



INFO90007 SOCIAL COMPUTING

Assignment 02, 2019

Designing a Social Computing System

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I. Introduction

Background

iCity is an application that is designed for events held by the City of Melbourne, specifically ones that have a targeted focus on the concept of crowdsourcing. The application is ideal for competition-based events, such as *idea-thons*, where ideas are gathered from a large number of people. In this design proposal, the iCity Innovation Competition will serve as the use case for our application.

Purpose of the Event and the iCity Application

The purpose of the event is to crowdsource innovative ideas from groups of participants, regarding topics with a clear community focus —such as education, sustainability. This crowdsourcing of ideas will be for the benefit of the entire community, as the City of Melbourne will be gaining ideas as to how they can use innovation towards societal improvement. Thus, a culture of innovation will be established within the city, and awareness regarding societal issues will also be invoked in the process. Another purpose of the event is for the City of Melbourne to build a stronger, more connected community —with an emphasis on the collaborative effort towards striving for the greater good. All these objectives are directly supported by the iCity application, which serves as a platform for participants to work collaboratively towards the creation of innovative ideas for the city.

During the competition, teams will collaborate on creating/refining ideas regarding social topics via iCity. The output will be a collection of crowdsourced video pitches which are meant to add value to the community. A voting process will be held towards the end of the event, with the purpose of choosing the most excellent video pitch. The winning video will gain recognition across print/online media, and this chosen idea will be implemented across the entire city.

Target Users

In this iCity Innovation Competition, the target users of the application — attendees —will be divided into two (based on their own preference): Participants and Voters. Participants are the ones who will be joining the competition itself. They will be actively working as part of a group, and will be contributing in the ideation and pitch-making process with their team.

Voters are the ones who are more inclined to take on a spectator role in the event. They are to simply engage in the event by watching, casting their votes, and expressing their views regarding the pitches.

Design Space

- **Crowdsourcing**

Over the years, the concept of open innovation has led organisations to crowdsource external ideas and resources to advance their technology, innovation, and capabilities (Zheng, et. al., 2011). According to Fuger et., al (2017), crowdsourcing is a way to include broad audiences in problem solving, establishing communities, and producing social innovation. Through crowdsourcing, individuals are engaged to share their ideas towards a common goal.

Our iCity application is based on the premise that meaningful ideas will be “crowdsourced” from event participants for the benefit of the city. In other words, the system will be used as a collective intellectual gathering tool for the betterment of the entire community. In doing so, common problems will be solved, communities will be established, and a culture of social innovation will be weaved into the DNA of the city. Motivational factors and design features related to crowdsourcing will be discussed in the later sections.

- **Collocated**

To ensure the collocatedness of the application, main features (collaborative functions such as brainstorming and video editing tools) will strictly be available and usable within the venue premises via a virtual private network. To further reinforce this collocated design space, a Group PIN (valid only for the day, and will only be given in the event) will also be required to access the main features of the application (i.e., collaborative group features). There will be non-collocated elements alongside these collocated ones, but these will only be pertaining to the secondary functions of the application.

- **Synchronous**

The ability to support synchronous collaboration is one of the highlights of this application. This design space element is clearly evident in the main functions of the application — Brainstorming/Ideation and Video Editing. Even some secondary functions such as group profile page creation are also synchronous in nature. These features are synchronous because group members are able to work on these features at the same time. For instance, in our application’s video editing process, we’ve decided to put in place some features, such as uniquely coloured cursor markers for each group member, allowing group members to work

smoothly in conjunction with their peers. Specific details regarding these synchronous features will be discussed in the section.

II. Crowdsourcing Heuristics

- **Idealism (Purpose)**

Based on the purpose of our platform, we created a slogan ‘Better city, Better us’, and to implement a high degree of purpose visibility, we directly showcased our slogan in the front page, shaping the perceptions of users at the very start. This way, users will gain a better understanding of what iCity is all about.

According to Reiss (2004), idealism in a platform means encouraging selfless contributions for the improvement of society. iCity aims to encourage people to contribute whilst unifying their understanding of the community. By starting a socially-focused video pitch competition, and by providing users with the right tools to address pressing issues, the application is embodying idealism at its very core. This entire crowdsourcing activity, as made possible by the application itself will have a profound impact not only to the entire society, but also in social behaviours —influencing a more altruistic and selfless mindset among its people.

- **Virtual Copresence (Platform)**

In our application, Virtual Copresence exists in the form of our in-app **video gallery**. This virtual video wall is where submitted videos will collectively be displayed, along with information regarding the contributors of the uploaded videos. The features of the video gallery that clearly reflect this heuristic are as follows:

Real-time displaying and tagging of video submissions

Every time a video is submitted, the video gallery will be populated accordingly. Specifically, the latest videos to be submitted will be displayed at the top of the page, and will be tagged with an applicable time marker (e.g., “Submitted just now”).

By clearly seeing the latest contributions, users will understand how active people are in the platform, giving the impression that the application is a populated space and has sufficient critical mass. By seeing that videos are being submitted successively via the platform, users will be drawn to contribute their own videos as well. By adding more visibility to previous contributions, users are rewarded for their actions (i.e., video contributions). This serves as a key element in reinforcing good social behaviour, as this functionality visibly takes the role of motivating and inspiring users to make their own contributions.

Displaying contributor information

For every video submitted, contributor information (e.g., group name, picture) will be displayed. This proves that there is a populated presence of real users within the application. By providing the aforementioned user information, the platform will be able to create real **social proof**. This will provide authenticity regarding existing users which will inevitably encourage new users to contribute.

- **Motivators (Contribution)**

According to Kraut et. al (2011), encouraging participants to contribute to a platform is a common challenge. Thus, to make crowdsourcing more effective, Geiger et. al (2011) suggests the use of encouragement and retainment schemes (e.g., monetary rewards). In the case of iCity, the main motivators for crowdsourcing are the following: altruistic desires, instant gratification, societal awareness, recognition, personal achievement, and to a certain extent, enjoyment and monetary rewards.

The entire competition is a huge motivational factor in itself, as it provides participants the ability to contribute to society, while allowing them to build their innovation skills in the process. On a more specific level, showcasing video pitches via the Video Gallery is a motivation for users, as it is boosting one's self-worth and sense of achievement. Our application's brainstorming tool and video-editing tool are, on the other hand, motivating users by satisfying their desire for creativity.

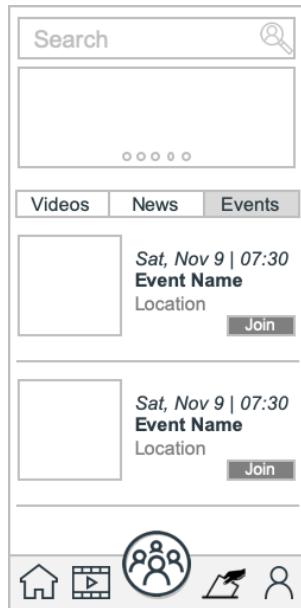
- **Monitoring (Moderation)**

Platforms should have moderators to guarantee a positive and healthy user environment (Kraut et al., 2011). In our application, although we do encourage as much contributions as possible to our platform, we will be exerting effort on controlling and monitoring social contributions. A critical regulatory process will be conducted by the moderator to supervise all videos before they are successfully uploaded to the platform. This way, a safe environment will be maintained, and there will also be a certain level of consistency regarding the quality of content uploaded to the application.

- **Events (Common Ground)**

In order to establish common ground and reinforce the purpose of Melbourne as a community, the iCity application will include an event functionality which will continuously churn out events that are meant to remind members about what their community is all about. Like the iCity Innovation Competition, several other community events will be featured from within the

application, and users will be given the ability to sign up to any event to their liking in just a click of a button. Because of the sheer simplicity of the event sign-up process, iCity eliminates the difficulty of registering for events, hence making it more likely for the community to get involved. By providing this functionality for events, iCity will serve as the community's go-to application, when they are looking to deepen their understanding and strengthen their connection with the rest of society.



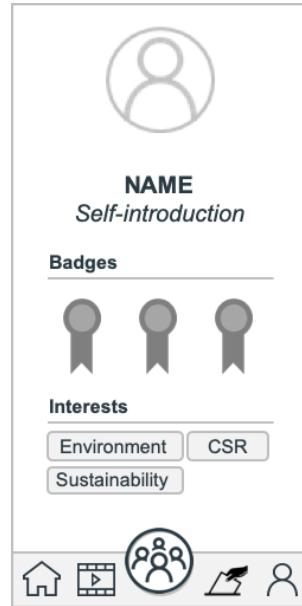
- **Self-Presentation (Members)**

Self-Presentation is evident in the **individual profile page functionality** of our application. Users of the application will be given an opportunity to present themselves, however way they want, to the community. By giving them the ability to create their own profile pages, users will be in control of how they want to be perceived by the online community.

Our application will be providing tools for users to present themselves in a personalised way. Via our platform, users will be able to display their own photo, their names, descriptions, etc. In addition to this, users will also have the option to display their achievement badges and personal interests.

By giving users the ability to display and customise their profile pages according to their liking, users will be able to develop their individual style and create their own social statement, as suggested by Campo et. al (2018). Having this profile page functionality will help users develop their own identity —which is a fundamental building block for long lasting communities. Furthermore, the functionality of being able to view other people's profiles and see their personal interests significantly helps in connecting application users. This will strengthen the

member base of the platform, and should translate to an increased level of member involvement.



III. Prototypes and Explanation

The functional structure of iCity is shown in Figure-01. The event flow is shown in Figure-02.

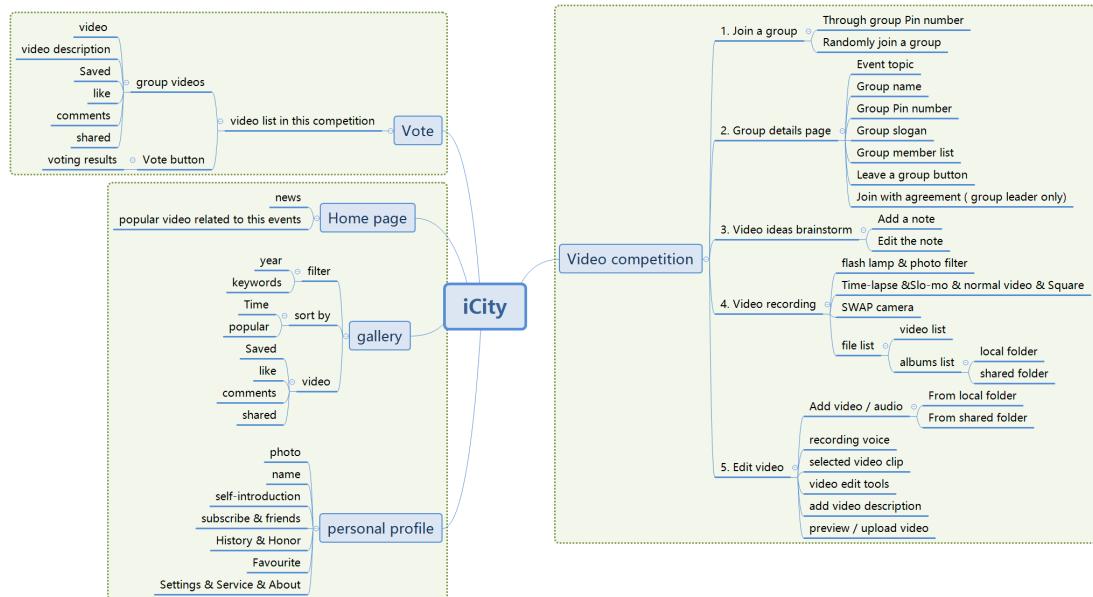


Figure-01: Functional Structure of iCity

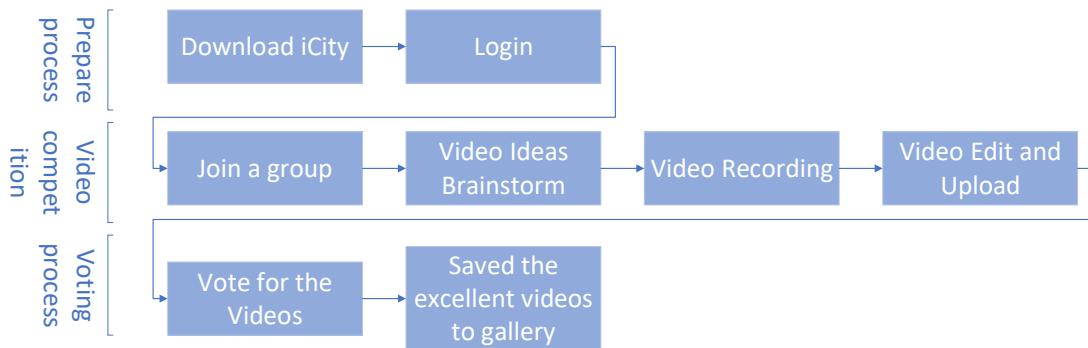


Figure-02: Event flow

Based on the functional structure, the event flow consists of two main functions: video competition and voting process. There are also secondary functions in our application which include personal profile pages, a video gallery, and a newsfeed.

2.2 Video competition

The video competition event will take place at the Melbourne Town Hall. In the whole duration of the event, the iCity application will be utilised. Via a VPN, the application's main functions will be restricted for use only within the Town Hall, during the timeframe of the event (**collocated**). In the competition, ideas will be crowdsourced from each participating group in video format (**crowdsourcing**). Each group will need to produce a video based on a given topic, within a strict timeframe. (Figure-03).

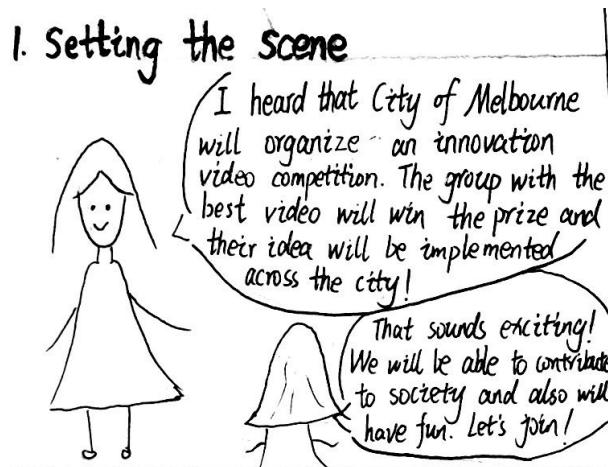


Figure-03: Storyboard-01_setting the scene

Preparation process

First, participants must download the iCity app into a mobile phone and login or register within the application (Figure-04).

2. Registration



Figure-04: Storyboard-02_registration

Once the participants open the application, the iCity slogan is displayed: "Better city, better us" (Figure-05_left). If this is the first time the user opens the application, a tutorial will be provided, illustrating the key functions of the application (Figure-05_middle). The next section will prompt the user to login/register with their social media accounts (Figure-05_right).

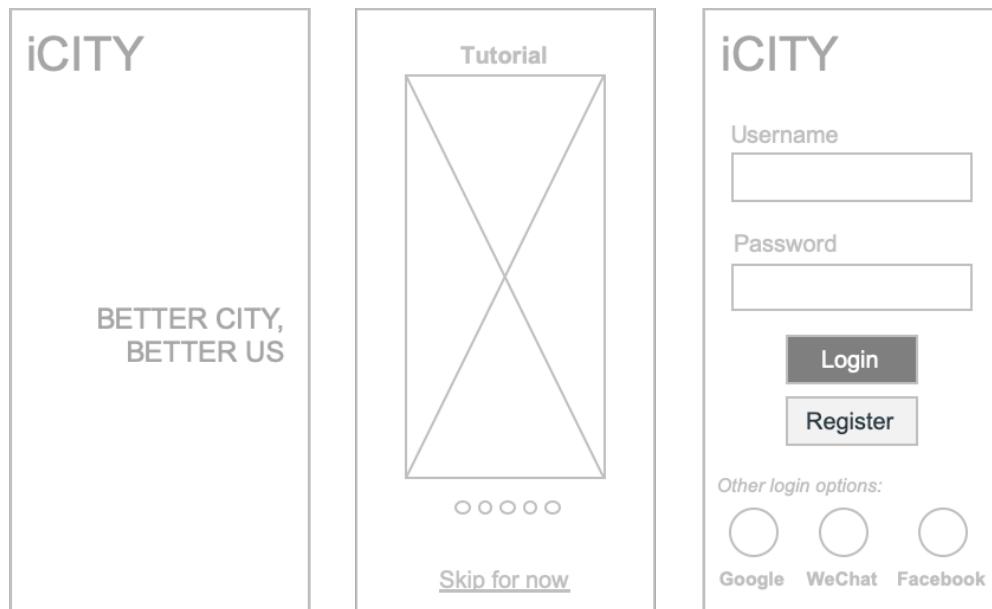


Figure-05: left-Slogan of iCity, ,middle-Teaching tutorial for users, right-Login and register.

Upon logging in, users will see iCity's homepage (Figure-06), this is further explained in **Section 2.3. Secondary Functions**. The middle button (now with a red circle) in the bottom menu bar will trigger a sequence of events pertaining to the main functions of the application (which are only collocated/ can only be used within the competition).

As soon as the button is pressed, users will be prompted to create/join a group, work on the group profile page, utilise the provided ideation tool, record themselves, and edit their video

pitches before submission. These aforementioned competition elements all have a specific time limit which upon ending, will automatically move the app to the next step, preventing the user from going to the previous step.

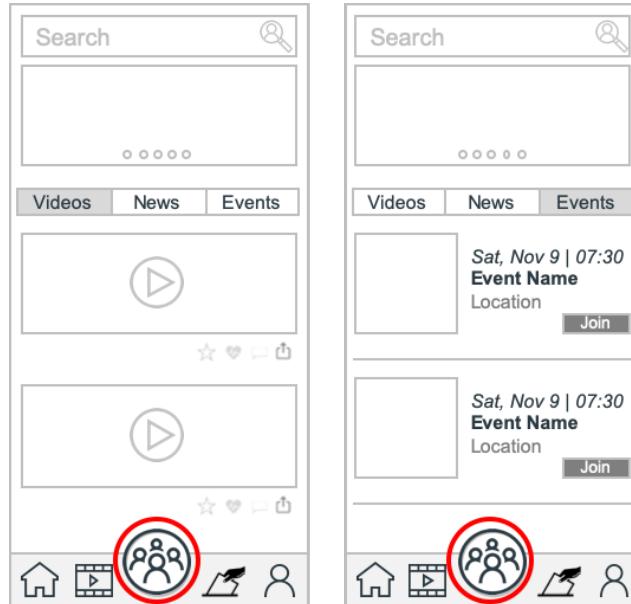


Figure-06: Homepage (displayed on screen)

Joining a group

Once the user is ready, the next step is to join a group. Participants must meet with their respective groups and update their group profile (Figure-07).



Figure-07: Storyboard-03_joining a group; Storyboard-04_group meeting; Storyboard-05_edit group profile

In Figure-08, the top-right corner shows a timer for the participants to join a group and the top-left corner is the button to return to the homepage (Figure-06).

To create/join a group all participants must be physically present at the event location. To create a group, all members need to enter the same pin code, which the group can decide on (Figure-08). Users can also choose to join a random group, automatically selected by the system. (**collocated**).

After a group is formed, the group's profile page can be viewed (Figure-09). This includes the topic of the events and the group's information (name, slogan, and member list). Users can use the "leave the group" button to leave and re-join another group.

Each group member's name is automatically assigned a unique color (unchangeable). In the same page, the group can decide on their name and slogan. If multiple members edit at the same time, their cursors are represented in the same color as their names, to indicate who is editing which part (**synchronous collaboration**).

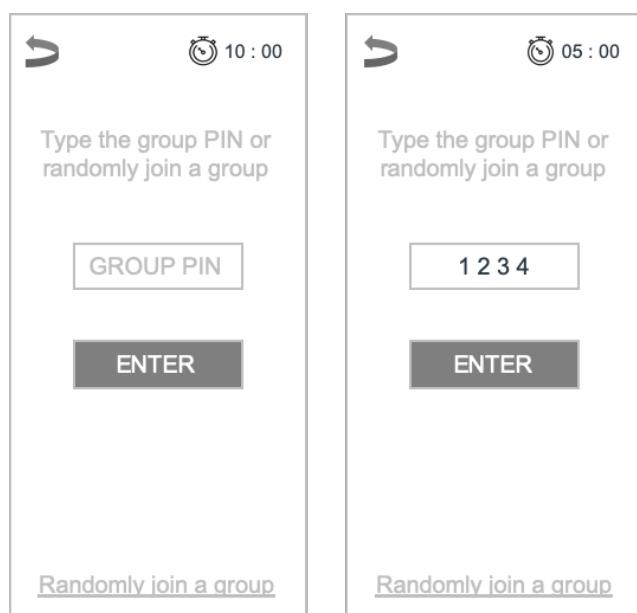


Figure-08: Joining a group

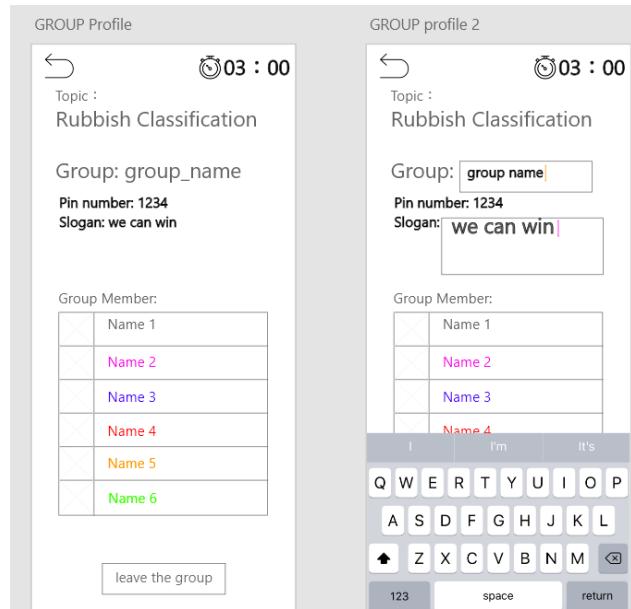


Figure-09: Group Profile

Brainstorming process

Once the competition begins, 15 minutes is allotted for the group to generate ideas for their video (Figure-10). First, there is a tutorial showing how to use the tools in this step (Figure-11_left). Like the previous steps, the timer and return-to-homepage button are at the top.

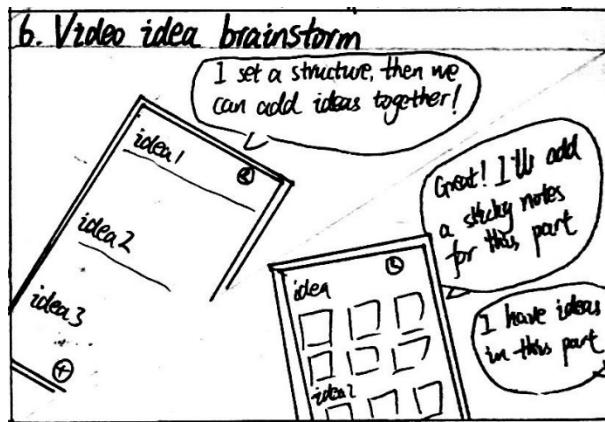


Figure-10: storyboard-06_Video idea brainstorm

The brainstorming interface is designed with reference to a whiteboard and sticky notes (Figure-11_middle/right). Users can add sticky notes in different parts of the virtual application whiteboard. When clicked, the sticky notes are editable. As different coloured cursors represent different users, everyone in the group can edit notes at the same time (**synchronous collaboration**).

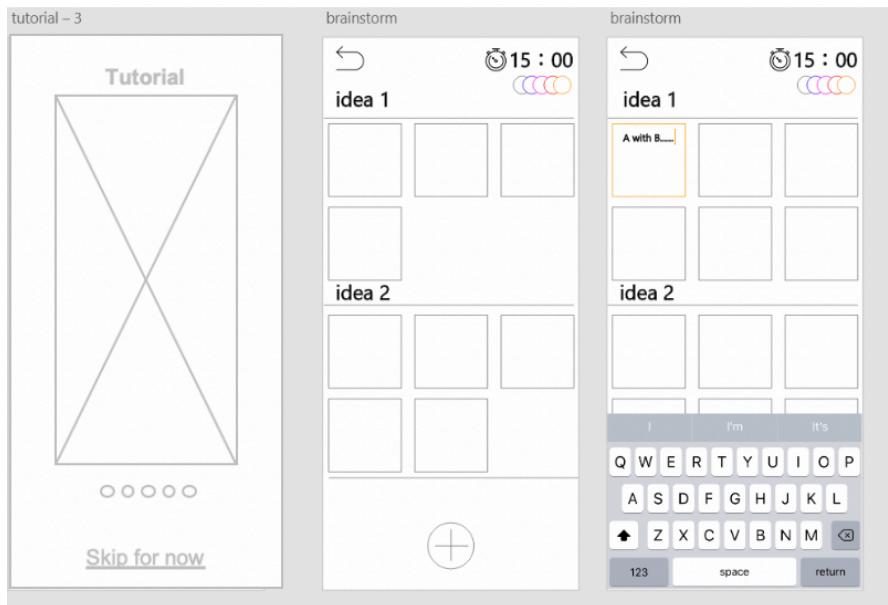


Figure-11: left-tutorial; middle/right-brainstorm whiteboard and sticky notes.

Video recording

After idea generation, participants need to use the application to record the videos within 1 hour (Figure-12). There is also a tutorial on recording and saving the video (Figure-13_picture-01).



Figure-12: Storyboard-07_Recording the video

Some basic functions of the camera on the video recording page (Figure-13_picture-02) include enabling flash, etc. After recording the video, users can click the bottom-left button on the video recording page (Figure-13_picture-02) and bring up the video list (Figure-13_picture-03) to review the recordings. All the videos are saved in the local folders which can only be seen by the participant. Participants can also choose to save the video into the shared folder, which can be seen by all group members (Figure-13_picture-04).

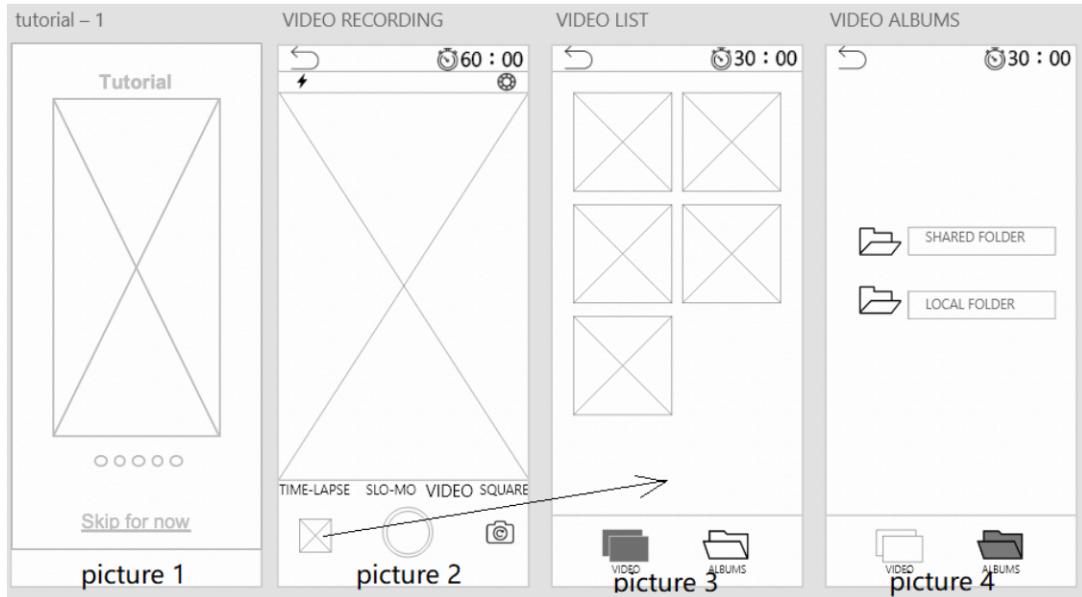


Figure-13: Picture-01_tutorial; Picture02_video recording; Picture-03_video list; Picture-04_video albums

Video editing process

The final part of the video competition is the video editing process. After which, each group will need to upload their video into the system. A large screen in the activity space will show the status of the event, such as how many groups finished and uploaded the video successfully. (Figure-14)

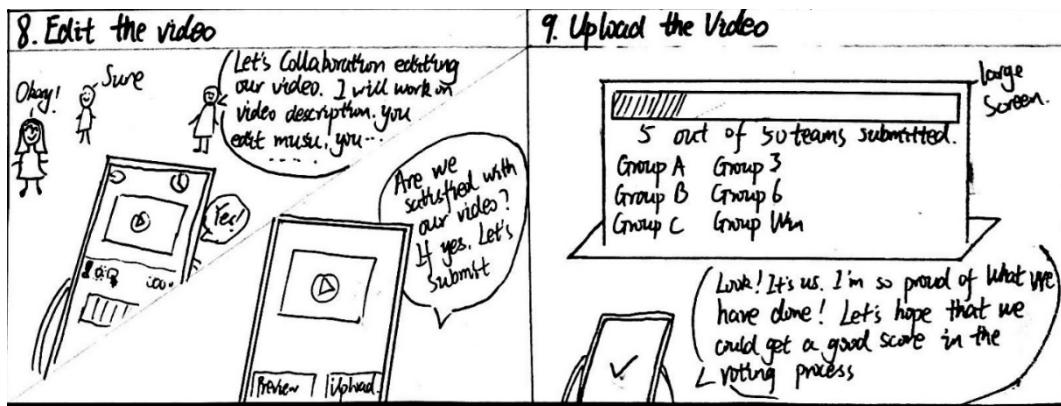


Figure-14: Storyboard-08_edit the video; Storyboard-09_upload the video

First, a tutorial is shown (Figure-15_left) and then it will change into the video editing page (Figure-15_right). The top of the video editing page has a return button and timer. In Figure-15_right, (1) is “adding a video or an audio (Figure-16)”; (2) is the editing tools: voice recording, select video fragment to edit, other editing tools and add description (Figure-17); (3) shows the photo of different participants, each framed in their own assigned colour; (4) contains the video images and audio which have been added into the workbench. The bottom of the page contains the preview and upload buttons.

During the video editing process, all participants in the same group can edit the video at the same time. To prevent conflicts, iCity uses different colours per group member. For example in Figure-17 (left), the purple square marks the range that one participant is editing while orange represents the range of another participant. If a fragment of a video has been selected by one group member, others cannot edit that fragment at the same time. Instead, they can select another fragment of the video to edit. In Figure-17 (right), while different people edit the description at the same time, cursors are marked in its user's colour. (**synchronous collaboration**). If the video or its description is being edited, the preview and upload buttons will not be available (Figure-17_left). These two buttons will only be available once all members have finished editing (Figure-15_right).

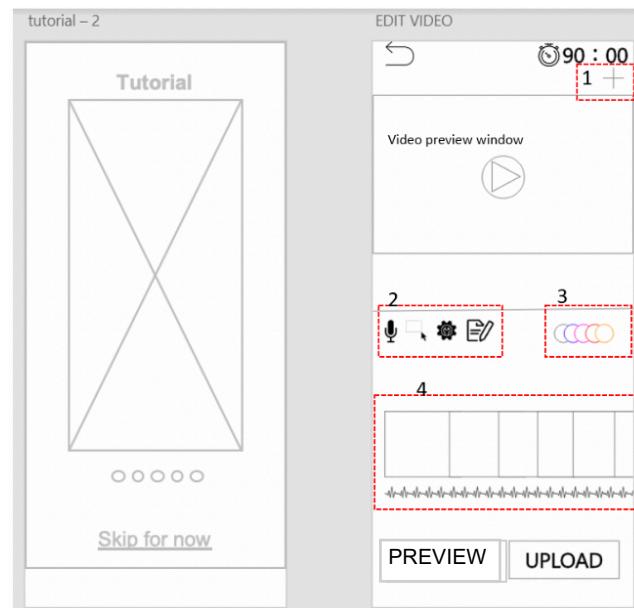


Figure-15: left _tutorial, right _video edit page

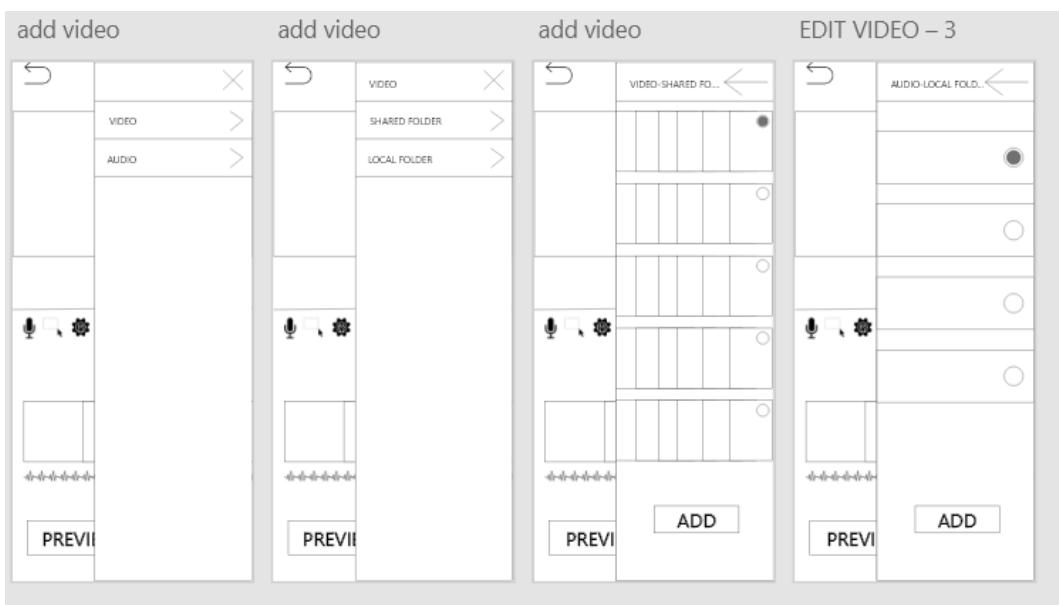


Figure-16: Add videos or audios

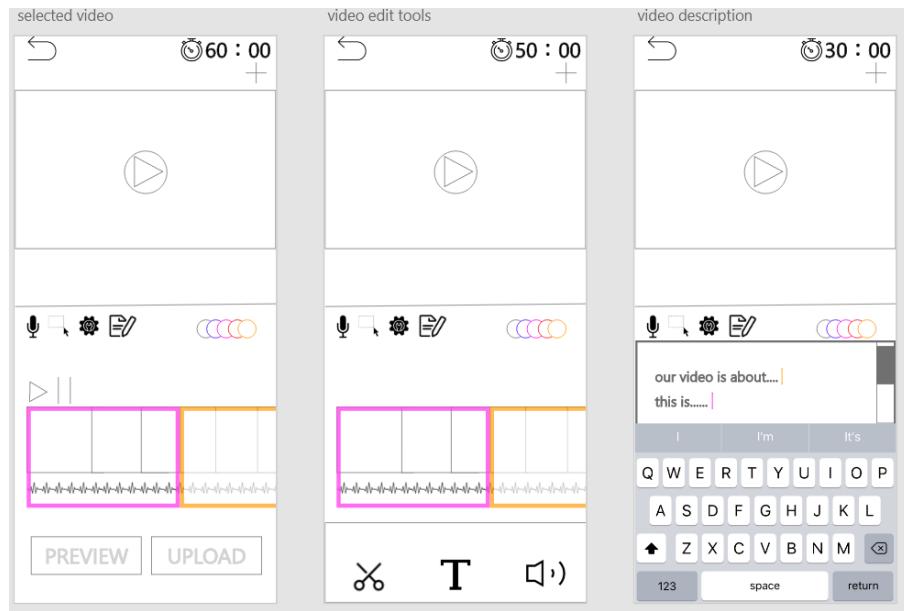


Figure-17: left_selected video fragment; middle_video edit tools; right_add video description

2.2 Voting process

Once every group has uploaded its videos, the audience will then start voting by logging into iCity (Figure-18).

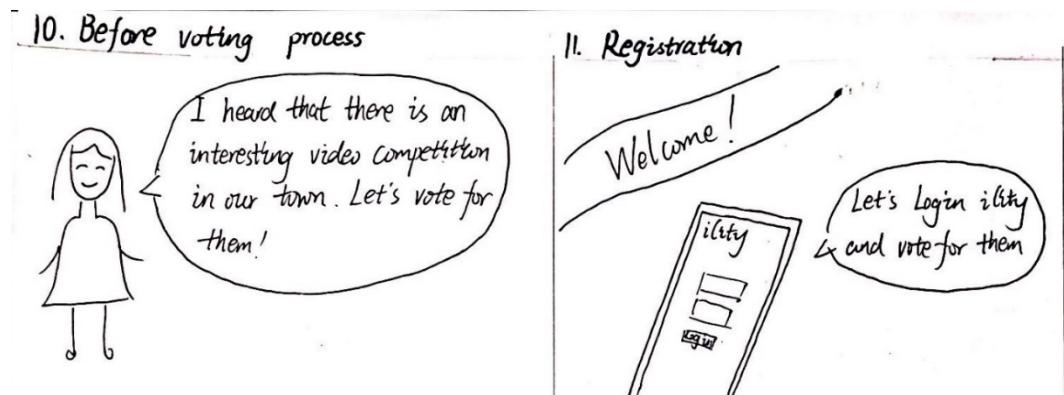


Figure-18: Storyboard-10_before voting process, Storyboard-11_registration

The homepage (Figure-19_picture-01) contains the voting button (marked with a red square), leading to the voting page (Figure-19_picture-02).

Voting is held at the same event place, where the large screen continuously plays the videos from different groups (Figure-20). Once users/voters arrive at the event, the application will automatically identify the event's location and show the video list associated to that event place (**collocated**).

In the voting page, every group's video is listed with a vote button for each (Figure-19_picture-02). Users can click the video and see a detailed description while watching the video (Figure-19_picture-02/picture-03), voters can add comments, share to other platforms, like/favourite the video.

After voting, the system will show the results (Figure-19_picture-04) (**synchronous collaboration**). Results are shown on the large screen in the activity place. When the timer ends, the winning video, along with select videos filtered by a moderator from the event organiser, is uploaded to the video gallery (Figure-21).

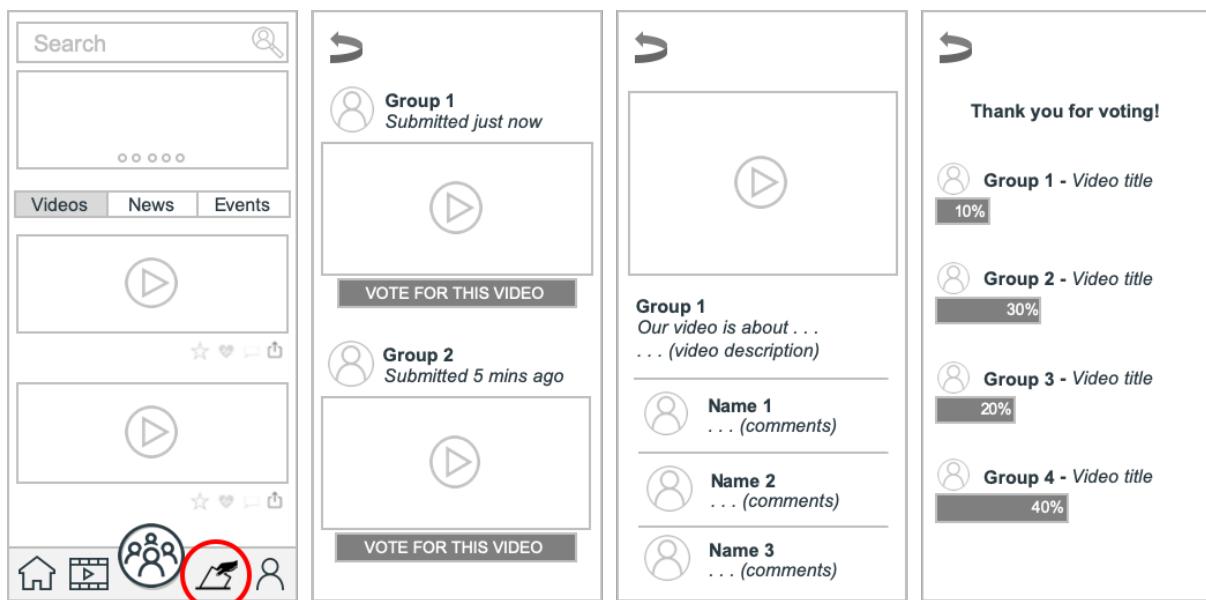


Figure-19: Picture-01_voting in the homepage; Picture-02_list; Picture-03_video details; Picture-04_results

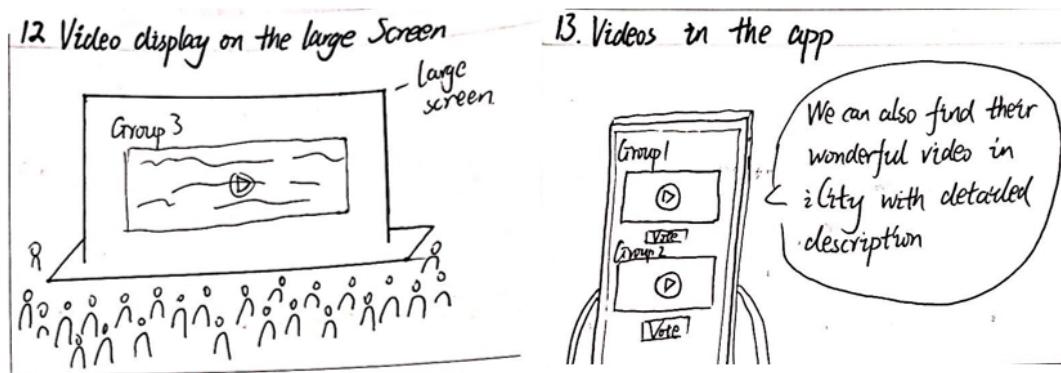


Figure-20: Storyboard-12_video display on screen; Storyboard-13_videos in app

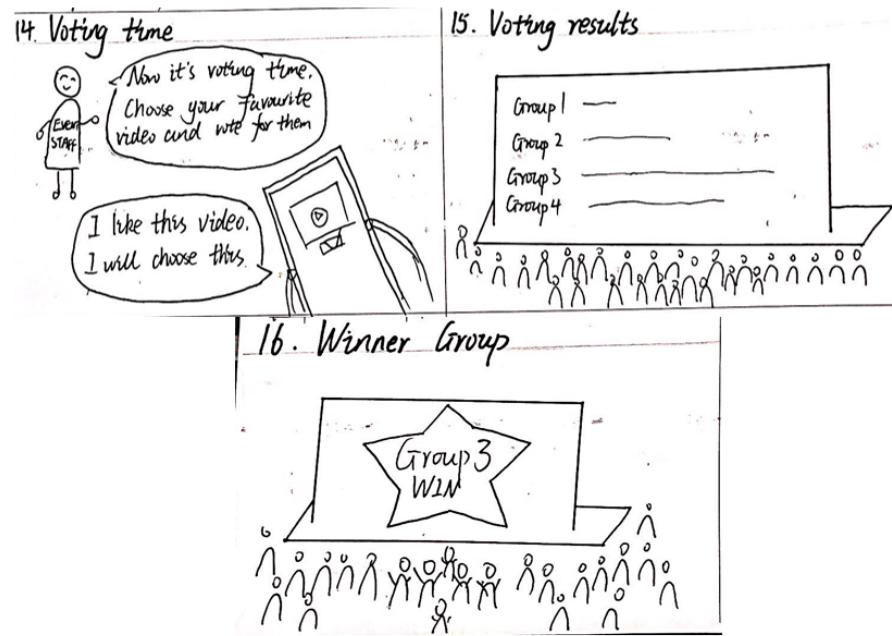


Figure-21: Storyboard-14_voting time; Storyboard-15_voting results; Storyboard-16_Winner

2.3 Secondary functions

To make iCity more comprehensive, secondary functions are included, such as homepage news, video gallery, and personal profile.

Homepage

The top of the homepage (Figure-22) contains a search bar for related popular news/videos from past events.

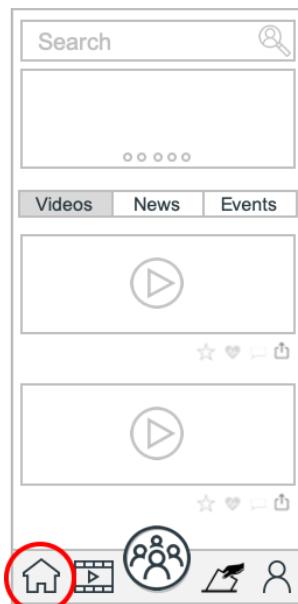


Figure-22: Homepage

Video gallery

Figure-23 contains curated videos from previous events. Users can search/filter/sort results by year, keywords, and popularity.

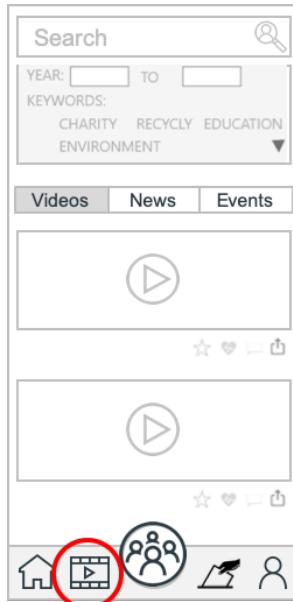


Figure-23: Video gallery

Personal profile

Figure-24 contains the personal profile page, where users can edit their self-introduction, showing their subscribed users and favourited videos. Users can check the event they participated in before (“History”) and titles they have won (“Badges”). The page contains basic tools such as Settings and About, to help the users understand how to use the platform.

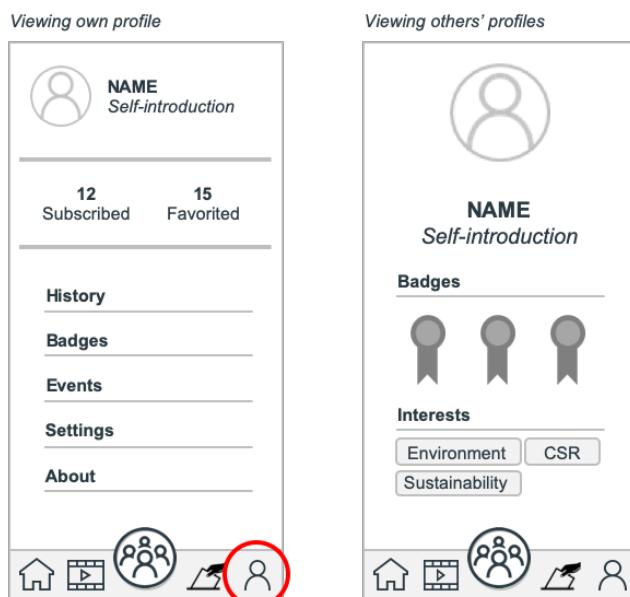


Figure-24: Personal profile

IV. Discussion

In this discussion, we will be linking our application to existing theories in Social Computing.

A. Work vs. Benefit

When deciding on how much work they should be exerting, users typically evaluate the extent of the benefits that they will be gaining. Our application is particularly strong in this aspect, because we have considered intrinsic and extrinsic motivational factors in our application design —as we have explained in depth in the previous sections. In using our application, it is extremely clear for the user what they are actually getting, and this opportunity for instant gratification makes it likely for our users to exert effort on their end.

B. Tie Strength

One of the objectives of the iCity application is to strengthen connections and build an engaged community. The community focus of our application will be a significant factor to its future success, because this will inevitably provide each community member with the motivation to use our application. It will be very difficult at first, because tie strength will still be under development. But as time passes and connections among community members are strengthening, it will be easier for the government to engage its citizens into using the iCity application.

C. 3Cs Model

- **Coordination** - The platform provides users with the ability to either form their own groups or join existing groups for the purpose of completing tasks in a collaborative manner. By managing users in this way, the application is laying out the foundation for a community that is grounded in collaboration.
- **Cooperation** - In designing our application, we have responded to the problems that users may encounter while cooperating on certain tasks, by making the collaborative functionalities clear, straightforward, and easy to use. For instance, different colors stand for different users in group tasks within the application. By dividing and prioritising tasks in such a way, operational conflicts (i.e., editing the same element resulting to merging conflicts) will be avoided. By applying these cooperative features, group efficiency will be improved.
- **Communication** - This is the weakness of our application, and it is mostly due to the collocated constraints within the design space. Our application aims to strengthen community ties by giving users the necessary tools to collaborate with their peers.

However, as this is a collocated application, it is unavoidable (and it is simply natural) for conversations to happen outside the confines of the application. Communication is extremely difficult with a collocated constraint, and this is the reason why we focused on enhancing Coordination and Cooperation instead. For future development, however, we are expecting the application to not be limited to collocated restraints. This way, the application may be effectively utilised in people's daily lives, and may also be viewed as a tool for Communication.

V. Individual Contribution

Name	Contribution
Marielle Louise Cruz	<ul style="list-style-type: none">• Introduction• Storyboard• Crowdsourcing Heuristics• Discussion• Editing / Proofreading
Chaoran Jin	<ul style="list-style-type: none">• Introduction• Discussion• References
Anqi Zhang	<ul style="list-style-type: none">• Crowdsourcing Heuristics
Huiwen Zhang	<ul style="list-style-type: none">• Wireframe• Storyboard• Prototype Explanation

VI. References

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