

U-Collaborator

An interface for schedule building and group collaborations



CPSC 481 - Human Computer Interaction I

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Executive Summary

As students ourselves, at some during point our undergraduate degree we have all experienced obstacles in finding a suitable time for creating group meetings. We and other students have had to use multiple apps such as Whatsapp, Messenger, or Email to communicate and organize group meetings; physical calendars or virtual ones (such as Google Calendars) to schedule a group meeting; and the University of Calgary Library website to book a workroom. At the moment, at least three different apps are required in order to organise a group meeting at the University of Calgary. Hence, we were inspired to come up with a service that allows students to carry out all these different tasks on a single platform.

U-collaborator is a web application that provides a user-friendly interface for users to plan their personal schedule, and easily form groups for convenient collaboration with others. We adopted the UCD process to go about our designing and creating U-Collaborator:

Firstly, we identified our end-users and stakeholders as students and teaching staff at the University of Calgary. Using IDEO Method Cards, we conducted surveys, interviews and cognitive maps to aid us in the **Investigation** phase.

Based on the data we gathered, we started to move into the **Ideation** phase. We did a brainstorming session and everyone came up with sketches on how we thought U-Collaborator would look like. We also used an affinity diagram to help organise our thoughts and ideas.

After designing our system based on our research, we transitioned into the **Prototyping** phase. We came up with a storyboard to help plan what are the main features we would like to show, before proceeding to create our Lo-Fi prototype using Balsamiq. From there, we learnt what worked and what did not work. Taking that into consideration, we then moved on to work on our Hi-Fi prototype using Adobe XD.

As a part of the **Evaluation** phase, we sent our initial Hi-Fi Prototype to another group for a Heuristic Evaluation. Section 6 documents more about the Heuristic Evaluation findings. Thereafter, we made some notable changes to our Hi-Fi prototype after receiving and analysing the constructive feedback from the other group. Section 7 delves into more detail about the changes that were made.

Before concluding this report, we also address some of the improvements that can be made in future iterations of U-Collaborator. These include improvements to the functionalities and overall aesthetics to the system. More details on these points are discussed in Section 8.

1. Introduction

U-Collaborator is a group collaboration manager for students in the University of Calgary (UCalgary) to arrange collaborations with their peers. Users are able to sync their course schedules as well as personal calendars. Our system analyses the compatibility of the schedules of all members in a group and automatically highlights compatible time slots. This allows students to quickly arrange meetings with their peers, be it for group projects or study sessions. A UCalgary meeting space booking system is included, which facilitates the organisation of such meetings. This system has been developed as a web-app, optimized for a full browser experience. Overall, this app will help students at the University of Calgary to coordinate with each other.

2. Design Problem

The schedule of an average undergraduate student is usually very hectic. Our goal is to make collaborating with other students, especially in classes where group work is required, easy and efficient. We noticed that students within groups usually find it difficult to arrange common times for meetings. They often end up using several less efficient platforms for communicating, planning deliverables, and finding suitable times for group meetings. We challenged ourselves with the task of designing a platform that incorporated all those key features and other exciting ones in order to make our product user friendly and compatible with the average students needs.

3. End-user and stakeholders

The main stakeholders are the users of the system. They are primarily students, as well as Professors, and Teaching Assistants (TAs). The ultimate goal for the system is to make it easier and more efficient to find the most compatible meeting time among students and teaching staff. A minor but important stakeholder are the school's Information Technology Services. However, they are mostly just involved in the development of the system and not an intended end-user of U-Collaborator.

- **Students**

Students interact with the app by creating accounts, uploading their schedules, and joining groups. These groups are used to create a group compatibility schedule, with times during the day that most members will be able to meet being highlighted in green. Members can propose meeting times and book rooms directly through the system. Members can also communicate via the chat function. This makes it easier for the students to collaborate or discuss about their project as they would not have to switch between different platforms.

- **Professors/TAs**
Professors and TAs may want to interact with the app to schedule study sessions and crash courses for their students. They may also wish to manually create groups themselves to ensure students have a means of contacting each other. After user research, we found it was important to concentrate on the core features of group management, and so the professor and TA interactions have been re-evaluated to be implemented in future versions of the app.
- **Information Technology Services**
IT services would interact with the system to support the API required for booking spaces on campus. Their interaction with the system would be minimal beyond this.

4. User Research and Findings

For our initial investigation, we decided to include IDEO methods such as surveys, interviews and cognitive maps.

1. Surveys

We created a survey to be sent out to TAs and Professors. We chose this method because it will allow them to conveniently fill in their answers, especially since the teaching staff will be very busy.

2. Interviews

We also conducted interviews with students. We chose this method as a means to gather information on where students preferred to meet up with group members to study, and how such arrangements were made.

3. Cognitive Maps

Additionally, we asked our interviewees to draw a cognitive map. This will complement the interviews, as it will allow us to visualize the process our end user's currently go through in order to schedule a group session. It will also give us insights as to what the basic functional expectations of our system should be.

4.1 Survey with Teaching Staff

The result sheet has been automatically generated by google forms. Questions are in the top row, with responses in the following rows.

[The link to the Google Form](#)

[The link to the survey results](#)

4.1.1 Summary of Survey Results

We received survey responses from 5 people, composed of 3 TAs or student leaders and 2 professors. The two professors teach in the Department of Computer Science and the others are from various backgrounds. Only one respondent has held a crash course, while 80% of the people surveyed have held a review session outside of scheduled time. Of the people who hold review sessions, one only does so for special circumstances. Two people who have sessions outside of scheduled time ranked the difficulty of finding a time at a 3 on a scale of 1 to 5 (1 being easy, 5 being hard), while one person said it was very difficult, giving it a 5 out of 5 rating. Two respondents listed the varied schedules of students as the main difficulty in finding an appropriate time, while the other said that physics students generally have similar schedules, simplifying the process. These results show that there is a quantifiable problem which can be addressed.

A majority of people said they use a tool for finding a time slot to meet, and the tools are You-Can-Book-Me, a survey in D2L, and Doodle polls. These tools have various advantages and are quite distinct from each other. They can provide strong inspiration for features which we should include in our app to create an appealing interface to all users.

4.2 Interview with Students

Responses from the interviews have been loosely transcribed into a google document, which can be accessed [here](#).

4.2.1 Summary of Interview Results

We can gather from the interview results that most students would have to done group projects at least once during their time in university. In fact, most people find it hard to coordinate timings with their group mates, with one person indicating they are unsure of apps which can be used to coordinate. Lastly, all find it useful to be able to schedule and book a room through a single service.

4.3 Cognitive Map

[Link to the Cognitive Maps received](#)

4.3.1 Summary of Cognitive Map Results

From the responses we received, it seems like most people will coordinate timings in person after class or over social media and text. Students would also have to go to workroom booking system to book TFDL rooms. In short, students currently have to access many different platforms just to coordinate one meeting.

5. Design and Justification

Keeping in mind the results received from the user research and the lo-fi prototyping stage, we collectively decided that creating a group with a team contract, a chat feature, and the ability to link external calendars to the system were necessary in our design. This was to allow us to make a comprehensive system. Most of our designs are based on the fact that the aforementioned features are currently being used by students, but on different platforms. Hence, their combination gives our system an edge as it will allow users to access the various features they frequently use without needing to switch between platforms.

The team contract feature includes the following components: team expectations & consequences, goals, and key performance indicators. These fields were included due to the positive impact it could have on a group's morale. We classified adding a team contract as an optional novelty feature in the group creation process, as it is a feature that most people would not be familiar with.

Another key component of the group is the calendar feature. We decided that using a shade of green on time slots to signify common availability, and a shade of red on unavailable time slots within the group, would resonate with our end users.

The chat and the linking of external calendar features were considered as major features, mainly for familiarity purposes and to aid with the ease of the system. The chat feature includes the ability to send attachments, and draws heavily from familiar chat platforms such as Facebook and WhatsApp. Additionally, linking external calendars was included based on the fact that it is a basic feature in most scheduling applications. The system would be rendered unusable if it does not have the ability to synchronize it with other scheduling applications.

[Link to the Lo-Fi Prototype](#)

[Link to the Hi-Fi Prototype](#)

6. Heuristic Evaluation and Findings

Google Drive folder with all of the raw Heuristic Evaluations are available [here](#).
A document with the feedback sorted into priority bins can be found [here](#).

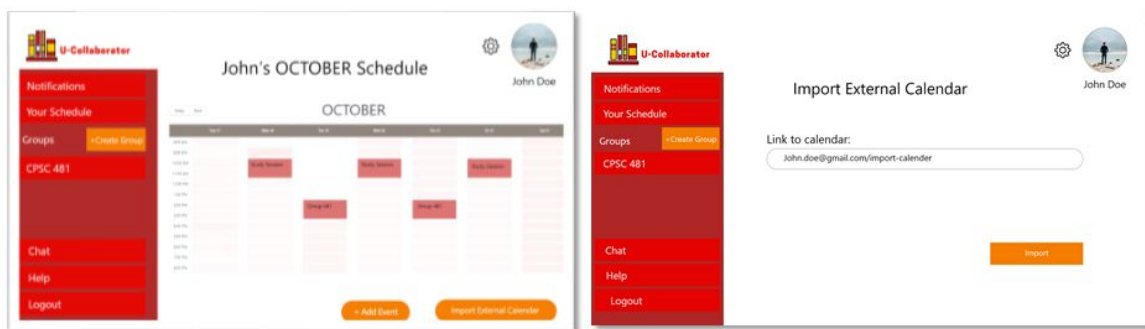
Overall, the feedback received from the Heuristic evaluations was constructive. Most of the criticism received were related to the aesthetics of the system, and consistency related issues. We identified several critical tasks and were able to implement them on the last iteration before the submission deadline. One of the aforementioned critical tasks was to add a link to the "Your Schedule" section. It was viewed as a must fix, because core functions such as adding an event, and linking external calendars revolve around a user's schedule. We also noticed the recurring theme of how the RSVP feature could be slightly disconnecting to a typical user as it is not a term they usually use.

In terms of positive feedback, we consistently heard that the system states were clear and intuitive, and appropriate titles were helpful as well. The system used clear and simple language, but at the same time it was specific enough so that their function was intuitive. We also heard that it was very easy to find your way back to a familiar location thanks to the static side menu that is always available. The help menus were thorough and the search seemed quite helpful. The lack of jargon also helped to keep the system accessible. Overall, the system interface seemed quite promising after a few fixes are put in place.

7. The design changes that you made based on the heuristic evaluation

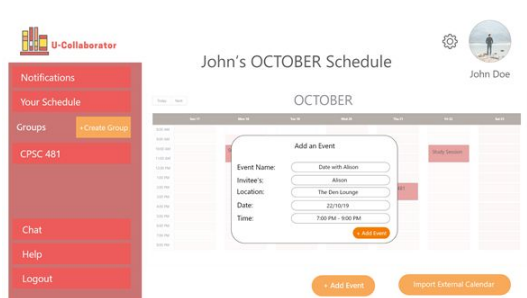
1. Included User's Personal Schedule and Ability to Import External Calendar

We implemented a page displaying the user's personal calendar, linking it to the "Your Schedule" button listed in the static side panel for easy accessibility. We also created an option for users to import their external calendars, which was one of our core features. By syncing their calendars together, this would enable the user to refer to all of their events conveniently in one platform.



2. Included Adding an Event

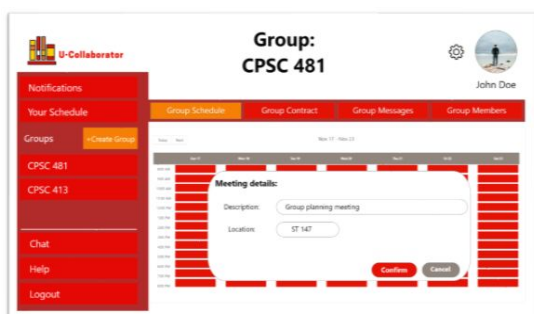
Building on top of the changes made to "Your Schedule", users can also directly add an event into their personal calendars. Adding this function will help the user to easily update their schedules accordingly whenever the need arises.



3. Included Meeting Details under Group Schedule

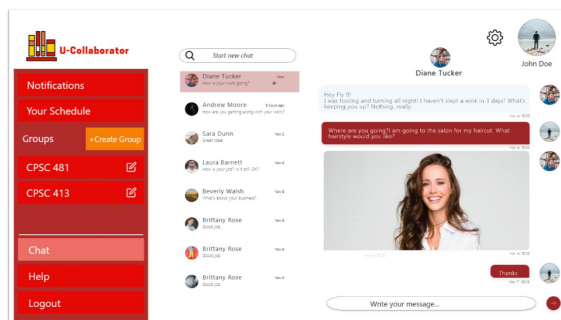
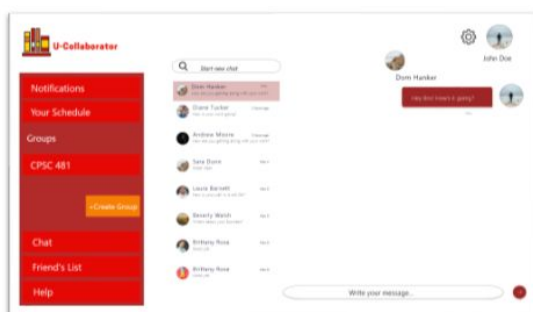
Initially, our platform would instantly send a notification to group members once one of

them proposed a meeting. We added another step for members to include meeting details, such as a brief description and specifying a location. Adding these details helps to increase the sophistication and level of realism of our platform.



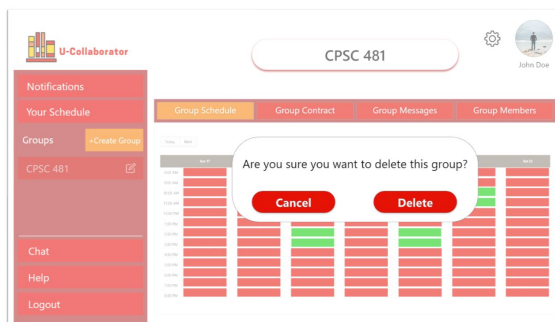
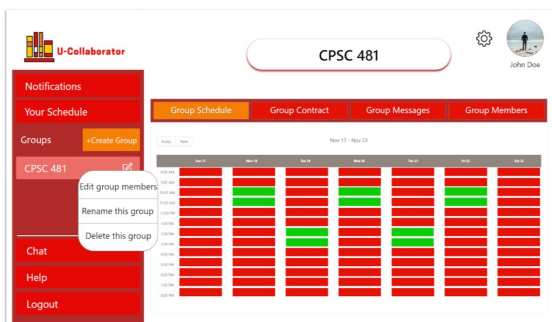
4. Revamped Side Panel

We also changed the design of the static side panel. "Friend's List" was removed as it was deemed to be redundant. A "Logout" button was added as well. The position of the "Create Group" button was also shifted above and we added a white line to make a clear distinction between the list of groups and other functions. We also changed the colour of the button if it is the page the user is currently on. This helps to improve the visibility of system status of U-Collaborator.



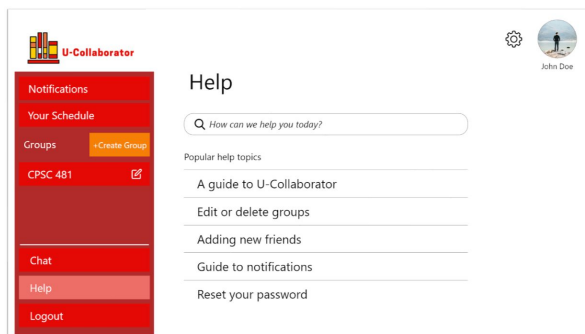
5. Edit

Additionally, we added an option for users to edit and delete a group. This helps to increase user control and freedom of the platform, as well as to help make it seem more realistic. Pop ups confirming whether the user does want to make changes have also been added as a measure to prevent the user from committing errors.

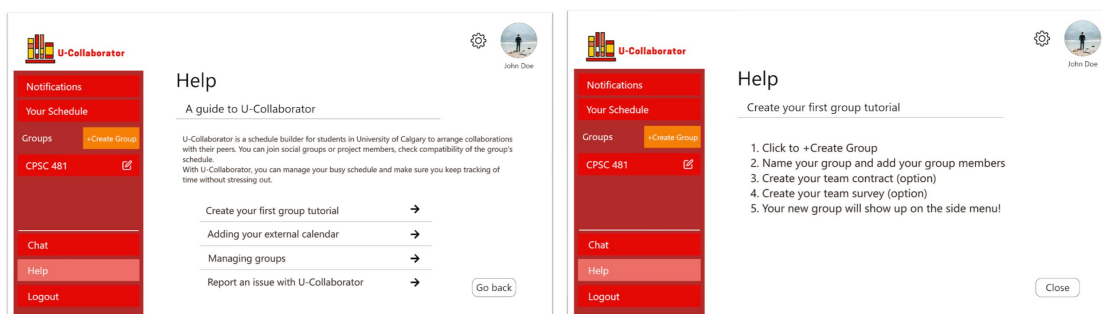


6. Revamped Help Page

The Help page has also been improved upon. Initially, we only displayed a static page:



We added more details and a clickable link to illustrate how the flow of exploring the Help page would be. For instance, clicking on “A guide to U-Collaborator” would redirect the user to the page below. Clicking on “Create your first group tutorial” will display the detailed instructions on how to do so.



Other slight details such as a “Go back” and “Close” button have also been added to increase the flexibility of the system.

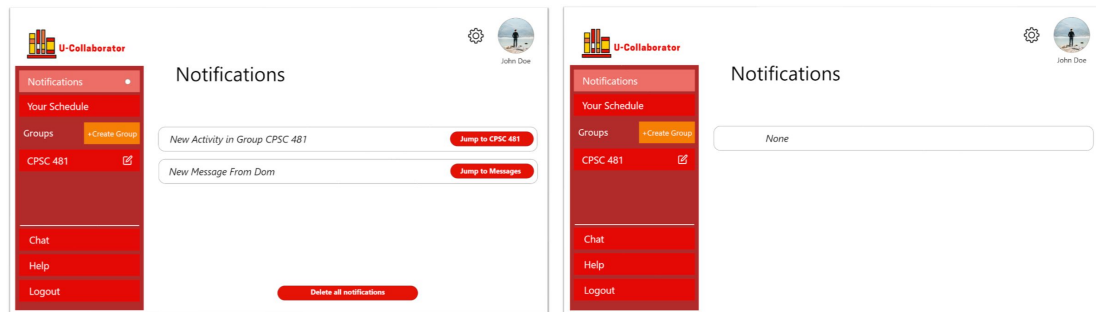
7. Slight Edits to Team Contract

We also edited the interface of the “Create Team Contract” page. The user creating a group now has an option to specify which members are assigned to which role. He can do so by choosing from a list of names of all group members that is displayed as a pop up. A “Go back” button has also been added to support user control and freedom of the platform.



8. Notifications

Lastly, we also made some modifications to the notifications of the system. The static side panel will display a white dot, that lets the user know when they have unread notifications. Plus, there is now an option available for users to clear all notifications at the bottom of the Notifications page. Clicking on it will clear all system notifications, as well as remove the white dot on the static side panel.



8. Recommendations for Next Iteration of Design

For further iterations of our design, we intend on improving the overall aesthetics of the system. For one, getting rid of the extra white spacing on the profile page would help to create a more inspiring look. Based on the heuristic evaluations we received, we also intend on changing the color schemes used to a more generic one. This will allow the system to be more compatible with other schools, should it be implemented on a bigger scale. We realized that we also did not take into consideration users who are colorblind. Hence, we intend to replace the colors red and green as well. The final cosmetic change we want to include is upgrading the message box in the Group Messages page so that user has a better experience.

We also intend on improving the functionality of the system. For starters, we want to include to include a Strike/Warning system. In the case a user breaks a rule in the Group Contract, the user will first be notified that he or she has violated the group contract. Furthermore, we will allow the users to remove harmful users via voting. One of our core values is to provide the best user experience we can offer, so we intend to work on the flow of the prototype to provide a superb and smooth experience.

Once we have included the cosmetic and functional changes, we intend on releasing a polished beta to non-computer science students, as well as extreme users who are not app savvy, in order to acquire a wider range of feedback. As soon as we obtain the said feedback, we will integrate all the necessary changes. Finally, we will examine the UCD process once more and move accordingly; ideally towards the Produce stage.

9. Conclusion

This report detailed our design journey of creating U-Collaborator - from investigating our end-users to implementing and testing our prototypes. Throughout the course of designing this platform, we went through four stages of the User-Centered Design (UCD) process:

1. **Investigate:** We conducted several user research via IDEO Methods. This includes conducting surveys, interviews and the use of cognitive maps. This allowed us to better understand our users' needs and wants.
2. **Ideate:** We brainstormed for ideas. Each member came up with a few sketches on how we envisioned U-Collaborator would look like.
3. **Prototype:** After brainstorming, we created a storyboard to illustrate the flow of how our system would work. We then used Balsamiq to create our Lo-Fi prototype. After determining what worked and what did not, we then progressed to build our Hi-Fi prototype using Adobe XD.
4. **Evaluate:** We swapped our hi-fi prototype with another team and they helped us conduct a Heuristic Evaluation on U-Collaborator. They gave us constructive feedback on how we could further improve the usability of our platform. We then improved on our Hi-Fi Prototype and came up with its second iteration.

Through this project, we learnt that design is an iterative process. We had to go through many rounds of iteration, especially when it came to the prototyping phase. We had to keep making improvements to the prototype after every round of feedback we received. Without a doubt, U-Collaborator still has much room for improvement in its future iterations of design, as listed in the *Recommendations for Next Iteration of Design* section.

In conclusion, U-Collaborator is a platform that allows students to better work together in teams. With core features such as comparing the compatibility of schedules among group members, U-Collaborator aims to reduce the hassle of coordinating team meetings for students and make group projects a less daunting experience for students in UCalgary. With various improvements made to the usability of the system with every iteration of the UCD design process, we are confident that U-Collaborator is a product that is useful and valuable to students of UCalgary.