PickUp
Low Fidelity Prototyping and User Testing

Team Members

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Introduction

As people plan casual sporting activities, one of their main tasks is to locate other people interested in participating at a mutually convenient time. At times, this becomes quite a challenge, since people generally depend on their existing social networks, which may or may not contain the people they're looking for. Additionally, coordinating such games with large groups of people is not a simple task. Our application seeks to improve upon the status quo by making it easier to find people with shared sporting interests, skill level, and compatible scheduling and location preferences.

Mission Statement

To encourage participation in casual sporting activities by connecting people and facilitating the organization of such activities.

Prototype Description

Background

To move towards a more complete and usable prototype, each member of our team conducted a heuristic evaluation of our sketches. We evaluated each scenario individually, and then came together to discuss our findings; at the end of each of these discussions, rather than immediately moving on to the next scenario, we took our sketches and notes and created the parts of the paper prototype that were used in the scenario, one screen at a time. We believe that this immediate reflection allowed us to channel all of our ideas directly into our prototype while they were fresh and open for debate. Through this process, we were able to find many issues with our previous design, including some global inconsistencies that may confuse a user. For example, several of the screens we originally designed lacked a header or clear navigation UI. For the "Finding a Game" scenario, the evaluations led us to simplify our filters that can be used to sift the games displayed on the map, since our old filters did not necessarily speak the language of all our users. Additionally, we changed the "aggregated schedule" screen, which previously showed a calendar with boxes that represented each hour time slot in for a day, filled in with the number of people who could attend at that time. We realized that just the number of people is not enough information and that users would not know who was available at each time, and changed our design so that when a time box is selected, a list below the calendar is populated with exactly who is available at

that time. (More detail about each of our findings from this evaluation are presented in Appendix A.)

Interface

The foundation of our application is fairly simple, focusing on the aspects of creating a pickup game, finding a game, and connecting with other individuals through profiles. Creating a new game is achieved by first pressing the "+" to create a new game. A dialog is displayed where the creator can then specify the sport, time, and other criteria.

The second foundational pillar is finding a game to play. The primary interface is the map, showing the locations of various sports that are taking place around a specified location. The user can then tap the small tabs on the map to reveal more in-depth information about the event. From there, the user can choose to attend the sporting activity, or search for others. A slider bar and calendar are located near the bottom, allowing the user to view activities that are happening on that particular day or other days in the future.

The third aspect allows a user to connect with other individuals who participate in pickup games. This is accomplished with the profile pages that correspond to others connected with the application. The user can view profiles of friends and others who have participated in the same games. Feedback can be given to give others a sense of the individual in a sports setting.

Taking cues from the iPhone, our interface mimics its interaction and operational ideas. The entire interface is based upon touchscreen technology, allowing a wide range of freedom for our interface and for the user. Buttons, such as navigating through the main menu, or creating a new game, are operated simply by touching them. Schedules are filled out by sliding the finger across times of availability on a calendar. Scrolling, when viewing players or the list view of games, is achieved by sliding or flicking the finger up and down to scroll through the list of items.
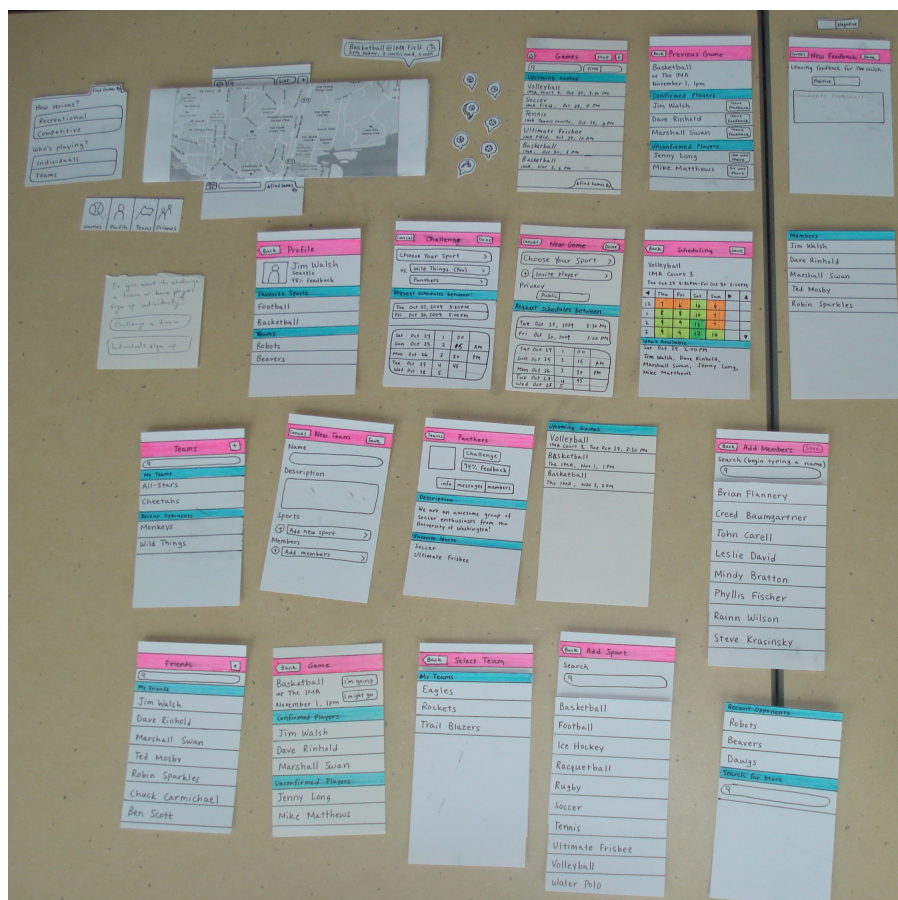
Method

Participants

   All three of our participants were male UW students with experience in playing sports. Danny and Ian asked their friends to find some people they know who play sports and would be willing to participate in our user testing. To tailor our application to our primary target demographic, we wanted to make sure that the users had experience with sports and pickup games. The first participant is a junior at UW, majoring in business. He is part of an intramural football team, and also likes to play unorganized pickup basketball games at the IMA. The second participant is a sophomore at UW studying psychology, and has lots of experience playing soccer in school, intramural and unorganized pickup games. The third participant is also a sophomore, studying civil engineering, and has lots of experience with pickup basketball, as well as organized basketball and baseball.

Environment

   We did the testing in a CSE meeting room, where it was quiet and void of distractions. We had the participants sit in the center, with the observer and the facilitator on either side of him. The 'computer' sat across from the participant and had all the interface screens laid out in front of him, presenting them to the participant as necessary.

Tasks

   We wanted our tasks to cover the most common use cases for the application as well as its novel features. The common cases were finding a game, creating a game for individuals to join, creating a team, challenging a team to a game, and leaving feedback for other users. We also wanted to test the feature of being able to request schedules from other players and reviewing the information to coordinate a time for a game.
   One task was to first create a volleyball team and invite 3 friends to join that team. Once that was completed, we asked the user to find another volleyball team and challenge them to a game. This involved requesting availability info from players from both teams, and reviewing that info to select a time.
   Another task was simply to find a game of basketball and join it. This was a relatively simple task, requiring the user to locate a basketball game on the map, enter it, and join it.
   Our third task gave an alternate scenario to the one above: none of the basketball games looked appealing to the user, so they had to create their own. This allowed us to test the "create game" screen.
   Finally, we had a task where the user leaves feedback for another individual, by viewing a post-game info screen and navigating from there.

Procedure

With the setup described above, we first had the user sign our consent form, informed them that we were testing the interface and not them, and described briefly how the touch interface would work. Sunil was acting as computer, and for the first participant, Ian was observer and Danny the facilitator (it was through Danny's friend that we found him), and for the final two Danny was observer and Ian the facilitator (Ian's contacts had provided these two participants). Mitch was not available at the time of user-testing. We had each user run through the four tasks, but used a separate ordering each time, to avoid any biases a certain ordering might produce. We gave minimal help to the users, only assisting when it was clear they had misunderstood the task. After each user was done, we asked them for any general comments or suggestions on the interface, then thanked them for their time.

Test Measures

During testing, we were looking for several things. One was how users navigated the system: whether they went to the relevant screens for the task they were performing, and how easy it was to find them. Another thing we looked for was how well they understood the labels and messages in our interface. If labels weren't clear, or the user didn't know what their options were, or misunderstood what options were available, we took note. An important aspect we considered was whether the users had experience with the iPhone, as our interface was designed to be consistent with the look of its standard interface and general functionality, so we took took that into consideration if they struggled with those elements which iPhone users are accustomed to (e.g. "+" button, setting a time and date). Finally, we watched for any errors such as skipping steps or trying to use the interface in a way that it cannot be used.

Results
The results for our task of finding a game and confirming one's intent to attend were promising. All of our testers were able to complete the task without help and with minimal need for exploration or learning. One tester did not initially understand that he could use the search bar to narrow results by sport, and spent some time exploring for a drop down of possible sports. Another tester was unclear about how the "find games by" tab was supposed to be opened and closed, but discovered the solution within 2 clicks.
Our next task, creating a game for individuals, had a couple more problems, but after a change to the phrasing of a dialog, and in the hands of someone familiar with iPhone controls, there were no major problems. Both our first and second testers had no experience with the iPhone, which we believe is the cause for the confusion they experienced with identifying the button to create games, because the "+" button used is a commonly used iPhone control. The last main problem occurred after testers pressed the "+" button, when a dialog appeared that asked "What type of game?", with options "Individual Players" and "Team Game". After both of our first two testers selected "Team Game", giving the rationale that basketball was a team sport, we decided to change the dialog for our final tester. We created our new dialog based on questions asked to both of the testers that had trouble with the old dialog, and the final tester had no problems after the change.
Our third task, giving feedback, went smoothly. One of the users was confused about the positive-negative toggle control, as it only shows one of the options at a time -- this is also a common iPhone control. Other than that, the only barriers encountered by testers were clearly also due to their inexperience with standard iPhone controls; and

aside from this all of our testers easily completed the task quickly and without any extra exploration.

The fourth task, our most difficult, caused the most problems for testers. The first problem we observed was that two testers thought the "Friends" tab was where they should go to create a team. While they both realized after looking at the "Friends" tab's initial screen that they were not in the right place and immediately switched to the team area, their initial reaction is troubling. The next major problem was that no tester fully understood what the request schedules section did on the game creation page. Most understood that they were selecting a range of possible start times, but usually not immediately, and none understood that both their team and the team they were challenging would be asked for their schedules between the range. The testers did not understand the model or process we had thought up about how to schedule a game. One tester firmly believed that he was supposed to pick a range and then the team he was challenging was allowed to pick the specific time. Clearly, more explanation about how this process works is needed somewhere. The last problem testers had with this task was understanding the choose a time screen. Our first tester explained after getting stuck on the screen that he did not understand that the calendar was clickable, which was most likely a problem of our prototype than anything else. After an addition of a small cutout to indicate which cell of the calendar was selected, this misunderstanding did not occur in future trials. None of the testers understood that we wanted them to drag to choose the best time, and only one of the three testers understood that the numbers represented the number of people available at that time. All of the testers told us more explanation was needed for this information to be clear. The user testing revealed more bugs than we expected, and it revealed bugs we did not anticipate, most likely because we understood the process and did not realize that it was unclear.

Discussion

Each of the four tasks revealed many different pros and cons concerning our interface design. As a whole, the interface was generally easy to follow and intuitive for users to grasp. This was reflected in the ease test subjects had in completing each of the tasks and the speed at which they were able to complete them. However, on that same note, there was slight difficulty in particular for users who were unfamiliar with the iPhone interface, causing navigational and selection problems. The question that remains is whether the user had difficulty because of our interface design, or whether it was due to the use of a paper prototype. This was definitely a limitation of the experiment, as most people's perceptions of an interface on paper and one on a touch screen are much different. Since this interface is touch-based, there is an assumption that the user will have experience using a touch screen device. Statistically examining the distribution of touch screen technology, it seems likely that these same users will be using an iPhone and will therefore be much more familiar with the interface. Yet, on the contrary, the application should also be easy and intuitive enough for anyone to pick up and use, regardless of their experience.

Specifically, each task also revealed many effective techniques and subtle issues in our interface design. The first task revealed that our intuition on both finding a game to join and confirming were almost on target. Since users had little trouble navigating, there is very little need to change our approach. But this task did reveal a need to be explicit about opening and closing supplemental tabs for searching. Giving the "find games by" tab a more clickable look may help to relieve this problem. For the dropdown menu issue, the search bar may also produce a dropdown list of suggestions that can useful for two types of users; those who are both expecting the dropdown menu for sports and experienced users who want faster searching capabilities through autocompletion.

The second task, creating a game, showed us a few more issues that needed to be addressed in our design. The first problem of using the "+" button falls into the category addressed above concerning familiarity with iPhone technology. Additionally, we found

that users tended to interpret individual players' and team games as individual sports and team sports respectively. This was a problem that needed urgent attention as it caused a lot of confusion for users. Our original intention was that this option would distinguish those trying to form a cohesive team and those just looking for a group of individuals to play with.

The third task of giving feedback went exceptionally well. The results validated the effectiveness our design concerning profile management and posting feedback. The experiment really revealed users' intuitions in working with profile based applications, specifically Facebook, to navigate through this task.

Our fourth task, and by far the most difficult, revealed the most problems concerning our interface design. The scheduler seemed to cause users the most problems. Many did not understand what the "request schedule" section did or that it would try to coordinate with the opposing team. Small pop-up messages may be required to inform users the scheduler's functionality. Yet, conversely, many users may find it bothersome as they become more experienced using the application. Additionally, few realized intuitively that they were required to select a block of time indicating when they were available on the "schedule" page, indicating there was not enough explanation in the interface to cue that action. Something as explicit as a message saying, "select available time" at the top of the schedule page may help to relieve the problem. On the other hand, it may have been a limitation of the paper prototype itself, as the calendar cells did not appear selectable. The numbers in each cell were also very ambiguous -- maybe they are not necessary, as a detailed explanation would be required to reveal what they reflect.

Appendix A: Heuristic Evaluation Results

	Screen	Heuristic	Description	Severity	Evaluator
Finding A Game		2	experience and competitive filters do not make sense to every possible user, as many may have never heard of intramural sports.	3	Sunil, Mitch
		4	having two places to filter by time is confusing ("When" tab in filter by area and slider bar just above filter by area)	3	Sunil
		8	why have a button to look at the weather the weather should just be shown in place of the button	3	Sunil, Danny
		6	there should be a small map on the game profile page if the user navigates to the page through the map so that the user does not have to remember the map	1	Sunil
		1, 6	when the map has filters applied to it they should be visible so the user does not have to open the filters area to see what filters are currently applied.	3	Mitch, Ian
		7	the map should indicate more clearly if a users friends are playing in any games on the map	3	Danny

	Screen	Heuristic	Description	Severity	Evaluator
Organize a Team Game		5	the "create team" button is where a search submit would normally be this is confusing and may cause errors	3	Sunil
		10	there should be a description of what a team is somewhere and how to utilize a team in pickup	3	Sunil
		2	instead of "add a new member" we should use "invite" as this makes it clearer that the person can decline	3	Ian
		1, 6	the team profile page does not say what kinds of sports the team plays or where they like to play	4	Danny, Mitch
		6	you cannot tell from just the numbers on the calendar who can attend, numbers of people is not enough because two times when 4 out of 8 people can come may not be equal which 4 is important.	4	Danny
		4	dialog navigation like done, cancel, and save should all be either on the top or bottom a standard should be set	3	Danny
		5	when entering a sport we should have the text box use auto complete to help	3	Sunil, Danny

			prevent errors but still allow arbitrary sports to be entered		
	Screen	**Heuristic**	**Description**	**Severity**	**Evaluator**
Give Feedback		2	a different word should be chosen to replace "dismiss confirmation"	3	Sunil
		8, 4	we should choose one format with witch to display feedback and it should be a percent to keep the design minimal and clear	3	Sunil
		5	we should limit the number of characters a user can enter for feedback comments to help get more concise comments	4	Sunil, Ian, Mitch
		7	we should make it possible to get to the giving feedback screen directly from the game profile screen if a game has ended	3	Sunil, Ian
		1	when viewing a non friends profile should we be in the friends tab? seems odd	3	Ian
		3	no way to exit like a back button	3	Mitch, Danny
		7	there is now way to quickly navigate to see negative feedback, if there is a lot of positive feedback a lot of scrolling would be needed	4	Danny

Appendix B: Script and Task Descriptions

Pre-Test:

Thank you for helping me and my group today. We are students in an HCI class at the University of Washington and are designing a mobile phone application that aims to help people find, create, and schedule pick up games. We have created a paper prototype with our initial ideas on how such an application could work, and today we would like you to try and complete 4 tasks using our paper prototype. By observing how you use the interface, we hope to improve our design. Our paper prototype is very low-tech: it uses index cards to represent a mobile phone screen, and post-its or other cutouts to represent typing and button interaction. Please don't let this distract you, and try to interact with the phone as if it were real.

During the testing, please:

Talk out loud about what you are doing and thinking
If you get stuck and can't figure out how to do something, feel free to explore the application until you find what you are looking for, and if that fails we can give you help. Remember, we are not testing you; we're testing our interface. If you get stuck or confused, that is our fault, not yours.
You can stop at any time. If you need a break or would like to stop entirely, just let us know.

Test Scenarios:

Imagine you would like to play a basketball game later today. Use PickUp to find and join a game. (should change join to some other word)
Let's pretend you didn't find any basketball games later today, or that none of the games appealed to you. Use PickUp to create a basketball game for 3:30pm at the IMA. Before leaving for the game, check if anyone else is going to your game and decide whether or not to go.
Now, as if you had just played in the game you created at the IMA, use PickUp to give feedback about one of the other players you played with.
Now, let's say you are the captain of a volleyball team, and you would like to set up a practice game between your team and another volleyball team. Use PickUp to make a team with your from three of your friends (make it so they only have three friends). Set up a game with another team.

Appendix C: Raw Data (Rough Notes of Note Cards)

Person 1
task 1
-no game screen
-wants to go somewhere to pick what sport he wants to play (doesn't know to search)

task 2, trying to create a game

couldn't find how to create a game--not familiar with iphone
chose team game rather than individual
didn't understand the time interface
didn't choose a team to play against

scheduling:
chose to save before selecting a time

task 3, feedback
hit positive, and it switched to negative (wanted positive)
    -wants both visible, one higlighted

task 4, creating team
-selected several members
    -no save button!

comments
-thinks 'find games by' should be up at top, by search bar where you're typing.
-wants time selecter on map to be drop down box (currently just looks like a search box)
-when clicking create a game, drop down has shortcuts to different

Person 2
Create a Team Game
went to friends first, then switched to teams
could not find create a team at first but first attempt was the +
wrote type of sport in description
thought sport was already determined in create team game dialog
confused by request time idea on create team dialog

Feedback
no feedback button on profile

Create an Individual Game
confused about what area (Games,Friends,etc) he is in
tried to make a team game when asked to make an individual game, thought basketball
was a team sport so it has to be team game
requesting schedules for an individual game was confusing
reviewing all schedules was not clear

Find a Game
not clear how open and close tab works
had no other problems

Person 3
Feedback
has used ipod touch a lot(same buttons as iphone)
clearly understood sliding from positive to negative

Create a Team Game
tried to create a team in the friends area
confused about where to create a team
found plus after looking through some of the teams profiles
thought that requesting schedules was just for the other team and that they could pick the time after he set a range
mostly understood the schedule page surprising, did not understand that he could drag to select multiple times

Finding a Game
no problems finding the basketball game

Create an Individual Game
no problem with new and improved screen to choose individual or team game

Appendix D: Consent Form

Consent Form

The PickUp application is being produced as part of the coursework for the University of Washington Computer Science course "CSE 440: Introducton to Human-Computer Interaction". Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of PickUp. Data will be collected by interview, observation, and questionnaire.

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers (Ian Crofoot, Sunil Garg, Mitch Ishimitsu, and Daniel Swisher) or with Professor James Fogarty, the instructor of CSE 440:

> James A. Fogarty
> Computer Science & Engineering
> University of Washington
> 206-685-8081
> jfogarty at cs.washington.edu

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the researchers and their supervisors.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my usage and opinions in relation to the PickUp experiment. I understand I may withdraw my permission at any time.

Name _____

Date _____

Signature_____

Witness name _____

Witness signature_____