University of Regina

FINAL PROJECT REPORT

SIG - Humanities and Engineering Website

ENSE 871 USABILITY RESEARCH AND ENGINEERING

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Business need/opportunity

The business need/opportunity in this project lies in addressing the gap within the Canadian Engineering Education Association's "Humanities in Engineering" Special Interest Group (SIG). Historically relying on periodic meetings and events, there's a need for a sustainable online platform to enhance engagement, networking, and knowledge sharing among members. By creating an intuitive platform, the SIG can better showcase research interests, promote events, and facilitate collaboration, thereby strengthening the engineering education community in Canada and potentially expanding its reach globally. This initiative not only meets the immediate need for a digital hub but also opens avenues for long-term growth, community building, and the advancement of interdisciplinary approaches in engineering education.

Given these objectives, the technology and programming environment for the web platform will include StoriesOnboard WordPress and GitHub. Our design approach would follow a Design Thinking methodology with an Agile/Fast Feedback Cycle. This involves iterative design, prototyping, and testing to ensure the platform meets the needs of the SIG members.

Reflections on project planning, execution, & closing

Customer Segment

NorthStar (target) customer: Special Interest Group (SIG) from the Canadian Engineering Education Association (CEEA) specifically focused on "Humanities in Engineering."

Carryover customers: Anybody with the same interests as students, teachers, and other researchers.

Assumptions made and constraints uncovered:

As we have little exposure to WordPress, we need to go through an extensive learning curve to understand the terminology, navigate the features, and utilize the plugins/templates effectively. There is a regular update release for WordPress but not all plugins are regularly updated by the plugin provider. So, using outdated or incompatible plugins can lead to functionality issues. As website grows, managing content volume can become challenging.

Key findings from affinity diagramming and empathy mapping:

Affinity diagramming and empathy mapping helped us gather what customers wanted, organize those ideas, and understand them better. We used sticky notes to jot down everyone's thoughts and then grouped them together based on common themes. This helped us see the big picture of what users really need.

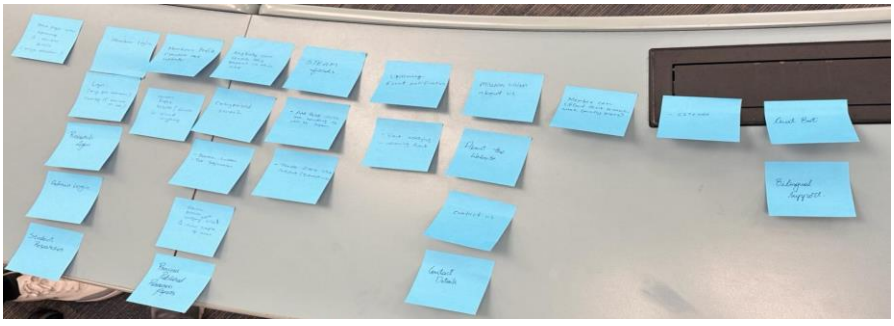

Fig: 1 (Affinity diagrams)

When customers shared their ideas about the SIG (Special Interest Group), we used empathy mapping to understand them better. To begin, we asked ourselves three key questions: What are customers really saying? What are they thinking? What actions are they taking? We then jotted down our insights for each question. Through this process, we gained a deeper understanding of our customers' perspectives and started addressing their problems more effectively

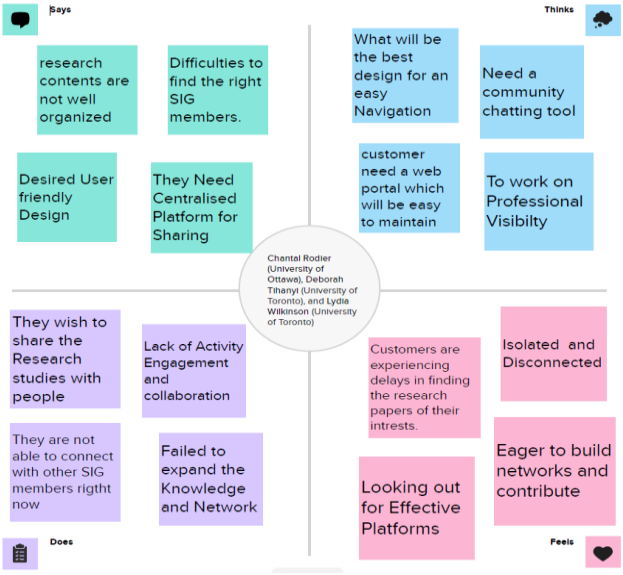

Fig: 2 (Empathy mapping)

Initial & evolution of your USM/MVP

At our professor's recommendation, we utilized StoriesOnboard to create user stories. Initially, we familiarized ourselves with the tool's functionality. Then, we crafted our user stories based on our understanding of user requirements. We prioritized these stories, focusing on key aspects such as registration, bilingual, and collaboration, which formed the core of our Minimum Viable Product (MVP). When we presented to customers the following week, we realized the need to refine our user stories based on their feedback as well as input from our professor. We implemented necessary changes, learning firsthand how user stories evolve in response to feedback.

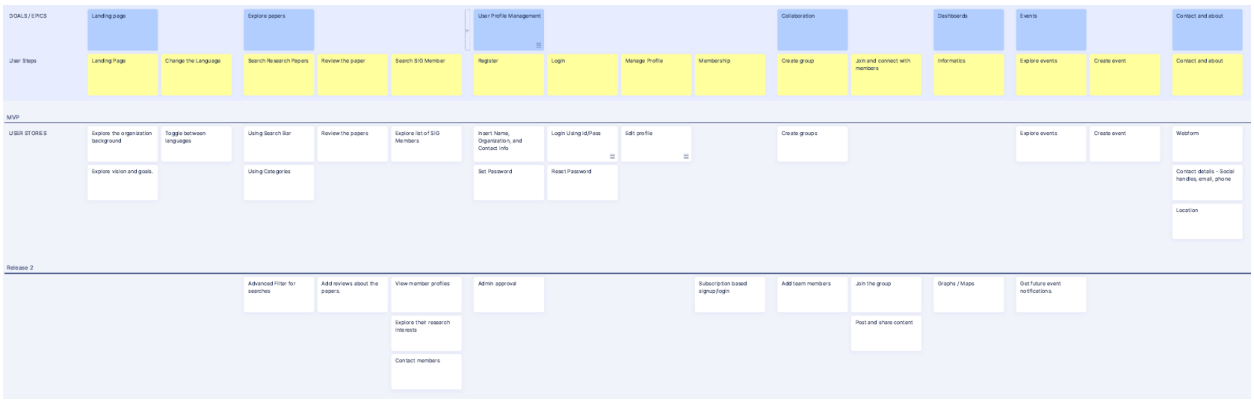

Fig: 3 (User story)

Prototyping activities and usability evaluation findings:

This phase marked the transition to implementing our ideas into designs. We utilized Figma to prototype our concepts, creating two prototypes initially. These prototypes were then presented to the customer and got positive feedback. Subsequently, we incorporated the customer's suggestions and revisions into our prototypes. This allowed us to start utilizing the prototypes as we began working on WordPress.

The feedback from the customers

Initially, customers were satisfied with our prototypes in which we highlighted member details and briefed them on their introduction and research insights. The customers were specific about not adding any research papers to the websites because it is handled by the CEEA. Also, customers said that the website is intended for the STEAM regions, but it might be rather for the larger perspective that we have to keep in mind. Then customers also suggested we focus on a device-friendly website that allows for easy search and viewing of content. Also, customers concentrated on the similar research interests and members. When we discussed Admin roles for the website, they chose minimal maintenance with maximum impact because no Admin member can manage on their own.

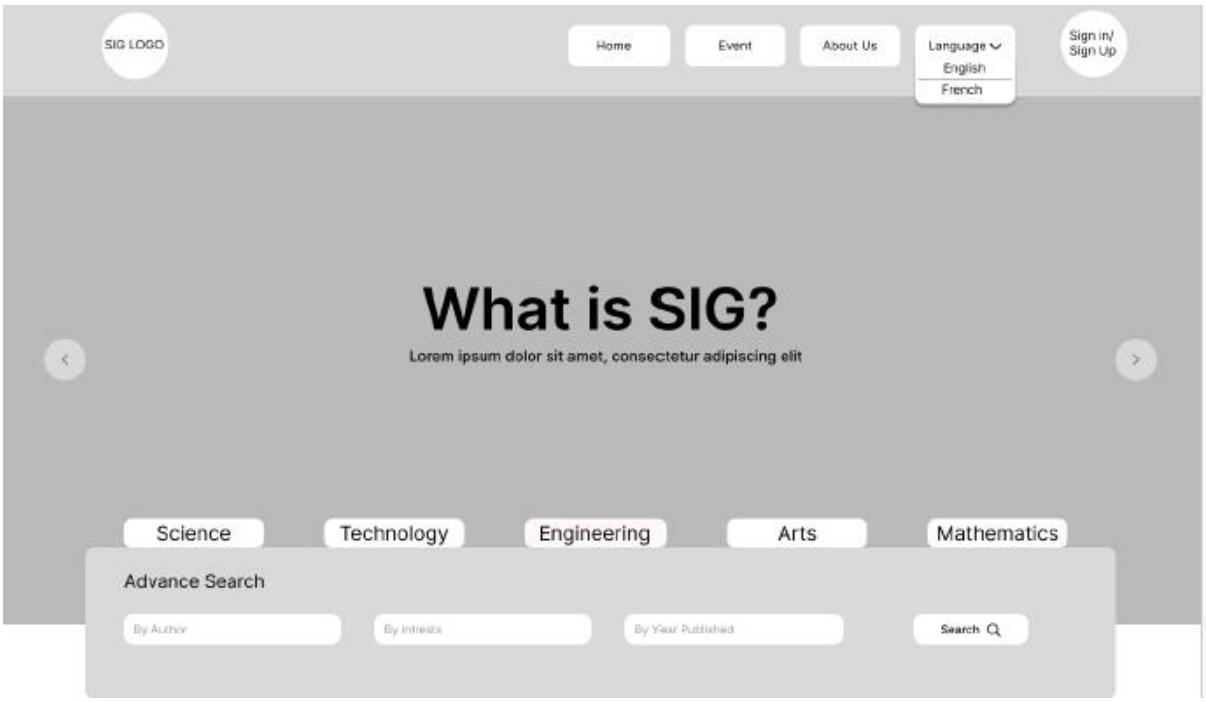

Fig: 4 (Home page)

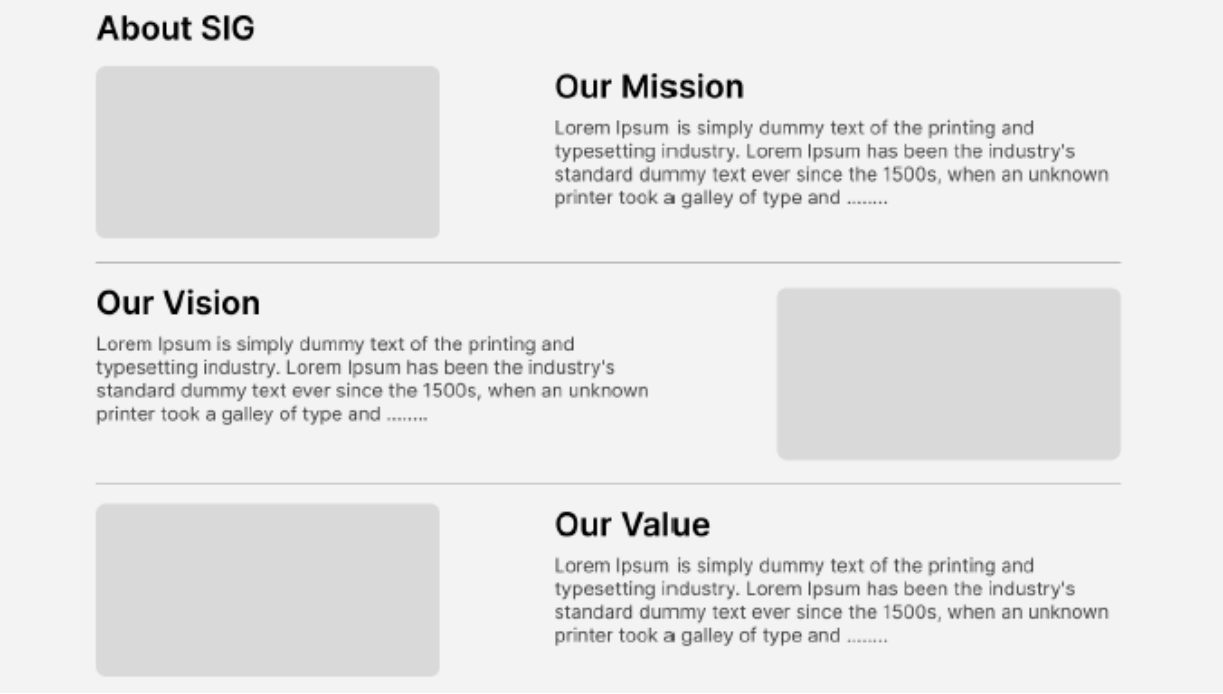

Fig: 5 (About SIG)

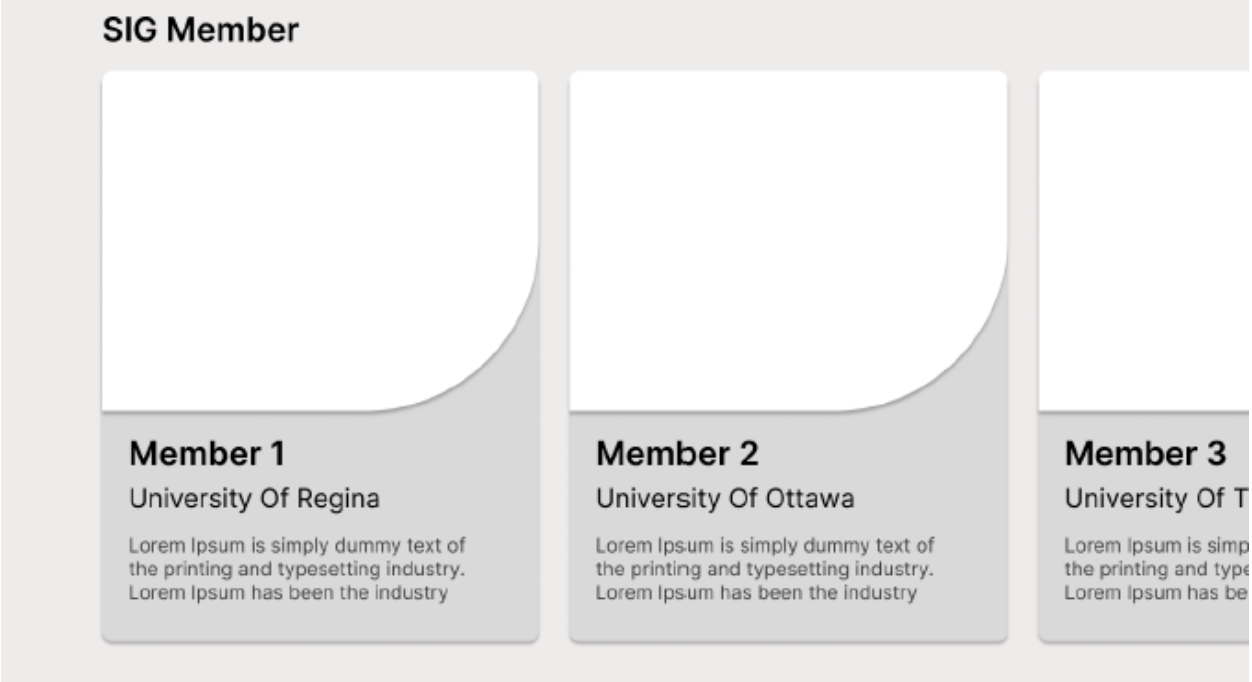

Fig: 6 (Member Page)

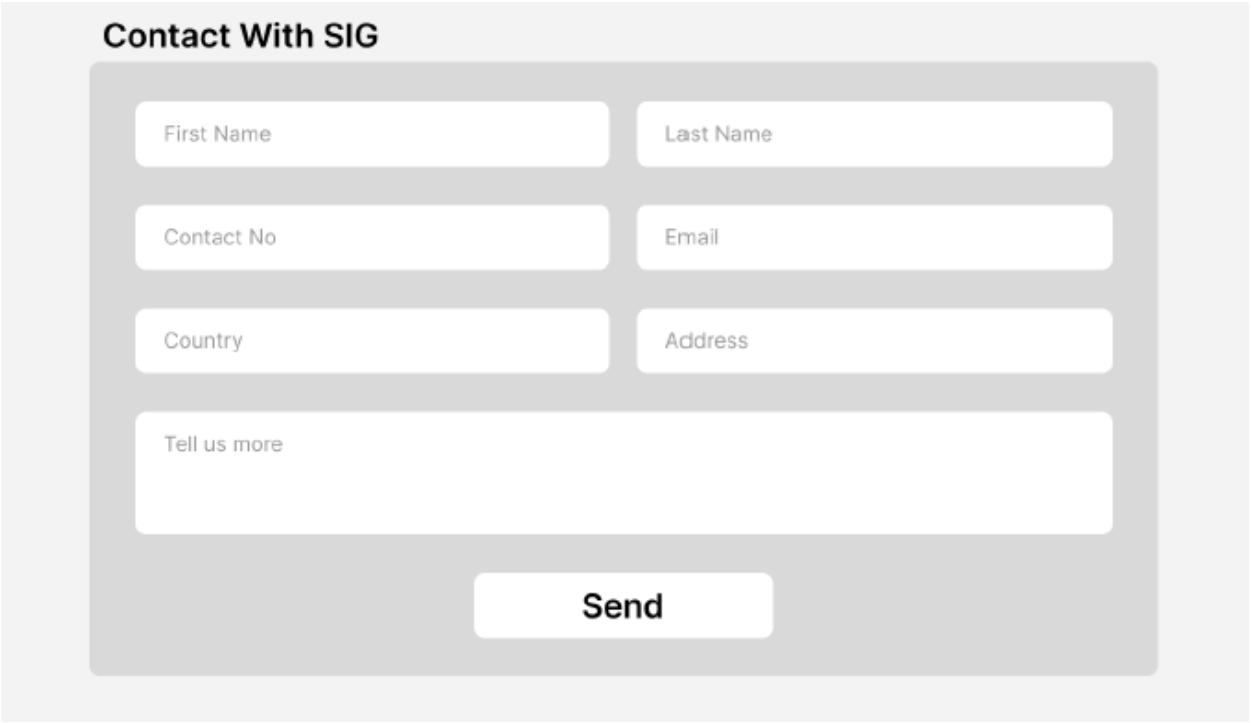

Fig: 7 (Contact us Page)

Design ideas related to people-centered design.

We successfully implemented all the ideas learned in class, thanks to our well-explained professor and the insightful videos by Don Norman on prototyping. These resources greatly enhanced our understanding of how user prototyping functions in real projects.

The concepts of discoverability.

Integrating discoverable, understandable, useful, usable, and desirable elements in design is a complex task that requires careful consideration of user needs, behaviors, and preferences. we used the example of our website to describe how these elements are balanced and integrated in their real-world design scenarios.

Discoverability: It means Affordances & information pickup through Signifiers, Mapping and Feedback. The search bar is prominently managing all these attributes and most importantly suggestions help users to discover relevant information quickly.

Understandability: We planned to minimalistic design and clear labeling Leads to a feeling of control and mastery that contributes to the user's understanding of the search process.

Usefulness: Users assess whether a system provides utility or value to them. If they believe that using the system will make their tasks easier, more efficient, or more effective, they are likely to perceive it as useful. Perceived usefulness is often tied to the specific tasks or goals that users aim to accomplish. A system that aligns well with users' needs and objectives is more likely to be perceived as useful.

Usability: The straightforward search process and clean layout contribute to usability by ensuring learnability. Learnability enables the user with a low threshold can start the using of the search and then they can go into advanced search step by step based on their need. Efficiency is another attribute of usability it means the system should not waste time or do any harm to the user. The search button also maintained memorability because its easy-to-remember interface allows users not learn how to operate the application every time, they open it.

Desirability: Desirability means High customer satisfaction. It provides a pleasurable user experience in delivering reliable search results and enhances the desirability of the platform.

The concepts of the Fast feedback cycle.

The fast feedback cycle revolves around obtaining rapid and continuous input on our projects. It emphasizes the importance of swiftly collecting feedback from target users to drive iterative improvements. By integrating this concept into our project, we gain quick feedback from our customers, enabling us to identify issues early and align with the perspective of target user goals to deliver a higher quality product.

The concepts of the Prototyping.

Prototyping is a crucial step in the design process. It involves creating a preliminary version of the product that can be tested and refined. Prototypes can be low fidelity (simple and easy to change) or high fidelity (detailed and closer to the final product). We use both types in our design process. Low-fidelity prototypes help us structure the layout of design components, while high-fidelity prototypes offer a realistic representation of the final product. For example, our low-fidelity prototypes allow us to quickly sketch out our initial design ideas and gather early feedback, while our high-fidelity prototypes allow us to conduct more detailed usability testing.

Our final WordPress solution:

Here are the few images of WordPress Design Website

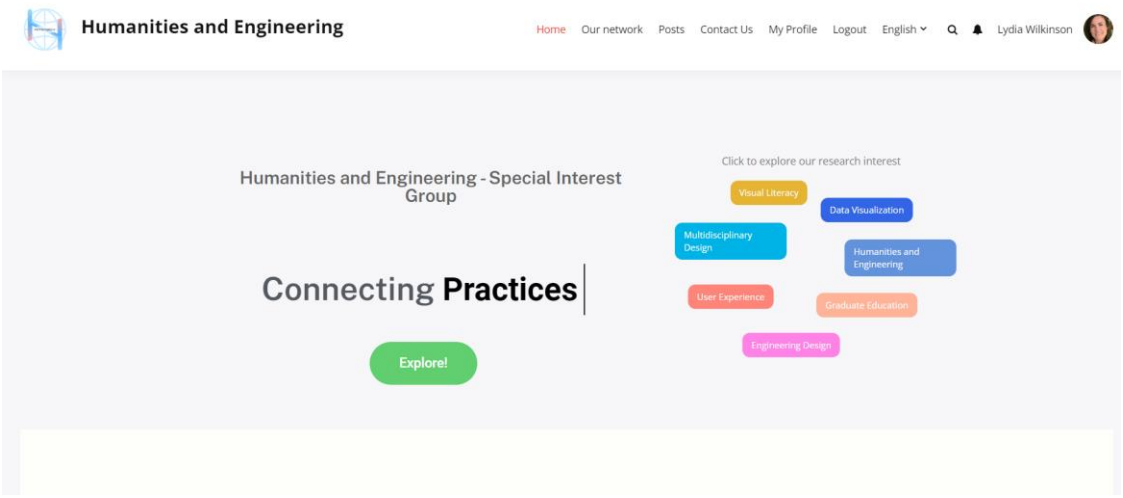

Fig 8 Home Page of Website

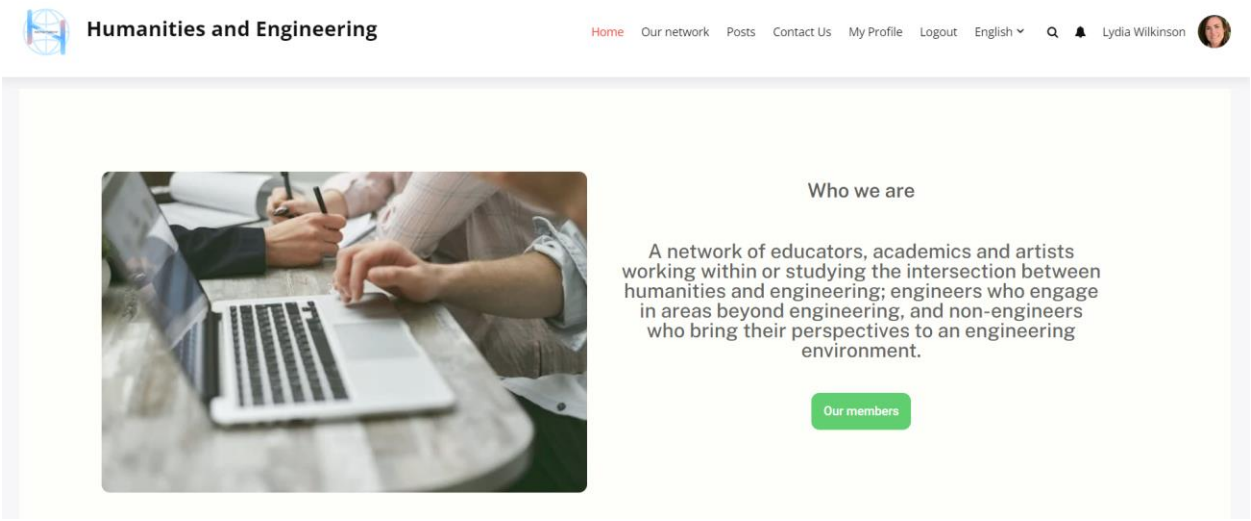

Fig 9 About SIG

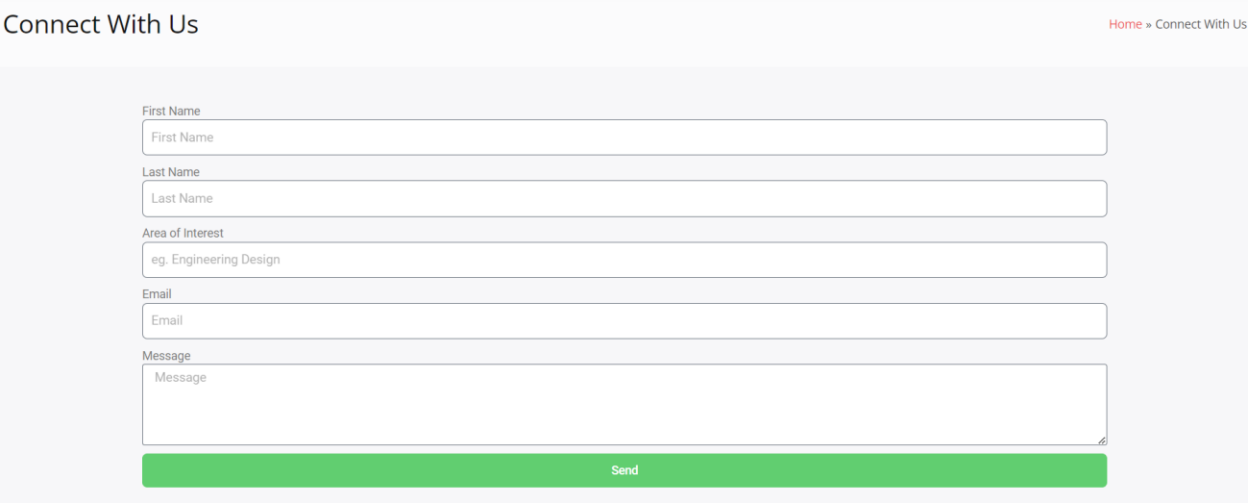

Fig 10 Contact Us

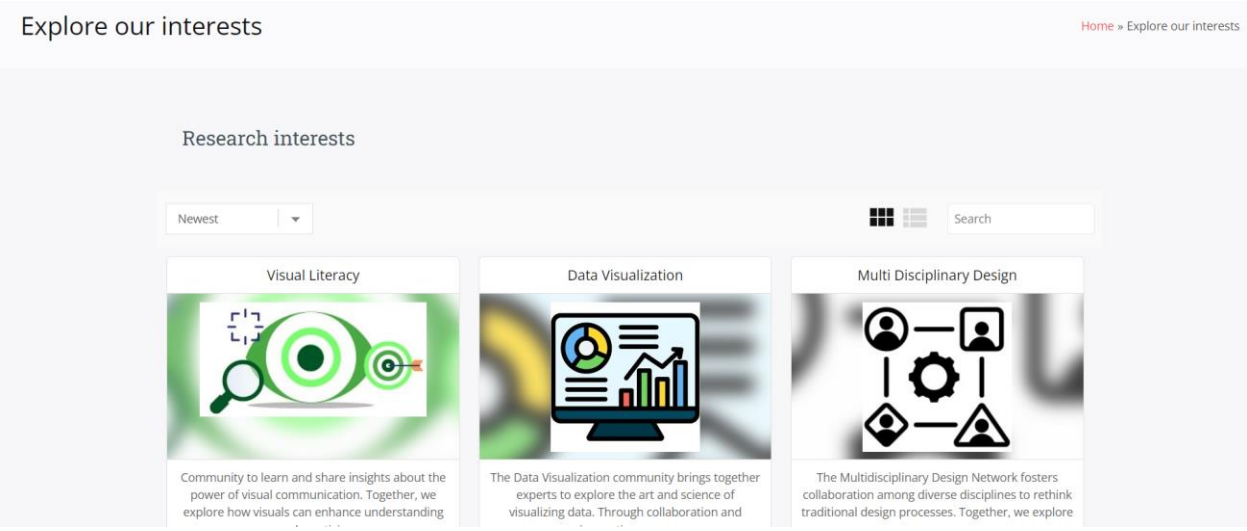

Fig 11 Explore Research Interests

Linking back to the prototypes we could make a similar kind of website design but kept the requirements in mind and designed accordingly with help of Plugins.

The Feedback which was given by the customers during the implementation phase helped us to explore more options and implement the updated design by creating similar research interests column, member profiles and expanding the connections. Here the customers' requirements are the priority and understanding the requirements and adapting the design accordingly is vital.

REFLECTIONS ON PROJECT RESULTS

How we felt about this project (likes/dislikes):

Firstly, the project allowed us to gain hands-on experience with what we learned in the class. We practically implemented brainstorming, affinity diagram and construct empathy mapping, fast feedback cycle, lo-fi and hi-fi prototyping as a team. Secondly, we have had a unique opportunity to interact with the clients directly which is a rare compared to other courses. We learnt how to communicate with a client and collect their feedback which has lifted our confidence in how to deal with clients. In addition, the project introduced us to tools and techniques used in the professional world. Before the class, we have zero knowledge of Figma and WordPress. According to WordPress, roughly 40% of the web is running on WordPress. Additionally, Figma is one of the leading prototyping tools so we are very pleased that we had the opportunity to learn both tools. In addition, StoriesOnBoard for producing MVPs, Mural for creating empathy mapping and Git hub for collaborating and making a repository of our project all are widely used in the professional world. As a result, we got a proper software engineering practice.

What went well during the project:

First, we were highly engaged with the project activity. We started with user requirement mapping, then constructed the empathy mapping and affinity diagram. Everyone made their part, and some innovative ideas were also produced by teammates which is beneficial as it provides a different dimension of thinking about design. This project introduced most group members to GitHub. Only one group member had experience using GitHub and now all the members have experience with that. The team worked with Figma and StoriesOnBoard smoothly. We collected the customer notes from each activity which enabled us to work within the agile methodology. Though WordPress is not a smooth experience at the initial stage, as we became more familiar with it, we were able to introduce more complex design elements gradually.

What did not go well during the project:

It was difficult to recreate all of the design elements that were included in the hi-fidelity prototype due to the highly restrictive plugins. We designed the features of the hi-fidelity prototype to reflect our design ideas for the website however, we did not take into consideration the restrictions that we would be working with when implementing WordPress plugins. Frist, we applied theme Divi and we failed to replicate our prototype as we aimed then we used BuddyX theme to create our final website. In addition, we were pleased with the functionality of Elementor for creating the homepage, network Map especially it allowed us to add custom codes for creating the wordcloud. We used Google Language Translator plugin to implement bilingual feature but it was showing Falg of Canada for the English language and the flag of France for the France language but customer did not like it. We explored the plugin Weglot for bilingual feature that solved the problem and finally it was showing English and French as text not as the flag of Canada and French.

How successful was our team in translating prototypes into WordPress reality?

We tried our best to implement what we created and presented in Figma. WordPress was new to everyone in the team and as a result, we faced some difficulties while transferring the Figma prototype into WordPress. We finally got it working with some limitations to the WordPress theme and plugins as per our proposed prototype. The plugins (Elementor pro, Weglot Translate, BuddyPress, Login/Signup Popup, ProfileGrid) were used in the final product.

Did we find that the people-centered design ideas discussed in lectures helped/hindered our design explorations?

People-centered design ideas made the team think differently with respect to design and the relationship between the customer and the designer. We found every design philosophy such as Affordances, Gestalt law, how to avoid mistakes and slips enabled us to design the project in a clean and simple but usable way. We got to know about customer-designer interaction, information gathering, iterative feedback cycle and NorthStar and Carry Over customers. Implementing Don

Norman's psychology of how people think, react and act when using technology. We learned a lot about Affinity Diagramming, Low-Fidelity and High-Fidelity prototypes and Empathy mapping. In addition, GitHub, MVP (minimum viable product) and user storyboard were introduced which are hugely used in the professional world. Overall, the class showed us how to deliver a project in a professional environment involving a real client.

What would we do the same for future projects?

We would follow the tools and techniques we learned in the class. As designers and engineers, it is crucial to remember that we must design for the user and not for ourselves. We can propose our ideas to the client and get their approval.

What would we do differently on future projects?

As we encountered limitations with WordPress functionality, it enriched our understanding of what is possible before working on prototypes. It will help us to design more realistic prototype. We will conduct usability testing of every feature before going to development.

Opportunities and design ideas for future work:

The project showed us why WordPress is the market leader in website building. A good designer can be a full-time web developer by knowing WordPress, HTML and CSS. A dynamic and fully responsive website can be easily made by WordPress quickly by selecting the correct theme and plugins. It makes development easier when a dynamic website with different functions is desired in a very short time. These are the clear opportunities we see in web development with WordPress. Additionally, for design ideas, we see Affordances, Gestalt law and simplicity are the best. Producing MVPs and getting customer’s feedback are the part of the design process will help us to stand out as engineers and designers.

Appendix: WordPress themes and plugins and custom code.

Word Press themes and plugins that we used in the design of the website are:

1. Buddy-X Theme: -

- ➔ The "Buddy X" theme is a popular WordPress theme designed specifically for creating online communities, social networking platforms, or membership-based websites. It's built to seamlessly integrate with BuddyPress Plugin, a powerful plugin for creating social networking functionality on WordPress sites.
- ➔ This is Theme was last updated on April 5 2024 and the current version is 4.6.7
- ➔ There is total 19 user ratings for this theme.
- ➔ There are More than 1000+ active installations for this theme.
- ➔ The theme is optimized to work with BuddyPress, which allows users to create profiles, connect with others, join groups, and interact within the community. The theme offers a range of customization options, allowing you to personalize the look and feel of your community website to match your brand or preferences. This includes custom color schemes, typography settings, and layout options. Buddy X is actively maintained and updated by its developers, ensuring compatibility with the latest versions of WordPress and plugins, as well as providing support to users through documentation, forums, or direct support channels.

2. BuddyPress Plugin: -

- ➔ BuddyPress is a powerful plugin for WordPress that enables you to create a social network or community site right within your WordPress installation. It's essentially a suite of components that add social networking features to your website.
- ➔ This Plugin was last updated on March 29 2024 and the current version is 12.4.0
- ➔ There are more than 100000+ active installations.
- ➔ There is total 365 user ratings.

➔ Similar to social media platforms, BuddyPress provides activity streams where users can see updates, posts, comments, and other activities from members of the community.

3. Profile Grid Plugin: -

➔ Profile Grid Plugin is a WordPress plugin that allows users to create customizable grids or galleries of user profiles on their website. This plugin is particularly useful for websites that feature multiple contributors, team members, or user-generated content.
➔ This Plugin was updated last on April 4 2024 and the current version is 5.8.3
➔ There are more than 7500+ active installations
➔ There is total 198 user reviews.
➔ Users can customize the layout of the profile grid, including the number of columns, spacing between profiles, and the overall appearance to match the design of their website. Users can define custom fields for each profile, such as name, bio, position/title, social media links, and more. This allows for flexibility in displaying relevant information about each profile. Profile Grid plugins offer user registration functionality, allowing visitors to sign up and create their own profiles. Users can then manage their profiles, update information, and upload profile pictures.
➔ Profile Grid plugins often integrate with other WordPress plugins, such as membership plugins or social media plugins, to enhance functionality and compatibility.
➔ Short-code Integration: Profile Grid plugins usually provide short-codes that users can insert into posts, pages, or widgets to display the profile grids wherever they want on their website.
➔ Overall, Profile Grid Plugin offers a convenient solution for WordPress users to showcase and manage user profiles in an organized and visually appealing manner.

4. Elementor Plugin: -

➔ Elementor is a popular WordPress page builder plugin that allows users to create custom website designs without needing to know how to code.
➔ This plugin was last updated on 10 April 2024 and the current version is 3.20.4

- ➔ This Plugin has more than 5+ million active installations
- ➔ There are around 6500+ user reviews.
- ➔ Elementor comes with a vast library of pre-designed widgets and templates that users can customize to fit their needs. These widgets cover a wide range of functionalities, from basic elements like headings and paragraphs to advanced elements like pricing tables and testimonial sliders.
- ➔ Elementor is compatible with most WordPress themes, allowing users to integrate its page-building capabilities seamlessly into their existing websites. However, it also offers its own theme, Hello Theme, which is optimized for use with Elementor.
- ➔ Elementor empowers users to create professional-looking websites quickly and easily, making it a valuable tool for both beginners and experienced web designers alike.

5. Weglot Plugin: -

- ➔ Weglot is a Multi-Language Translator
- ➔ This plugin was last updated on 8 April 2024 and the current version is 4.2.6
- ➔ This Plugin has more than 60000+ installations.
- ➔ There are around 1500+ user ratings
- ➔ Weglot offers support for over 110 languages, allowing you to reach a wider audience. You can choose the languages you want to offer and Weglot will handle the rest.
- ➔ Weglot uses a combination of automatic translation and manual editing to ensure accuracy. The plugin automatically detects your website's content and provides machine translations, which you can then review and edit for better quality.

We have updated our word cloud using html CSS code which is listed below.

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<title>Adjusted Circular Word Cloud</title>
<style>
 .circle-container {
   position: relative;
   width: 300px; /* Keep compact size */
   height: 300px;
   border-radius: 50%;
   margin: 20px auto;
   background-color: #F7F7F9; /* Updated background color */
   overflow: visible; /* Ensure buttons are not cut off */
   display: flex;
   flex-direction: column;
   align-items: center;
   justify-content: center;
 }
```

```
.circle-container a {
  position: absolute;
  padding: 8px 12px;
  border-radius: 10px;
  display: flex;
  align-items: center;
  justify-content: center;
  color: #fff;
  text-decoration: none;
  transition: transform 0.3s ease;
  font-size: 12px; /* Adjusted for a better fit */
}
.circle-container a:hover {
  transform: scale(1.1);
}

/* Specific colors for each link */
.circle-container a.humanities { background-color: #6493de; }
.circle-container a.graduate { background-color: #FFB399; }
.circle-container a.design { background-color: #ff82e6; }
.circle-container a.experience { background-color: #ff857a; }
.circle-container a.multidisciplinary { background-color: #00B3E6; }
```

```
 .circle-container a.visual { background-color: #E6B333; }
 .circle-container a.data { background-color: #3366E6; }

 /* Adjusted central text */
 .instruction-text {
  position: absolute;
  top: 10px; /* Moved to top */
  width: 90%;
  text-align: center;
  font-size: 14px;
  color: grey; /* More visible color */
 }
</style>
</head>
<body>

<div class="circle-container">
 <div class="instruction-text">Click to explore our research interest</div>
<!-- Position links around the circle with actual URLs -->
 <a href="http://99.79.190.136/user-group-humanities-and-engineering/" target="_blank" class="humanities" style="transform: translate(-50%, -50%) rotate(0deg) translate(120px) rotate(0deg); top: 50%; left: 50%;">Humanities and Engineering</a>
```

<a href="http://99.79.190.136/user-group-graduate-education-2/" target="_blank" class="graduate" style="transform: translate(-50%, -50%) rotate(51.42deg) translate(120px) rotate(-51.42deg); top: 40%; left: 50%;">Graduate Education</a>

<a href="http://99.79.190.136/user-group-engineering-design-2/" target="_blank" class="design" style="transform: translate(-50%, -50%) rotate(102.84deg) translate(120px) rotate(-102.84deg); top: 50%; left: 50%;">Engineering Design</a>

<a href="http://99.79.190.136/user-group-user-experience-2/" target="_blank" class="experience" style="transform: translate(-50%, -50%) rotate(154.26deg) translate(120px) rotate(-154.26deg); top: 50%; left: 50%;">User Experience</a>

<a href="http://99.79.190.136/user-group-multi-disciplinary-design/" target="_blank" class="multidisciplinary" style="transform: translate(-50%, -50%) rotate(205.68deg) translate(120px) rotate(-205.68deg); top: 60%; left: 50%;">Multidisciplinary Design</a>

<a href="http://99.79.190.136/user-group-visual-literacy-2/" target="_blank" class="visual" style="transform: translate(-50%, -50%) rotate(257.1deg) translate(120px) rotate(-257.1deg); top: 60%; left: 40%;">Visual Literacy</a>

<a href="http://99.79.190.136/user-group-data-visualization-2/" target="_blank" class="data" style="transform: translate(-50%, -50%) rotate(308.52deg) translate(120px) rotate(-308.52deg); top: 60%; left: 50%;">Data Visualization</a>

</body>

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