OnCE

Once N' Done

Online Collaborative Environment

Team 2

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Executive Summary

IUPUI has number of undergraduates and graduate students working on team projects and assignments, which requires collaborative efforts from all the team members. Above all, the problems they face are scheduling and meeting, also many issues with document sharing and working collaboratively on single document. Our project addresses the problem with the scheduling meetings and the hassles of collaborative working among groups. Although the school offers various facilities such as collaborative study rooms which are equipped with large screen displays, whiteboards and high speed internet connection to allow the students to work in distraction free environment, they still face issues regarding managing the documents and have to move around to brainstorm on the whiteboard. We are planning to augment this experience with better connectivity, good and reliable cross platform tablet application with highly efficient services and features which will facilitate online collaborative work environment.

Introduction

Our application is focused on assisting study and project groups, to help them communicate and work collaboratively under one common platform. It will free them from relying on multiple services to communicate with each team members. Our application will allow the users to communicate and schedule meetings as per everyone's convenience and will also help them manage meeting locations. Timely reminders to check on everyday to-do list, facility to share screen and work simultaneously on one single document, which will allow them to scribble on their devices instead of using pencil and paper. Notification functionality will update users about any changes to the team activity.

Fieldwork setting

We planned to conduct contextual inquiry on groups in the UITS collaborative study rooms. The UITS rooms are equipped with large screen displays, whiteboards and table which will allow at least 3 people to work together. The large screen displays were connected to high speed internet and separate wireless access was provided to all the students on campus. The participants' usually preferred UITS study room since its located closer to the Einstein Bros Cafeteria and they can catch a quick bite and resume back to work.

We observed two study groups and one research project group, while the two study groups preferred meeting in UITS study rooms, the project group preferred AVL Lab which offers more advanced facilities and comfortable environment to move and discuss activities while moving around.

Data Collection and Analysis

Contextual inquiry sessions lasted approximately for 30 minutes on average. User actions were captured during the first three sessions. Based on this, we did brainstorming sessions, took notes, generated affinity diagrams and came up with individual work models (cultural, physical, artifact, flow and sequence model) for each session. From the individual work models, consolidated models were generated. Information flow and patterns from the consolidated work models were studied and we listed down the key issues and hot ideas which ultimately influenced our visions and storyboards.

Once visions and the storyboards were complete after several iterations, UED (User Environment Design) was designed to understand the flow of functionalities to be addressed in the prototype. UED helped us to identify the key places, functions and links between places. We developed a prototype based on the UED which helped us to address issues which never dawned on us before. After finalizing the UED, the low fidelity sketches were done for the application and after getting the clear picture, we started working on the high fidelity prototype. The final prototype was designed in PowerPoint and we conducted usability testing sessions with 3 users.

User Profiles

- College Students Study group
- Independent student study group
- People working in groups

User Scenarios

Scenario 1

Abdul is graduate student at IUPUI, he is 20 years old. He is from Computer Science major, for his Networking class they have a team project. Abdul is really confused how to schedule the meetings, until he finds the OnCE tablet application. Abdul wants to create a new team for his class project. He launches OnCE his new tablet application and then creates a new team. The application will then lead him through several fields where he has to enter the name of project, add email addresses of the team members and project description. Once done, the applications sends notification to his teammates.

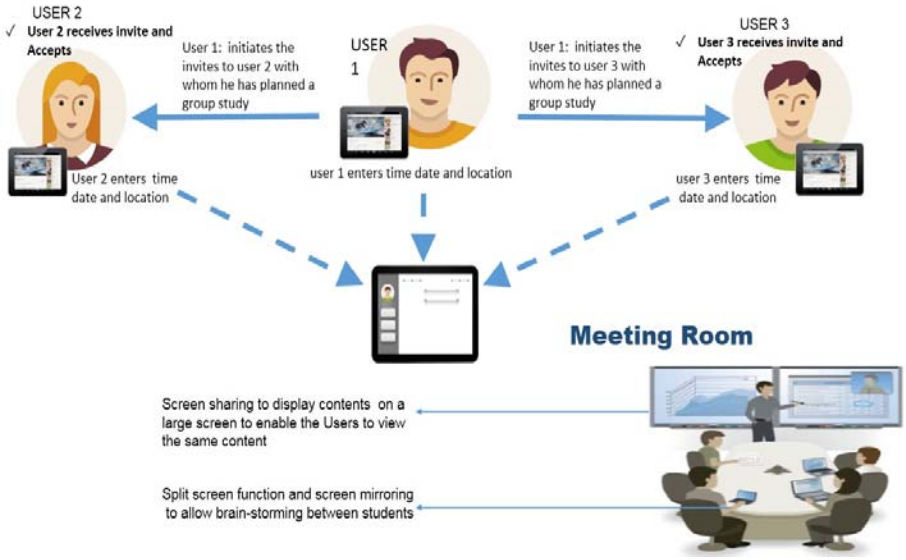
Scenario 2

Pankaj just got an invitation email from Abdul about signing up for the OnCE application. He also enrolled to the Computer Science course. As Pankaj reads through the invitation mail and creates an account on OnCE and saw that he already is member of team created by Abdul. He clicks on that team icon, see that there is functionality to schedule a meeting. So he clicks on that and enters the title, description, location and his suitable timings and adds the agenda for the meeting asked by the applications. Once he has done entering all the details, he clicks on schedule. This sends notification to his teammates.

Vision and Storyboards

Consolidated Vision

The consolidated vision is created from the individual visions, based on the data collected from the user study, activity models drawn and the breakdowns received in the various stages. Visions for "Study Group" consists of the two main phases, scheduling of meeting and meeting in progress. Scheduling is focussed on the planning of meeting with location, time preferences and agenda. Meeting in progress deals with the activities such as screen sharing (sharing screen on large screen display), and screen mirroring. With support to cross platform and all devices, application helps study group to achieve their goals. Below, is the consolidated vision (individual visions are listed in Appendix 1).

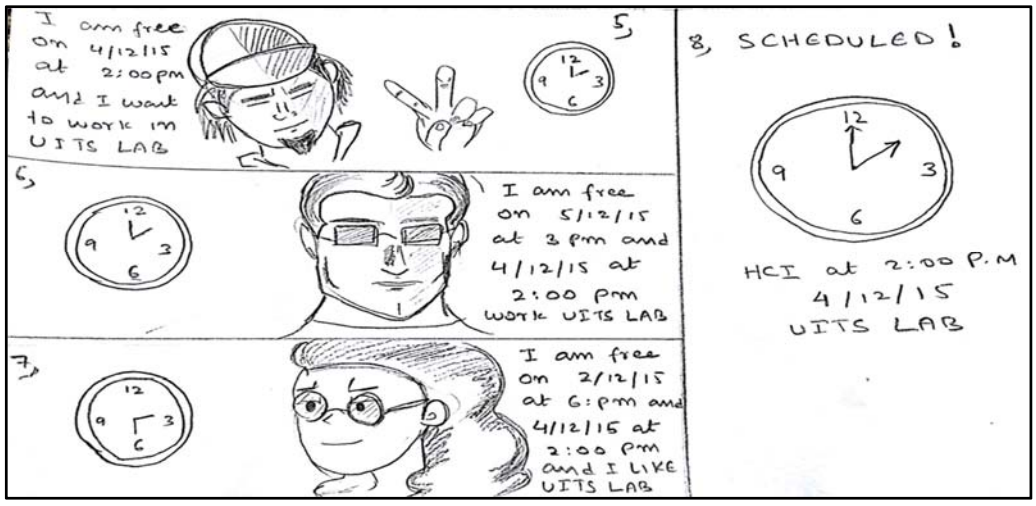


Storyboards

Storyboard 1: (Setting up the meeting)

The storyboard illustrates the first scenario which happens before the meeting can be scheduled. This storyboard shows how the application schedules a meeting. As we can see the users wants to schedule a group study meeting but is unaware of the others schedules and each team mates have their own time and day preferences. So one of the user takes the role of the scheduler and sends the application invite request to the rest of his team members but adding their respective e-mail ID's. The team members approve of the received invites.

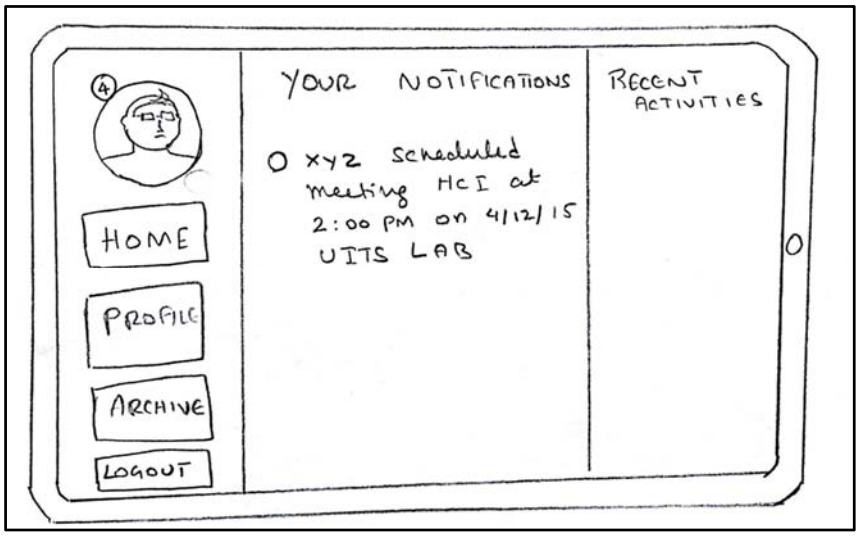
(1) (2)



(3)

Once the invites have been approved, the respective team members enter their desired dates and time and also specify their preferred location to conduct the meeting. The application analyses the entered preferences and suggests a time accordingly based on their free schedules

and location preferences. In the storyboard we can see that the only common date and time in which the users are available are at 2 pm on 4/12/15 and prefer the UITS lab. The meeting is set by the application!



(4)

The users also get notifications based on any updates or activities that has happened helping the users to be aware and be up to date on the activities or changes that have been made.

Storyboard 2: (During the meeting)

(5) (6)

This is the second storyboard and in this we explain the functionalities of the application inside the study room after the meeting has been scheduled. The Users have now met at the scheduled time and are now working on their projects inside the UITS lab.

The application offers many functions while doing a collaborative work. The application enables a screen sharing functionality which enables the device which runs the application locally to

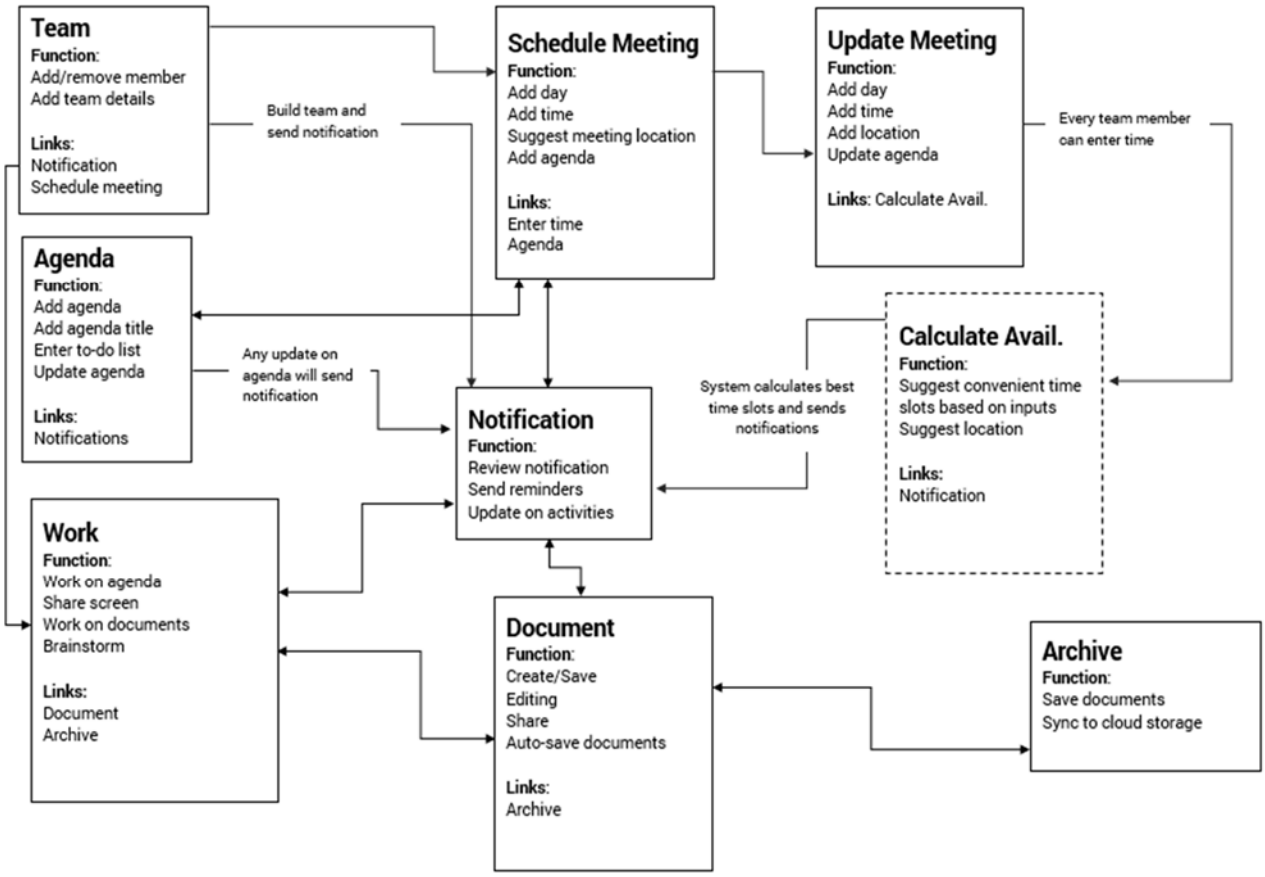
share the contents of the devices screen on to any large display present and accessible in the vicinity. We can see that one of the Users is using the function and displaying the contents on to the large screen so all the other team members can view the same content.

After working on the applications work space, the users can archive their work. The application also has an agenda page which stores the entered agenda of the users and can be edited and update also informs the users and helps them keep track about the accomplished goals as well as pending work which needs attention.

Conceptual Design

User Environment Design Model (UED)

The User Environment Design (UED) model was preferred since it was the best fit “Once”. It helped us in taking structural decisions based on the user work/activity. We started with our storyboard sequence and identified focus areas as described in the UED diagram is on the following page. Nine places (focus areas) were recognized where user can work. Each place is associated with functions and links. Function supports work in each place. Links allowed communications within the places. We used this model to build low fidelity prototype.



Highlights of the main places of the application are as follows:

Team

Teams has functionality of creating and managing a new team. Managing a team, which include add/remove members and enter details. Also team links to notifications and schedule a meeting.

Schedule Meeting

Schedule Meeting has main functionality of entering details about the scheduling a meeting. Schedule Meeting links to places such as Notifications, Enter Time, Calculate Availability and Agenda.

Update Meeting

Update meeting is subset of Schedule Meeting. It allows users to suggest and update the time, location and agenda based on individual's availability/preference. It links to system driven work place called Calculate Availability and Agenda and Notification.

Calculate Availability
Calculate Availability **i**s the only system driven place. Its main functionality is to calculate time and location based on the inputs by all the users. And it will send notifications to the users via Notification module.

Agenda
Agenda module has main functionality of agenda management task such as add, update and delete. Its and independent module related to Schedule and Update Meeting. Any changes made via agenda module will trigger a notification.

Notification
This module is heart of the application. Notification module handles the notification review, display and sending a notification to external entities such as email, text message. Most of the activities performed within the application trigger the functionality of notification module.

Work
Work is associated with in meeting functions such as Working on agenda, sharing screens, brainstorming and document management functionality. It's linked with Notification and Achieve module of the applications.

Document
Create, update, delete, auto save and sharing are the main functionalities of Document module. This module is part of work module and linked with archive and notification modules of the application.

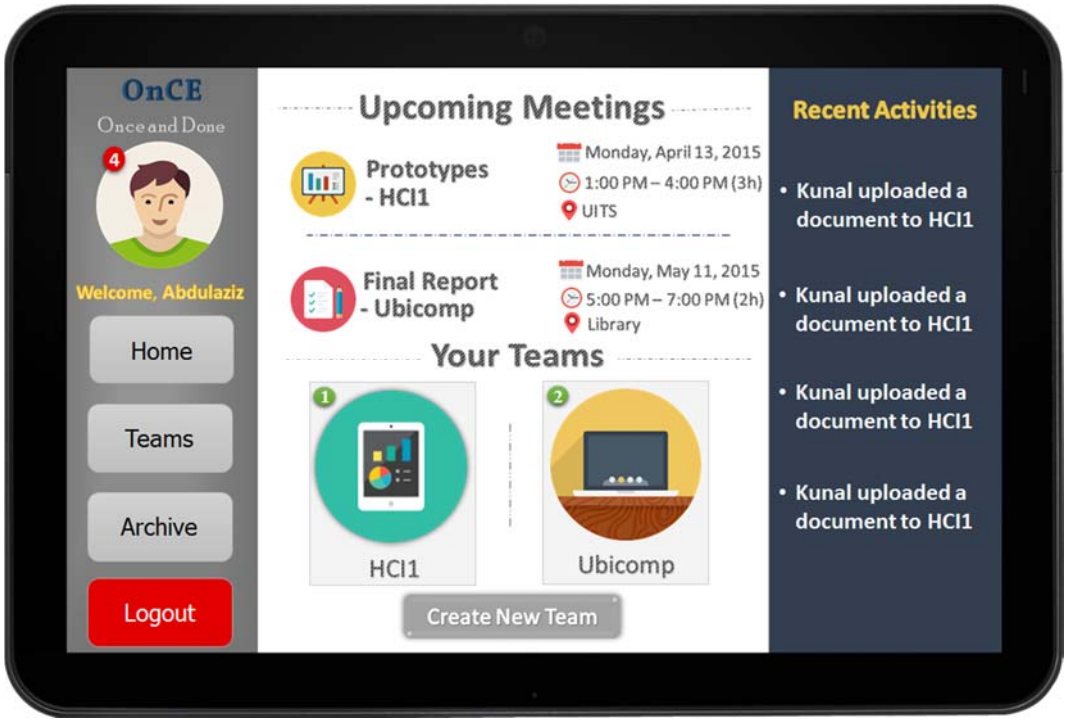
Archive
Archive has main functionality of save and syncing all the documents to the cloud. This module is part Document Module of the system and its not linked with any other module of the system

Overview of Prototype Operation

Prototype: https://iu.box.com/Team2Prototype

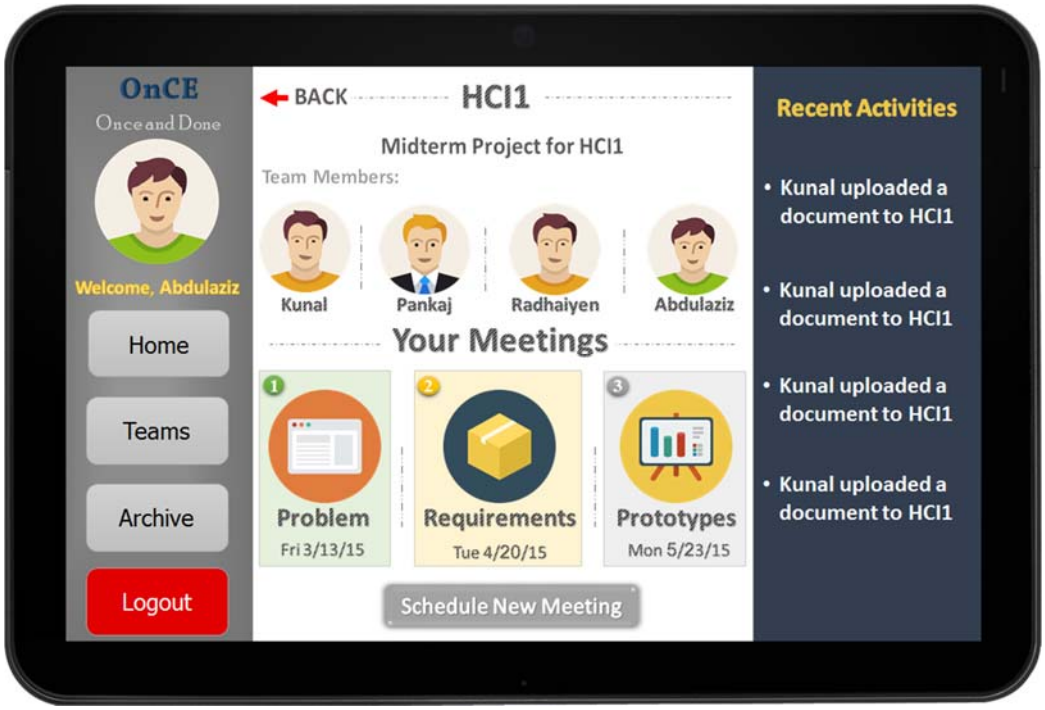
For our interactive prototype, we used Microsoft PowerPoint to demonstrate the functionalities of our table application (OnCE). We mainly focused on three primary functions,
(1) Creating a team space,
(2) Checking one of the weekly meetings,
(3) Scheduling a new meeting.

In team creation page, any member of the team can initiate that space and then add his team members. For checking a weekly meeting, a team member should enter to the team space and then look for that meeting under a section labeled “Your meetings”. Lastly, the process of scheduling a new meeting is straightforward, simply a team member will go to his team space and under “Your meetings” section, there is a button “Schedule new meeting” that allow team members to easily enter the meeting details, and then the application will notify the other team members.



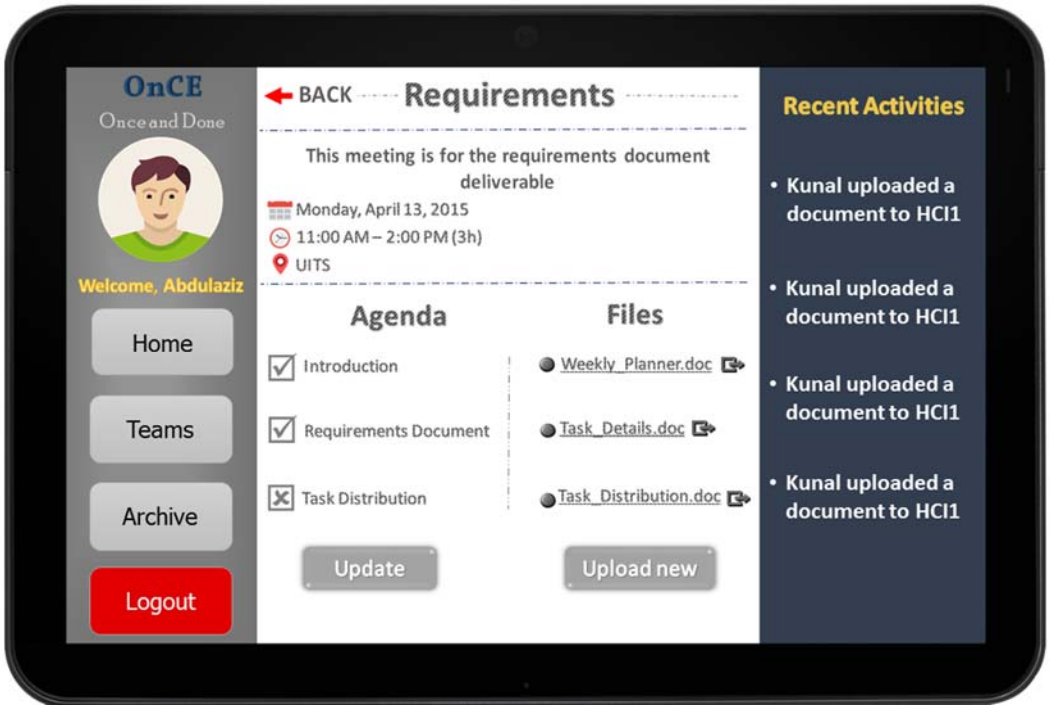
(1) Home Page

1- This is the home page of our application which shows the important information that users need to know at a glance when they login to the system. Upcoming Meetings are placed high priority in the home page since users want to know their next meetings (title, date, time, and location). Also home page provide users with quick links to teams’ page, archive, and notifications. Recent activities are displayed on the right side of the home page to easily identify latest updates and changes.



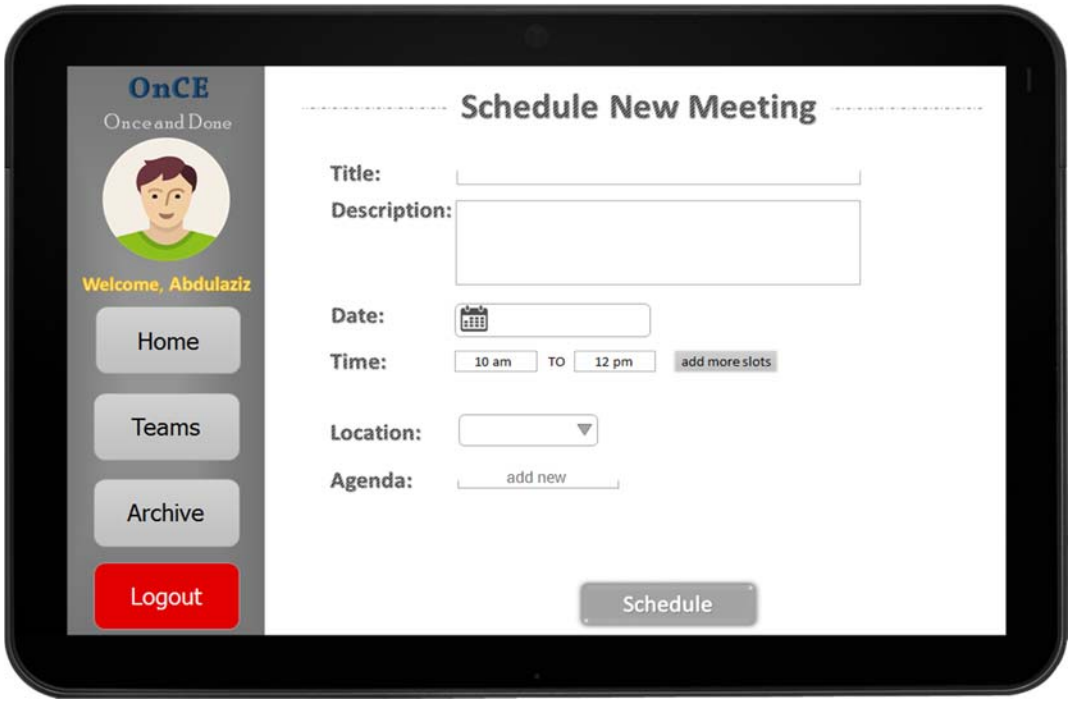
(2) Team Page

2- Team's page conveys the information needed for each team along with the details of each team member. One important section in the team page is the meetings section where users can easily access their project weekly meetings with color indication of the status of each meeting/deliverable (green = completed, yellow = in progress, gray = upcoming).



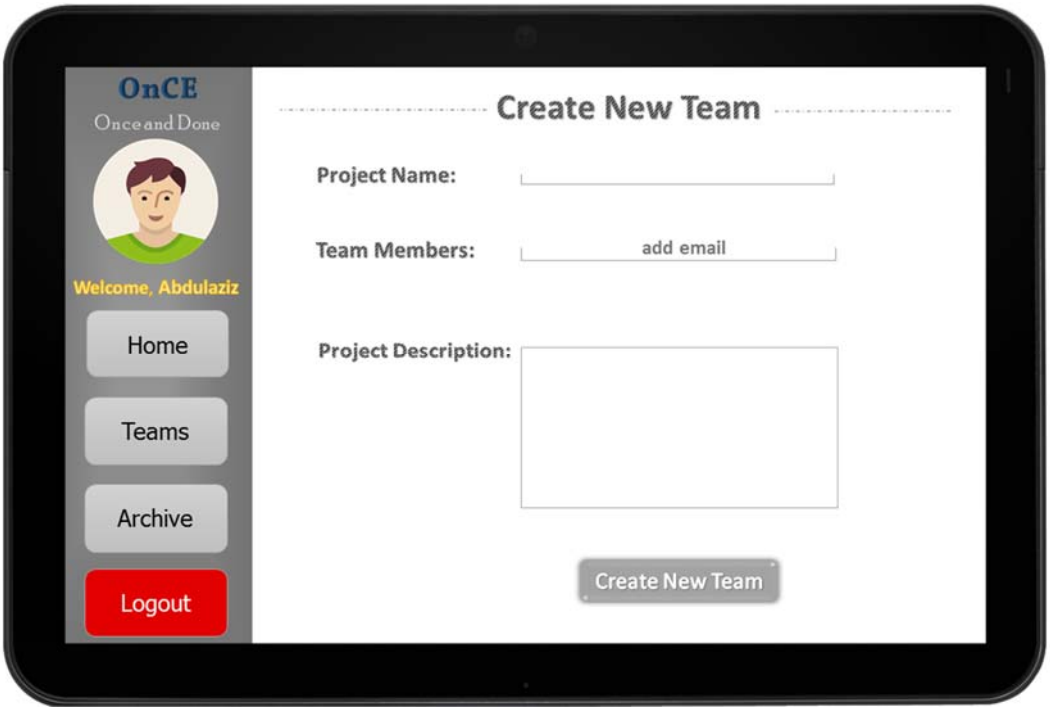
(3) Meeting Details Page

3- In this page users can find the details of each meeting, description, date, time and location. Agenda and files are accessible from this page where users can update the agenda items and also upload new files to their meeting space.



(4) Schedule New Meeting Page

4- One main feature of our application is scheduling new meeting which allows team members to set the plan for their next meeting by specifying meeting details such as description, date, time, location and agenda. When this form filled and sent, each team member will get a notification about that meeting.



(5) Create New Team Page

5- Creating a new team is the main functionality of our application which was developed to assist users in managing their project space by adding their team members and assign name and description for their team.

User Feedback

Demographics:

- All the users were graduates students at IUPUI
- Two from Mechanical and One from Informatics

Feedback Summary

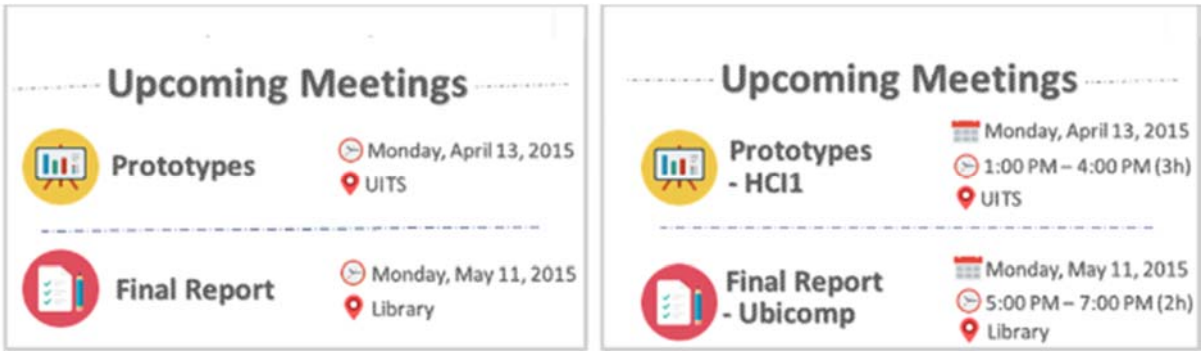
We conducted 3 user testing sessions, all the participants were the graduates of IUPUI, and two of them belonged from Mechanical and one from Informatics. The sessions didn't last for more than 10 minutes and we had decided the task prior to the testing sessions. The test plan consisted of three tasks to be performed during the session (check appendices). The participants were informed them *we are not testing you, we are testing the system and any bugs or*

issues, if encountered is not your fault but the system's fault. The application was well appreciated and participants did not face any issues during the session. Though the participants didn't face any issues, they suggested us few recommendations which will enhance the usability of the application.

Participant one, noticed that the time for the meetings is not shown in the 'Upcoming Meetings' section. In the 'Your Meetings' the meeting titles were confusing to the participant. In the 'Requirements' page, the 'Archive' section did not make sense to the user and he thought it was something different. Participant two, suggested putting milestones for the meetings view to allow users better understand the flow of the meetings. Finally, for scheduling a meeting, she preferred to have a field where can enter start and end time for her meeting instead for selecting from the list provided. Other than that, the participants, also said that a tutorial would be good for not so tech savvy people.

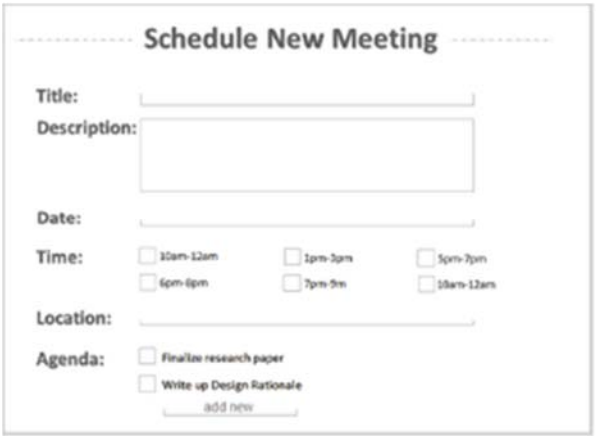
Based on the feedback we received and made changes to our final prototype, the highlights of the changes can be seen below.

1. **Time and Team details:** We added time and team details to the 'Upcoming Meetings' section based on the feedback we received.

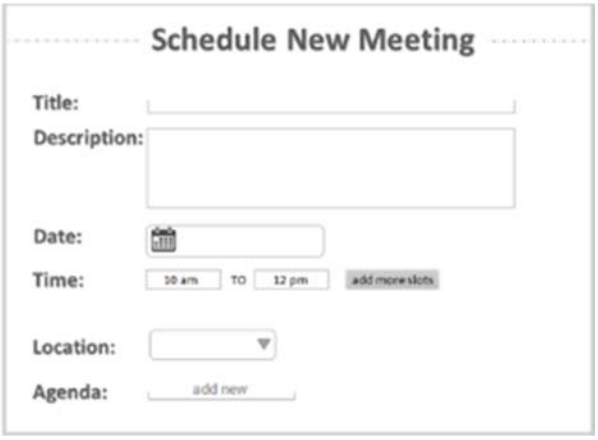


Before **After**

2. **Time Slots:** In the 'Schedule New Meeting' we removed the predefined time slots and provided user the more control so that, they can add time slots as per their convenience.



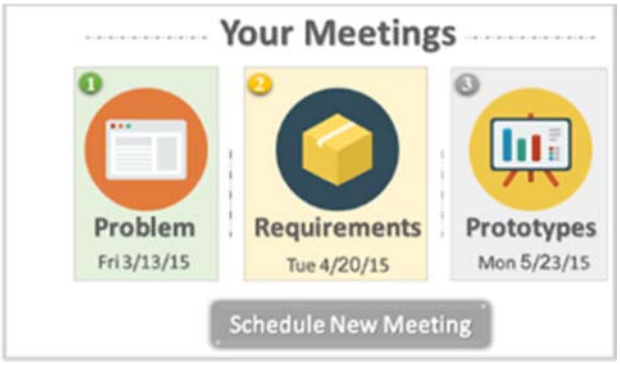
Before



After

3. **Milestones**: In the 'Your Meetings' section, we added milestones which and numbering, which makes it clear the sequence of the meetings and also we added dates for reference. The circular icons 'Green' signifies that the meeting is done and complete. 'Yellow' signifies that the work is in progress. 'Grey' signifies that that it's an upcoming meeting.

Before



After

Conclusion

Contextual Inquiry is a user-centered design ethnographic research method. We studied that it is the process of gathering information for the context of use, where researcher observes user closely while doing certain task. We understood that we should gather as much as data possible during the study. Project allowed us learn how to do the affinity analysis and generate work models based on the interviews.

We learned that study/project groups face lots of issues while scheduling group meetings and managing documents, also there are issues with file saving and sending updates about the

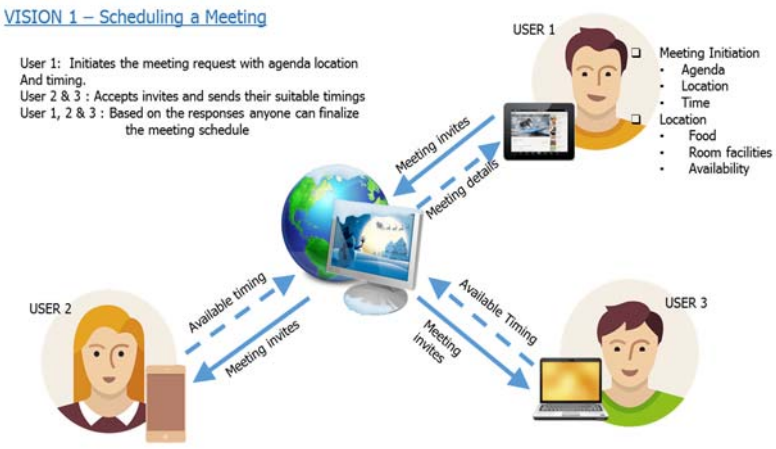
changes. We also learned that many students still prefer pen and pencil to brainstorm, even though there are multiple other source, traditional method works best for them.

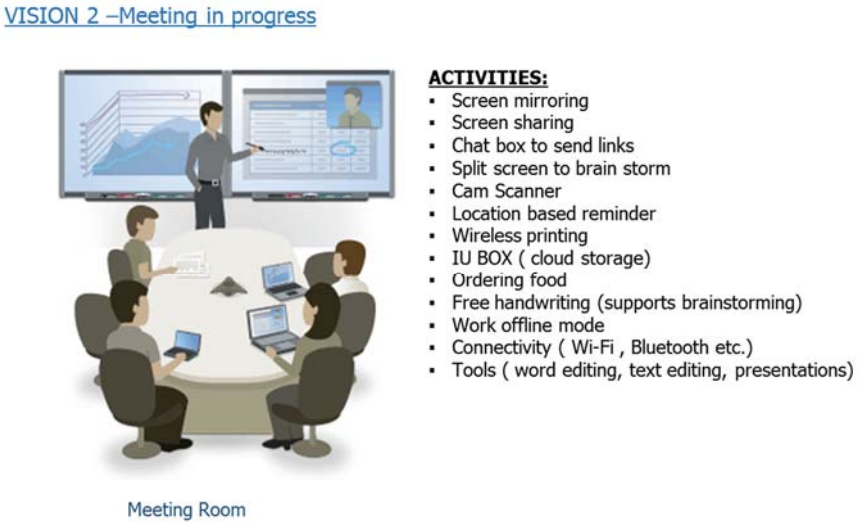
Future Scope

We are planning to extend this project and then build a fully functional application, where we can solve the problem and provide solution to the wider audience. It will not be limited to students groups, we are planning to target it for enterprises or businesses, our screen mirroring functionality will allow them to give presentation live from their tablet. We will try to incorporate the software development methodologies module in the system, so that for enterprise users it will be easy to continue with their current working culture e.g. agile, spiral development. We might have to conduct more contextual inquiries to get a deep understanding of the office setting and add-on to our existing functionality.

Appendices

Appendix 1: Individual Visions





Appendix 2: Usability Test Plan

Plan: We decided to allow the participant to explore the application for some time. Explain what the application does, in which scenarios it will be useful. Also, inform the user that we are testing the system not you, if anything goes wrong, it's the systems fault not yours.

Questions to be asked:

- What do you think about the UI design?
- What can you do to improve the application?

- Do you think the application will be useful?
- Were you able to navigate without any trouble?

Tasks:

1. Check your “Requirements” meeting in your “HCI1” team.
2. Create new team
3. Schedule new meeting.

Appendix 3: Individual User Feedback

User 1 Summary

I approached one user, who usually have several team meetings and have trouble scheduling meetings with his friends, I introduced him to our prototype and asked him to evaluate it. User was quite happy to evaluate the prototype. I informed the user that we are not testing you, we are testing the system and if anything goes wrong, it's the system's fault and that system might have bugs, so do not panic. The user acknowledged the information and was ready to evaluate the prototype.

I allowed him some time to understand the home screen and once when he was ready, I asked him to perform 3 tasks. The participant was able to perform the task without any trouble and he provided me with some quite insightful feedback on the prototype. Participant noticed that the time for the meetings is not shown in the 'Upcoming Meetings' section. Also, in the 'Your Meetings' the meeting titles were confusing to the participant. In the 'Requirements' page, the 'Archive' section did not make sense to the user and he thought it was something different. Overall, the participant didn't ran into any issues with the application and liked the concept.

User 2 Summary

I met with my participant in grad lab for almost half an hour to test the usability of our application. First, I explained the idea behind our application with the emphasis that the app still in a prototype stage so it will not function properly. While explaining the application, I demonstrated to my participant a couple of screens to allow her fully understand the functionalities of our app. Then, I asked her to perform three different tasks in order to test the usability of our app.

Overall, the participant liked the way that our app navigates from one page to another, also she liked the layout and user interface design. On the other hand, there were some wording issues that my participant noticed in “Your Meetings” and “Archive”, and she suggested coming up with more understandable words or phrases. Also the way the meetings are viewed in the meetings page was very confusing since each meeting was labeled by meeting title. She suggested putting milestones for the meetings view to allow users better understand the flow of the meetings. Finally, for scheduling a meeting, she preferred to have a field where can enter start and end time for her meeting instead for selecting from the list provided.

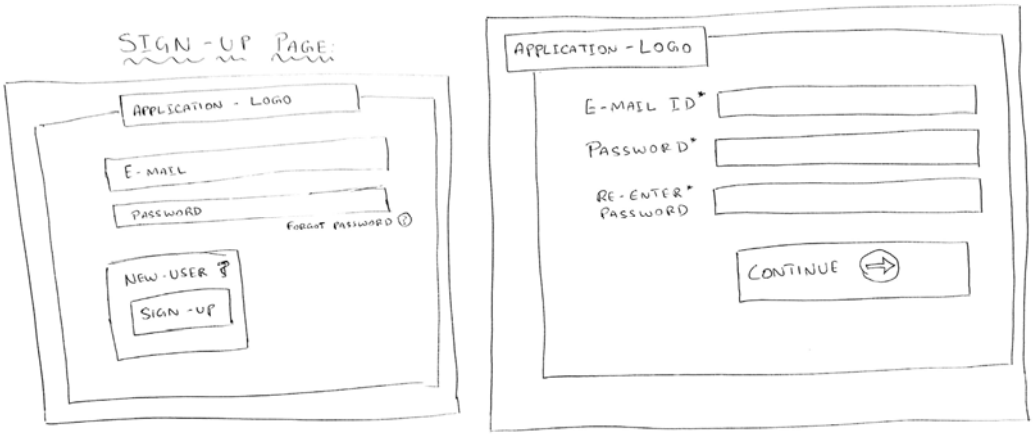
User 3 Summary

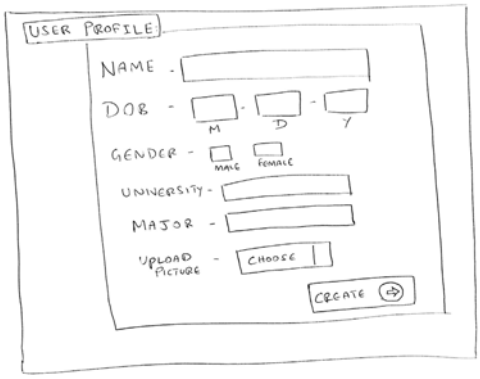
I scheduled a meeting with the participant to run a user test at the UITS lab. At first I explained about the application, its functionalities and briefly ran him through the user interface. And then I let him explore the prototype and asked him to perform certain tasks and asked for his feed backs later.

He said that the user interface is simple and effective and the color scheme was good. The layout is self-explanatory and User friendly.

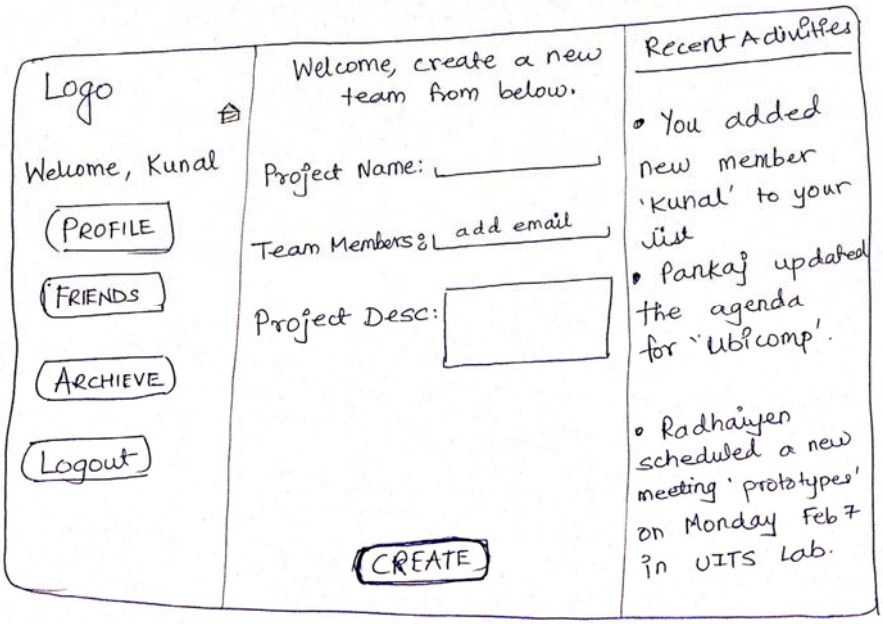
His comments on improvements were that the time details were missing and a field is needed to specify the meeting duration. He also requested fields to enter meeting notes or reports and suggested that a tutorial which will guide a first user through the process will be useful for the non-tech savvy users.

Appendix 4: Low Fidelity Prototype

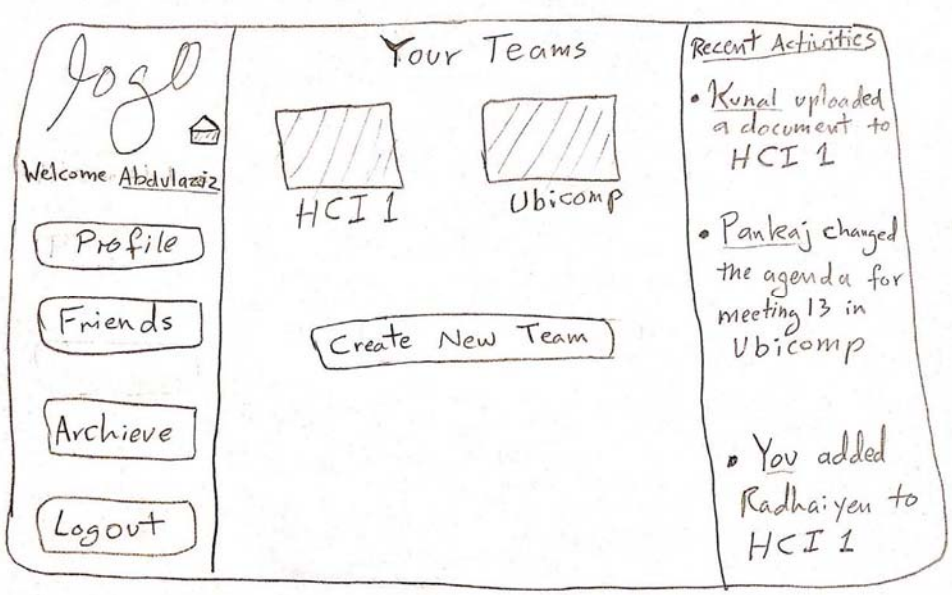




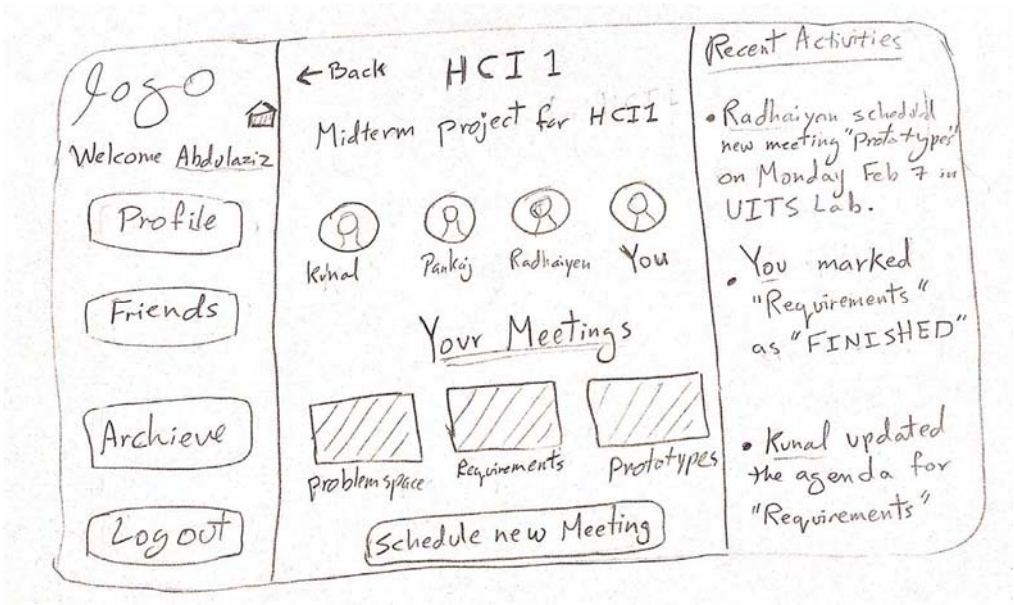
Sign in/sign up pages



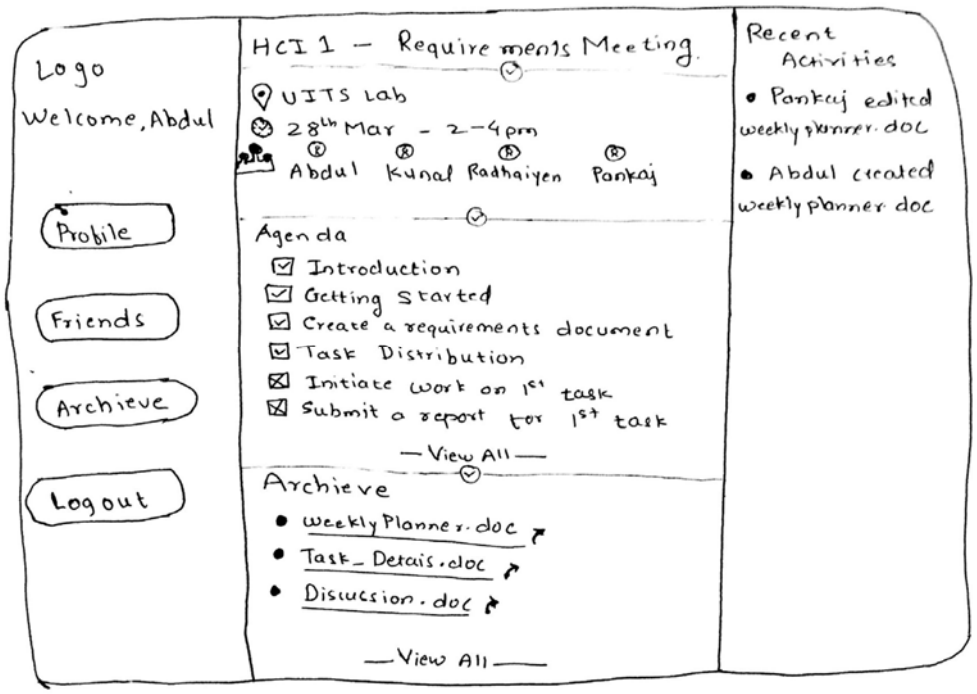
Create New Team Page



Teams Page

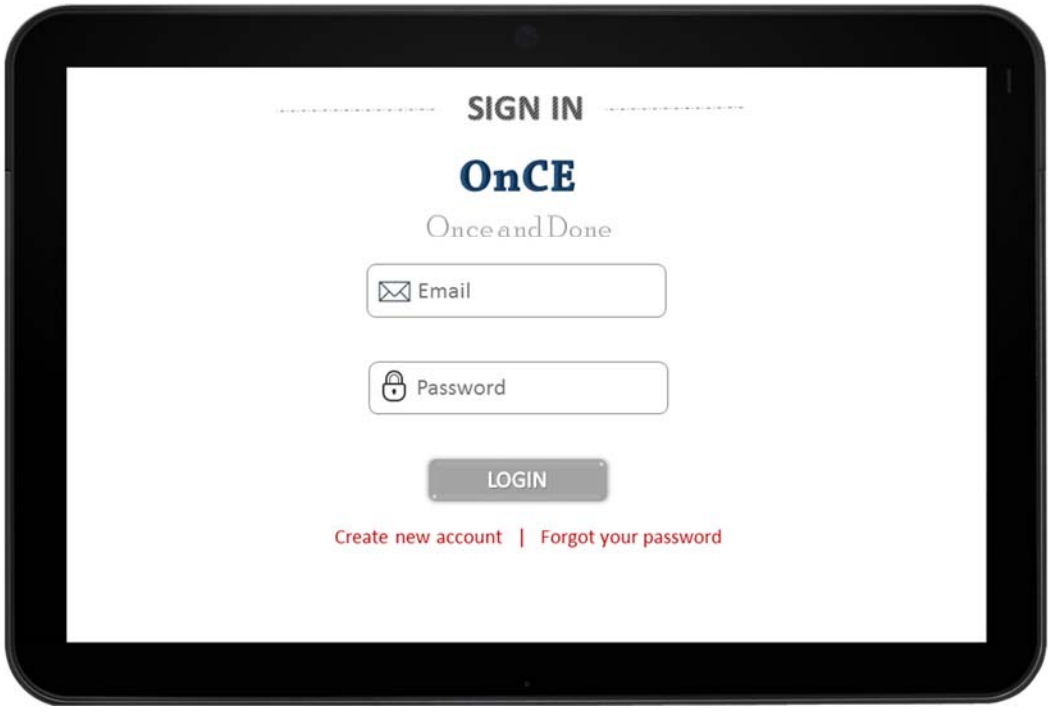


Team Page

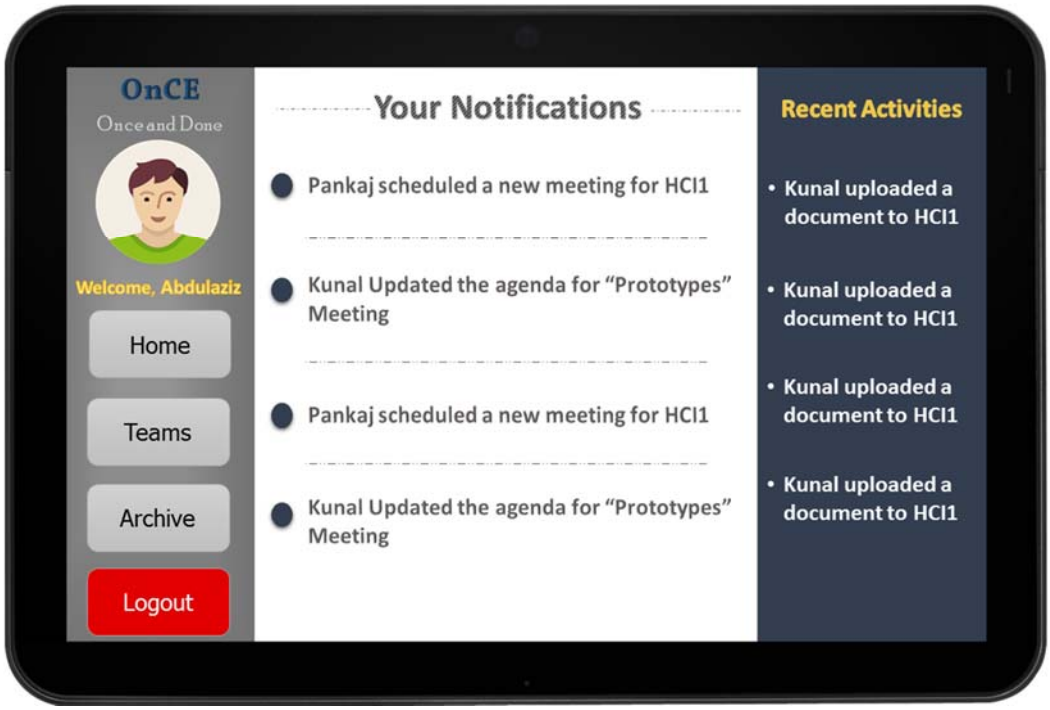


Meeting Page

Appendix 5: High Fidelity Prototype (additional screenshots)



Login Page



Notifications Page