



# Planning A Vacation

CS 247 HCI Design Studio Final Design Challenge

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## Introduction

As the spring break draws near, many students are planning for a getaway from the campus. In a team of 3, we wanted to utilize what we learned in CS247 to uncover the problem areas when people plan their vacations and design a resolution for a major pain point in this process.

## Project Plan

While I individually came up with the majority of the following plan, I discussed with my team the rationale behind each method we planned to use. Based on team feedbacks, I removed the usage of journey map and RITE from my original plan. The reasons are detailed below.

### Phase 1. Needfinding

**Goal:** Understand the problem space

**Methods:** User interviews

**Procedure:** Each team member recruits 1 Stanford student as participant and individually conducts a 30-min semi-structured user interview. Ideally the interviewees recruited are currently planning for a vacation, or have recent experience planning vacations, so that they have fresh memory about the problems they have encountered.

**Rationale:** Interviewing is a quick method to gather insights about user needs and understand their pain points. It is less time-consuming than other methods such as field observations and diary studies.

### Phase 2. Synthesis

**Goal:** Identify the problem to solve

**Methods:** Affinity grouping, Point-Of-View (POV)

**Procedure:** Team members individually write down observations from their user interviews on post-its.. The team group all post-its into common themes and then map them in a coordinate system along Importance & Certainty axes. We'll pick the problem area that is in the important & uncertain region as our main focus. We'll write a POV for the user we design for, in the format of "*We met ... We were amazed to realize ... It would be game-changing to ...*".

**Rationale:** We use this method to identify and prioritize solving a problem that is important to user but currently doesn't have a certain or trivial solution. The POV helps us focus on addressing the needs of a specific type of users. For synthesizing user research results, we also considered using journey map, but decided it was not appropriate as users in this study cannot be relied upon to recall from memory every touchpoint and emotion they experience during the process.

### Phase 3. Ideation

**Goal:** Explore the design opportunities

**Methods:** Mind map, brainstorming

**Procedure:** The team will brainstorm the elements involved in the chosen problem and create a mind map. We use the mind map as a guide to brainstorm *How Might We* statements and generate 25 micro ideas written on post-its, including some dark-horse ideas.

**Rationale:** Creating a mind map gives us opportunity to take a step back and look at the big picture. Without it, certain aspects of the system may easily be overlooked when it comes to brainstorm solutions and we won't fully explore entire design space.

### Phase 4. Prototyping and Testing

**Goal:** Produce a solution

**Methods:** Rapid prototyping

**Procedure:** Examine the micro ideas and combine the best aspects of them into 2 more detailed ideas. For each of the detailed ideas, create 1 lo-fi prototype that tests 1 risky assumption about it. Each team member then recruits 1 Stanford student who is planning for a vacation over the spring break and conducts tests with user on these 2 prototypes. Based on user feedbacks, we will choose 1 prototype that has validated assumption and higher potential for success to refine.

**Rationale:** Due to time constraint we only flesh out 2 ideas. It's good to test at least 2 prototypes since our assumptions might be wrong, and having tests for different assumptions will increase our chance to arrive at a right solution. Users are also more willing to give critical feedbacks when there are more than 1 idea presented to them. We also considered using the RITE method -- however, as the prototypes are mainly used to test

larger assumptions about user behaviors, rather than finding specific usability issues of the design, we consider the RITE method is not appropriate for this testing.

## Execution

### Needfinding Interviews

As detailed in the project plan, we interviewed three Stanford students who were all planning for the upcoming spring break and asked them about their current and past experience planning vacations. In order to better synthesize interview results with the team, we drafted a list of open-ended questions that all interviewers could use to start their interviews with (but not limit to). Sample interview questions included:

*How are you planning for the spring break?*

*What tools do you use? How are you feeling about these tools?*

*What was the last time you made a vacation plan and fully executed it?*

*What was the last time you had a frustrating experience planning a vacation?*

### Synthesis

To synthesize the user interviews, each team member wrote down the findings and user's quotes excerpted from the transcript of the interview they conducted on post-its, read to the team, then we grouped the post-its into the following common themes (numerated from 1-8). Sample user quotes:

1. Executing plans
  - "I'm very satisfied when the plan is fully executed."
  - "Usually I won't execute everything from the plan but this is OK."
2. When to start planning
  - "I'd make a plan for the next city after arrival"
  - "1-2 days beforehand"
3. Tools & Methods used to make plans
  - "The plan was written in a Word document which looks disorganized. It's too long and I didn't have clear clue after reading it."
  - "I wished the plan was written in a spreadsheet."
  - "Google Doc is the best plan making tool for now because of collaboration. However it's hard to get pretty formatting with Google Doc."
  - "There isn't a good travel guide website or app that provide enough details".
4. Vacation experience / destinations
  - "I had a very nice experience with a friend at a small bar in NYC. "

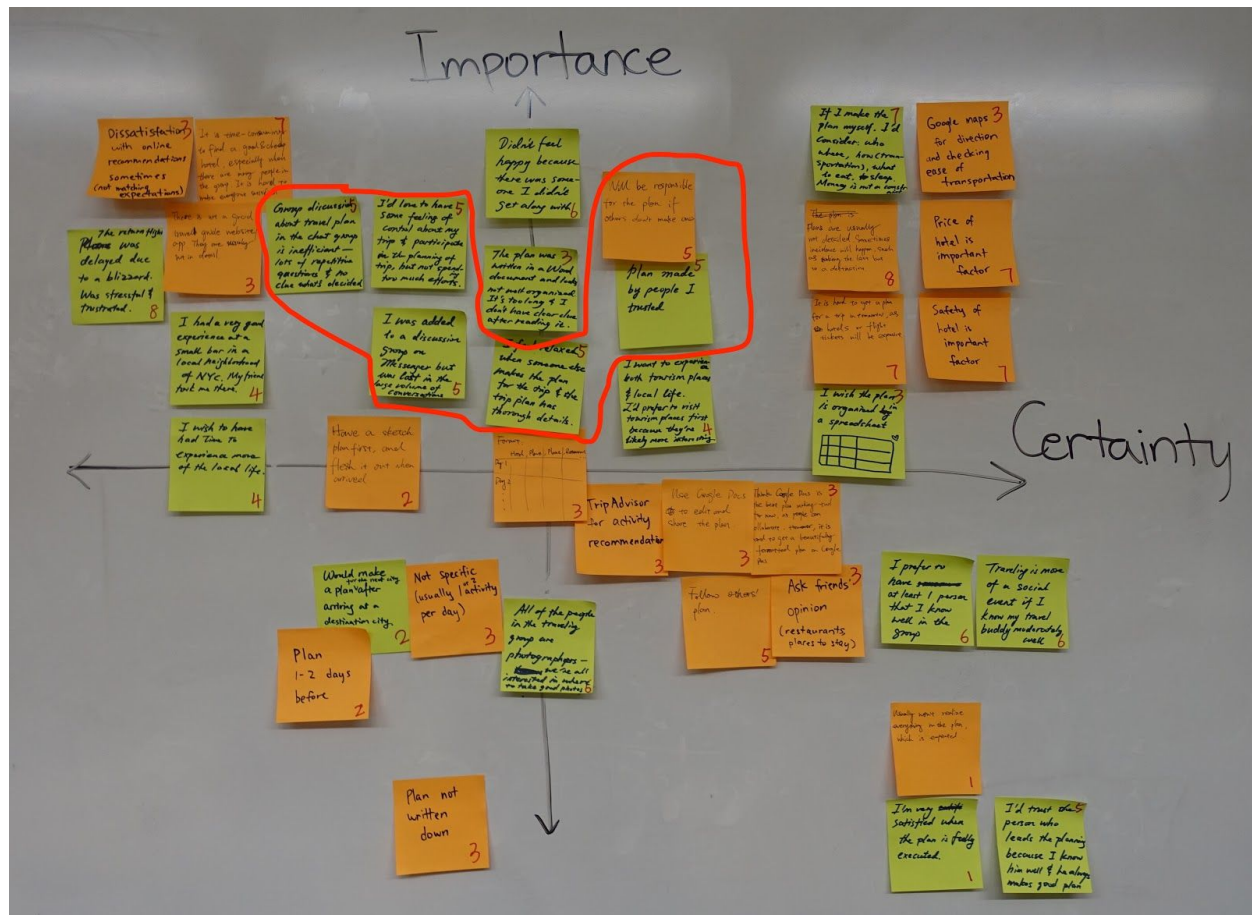
- "I wished I had more time to experience local life."
- Group communication & interaction during planning
    - "Group discussions in that chat group was inefficient; lots of repetitive questions were asked and I'd no clue what's been decided"
    - "I trusted the person who led the planning because I knew he always made good plans"
    - "I was lost in the large volume of conversations in that chat group"
  - Social factors
    - "I didn't feel happy because there someone in the travel group I didn't get along with"
    - "I prefer to have at least one person I know well in the group."
  - Planning about hotel & transportation
    - "Price/Safety is an important factor for consideration"
    - "It's time-consuming to find a nice & cheap hotel, especially when there are many people in the group. Hard to make everyone happy."
  - Unexpected situations during travel
    - "The return flight was delayed due to a blizzard. It was so stressful."



Figure 1. Synthesizing interview findings: affinity mapping.

The findings from user interviews seemed quite diverse, but as we mapped them using affinity diagram (**Figure 1**), important problem areas started to emerge. A lot of user comments were made about inefficiency and annoyance of **(1)** the tools they used for making travel plans and **(2)** group trip planning.

To narrow down the problem scope, we plotted these post-its along Importance & Certainty axes (**Figure 3**). We found that observations from theme category 5 - group communications were clustered in an area we were looking for: important problems that currently did not have certain solutions.

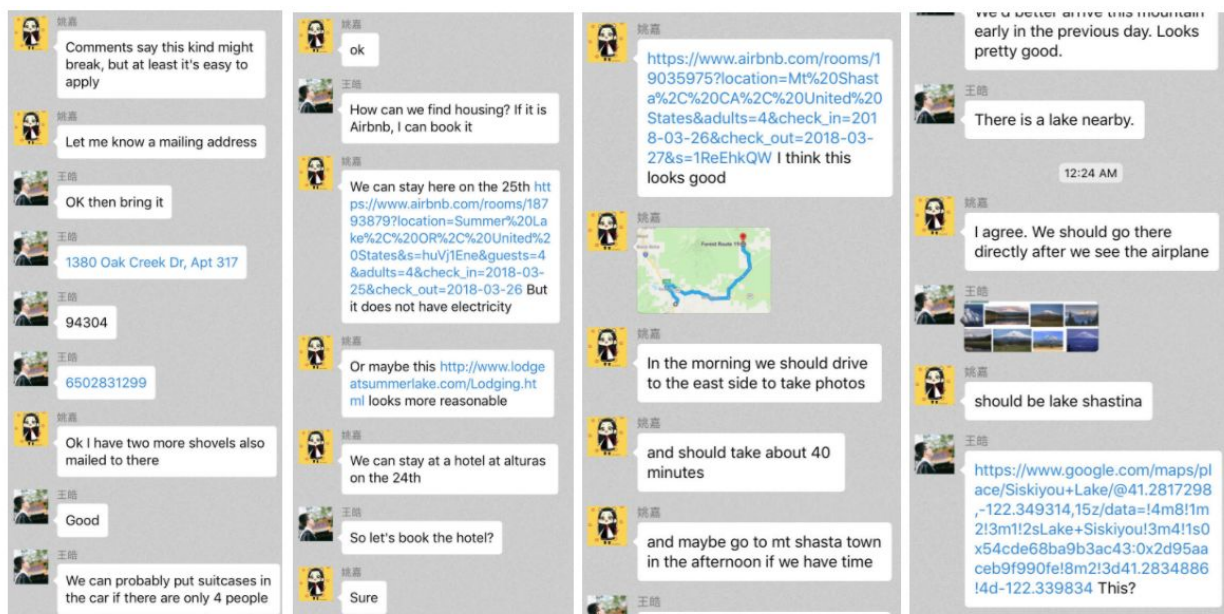


**Figure 2.** Mapping interview findings in the importance-certainty coordinates.

## The communication issues with group planning

During user interviews, we found that group planning for vacations tends to center around a communication app, such as Messenger or WeChat. As users mentioned in interviews, within chat apps, there is no centralized place for documenting all the decisions made by group members. As a result, after a group discussion occurred, a lot of repetitive questions had to be asked in order to confirm what decisions had been made. Although other documentation methods existed, users found them not effective in organizing trip plans -- so far the best tool users claimed was Google Docs, which was complained about not allowing desirable formatting.

One of the users we interviewed described a particularly frustrating experience he was having while planning over WeChat with a group of fellow student photographers for a group trip to Oregon. He complained that he was not able to contribute his ideas about the trip or participate in decision-making because he was overwhelmed by the reams of chat messages generated by two other members in the group. While he was taking final exams, a mountain of conversations quickly piled up about what flights and hotels they needed to book, among discussions about many other details. As the user explained, he did not really want to get involved in all the details of trip planning, and he was "glad that someone else were taking take care of it"; however, he was rather frustrated about not being able to follow the conversation to make out all the decisions that had been made. Even after perusing the chat history, he was still confused without a clear clue about what would happen to his upcoming trip.



**Figure 3.** User's group chat history in WeChat about the spring break trip planning. Image provided courtesy of the user we interviewed.

## Point Of View

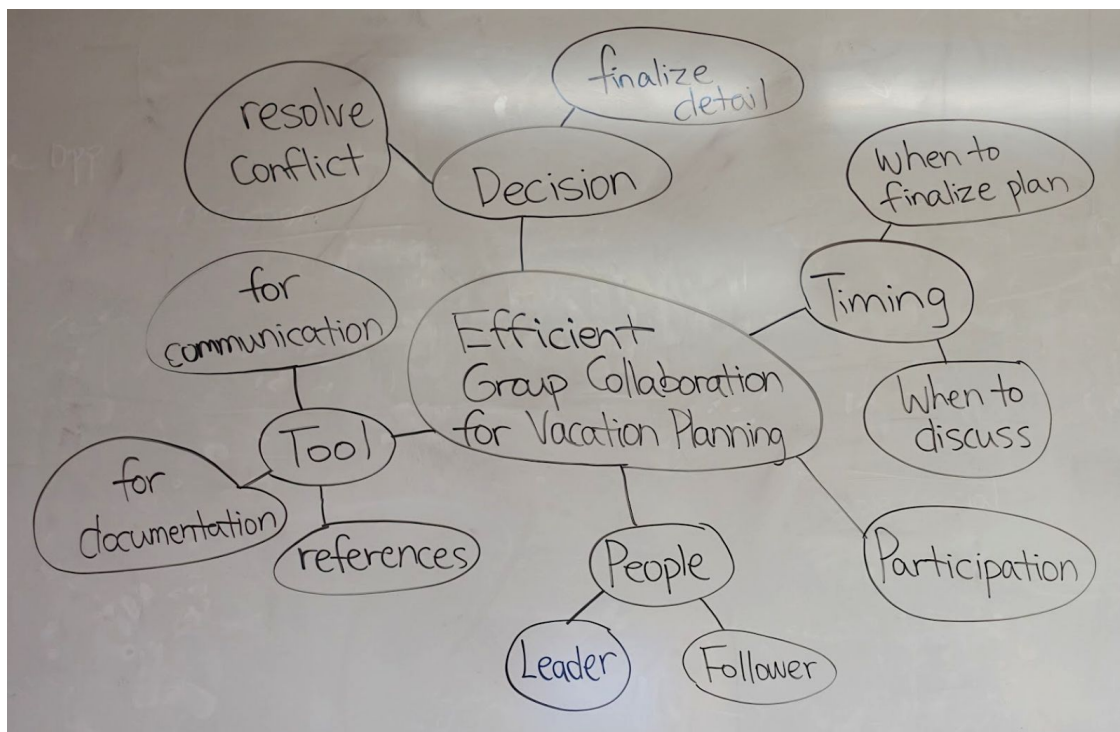
Motivated by this user's experience, we wrote down the following POV to help us focus on solving this major pain point in planning vacations.



*"We met Mingyu Huang, a Stanford student who travels frequently with a photographer group. We were amazed to realize that he found it hard to follow and contribute to online group discussions when planning for group trips. It would be game changing to have an efficient collaboration tool for planning vacations with a group of people."*

## Ideation

Following our project plan, the next step was to create a mind map to explore the design space and guide us in the process of brainstorming ideas.



**Figure 4** Mind map centered around the topic *efficient group collaboration for vacation planning*.

We utilized this method to identify the various entities that played a part in the group vacation planning. The nodes in this mind map represented the elements that we directed our *How Might We* questions to and solution ideas to act upon. The end result of our brainstorming session were 25 micro ideas about how to address the problem we stated in POV.

## Sample ideas:

Tools for group communication

- Auto-group each person's chat history to make it clear which person said what

- Use AI to automatically classify chat messages
- Pin/highlight important chat messages
- Support quick viewing maps, hotels, etc in the chat app

## Tools for documentation of the plan

- Google sheet with larger boxes
- Dashboard view with widgets showing hotels, restaurants info that can be copied and pasted.
- Journey map view by days

## People & Participation

- Each person in the group makes one day's plan for the whole group
- Discussion leader can be a bot



**Figure 5.** Brainstorming 25 micro ideas, using mind map as a guide.

## Prototyping & Testing

We then fleshed out 2 design ideas using the micro ideas as building blocks.

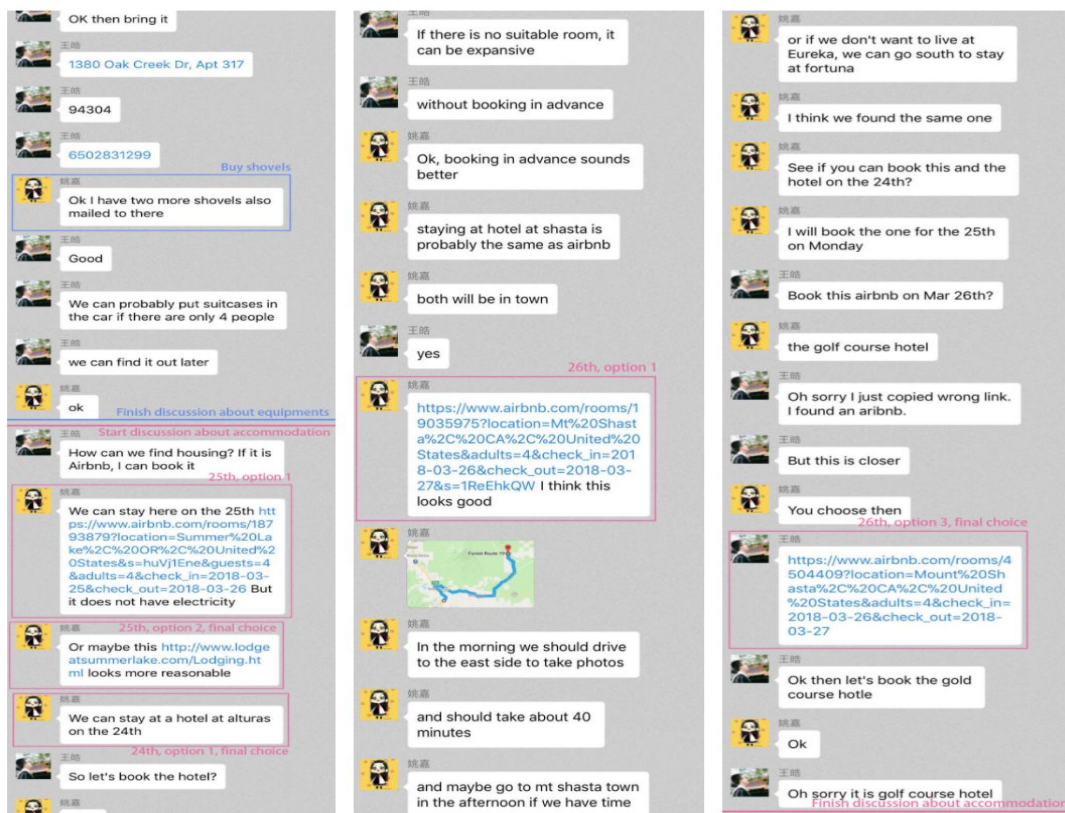
## Design 1 - Automatic Annotation

**Description:** Our first design was an Artificial Intelligence (AI) - powered system that provided automatic annotation of chat messages using Natural Language Processing technology. There are two features we wanted to include in this design: **(1)** automatic

classification of chat messages, e.g. provide a short summary of similar chat messages and label them as "booking flights", "booking hotel", "booking restaurant", etc. **(2)** automatic highlighting of important messages in each category, such as the decisions made (if any) about flights and hotels to book.

**Assumption:** Our assumption was that users will be able to digest group discussion much faster provided automatically annotated chat messages. It will make it easier for users if they want to express their opinions or simply get an idea about what is being or has been planned.

### Prototype:



**Figure 5.** Prototype 1: Group chat history, annotated. We will show users this design together with the normal chat history (**Figure 3**) during prototype testing.

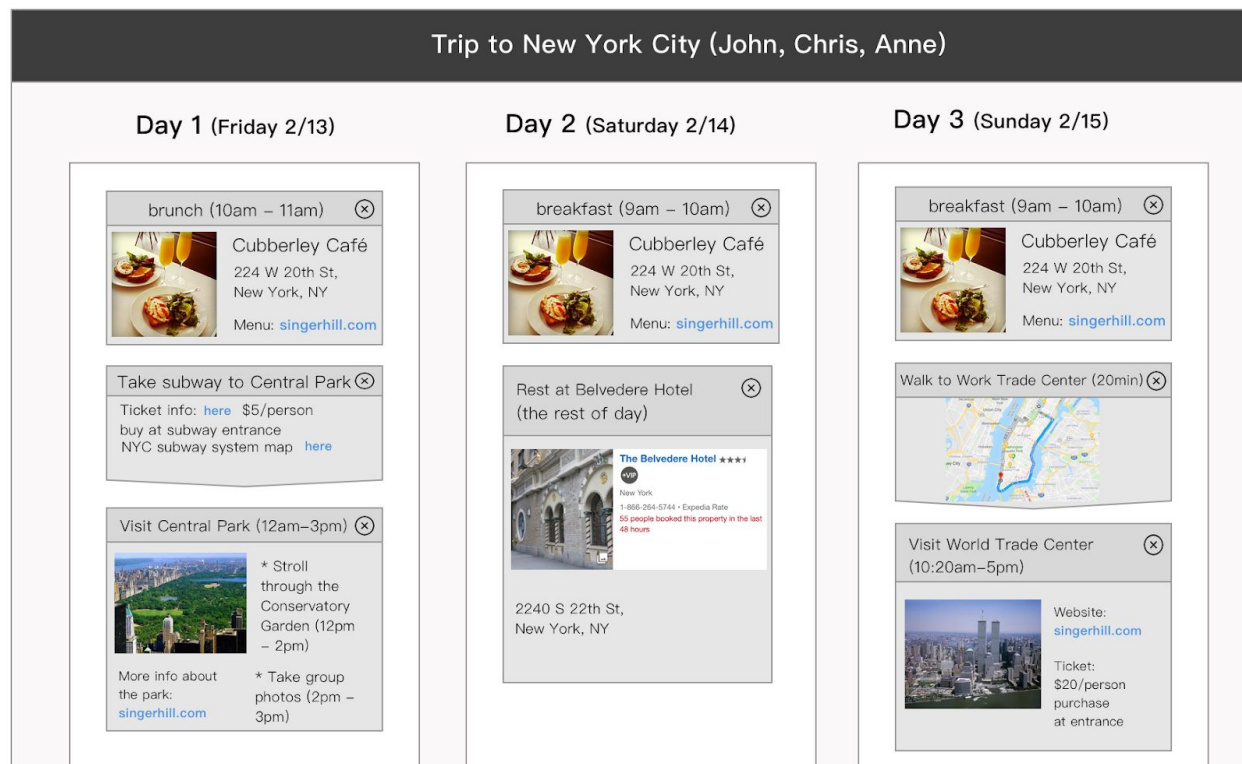
**Testing:** We will show users a chat history as normal and then a similar chat history that has been categorized and highlighted. We will see if there is a difference in the amount of time they take to find important information.

## Design 2 - Dashboard View

**Description:** A second design option is a dashboard for easy reviewing and editing group travel plans. Each column in the dashboard represents one day in the trip and for each day users can collaboratively add/edit/remove some widgets that visualize useful details about their trip, such as flights, hotels, events, local transportation methods, etc.

**Assumption:** Our dashboard design ultimately needs to integrate with a communication tool. However, for this prototype a question we were more unsure about was whether users would find this presentation format useful in facilitating reviewing plans. Therefore we focused our prototype on the basic functionality of the dashboard -- viewing a plan, and left out the editor functionalities and the integration with communication tool.

### Prototype:



**Figure 6.** Prototype 2: Group planner in dashboard view.

**Testing:** Show users the dashboard view of an existing plan. See if they grasp plan details easily.

## Test Results

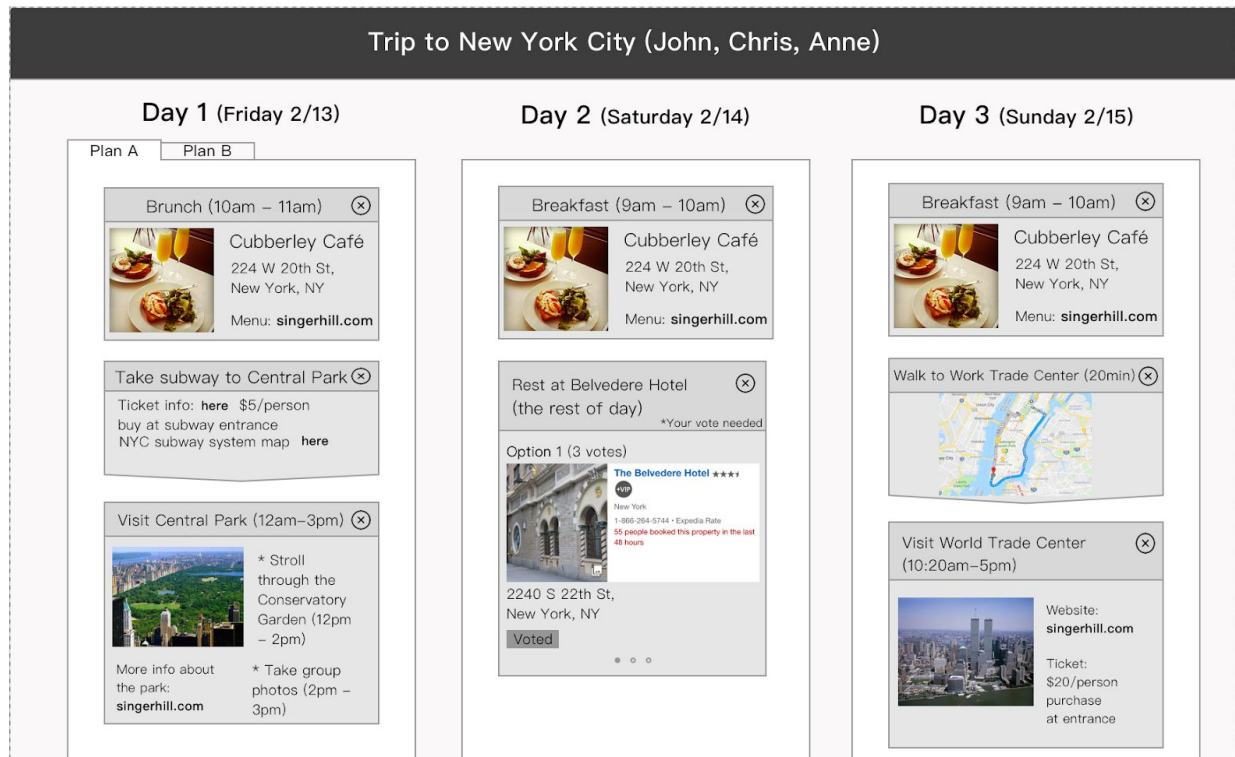
We conducted tests of our prototypes with three students. We picked users who were currently planning vacations for the spring break because they were more motivated to test our prototypes and give more effective feedbacks. Although both prototypes validated our assumptions and received overwhelmingly positive feedbacks (**Table 1**), we decided to refine Design 2 rather than Design 1. The main concern about Design 1 was the technical barriers implementing it: it has to be an add-on feature to some chat apps thus requiring modification of existing systems. Also, the AI technology involved in this design is quite advanced. Therefore we decided Design 1 had lower potential for success in reality.

	Prototype 1 - Automatic Annotation	Prototype 2 - Dashboard View
The Good	<ul style="list-style-type: none"> <li>• Normal version: all 3 users ended up very confused after reading the chat history. Always needed to scroll back to re-read the discussion.</li> <li>• Annotated version: "This is very helpful. I don't care all the details of discussion."</li> <li>• "Without the annotations I didn't even know we already made a decision about the hotel for Mar 25th"</li> </ul>	<ul style="list-style-type: none"> <li>• "Easy to follow"</li> <li>• "This is how I want to make plans about my trip with other people"</li> <li>• "I really like the Map widget [if I can directly open Google Map from the widget]"</li> <li>• "Much nicer than Google Docs"</li> <li>• "It's clear what we are going to do at every step [in the trip]."</li> </ul>
Improvements suggested	<ul style="list-style-type: none"> <li>• "Aggregate all summaries at the very end of chat."</li> </ul>	<ul style="list-style-type: none"> <li>• "What if we want to have a Plan B?"</li> <li>• "What if we have a lot of options about the hotels and can't decide?"</li> </ul>

**Table 1.** Sample user comments & observations during tests.



## Refining Design 2



**Figure 6.** Refined Prototype. Main enhancements 1. The option to add alternative plans for a day (Day 1)  
2. The option for group members to vote (Day 2 hotel widget - users can vote 1 out of 3 hotel options).

## Conclusion

On a tight schedule, we completed our design challenge of solving communication inefficiency when a group of people are planning for a vacation together. The problem we solved was a major user pain point and our resolution was deemed largely as effective by the users we tested our designs with.

## Acknowledgements

I would like to thank my collaborators on the project and my friends who helped us with the user tests during the crazy final week. I also want to thank the CS 247 course staff for an enjoyable HCI course that helped me improve rapidly as a designer.