



High Fidelity Prototype Report



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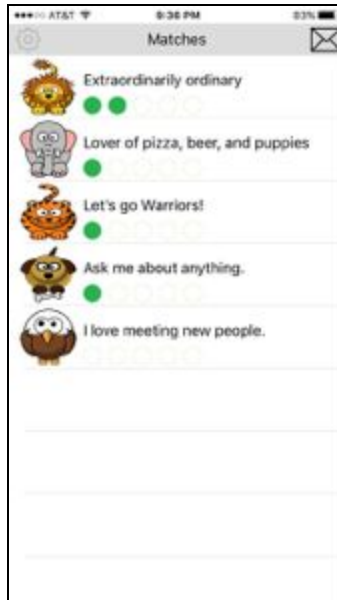
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Team Manager
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“Let’s Commute Together”

Problem and Solution Overview

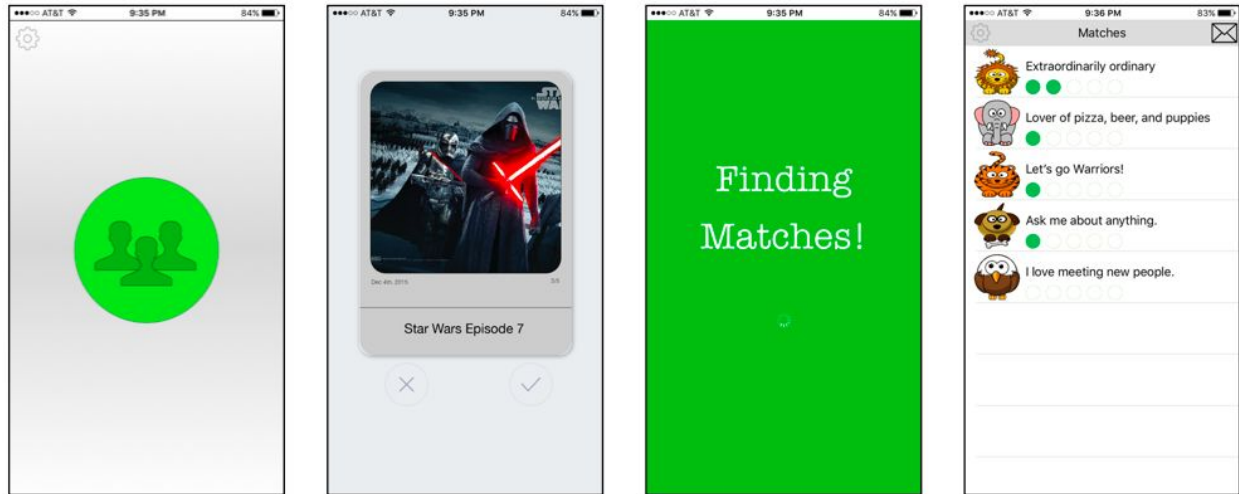
In their daily commutes, people consistently choose to drive cars rather than use public transportation, despite the negative impacts on the environment, the opportunity costs of commute time, and the tedium of traffic. According to a U.S. Census Bureau report, over 105 million US drivers commute to work in private cars, with each driver responsible for emitting approximately 7000 pounds of CO₂ /year, and spending an average of 260 hours per year sitting in traffic.

DotTrain is a smartphone application that strives to impact the issue of sustainability at precisely this crucial point: the commute. DotTrain is a social platform that connects commuters with each other, allowing strangers to develop friendships over common interests. At DotTrain, our core value proposition is commuting together. We believe that if we can facilitate social interaction on the train, we can make public transportation a richer and more enjoyable experience, which will encourage more people to choose it over less sustainable commuting options.

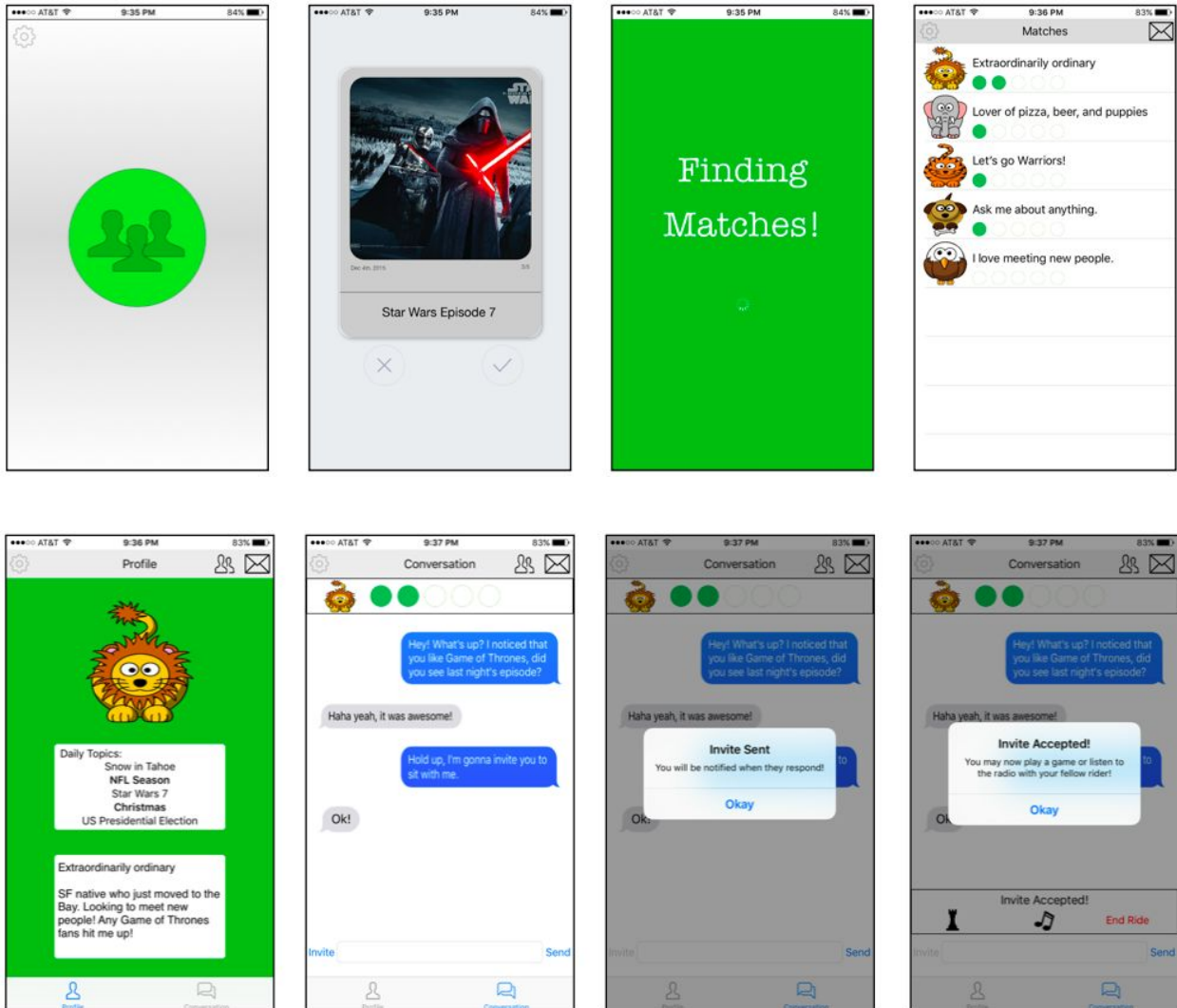


Tasks & Final Interface Scenarios

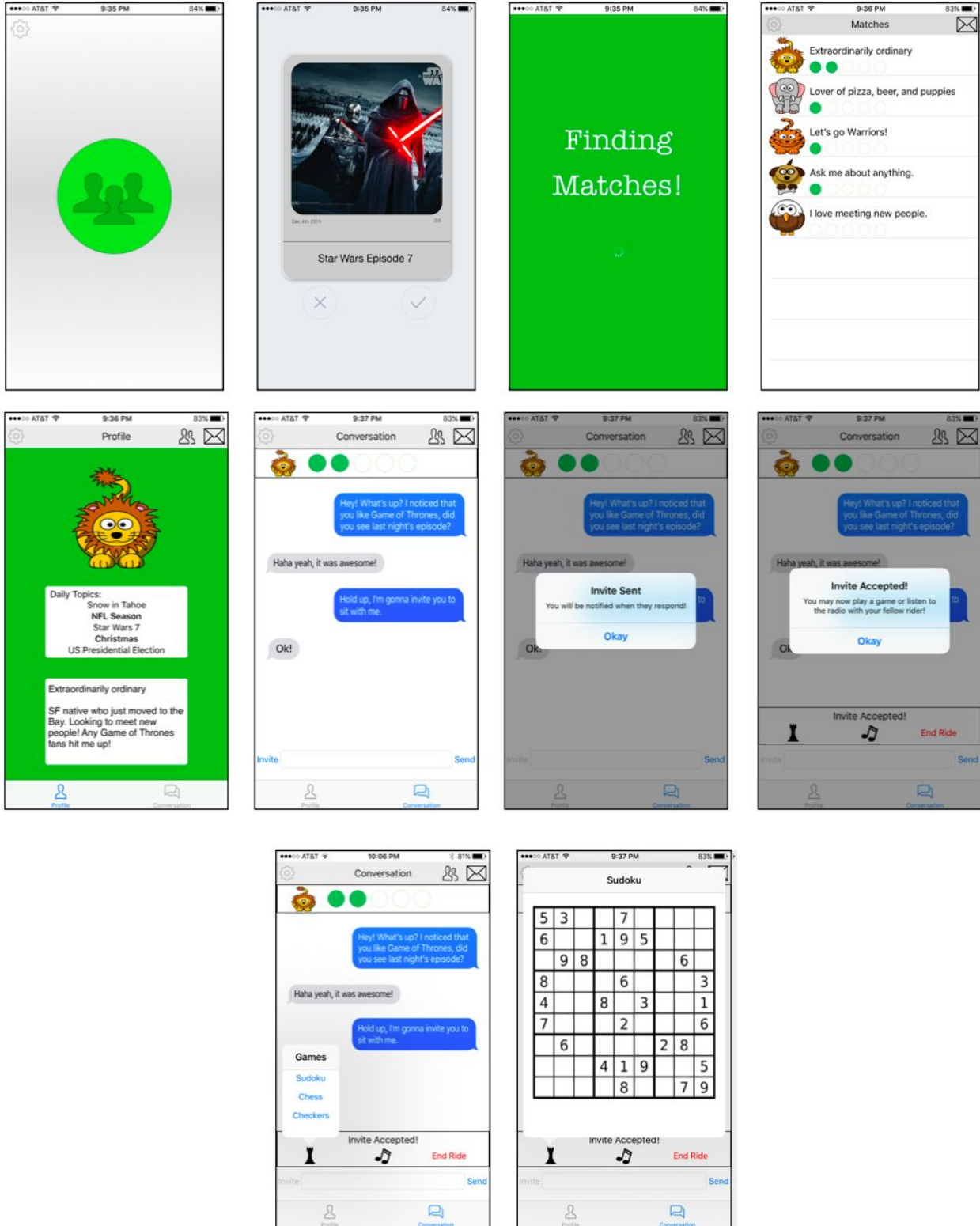
Task 1: Make yourself available. (Easy) The first task is for the user to make themselves available to interact with other users. This task involves clicking a large, central button and then swiping left or right to indicate the topics of interest. We chose this task because making yourself available is the core of our app. Choosing interests allows us to quantify the lifestyle and interests of a person, so we can best curate their possible matches.



Task 2: Invite a Potential Match. (Medium) The second task is for the user to find and invite an interesting and available person to sit with them. This task involves users completing the previous task, selecting one of the potential matches, having a conversation with that person, and then inviting them to sit together. We chose this task because it evokes the feeling of friendship and camaraderie when you invite someone to do something with you (whether it is play a game or sit together). Also, this is the second essential step in finally socializing on the train.



Task 3: Play a Cooperative Game. (Hard) The third task is for the user to play a game with someone. This task requires the skills used in the first two tasks and adds a layer of complexity - they must indicate the game they want to play and navigate the post-invitation screens to get to the game. We chose this task because it is a good example of something complex that can be done using our app. Playing a cooperative game, along with sharing seat location information, is one of the main end goals of the app.



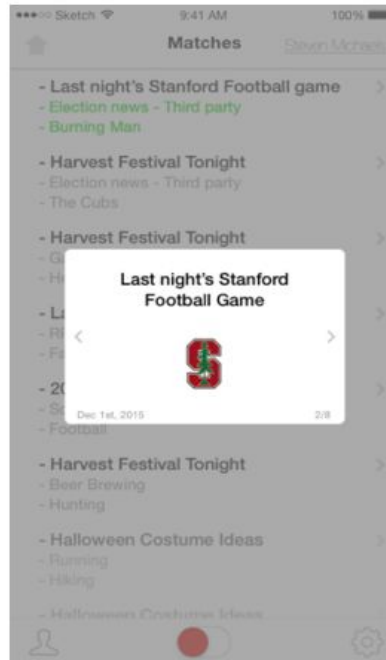
Design Evolution

Top 3 Largest Design Changes:

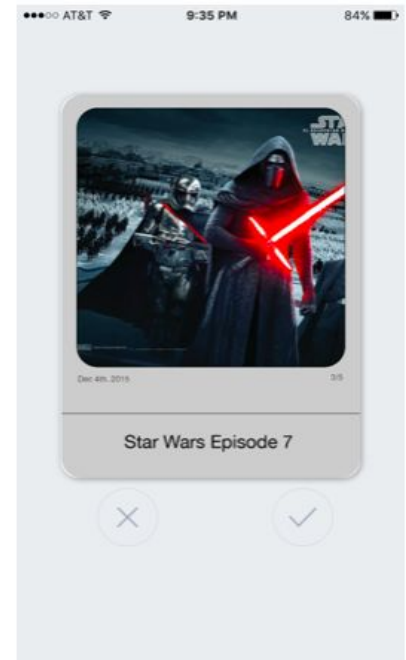
1. The method by which a user chooses their daily interests has evolved significantly over the course of the design. We started by having the user choose interests from a drop down checklist, but after user testing on a low-fi prototype, we realized that this is cumbersome and overwhelming. In addition, the sheer number of items in the checklist resulted in users having fewer possible matches. We simplified daily interests down to a series of 5 swipe screens, which are presented upon opening the app. The user now swipes left or right to indicate whether they like or dislike each topic.



(1)

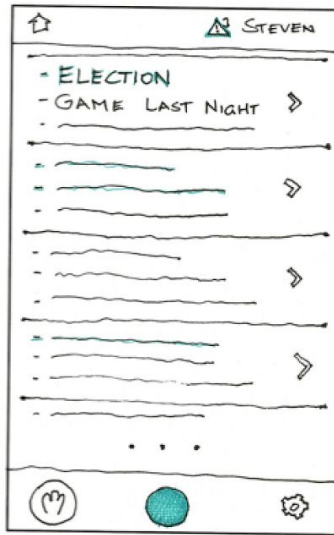


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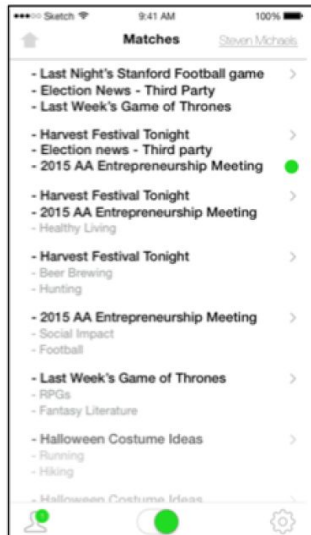


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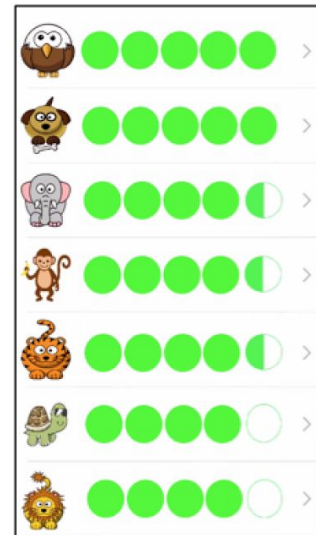
2. Throughout out the initial stages, we had a text heavy design. This was especially problematic in the interest selection screen and in the list-of-matches screen. We solved the former problem above (1). The latter problem occurred because, in our initial design, we displayed a short list of each person's interests in the match screen, and bolded the interests in common. To solve this problem, we chose to display the number of common interests you had with other users as green dots. This is because images are much easier to digest than words, and allows the user to painlessly determine which matches have more in common with them.



(1)



(2)

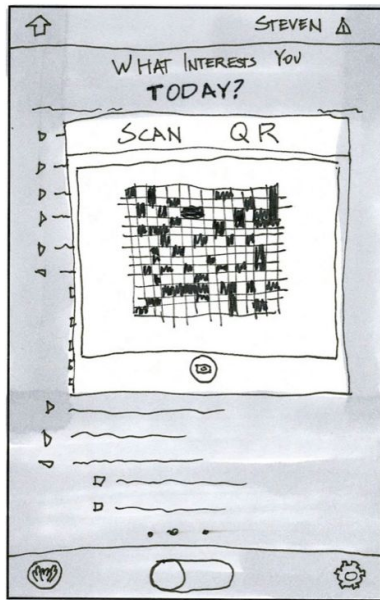


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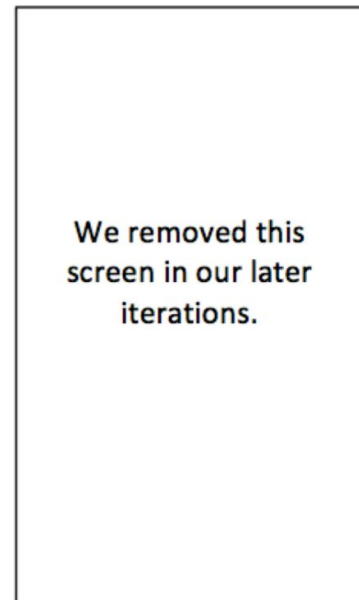
3. We started with the idea that dotTrain was a highly structured app to help CalTrain commuters find seats next to people that shared their interests. With this framework, we had a system where users would send invitations to other users who looked interesting. The other user would then accept that invitation, and then the app would lock down, sending both users an alert that they had been matched. After the heuristic evaluation, it became clear that having the app lock after two users matched presented a major usability problem for the app in terms of people becoming frustrated with the interface. Thus, we changed the interface to give users more control. We decided we had to get rid of the QR code.



(1)



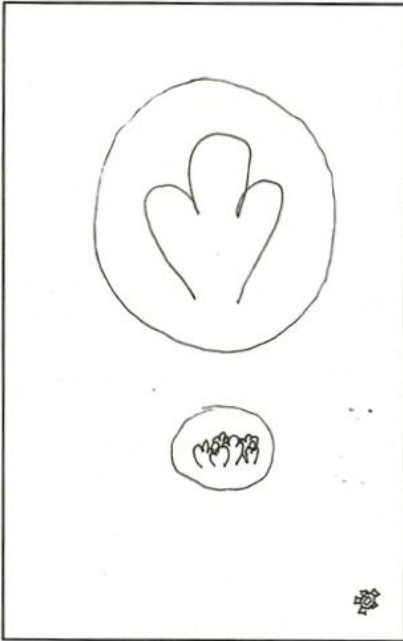
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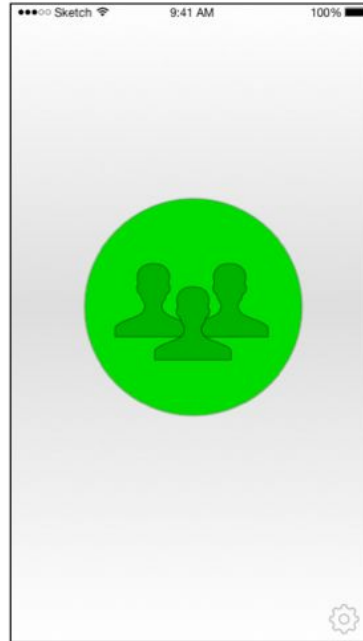
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4. Evolution of the Home Screen

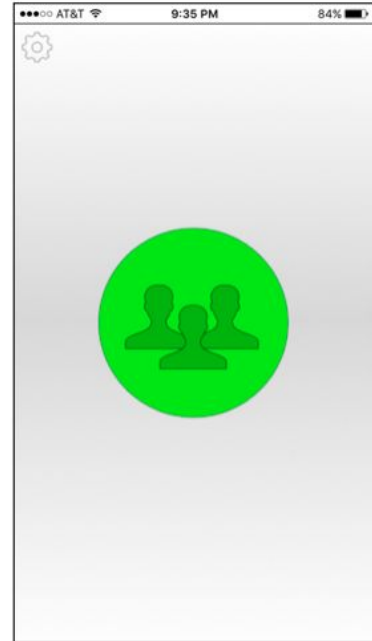
Initially, our homescreen had two buttons. A large button with an icon of a person, and a smaller button with an icon of a crowd. The large button was meant to make the user available and visible to other users, while the smaller button allowed you to browse the other users in the system without being discoverable. For our med-fi prototype, we got rid of the second button because we did not want anonymous browsing. Then, we replaced the icon of the single person with that of a crowd, because we found that users responded more positively to this image in our user testing.



(1)



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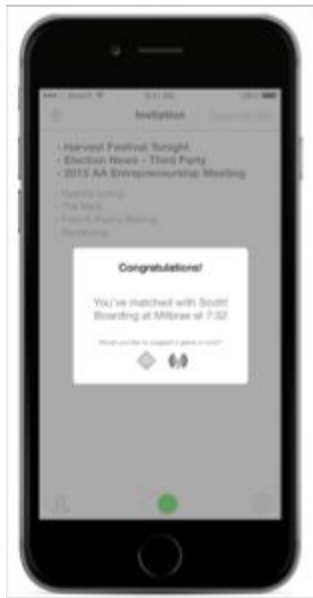


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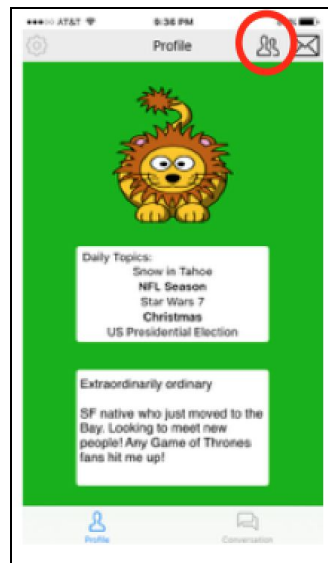
Major Usability Problems Addressed

[H2-3 User Control and Freedom][Severity 4] No back button

We realized that the app had several dead ends with users getting stuck in several screens with no ability to go back to different screens. For example the screen below on the left depicts what would happen if the user got a match in using the med-fi prototype. Here, they would be forced to meet with Scott, and have no option of backing out. We fixed this by improving the navigation of our app. However, we ultimately decided not implement the back button because it did not make sense for our users to go back to some screens, such as immediately going back to the swiping of interests when seeing the matches. However, we did implement navigation mechanisms that prevent a user from getting stuck. For example, if a user wishes to choose the daily interests again from the matches screen, the user is provided an option to go back to deactivate, which effectively restarts the app again. Or, if the user wants to view other people on the train to find someone else to talk to, we added a button for that as well. We can see these buttons circled in red in the final two images.



(med fi)



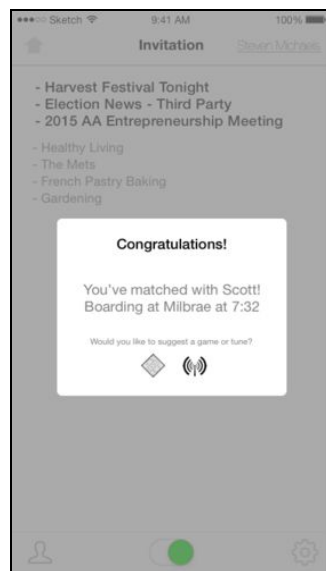
(hi fi)



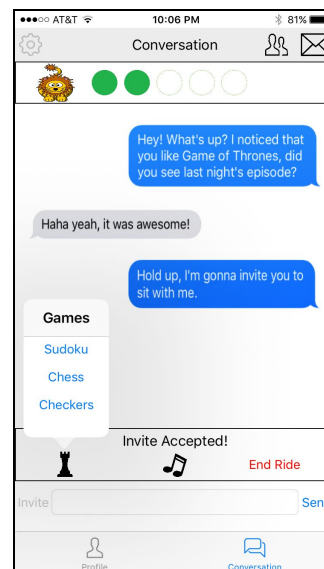
(hi fi)

[H2-8 Aesthetic and Minimalist Design][Severity 3] Better Icons

In our med-fi prototype, we chose some confusing icons. For example, in the upper left corner of our med-fi prototype, the home icon did not properly represent a “home”. Instead, it looked like an arrow, which may have been confusing for users. Another icon that may have been confusing is the person icon in the bottom left corner, which could have been interpreted as being able to change the profile of the current user as opposed to being interpreted as notifications. In addition, the sudoku and radio icons were not intuitive. Thus, we carefully selected simple, meaningful icons that clearly express function to the user. In the hi-fi prototype, we explicitly had the options to edit your own profile within the settings menu, and we chose clear icons to go back to the matches screen, to view the current match’s profile, and to go to your conversation with the current match. We also chose better game and radio icons.



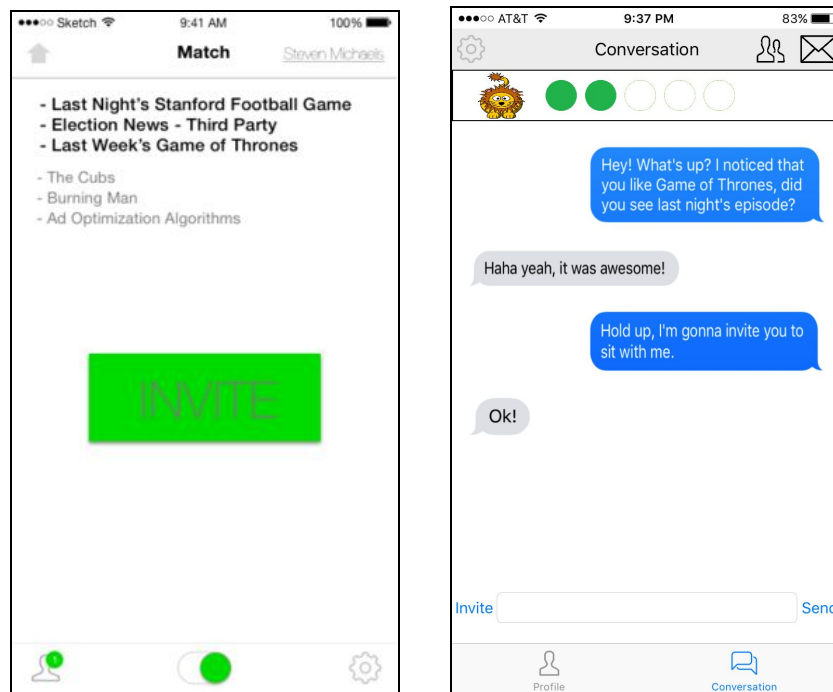
(med-fi)



(hi-fi)

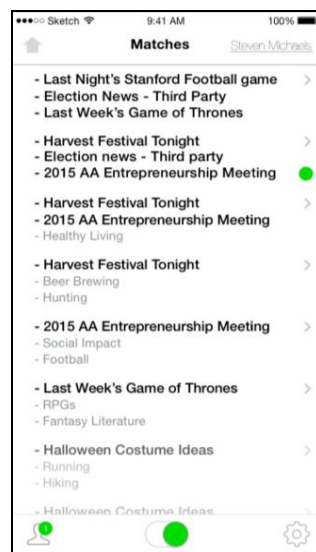
[H2-2 Match between System and Real World][Severity 4]How do you find the person you matched with in real life? There is no way to message someone you matched with.

In our med-fi prototype, we did not allow users to know the location of other users unless they matched. We realized that problems would arise in terms of finding the users. What if a user is not sitting down? What if a user is just boarding the train? What if a user would like to know a bit more about a match? In response to all of these edge cases and to facilitate finding and inviting matches, we decided to introduce conversations, where users can message their matches. In the first screen below, you can see an invite button is featured, however in the second screen, the user is chatting with another user, and brings up the topic of sitting together more organically.

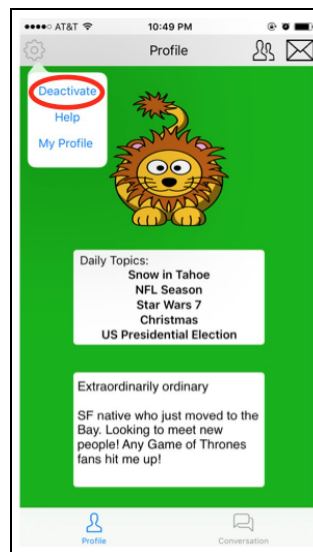


[H2-5 Error Prevention][Severity 3] Have option to change daily interests after initial swiping

We realized that we were restricting the user's freedom by not allowing the user to change their daily interests. To fix this problem, we now allow this functionality. To do this, the user simply has to deactivate and then reactivate himself. He can now re-select his daily interests. As shown in the screenshots, the deactivate button is hidden within the settings button. We chose to do this because we wanted to avoid the user accidentally clicking the button and being taken back to the original screen.



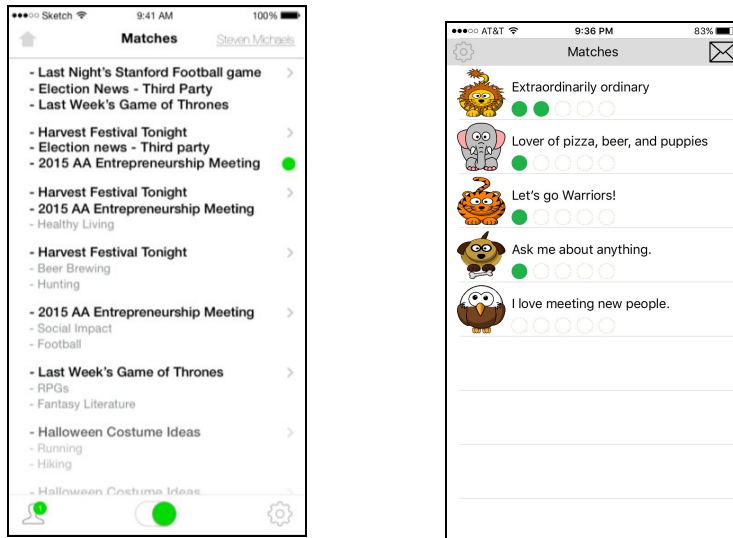
(med-fi)



(hi-fi)

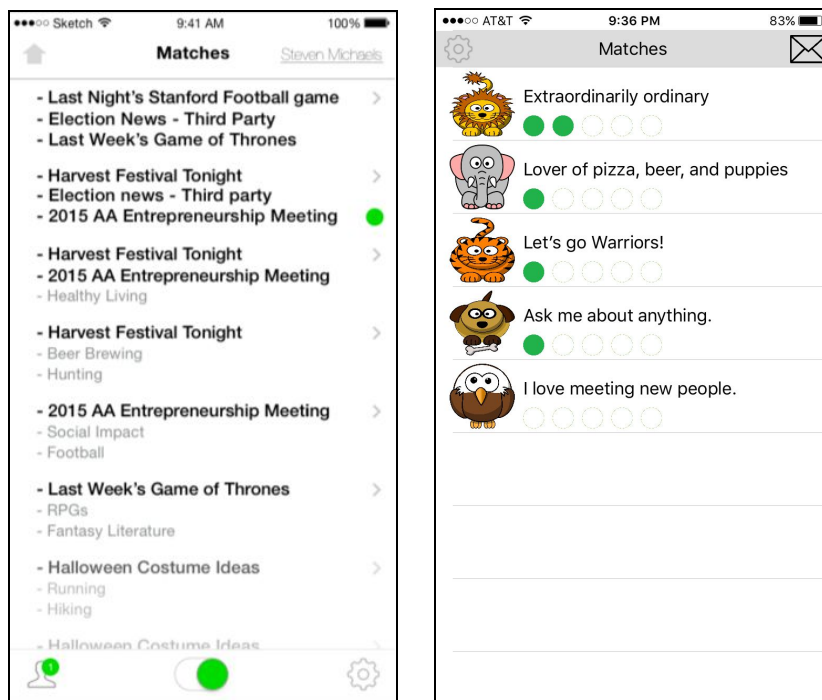
[H2-4 Consistency][Severity 3] Green dot overloaded (available and notification)

Throughout our screens, we used the green dot for many things such as for the home screen, the activating slider bar, and the invite notifications. We fixed this by completely removing the slider bar, and becoming more selective with our use of the dot. In fact, for our hi-fi prototype, the green dot is only used to show common interests, seen in the second screen below.



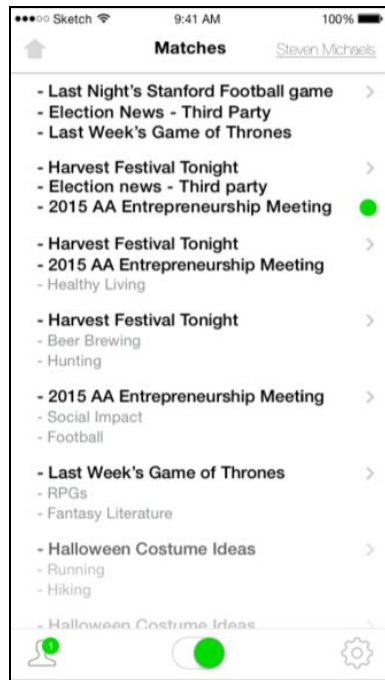
[H2-8 Aesthetic and Minimalist][Severity 3] Text heavy design is extremely confusing

The text heavy design is tough and tiresome to read. In response to this, we drastically cut down on the text shown in the match screen, and replaced it with green dot icons to indicate similarity with another user. Ultimately, however, the app is trying to match people for conversation, based off of their interests, so a little bit of text was necessary to be true to the intent of the design, and the beginning of a personal bio can be read above the ratings.

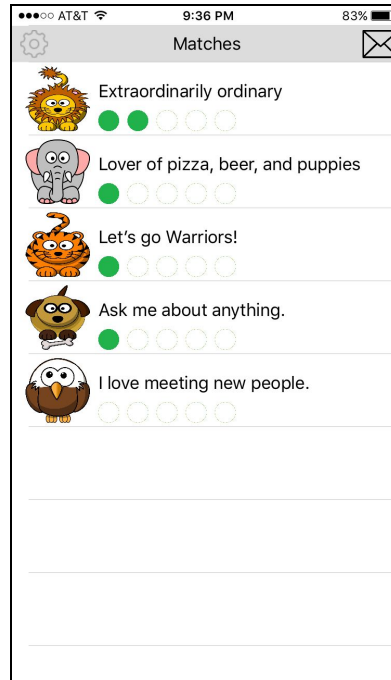


[H2-2 Match System and Real World][Severity 3] Avatar or username to remember users

In our medium-fi prototype, there was no easy way to tell apart the different matches. With the text heavy design, our matches screen appeared to be an essay. There was no clear distinction between match results. Thus, we introduced randomly generated avatars to easily distinguish different users along with dots representing common interests.



(med-fi)



(hi-fi)

Prototype Implementation

Throughout our design process, we used the following the tools. For our high fidelity prototype, we used Xcode to create a native iOS application. We used Proto.io and Sketch to generate storyboard sketches to get a sense of how our final design would look like. We used Illustrator to create icons. Xcode was a helpful tool in developing the app, because the user interface design had an accessible and intuitive method, and it was useful to be able to both storyboard and execute the actual app in one program. Swift also has a lot of open-source code, which helped us with tricky features such as swiping.

Xcode and swift programming posed a number of challenges for us as well. It is a large tool set with a large set of built in functionality that can be hard to understand at first. We had to spend a significant amount of time familiarizing ourselves with Swift just to begin working, but even then the size of the program continued to be a major roadblock. With so many different built in functions of the app, it required a fine grain understanding of the differences between functions to differentiate between functions that would otherwise seem interchangeable. In addition, the ui builder, while intuitive, seemed to be lacking in direct graphic editing features.

Our app has three main features that could be hardcoded for our prototype due to the limitation of its use. One of the central features of the app is connecting the user to other people on the caltrain, but because the prototype would only be used by one person at a time, we hardcoded other profiles into the app that the user could match with, giving them a set of daily interests, an avatar, and a brief bio.

Finally, we hardcoded the daily topics into the app. In a real version, there would likely be an algorithm that could determine apropos topics based off of news events, season, and location. For the purpose of this prototype, which would only be used on a specific day, we chose the topics in advance. We chose them as a set of things different enough that each would describe the type of personality a person has, but broad enough so that any person would have at least one interest.

The main wizard of oz technique was used in the implementation of our conversation screen. Since we could not have a real person to chat with our prototype user, we had to hardcode responses to their messages into the app, but since the logical progression of the chat had to get to a seating invitation of one party to the other, it was easier just to code the entire conversation as an animation, instead of predicting the types of comments the prototype user might type into the interface.

Limitations and Tradeoffs:

There are limitations to our app beyond what was wizard of oz'd and what was hardcoded. We did not implement the conversations screen on our app, as the number of people hardcoded in our database and the length of time interacting with our app in the demo was not great enough to warrant its implementation. This screen would show a list of all the conversations you had started with other riders so that you could sort through your different possible matches.

Additionally, the options for music/radio sharing and playing a game with other caltrain riders are not implemented, but would add a second dimension to the user experience of our app. Pushing that further, we could develop a set of ways that people can quickly bridge the gap from being total strangers to approachable acquaintances.

There are a few more, smaller, unimplemented features. The gear pop-out does not work on the matches screen. The end ride button is unimplemented, as are the help screen, and the personal profile settings. All of these would need to be implemented for our app to feel complete.

Summary

Overall, the main goal of our hi-fidelity prototype is to incorporate all of the feedback from our user testing and heuristic evaluations while still maintaining our goal of delivering an intuitive and easy-to-use interface. In creating our hi-fidelity prototype, we carefully stepped through our task-flows, and isolated what actions the user would want to be able to do from each given screen. We re-storyboarded our app with this feedback, and changed the way that the app was connecting users from a highly structured encounter to a looser conversation. This technique allowed us to streamline the interface structure, but it set us behind in working on the final implementation of the interface.

Appendix - Team reflection:

Throughout the quarter, our efforts have been focused on the structure of our app, but there are a few graphical and technical problems that would need to be worked out in the next iteration of the app.

- Our “match’s profile screen” is distracting in its use of green, and the button to start a conversation may not be inviting enough for a first time user.
- In testing, people often got confused as to whether they were still selecting interests on the match list screen, because the avatars were not clearly representing people. The avatars could change to make this more clear, however we would still want to avoid the avatar revealing a match’s gender or identity.
- The invite button on the conversation screen could be increased in prominence to make it a more central feature of the conversation
- our game implementation could use more introduction.
- the swipe screens could have a greater skeuomorphic quality to reinforce the clarity of the swipe interface.
- The blue dot indicating that you had a conversation with someone on the matches screen should be changed to a more connotative icon, such as a speech bubble.
- Our screen after a seating invitation is accepted does not include a seat location popup, but including that information would ease the function of finding your match.

Our App is not context dependent, and we could see it being ported into other settings where icebreaking is necessary. As examples, it could be a useful application in business meetings, in waiting rooms, and to address the common dilemma of being alone in a crowd.

Overall, we learned a lot about the design thinking process and what aspects constitute a good user interface. We hope you enjoyed following the development of our application.

Thank you,

The dotTrain Team