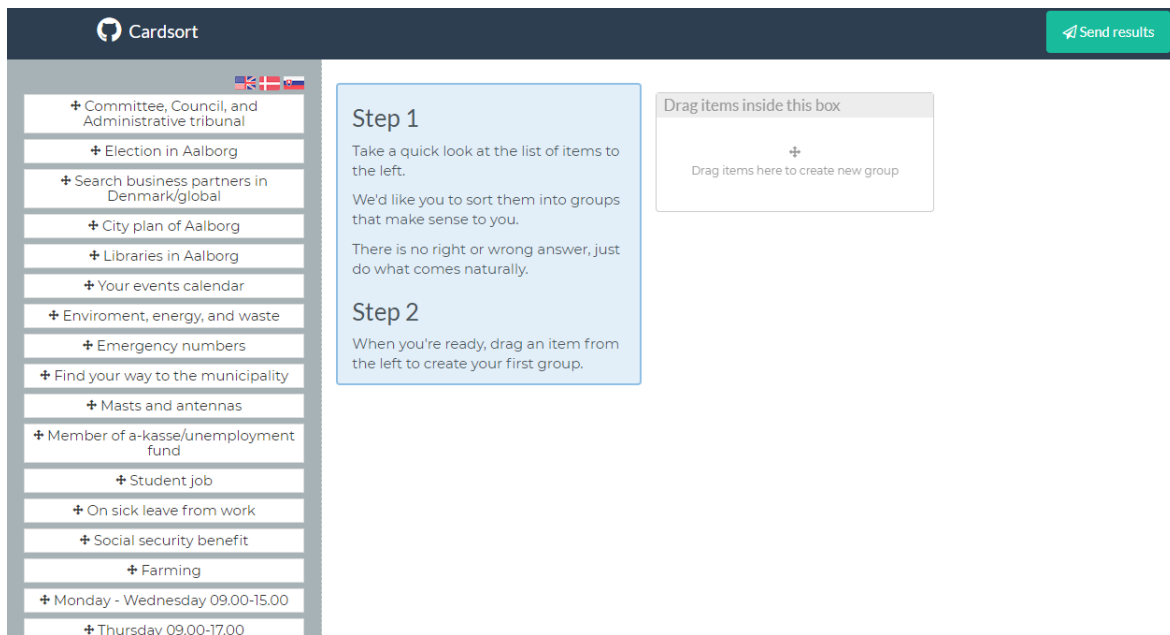
Figure 4 - Developed website for card sort [5].

Identify our target group more precisely is very difficult because it involves all the people who have potential to use or just visit the municipality website and not just the Aalborg municipality. Therefore, we can conclude on this, that our target group involves both women and men. In this case age, country of origin and language is not important. However, since this card sort is about sorting a navigation of online website, it is necessary that the participants have access to the computer and the internet connection.

Participants were our friends, and we distributed card sort between them via Facebook. Firstly, when a participant opened our website they had to complete introduction form (Figure 5), which consisted from 3 questions:

Figure 5 - Introduction Questionnaire [5].

- Your first name – text input.
- What is your gender? – 2 options: Female or Male.
- How old are you? – 4 options: Under 18, 18 to 28, 29 to 64, 65+.

After the form is completed, a participant proceeds to the card sort itself with the next button. First feature which bump into eyes is the language panel located above the cards. This allow participants to change localization of the cards for better understanding. Cards were translated by our group from Danish into English and Slovak. Localization was implemented in frontend using Javascript. Meaning, that the participants do not need to refresh the webpage in order to have cards translated. Since this is remote card sort and not many people are familiar with the procedure, we wrote instructions about how the participants should proceed.

> Step 1 – "*Take a quick look at the list of items to the left. We'd like you to sort them into groups that make sense to you. There is no right or wrong answer, just do what comes naturally.*"

> Step 2 – "*When you're ready, drag an item from the left to create your first group.*"

When a participant started with sorting, the window with instructions changes its position and content to third and fourth step.

> Step 3 – "*If you already know what you'd like to call this group, click the title to rename it now. If not, you can do this later.*"

> Step 4 – "*When you're done, click "Finished" (top right).*"

For the card sorting a "drag 'n drop" functionality was implemented with visual feedback to let participant know where the cards can be dropped. Lastly, when all the cards are sorted, participant can submit the results and "thank you" message will be shown. Possible errors were taken care of during the

testing phase, e.g. when participant forgot to name the category, when categories names were same or when they forgot to assign a card to a category [1, 5].

Sorted cards are not only data which is stored in database upon submitting. Using our own software allows us to gather additional data such as IP address so we know the participants location, furthermore language which participant used and lastly starting and finish timestamp. Extra functionalities can be easily implemented, which would have not be possible if we had used the third party software [1, 5].

It may seem that we haven't gathered any qualitative data since we used remote card sort, however we received comments, since the participants were our friends. These comments were aimed to the system itself saying that it is not possible to sort it on a smart phone or when the page is refreshed during the process, they have to start all over again. Also on my opinion we had too many cards (22) in a small space, so when participants wanted to create more groups they had to scroll too much up and down. This was probably reason why people tend to create only few categories, which wouldn't be an issue if a facilitator would be present.

Overall, 16 participants performed the sort from 2 countries. Categories names were firstly standardized, because either they were in different language then English or participants used slightly different names for them. For statistical analysis the correlation was used in order to spot the patterns between the cards. From the test we can see interesting connections such as Death and funeral card originally under Health and disease, where 19% of the participants also felt it fitting, but 19% felt it was better suited under Politics. Election in Aalborg, originally under About the kommune, but 56% felt it is better suited under Politics. Aalborg town council, 44% categorized it as politics, which was the original categorization too, and 31% categorized it under Aalborg.

CONCLUSION

To conclude, in this project the opensource card sort software was implemented and card sort was performed on the target group. From the test done, it can be seen that our card sort software should be improved. Not having a facilitator is source of misunderstandings and leads to uncalibrated results, since every person might get the idea differently. It means that doing this kind of card sort requires much more participants, not just 16. Thus, from the results I can conclude that it should be repeated, with implemented improvements. Also, I would suggest to segment groups into age, gender, nationality, country and eventually compare the results between each other. Furthermore, the card sort should be run face-to face first in order to detect inconsistencies, which from the quantitative analysis are difficult to get.

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