

Artigo completo

Design, Cultura e
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Strategies for restructuring information architecture: sustainability informational hub at University of British Columbia

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Abstract: *This paper presents the research process to restructure the information architecture of the Sustainability Hub website with the purpose of improving findability, organizing the information and levels into a more intuitive structure for users, and preparing the architecture for future natural informational growth as described by Lévy's principle of exteriority. The process connects with Lévy's (1993) hypertext principles, Morville's (2005) findability concepts, the relation triad in corporate industry discussions by Guimarães et al. (2018), and follows methodological guidelines for remote card sorting and prioritization matrix from previous experiments. The full research process is detailed, from initial analysis and goal-setting to architecture reorganization and strategic discussions balancing users' expectations and institutional interests and objectives.*

Keywords: *sustainability; information architecture; card sorting.*

Estratégias para estruturar arquitetura de informação: centro informacional de sustentabilidade na Universidade de British Columbia

Resumo: Este artigo apresenta o processo de pesquisa para reestruturar a arquitetura da informação do website Sustainability Hub com o objetivo de melhorar a encontrabilidade, organizar as informações e os níveis informativos em uma estrutura mais intuitiva para os usuários, assim como preparar a arquitetura para o futuro crescimento informacional natural, conforme descrito pelo princípio da exterioridade de Lévy. O processo se conecta aos princípios de hipertexto de Lévy (1993), aos conceitos de encontrabilidade de Morville (2005), à tríade de relações em discussões corporativas do setor por Guimarães *et al.* (2018) e segue as diretrizes metodológicas para classificação remota de cartões e matriz de priorização de experimentos anteriores. O processo completo de pesquisa é detalhado, desde a análise inicial e definição de metas até a reorganização da arquitetura e discussões estratégicas, equilibrando as expectativas dos usuários e os interesses e objetivos institucionais.

Palavras-chave: sustentabilidade, arquitetura de informação, *card sorting*.

1. Introduction: sustainability hub

The Sustainability Hub is part of the University of British Columbia (UBC) and works to embed sustainability across all aspects of its academic endeavors, focusing on student education and faculty support. Faculty, researchers and departments across UBC work on innovative initiatives related to sustainability and climate action. From their collective effort, a brand toolkit was created to ensure a cohesive and consistent approach to sustainability and climate action communications in a manner that reflects UBC's distributed environment. The four main goals of the hub can be found on their official website (sustain.ubc.ca):

1. Working to create the most sustainable and equitable campuses in the world.
2. Empowering and supporting the sustainability leaders of tomorrow.
3. Helping British Columbia reach a more sustainable future through research, living labs, community engagement, and other actions that tackle our most pressing issues.
4. Leading and partnering with other organizations to achieve impact at a scale that makes a difference for individuals and society.

When navigating throughout the website, it becomes clear that it is a space to show all that is happening at UBC (University of British Columbia) related to sustainability, to share sustainability academic opportunities, to guide people who want to take action pro sustainability, to communicate and to connect people. But over the years, the information structure has grown to a size that became difficult for users to find information on deeper branches of the information architecture, following the characteristics of hypertext principles, presented by Levy in 1993 (p.21-28):

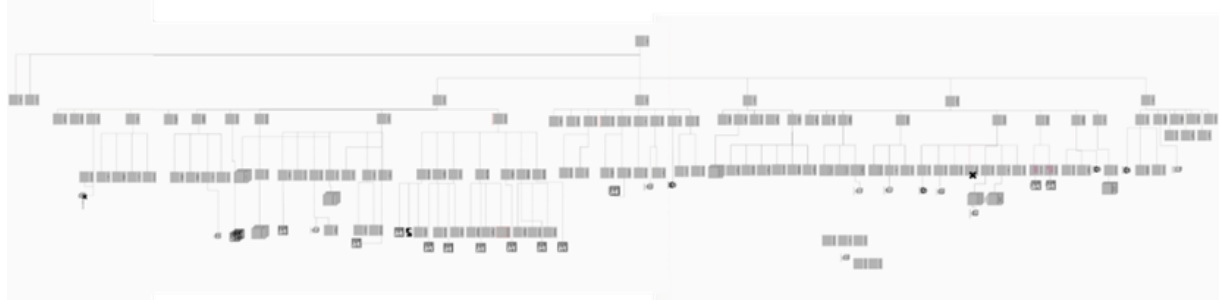
1. **Principle of Metamorphosis** – the hypertext network is constantly under construction and renegotiation. It can remain stable for a certain period of time, but this stability is in itself the result of work.
2. **Principle of Heterogeneity** – the nodes and connections of a hypertextual network are heterogeneous. In memory, images, sounds, words, various sensations, models, etc. are counted, and the connections will be logical, affective, etc.

3. **Principle of Multiplicity and scale fitting** – hypertext is organized in a "fractal" manner, that is, any node or connection, when analyzed, can reveal itself as being composed of an entire network.
4. **Principle of exteriority** – the network has no organic unity, nor an internal motor. Its growth and its decrease, its composition and its permanent recomposition depend on an undetermined exterior.
5. **Principle of Topology** – in hypertexts, everything works by proximity, by neighborhood. In them, the course of events is a matter of topology, of paths.
6. **Principle of Mobility of Centers** – the network has no center, or rather, it permanently possesses several centers that are like perpetually mobile luminous points, jumping from one node to another.

Figure 1 shows a visual representation of the information architecture of the website *sustain.ubc.ca* before the restructuring information project started. It had 5 levels, with many pages linking to external information as a 6th level. The information allocated on deeper levels were hard to find, unless users were familiar with the different sectors of the website.

The primary goal of restructuring the information was to enhance access by improving findability. Peter Morville (2005) defines findability as the ability of users to locate the information they need, both on websites and across the internet as a whole. It refers not only to users being able to discover relevant content, but also to their ease in navigating to that content. It's about making information accessible and easy to find, ensuring that users can locate the right resources or answers quickly. Even before this term was coined, Wurman (1996) noted that the ease of finding something is closely tied to how well the information is organized.

Figure 1 Visual representation of the information architecture before project



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The audience for the website can be summarized as the university faculty, staff, students and outsider sustainability experts.

Restructuring the information architecture led to 3 questions: (1) how to better reorganize the information structure and determine which information is more relevant to different audiences; (2) How to make information search (findability) logical and obvious to all 4 audiences; (3) What would be the middle ground between users' expectations and the hub's goals and strategies for the website.

The suggested sample should contain 3-4 students, 3-4 faculty members and 2-4 sustainability experts from the local metropolitan community – staff were recruited for the 2nd phase of the project. Sample methods to be considered were:

1. **Random sample.** Selecting a smaller group from the population by random selection gives each person an equal chance of being selected.
2. **Convenience sample.** Select participants based on ease of access (e.g., from a professional network).
3. **Snowball sample.** People recruited to be part of a sample are asked to invite those they know to take part and so on.
4. **Purposive sample.** Participants for the sample are chosen consciously by researchers based on their knowledge and understanding of the research question.

The participants that agreed to be part of the interviews were selected mostly from convenience and purposive sampling. The stakeholders involved in the project had direct contact with faculty members, part of the students and sustainability experts.

2. Information architecture

Definitions of information and information architecture have been evolving since the 1950s, evolving together with technology and interaction. According to Rosenfeld, Morville and Arango (2015), information architecture is the discipline for the structural design of digital landscapes, through the synthesis of organization, labeling, navigation and search to build physical, digital and transmedia information ecosystems.

The discipline goal is to develop experiences and products that provide the best usability, findability and comprehensibility. For the authors, findability and comprehension are the key objectives when

structuring information. With the ubiquity of media, a series of devices and objects connected to the Internet for all kinds of daily and routine activities, in homes, offices or urban spaces, new concerns and studies arise to configure new and diverse ways of humans interacting with information and the escalation concerning “information overload” (Wurman, 2001).

Oliveira, Vidotti, and Bentes (2015) added that it can also be viewed as “a systematic effort to identify standards and develop methods for defining information spaces” with the goal of representing and manipulating information and establishing relationships between entities to construct information spaces.

Resmini and Rosatti (2017), relate information architecture to structure, access, retrieval and use of the content, focusing on space, navigation and way-finding. In their book “Pervasive Information Architecture: Designing Cross-Channel User Experiences”, the authors bring forward 5 principles of pervasive information architecture focused on people’s experience journey transpassing digital and physical spaces, crossing different channels on different devices, to reach their objectives:

1. **Place making** – refers to the capacity of users build a sense of self-localization;
2. **Consistency** – refers to a model of pervasive information to attend objectives, contexts and users, keeping the same logic in different media, environments and shifts of necessities with time;
3. **Resilience** – refers to capacity of the pervasive information model adapt to specific users, their needs and search strategies and gradually change to fulfill the evolution of users’ needs and expectations in different contexts;
4. **Reduction** – refers to the capacity of a huge quantity of information management being organized for easy and simple access by users;
5. **Correlation** – refers to the relevant connections between pieces of information, services and products to help users reach objectives or stimulate latent needs.

It is essential to determine priorities for attention and interest, create hierarchies, information structures, groups, categories, and sequential interactions according to people’s affinities and expectations. Information architecture is responsible for creating structures that effectively allow users to transform their informational needs into actions and achieve their

goals. In this sense, the traditional role of information architecture is to organize and structure information to help users discover and consume content, as well as facilitate their decisions and actions (Agner *et al.*, 2024).

Rosenfeld, Morville and Arango (2015) comprehend information in 4 interdependent systems:

1. **Organization system:** this determines how content should be organized, classified and presented.
2. **Label system:** this determines verbal and visual signs for each information element and supports navigation.
3. **Navigation system:** this specifies routes within the informational space.
4. **Search system:** in this system, users call upon typing questions to achieve desired information.

3. Card Sorting

Digital projects that aim to follow a user-centered design approach must involve users throughout the discovery and design process (Maurer, 2002). The research process can include both quantitative and qualitative methods to explore, categorize, structure, and test new products.

As one of many research possibilities to bring users as part of the designing process, card sorting has been often used to help organize and categorize subjects, taxonomy and content within a system. It is considered an important research process to organize topics, create classification schemes, identify steps in a process, or even figure out the structure of a book (Spenser 2009). Santa Rosa & Moraes (2012) add that Card sorting can help understand how people think about certain topics and organize content groups based on their own life experiences and expectations. Observing users' perspective and how they process their thinking to choose can be more rich than the final organized structure.

Card sorting experts in the scientific community, such as Padovani, Spencer (2009), Santa Rosa and Moraes (2012), and Tullis and Wood (2004), have published detailed in-person guidance on the method. Their personal experiences and perspectives on how to better conduct card sorting can be summarized into: (1) give people a set of cards with written content on each one, (2) have people sort the cards into piles according to what they perceive as similar, and (3) ask them to describe the groups they create.

Padovani and Ribeiro (2013) describe the card sorting process as consisting of writing information or functions on cards and asking participants (individually) to group them in a way that makes semantic sense. The researcher then analyzes the composition of the groups, looking for patterns that would lead to a final organization. The authors present the process in three phases: (1) planning, (2) card arrangement, and (3) elicitation.

1. **Planning phase:** determines the scope and broadness of content to be written on the cards. It defines if the card sorting will be closed (top categories previously defined), or open (with no preset categories).
2. **Card-arrangement:** participants organize the content cards on a board. The orientation is to distribute the content cards by semantic similarity.
3. **Elicitation:** the researcher asks participants to explain why they organized the cards the way they did and what was the logic of their organization – important (Padovani and Ribeiro 2013) to clarify doubts while unifying the structures produced by the participants.

It is important to note that areas of divergence also provide useful information regarding content that participants haven't understood well or that could belong to more than one group, as well as show alternative paths.

Padovani shows that card sorting can be used in both digital and physical projects and describes an adaptation of card sorting to help organize information on package design. In her adaptation, the card sorting process helps organize information on a toothpaste package, with users placing content stickers on the package based on their cultural conventions and personal experience regarding where each piece of information should be positioned.

Remote card sorting method

When pandemic hit the world in 2020 and in-person office had to shift towards remote work, research had to adapt itself to the new perspective as well. Previous experiences in multinational projects with co-workers spread around the globe, and sudden lockdown everywhere in 2020, helped guide adaptation strategies to research methods on new analytical lenses (Renzi & Agner 2023). This paper intends to present the usage of remote

card sorting to help restructure an intrinsic information architecture based on users' expectations and sense making (Sande *et al.* 2017).

The Interaction Design Foundation has a step-by-step card sorting guide prepared by Donna Spencer (2025) focused on in-person methods. However, a remote version is included in their FAQ section, which focuses on the advantages of remote card sorting over in-person sessions.

1. Digital tools automatically collect and analyze data quickly and with the ability to generate statistical reports and visual representations of the data.
2. It easily handles more cards and participants than physical sorting, which is often limited by physical space and materials.
3. It eliminates the need for physical materials, rental space, and to transcribe results from physical cards. Also, it reduces time spent on set-up and managing the session.
4. Participants might feel more at ease in their own environment, leading to more genuine responses. They can also complete the task at their convenience.
5. Digital card sorting is more environmentally friendly as it reduces the need for paper-based materials.

Recently the NN Group (2022) has released a video explaining the remote process of card sorting. The video presented by Katie Sherwin, shows the process in 4 steps:

1. Choose the topics: the presenter presents nomenclature tips to better make distinguished options and not bias.
2. Choose the card sorting software: the presenter classifies the existing softwares in 2 types – specialized tools and do-it-yourself tools. The video mostly focus on quantitative analysis, where when using a professional tool, it calculates automatically, and when done by do-it-yourself, there are tutorials online to help make the calculations.
3. Recruit participants that reflect the users that will use the product. The participants should share their screen in order to follow their actions, and camera on to see their facial expressions. The presenter follows the overall instructions to participants to organize the cards in groups.
4. Thank the participant for helping with the research. The presenter encouraged to offer compensation, such as a gift card, to each participant.

The NN Group presenter (Sherwin 2022) does not explain how to analyze the results with details in their official video.

Card sorting sessions

For this project, the card sorting method used was fully based on experimentations with card sorting and prioritization matrix by Renzi & Agner (2023) which brought up important foundations and new learnings on how to better conduct remote sessions. The method has participants to fully understand the scenario and gradually warm-up their organizational thinking process. This research process follows the disclosed steps of remote card sorting described in the paper “Card sorting for remote research: identifying useful data and new learnings” (Renzi 2025).

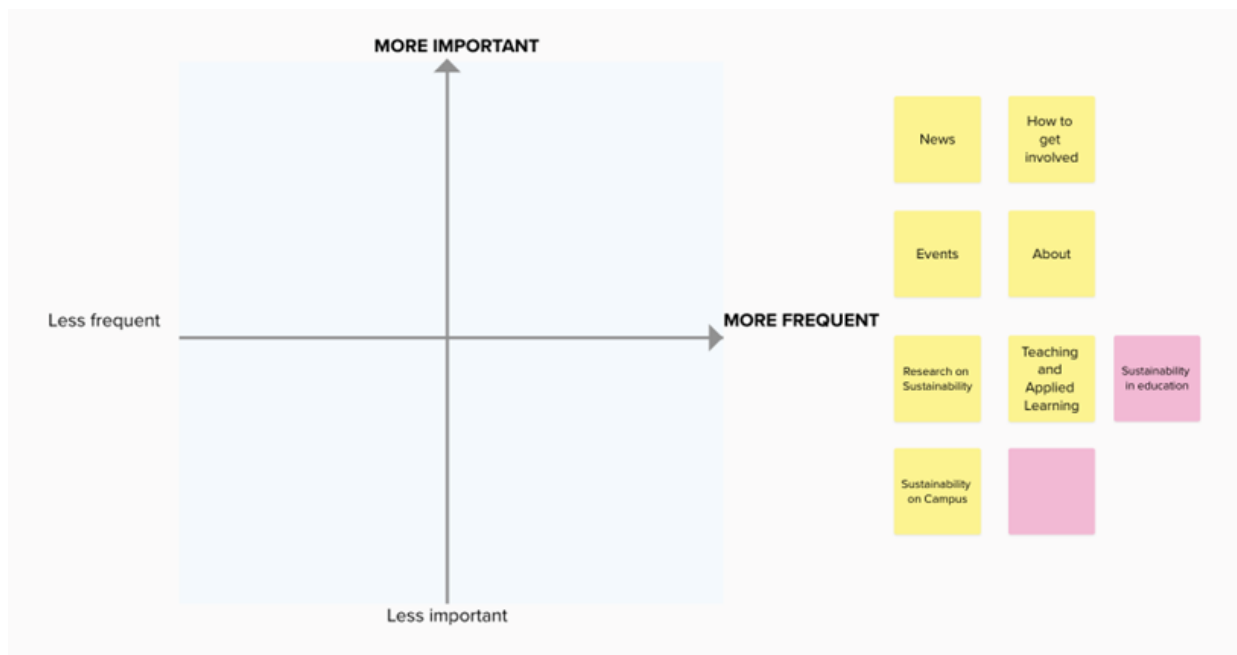
The card sorting sessions for the sustainability hub was the 1st of 2 phases and included 12 participants. The recruited participants included UBC (University of British Columbia) students, UBC faculty members, UBC staff connected to sustainability areas, and sustainability experts from Canada. From the 12 participants, only 4 (2 students, 2 faculty) were well familiar with the website (sustain.ubc.ca) before the interview.

Each card sorting session had a duration of one hour. All interviews were conducted through the video conference Zoom app, and the card organization was done in Mural.co, where the participants would join and go through card topics and start organizing the information. The sessions started with warm up introduction questions, followed by a scenario understanding using prioritization matrix before doing the card sorting itself. Following the guidance from Renzi (2025), when moving the conversation to the Mural.co board, Prioritization Matrix (fig.2) was prepared to get the participants into the full scenario of visiting the website and help them think about what topics are most important to them, before moving on to the card sorting part.

The seven main topics used for the prioritization matrix were reflection of the seven main menu options on the website: News, Events, Research on sustainability, Sustainability on campus, How to get involved, About, and Teaching and Applied Learning. Research on Sustainability and Sustainability on Campus were modified from its original names (Research and Campus) because the original names were being perceived on a much broader significance range than their actual representation. The topic Sustainability in education was included next to Teaching and Applied

Learning, as a side pink sticker to raise discussion about how to better represent the section of learning subjects, educational partnerships and guidance within sustainability. A blank sticker was included to open possibilities of new ideas to the Menu format (Renzi & Agner 2023 and Renzi 2025). The results and discussions from the prioritization matrix sub-session influenced the card sorting starting point board (fig.2), where new/changed nomenclatures would be added as main menu topics.

Figure 2 Visual representation of the prioritization matrix board



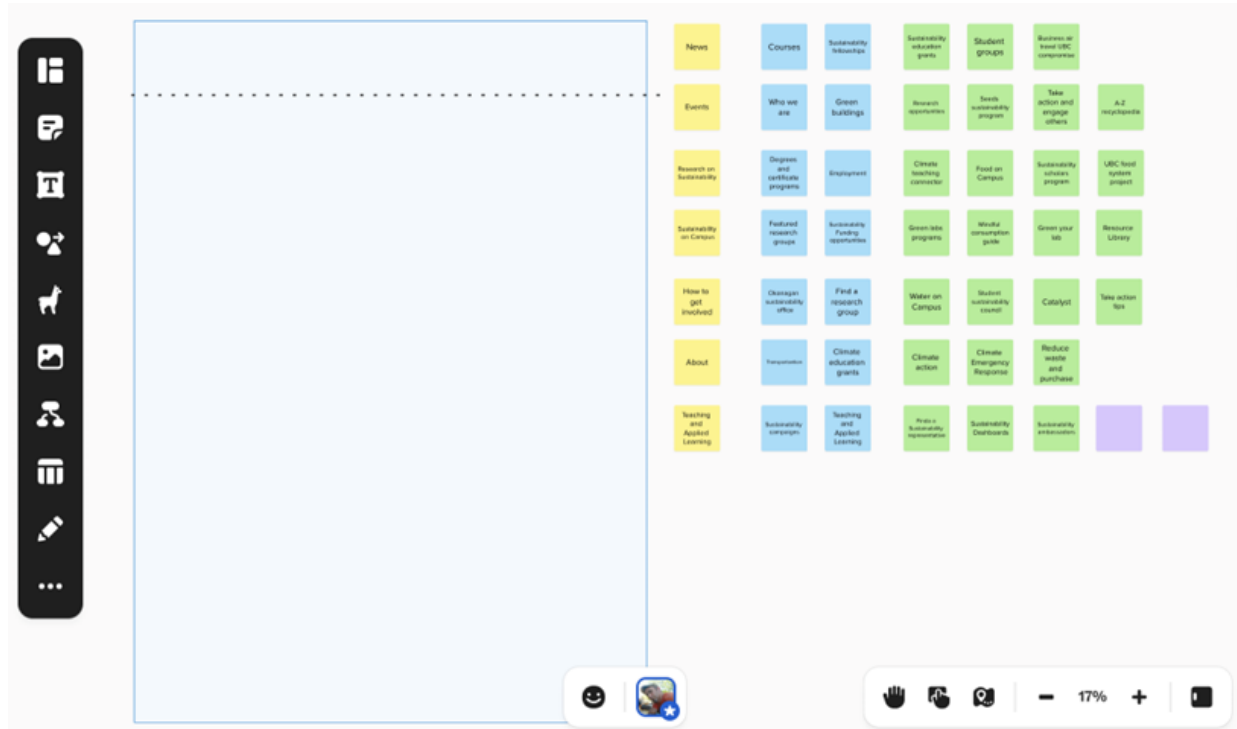
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Although organized as an open card sorting, the session was conducted as a hybrid closed top-down card sorting. The decisions made during the prioritization matrix (regarding names and importance rankings) were reflected in the first yellow column of the card sorting board. Based on participants' inputs, the yellow stickers were adapted to the new names and organized at the top, according to their importance.

Following guidance from "Card sorting for remote research: identifying useful data and new learnings" (Renzi 2025), the order of presenting the card options to participants, and letting them organize the cards on the board, started with the yellow column. The 2nd column (blue cards), concentrated easier to categorize options, which gives a better flow of organization thinking and positioning the cards. Selecting the topics for

the blue cards were based on the structure of the original information architecture of the website.

Figure 3 Visual representation of the card sorting board in Miro



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For this project only three color columns were used, in order to better fit the limited time allowed with the participants. The 3rd column, shown as green cards, consisted of 25 cards encompassing topics that could bring discussion or conflict when comparing with yellow and blue cards. Due to the enormous amount of topics displayed throughout the website, topics were selected to represent a series of options with semantic connection and similar architecture positioning: instead of listing all different sustainability programs covered by the hub, we selected the ones most recognizable by all categories of participants.

As participants go from one column of cards to the next one, the purpose of the selected cards on column three is to make participants re-think decisions of previous columns and rearrange the cards positioning accordingly, which allowed possibilities for repositioning cards, change, delete, and add topics to the board (Renzi 2025).

Two purple blank cards were added to encourage participants to add topics they felt it was missing. Together, with each participant, the session revisited the card arrangements to see if there is anything to be

repositioned. The interview sessions ended with open questions from participants about the project and further suggestions

4. Results

The results were organized side-by-side to better compare visually the positioning choices among different people. For remote card sorting, there are two main types of analysis to be considered (Renzi 2025):

1. **organizational patterns** are the main source of insights about how different personas perceive what would be the perfect architecture from their experience and expectations. The common choices stick out and it's possible to see the common arrangements.
2. **stories behind choices** require a deeper understanding of the whole scenario to better connect the dots, where personal positioning from one participant connects to similar thinking with others.

Connecting the stories shared with cards positioning, it was possible to map a few general insights from across the multiple types of users (students, faculty, experts):

1. They all agree on the importance of ABOUT for someone coming to the website for the 1st time. But it's considered of less importance when compared with RESEARCH, CAMPUS and EDUCATION.
2. Participants confirmed the need of this restructuring project, since it was hard to find specific subjects within the website when not familiar with the programs.
3. RESEARCH, HOW TO GET INVOLVED and CAMPUS were considered important sources for reference and learning
4. Participants from all audiences suggested having one separate tab for guides and resources. The discussion led to the addition of a new menu tab at the landing page: RESOURCES
5. TEACHING AND APPLIED LEARNING was considered a confusing naming for the section, leading to ideation discussions with participants to change it to EDUCATION
6. Social media was considered by the younger generation to be the main channel for news and events
7. Suggestion of a new tab to help connect with people: groups, ambassadors, council etc. new menu tab was created: COMMUNITY

8. The topic opportunities was important to everyone, but it was perceived differently by different audiences and connected to various meanings: grants, funding, programs, and employment.

The three main audiences invited to be part of the research process showed different points of view based on their understanding of how a sustainability website should address the public. The figure 4 represents each segment's main interests around the menu topics.

Figure 4 Visual representation of the main menu topics discussed and suggested by participants based on importance.



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When analyzing the perspectives of students, faculty members and sustainability experts, there is common ground regarding expectations and how the information structure should work, but also, perspectives that are very specific for each group.

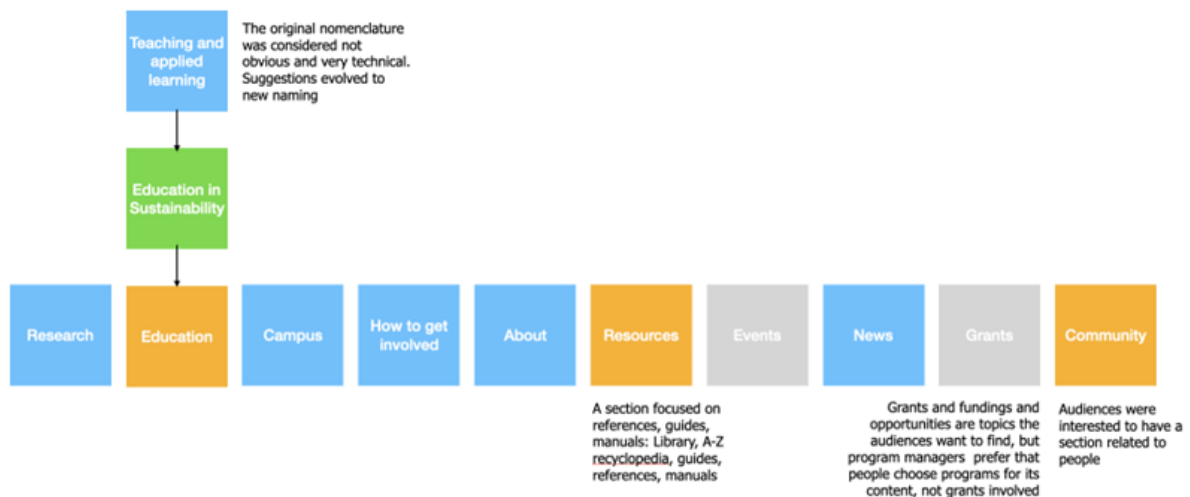
After analyzing the patterns of suggestions, the different points of view, the rearrangements and final location of cards, as well as the shared stories to justify positioning choices, it was possible to better understand and map the behavioral thinking behind decisions during the interviews. Important changes affected the main menu, resulting in many significant reallocation of information into the new top topics.

Teaching and applied learning slowly changed to a more direct and objective nomenclature based on users' expectations and semantic connections (fig.5). From Teaching and applied learning to Education in sustainability, and finally to EDUCATION. Different segments of users showed the importance of having an informational branch to address the UBC community and make communication easier between different parties, and from this need a new topic was added: COMMUNITY.

And the most interesting addition – from a research perspective – was the new topic RESOURCES, which concentrates completely disassociated sub-topics, but at the same time makes sense to different audiences on their particular semantic connections: having resource

library, plans, policies and reports, opportunities and consumption guide may seem a completely errant organization, but although these sub-links don't connect to each other semantically, for each different audience they all belong to RESOURCES.

Figure 5 Visual representation of the gradual transformation of teaching and applied learning nomenclature into education nomenclature



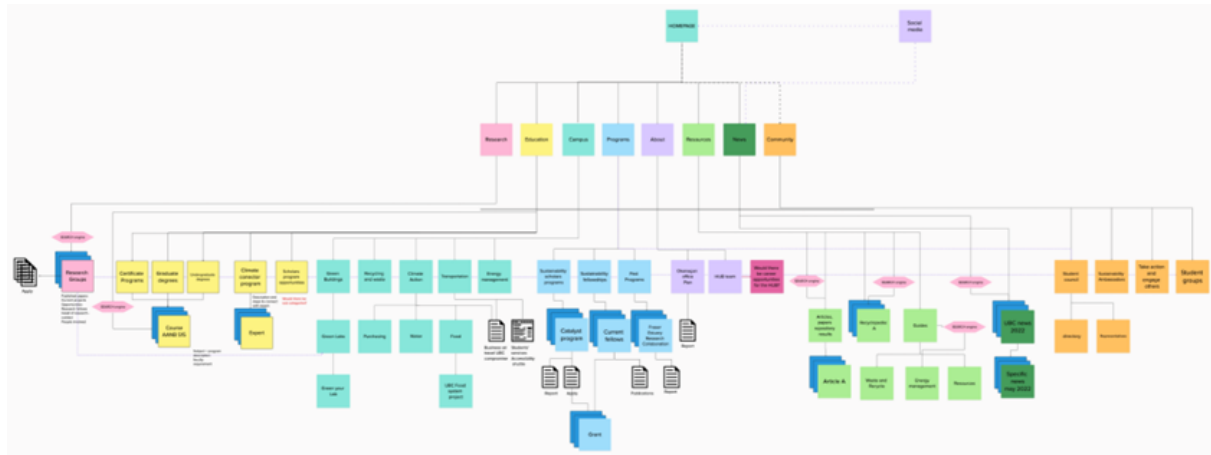
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The organization of the cards (and users' stories) suggested the eradication of NEWS from the menu and limit it to the homepage and social media, and also the addition of GRANTS, as a topic of major interest for students and faculty. But results of research methods are a starting point for discussion and strategy with stakeholders, leading to considerations from a management perspective and objectives of the system and institution. NEWS was kept a main topic together with Events, but their content organization changed. And although grants and funding were considered important by UBC audiences, they were kept within their respective programs and associations, as it is more important to have application interests related to being part of a project by topic affinity instead of by type/value of funding/grant.

After analyzing the cards positioning patterns, the decision stories displayed by users, and discussion about the results with stakeholders to align decisions with the hub strategies – the relation triad (Guimarães *et al.* 2019), the reorganization of the main menu was set as: RESEARCH | EDUCATION | CAMPUS | PROGRAMS | ABOUT | RESOURCES | NEWS | COMMUNITY (represented by different colors in fig. 6: research-pink,

education-yellow, campus-aquamarine, programs-light blue, about-purple, resources-light green, news-green, community-orange).

Figure 6 Visual representation of the new information architecture after the research project. The scheme shows the menu topics organized by color, to make it easier to identify the informational branches coming out of each segment



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RESEARCH (pink) is expected to have all the research groups, information of their current research projects, people involved, publications, opportunities and contact, together with a search engine.

EDUCATION (yellow), former teaching and applied learning, users can find specific courses, classified under graduate, undergraduate and certificate programs, they can connect with various experts related to the climate connector program and check scholar program opportunities.

CAMPUS (aquamarine) is to have everything about the UBC campus: green buildings project (and green labs), recycling and waste active programs, climate actions (purchasing, water, food), energy management and transportation.

PROGRAMS (light blue) gets subdivided into three main categories: sustainability scholars programs, sustainability fellowships and past programs. Each one of these categories links to informational pages of each program involved, where people can find descriptions, who is involved, publications, reports, how to apply and what kind of grants are associated with them.

ABOUT (purple), considered of main importance to users that visit the website for the first time, has all the descriptive and representative content related to what the hub is all about in UBC Vancouver and

Okanagan offices. It's the place to find more about who is involved with the sustainability hub.

RESOURCES (light green) symbolizes different things to different audiences. This section is where recyclepedia, resource library, policies, reports, guides to sustainability, to campus, and to energy management are allocated. And at the same time, where people would also find funding opportunities, take action tips and campus guides.

NEWS (green) was suggested at first to be mainly at the homepage, as it should be updated frequently and draw attention from social media posts. But after discussing strategy for the website, it was kept as a menu topic as well. The suggestion is to make it possible for users to access older repository news with the help of search engine and tag organization by date, subject, area of knowledge and keywords.

EVENTS (added later) stayed as well, but with plans to have its inner content reorganized. Actively have updated events and keep past events as a repository organized to make findability easy.

COMMUNITY (orange) is to make it easier for users to reach out to people, find out how to be part of interesting groups and how to get more involved in the community – student councils, sustainability ambassadors, and student groups.

Aside from organizing the information architecture of the website, the interviews started discussions about the website usability as well. A full heuristic evaluation and accessibility audit were conducted as part of the research project, but they are not to be shared at this time on this paper.

5. Conclusion

The research project confirmed the usefulness of following the remote card sorting guidance published in *Card Sorting for Remote Research: Identifying Useful Data and New Learnings* (Renzi, 2025). Setting a prioritization matrix as a starting point helped participants think objectively about how to better organize content from their users' perspective. This approach facilitated reviewing all menu items and discussing their importance in the user journey, as well as setting the ambience for conducting the card sorting activity.

The selection of cards for the three columns worked as intended: (1) starting with easier choices, (2) ending the second column with topics that could bring dual interpretations and spark discussion about previous

choices (including items on the top menu), (3) progressing through the third column with options that would connect with previous positioning but bring up opinions that could be considered very topic-specific and could lead to organizational thinking by participants. For this particular research project, adding more than 48 cards would compromise the one-hour time limit.

Unlike previous experiments, the first column consisted of the top menu discussed in the prioritization matrix this time. The results from the prioritization matrix directly influenced the order of the first column's top menu and sometimes already changed a few nomenclatures. This occurred more frequently with the topic TEACHING AND APPLIED LEARNING.

The triad relation (Guimarães *et al.*, 2019) played an important role after results were presented for discussion. The results and reorganization of information from users' perspective led to revisiting the hub's strategy and reconsidering the website's role in the ecosystem of informational journeys. Grants, considered very important for students, as well as funding for faculty, were demoted from the menu and distributed through specific branches of the architecture – to cite one example. Although considered important by participants, professors and program leads prefer applicants to apply based on their interest in specific programs rather than the grant value.

Lévy's principle of exteriority is a concern for the future. As information grows exponentially, it is worrisome that architecture might grow uncontrollably again, making findability more difficult. To minimize this impact, it was decided that the displayed information should focus on the hub's main goals and connect less with information requiring constant updates and follow-ups with outside departments.

Among the main informational branches from the first level of the architecture, the proposed restructure would typically reorganize existing content, but the biggest challenges reside in informational branches that appear too minimalistic visually, which will require a different approach or addition of new content. The RESEARCH section exemplifies this challenge: although the research branch leads to a central page with a research engine and links to research lab pages, it requires up-to-date information about each lab, including the lead professor, the team, the research project's topic and abstract, and contact information. This same type of information repeats across various connected labs, but maintaining

current information depends on active participation from the research labs themselves.

Updates could be implemented through either: (1) the hub staff reaching out to each lab, (2) active engagement from labs to update their information with the hub staff whenever new information becomes available, or (3) utilizing a Content Management System (CMS) to enable labs to update information themselves. All three options raise considerations that extend beyond design or information architecture and connect more directly to operational processes: Does the hub have sufficient personnel capacity to handle update requests? Do the labs have adequate personnel to promptly update information? Does UBC have a CMS that can seamlessly accommodate this need?

After adjustments and restructuring of the information architecture, a second research phase aimed to user-test the website with the new information structure. For the user testing phase, cooperative evaluation (Teixeira & Moraes, 2004) was used with eight participants, including students, faculty, and staff members. Each interview session lasted approximately one hour, during which, specific tasks were assigned to each user type to test different sections and deeper levels of the website. All issues identified by participants were collected and organized according to heuristics.

It was encouraging to note that all reported issues were related to usability—specifically connected to heuristics 4 (consistency and standards) and 8 (aesthetic design)—from a visual and interaction perspective, rather than informational. From an information architecture standpoint, the new structure appeared to improve findability and create more intuitive semantic connections for locating information, even when users were unfamiliar with the topic.

References

AGNER, Luiz; NECYK, Barbara; RENZI, Adriano B. User experience and information architecture interaction with recommendation system on a music streaming platform. In: HANDBOOK OF USABILITY AND USER-EXPERIENCE: methods and techniques. 1. ed. Boca Raton: CRC Press, 2022. p. 247-268. DOI: <https://doi.org/10.1201/9780429343490>.

GUIMARÃES, M.; ZISMAN, R.; RENZI, A. B. Pharmaceutical online store project: usability, affordances and expectations. In: ADVANCES IN HUMAN

FACTORS AND SYSTEMS INTERACTION: proceedings of the AHFE 2019 International Conference on Human Factors and Systems Interaction, 24–28 jul. 2019, Washington, DC, USA. Cham: Springer, 2019. DOI: https://doi.org/10.1007/978-3-030-20040-4_47.

LÉVY, Pierre. As tecnologias da inteligência. São Paulo: Editora 34, 1993.

MAURER, Donna. What is usability? Step Two KM Column, 2002. Disponível em: http://www.steptwo.com.au/papers/kmc_whatisusability/. Acesso em: 27 maio 2026.

MORVILLE, Peter. Ambient findability: what we find changes who we become. Sebastopol: O'Reilly, 2005.

OLIVEIRA, H. P. C. de; VIDOTTI, S. A. P. B. G.; BENTES, V. Arquitetura de informação pervasiva. São Paulo: Editora UNESP, 2015. DOI: <https://doi.org/10.7476/9788579836671>.

PADOVANI, Stephania; RIBEIRO, Milton A. Card sorting: adaptação da técnica para aplicação ao design de sistemas de informação não digitais. InfoDesign, São Paulo, v. 10, n. 3, p. 293–312, 2013.

PETTITT, Michael. Visual demand evaluation methods for in-vehicle interfaces. 2008. 245 f. Tese (Doutorado em Human-Computer Interaction) – University of Nottingham, Nottingham, 2008.

RENZI, Adriano B. Card sorting for remote research: identifying useful data and new learnings. Arcos Design, Rio de Janeiro, v. 18, n. 1, p. 155–177, 2025. DOI: <https://doi.org/10.12957/arcosdesign.2025.82958>. Disponível em: <https://www.e-publicacoes.uerj.br/index.php/arcosdesign>. Acesso em: 27 maio 2026.

RENZI, Adriano B.; AGNER, Luiz. Prioritization matrix to highlight business opportunities. In: DESIGN, USER EXPERIENCE, AND USABILITY. Cham: Springer, 2023. (Lecture Notes in Computer Science). DOI: https://doi.org/10.1007/978-3-031-35699-5_4.

RESMINI, Andrea; ROSATI, Luca. Pervasive information architecture: designing cross-channel user experiences. Burlington: Morgan Kaufmann, 2011. ROSENFELD, Louis;

MORVILLE, Peter; ARANGO, Jorge. Information architecture for the web and beyond. 4. ed. Sebastopol: O'Reilly, 2015.

SANDE, A.; RENZI, A. B.; SCHNAIDER, S. Experience, usability and sense of things. In: DESIGN, USER EXPERIENCE, AND USABILITY: designing pleasurable experiences. DUXU 2017. Cham: Springer, 2017. p. 77–86. (Lecture Notes in Computer Science, v. 10289).

SANTAROSA, José Guilherme; MORAES, Anamaria de. Design participativo. Rio de Janeiro: Rio Books, 2012. SPENCER, Donna. What is card sorting?

Interaction Design Foundation, [s. l.], [20--?]. Disponível em: <https://www.interaction-design.org/literature/topics/card-sorting#card-sorting-faqs>. Acesso em: 27 maio 2026.

SPENCER, Donna. Card sorting: designing usable categories. New York: Rosenfeld Media, 2009.

TEIXEIRA, E.; MORAES, A. de. Avaliação cooperativa da interface de sites hipermídia focados na “banda larga”. In: CONGRESSO INTERNACIONAL DE ERGONOMIA E USABILIDADE, DESIGN DE INTERFACES E INTERAÇÃO HUMANO-COMPUTADOR, 3., 2004, Rio de Janeiro. Anais [...]. Rio de Janeiro: [s. n.], 2004.

TULLIS, Thomas; WOOD, Larry. How many users are enough for a card-sorting study? In: USABILITY PROFESSIONALS ASSOCIATION (UPA) CONFERENCE, 2004, Minneapolis, MN. Anais [...]. Minneapolis: UPA, 2004.

WURMAN, Richard Saul. Information architects. New York: Graphis Press, 1995.

WURMAN, Richard Saul. Information anxiety 2. Indianapolis: Que Publishing, 2000.

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