
REFLECTIONS ON A PAPER PROTOTYPING SESSION

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HANLON

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A Paper Prototyping Session

The Paper Prototyping Session was completed on October 26, 2016 during the scheduled lab time.

B Team Details

B.1 Team Name

The team name for the project is "Hanlon."

The name is inspired by the eponymous highway that runs through the city of Guelph, and signifies the team's ties to the University of Guelph, and its beautiful city.



B.2 Team Members

Hanlon is comprised of the following students:

1. **David DiMaria** - Project Manager
2. **Braydon Johnson** - Software Developer, User Interface Designer
3. **Joshua Lemieux** - Project Manager, User Interface Designer
4. **Neivin Mathew** - Software Developer, User Interface Designer
5. **Like Zheng** - Software Developer

B.3 Team Roles

Project Manager

The Project Manager predicts potential problems that may arise during development, and plans tasks to ensure that the project is completed successfully and on time. This role involves the scheduling and unblocking of tasks. It may also involve some programming.

Software Developer

The Developer is involved in all aspects of the software development process including research, design, coding, documentation and testing.

User Interface Designer

The User Interface (UI) Designer role is to plan out and develop any user facing component of the system which includes the specific layout of screens, and improving the interaction between the customer and the product.

B.4 Team Organization

Hanlon will follow a static team structure. Each member will maintain their respective roles for the entire duration of the project.

Hanlon will use a democratic majority voting system for any decisions that need to be taken within the team. Each present member will be involved in voting, and possesses one vote per motion. A motion is passed when a simple majority is achieved.

In the event of a team member being unavailable, and a majority cannot be established, a motion can only be passed through unanimous consent.

C Use Cases

C.1 List of Use Cases

Participants of the Paper Prototyping session were presented with the following use cases:

1. Create a Farmer user account
2. Login to a Farmer user account
3. Answer an ARET Survey
4. Download a Research Article on Tomatoes
5. Add Tomatoes to your list of Crops
6. Harvest Tomatoes from your list of Crops
7. Delete Tomatoes from your list of Crops
8. Change your name in your User Profile
9. Change your Account Password
10. Log out of your Farmer user account

C.2 Team Roles

The members of Hanlon were responsible for different aspects of the prototyping session:

1. **David DiMaria** - Facilitator
2. **Braydon Johnson** - Observer/Note Taker
3. **Joshua Lemieux** - Human Computer
4. **Neivin Mathew** - Observer/Note Taker
5. **Like Zheng** - Observer/Note Taker

C.3 Participants

The prototyping session included the following four participants:

1. **Corey Alexander**

The participant appeared to be in their late twenties, did not seem to be able to remember some instructions, but still seemed to be familiar with mobile interfaces and possessed a

moderate proficiency with computers. This participant is not very representative of the client.

2. Dominic Gagne

The participant appeared to be in their mid twenties, and was very comfortable with the mobile interface and other aspects of the application. The participant is certainly highly skilled in the use of computers and is also not an accurate representation of the client.

3. Oliver Cook

The participant appeared to be in their mid twenties, and was very comfortable while navigating the mobile application interface. The participant is almost certainly highly skilled in the use of computers and is also not an accurate representation of the client.

4. Katherine McRoberts

The participant appeared to be in their late thirties, and seemed unfamiliar with mobile application interfaces and design standards. The participant is most likely not skilled in the use of computers and is quite representative of the application's target audience.

D Things That Worked

It was difficult to evaluate exactly what elements of our design worked well since participants would not notice things that worked as expected. Thus, we can assume that any element of the design that the participants did not have trouble with was well designed and behaved in a way that users were familiar with. However, some participants did have positive comments about certain parts of the prototype.

All participants thought that the processes of logging in, and creating an account went exactly as they expected. They felt that the process was straightforward, and agreed that the flow was intuitive. Upon reaching the home screen, all participants were able to recognize the menu bar at the bottom of their screen as the primary means of navigating through the application. Most participants acknowledged that they had successfully logged in.

The process of adding new crops to the list of the user's currently growing crops seemed to be well received by all the participants. Most participants felt the add button occupied the same section of the screen that they expected it to be in. They were able to successfully search for a new crop and add it to their growing crops without a hassle.

All participants agreed that new surveys available to them on their home screen were appropriately positioned and visible enough to catch their attention without being obtrusive to other application functionality.

Most participants were able to easily navigate through their user profile page. They were able to successfully change their name, and account password without confusion. Most participants were also able to quickly find the logout option on the profile screen when asked to do so, and also completed the use case without any hindrance.

E Things to Improve

Although most participants were able to easily navigate through the system without much trouble, there were some aspects of the design that were found wanting.

The most common complaint was about our navigation bar at the bottom of the screen. All participants felt that the icons used to indicate each screen were rather ambiguous. They felt like they did not know which screen each button would lead them to. After the first two participants had completed the prototyping session, the team decided to add text below the icons to indicate which screen each button would lead the user to. While this approach certainly helped the following participants to navigate through the application better, it had a negative impact on the overall look and feel of the application. A more permanent solution would be to overhaul the icon design and choose icons that are more representative of the screens they lead to.

The location of the add button on the Crops page was troublesome to one of the participants, due to the fact that they were accustomed to the iOS user experience, while our prototype followed the Android design guidelines. The user expected the add button at the top right portion of the screen, rather than the bottom right. However, it is possible that this participant is an outlier. The team believed that the position of the button was consistent with Android design patterns, which is the operating system that the majority of the user base is expected to use.

Participants were generally unsure as to which specific screen they were on when managing their currently grown crops. The page titles for the screens on which participants viewed their own crops and searched for new crops to add were too similar, which possibly led to the confusion. Giving each screen more descriptive titles would help alleviate the uncertainty that the participants had. Appropriate prompts to the user in search bars and other pop-up windows would also help the user understand the current state of the application.

Some participants wished to decline answering the survey presented to them, but had

no option to do so. However, the user must have the power to be able to refuse to answer surveys that they do not wish to answer for any reason. Another issue was that the team had not accounted for how multiple surveys would present themselves to the user. To rectify these issues, the survey can have an additional decline button next to the choice to answer the survey. Additionally, multiple surveys could be presented as a collapsible list, where users can select which ones they want to answer and which ones they do not. The list can be collapsed to preserve screen real estate and be unobtrusive to the user.

Our first participant successfully downloaded the research article, but was not provided with any feedback indicating whether the download was successful or not. Thus, the user did not have any information as to whether the application had done what they had wanted it to do or not. The team added a pop-up notification after the first session which informed the user of the status of their download, which successfully resolved the issue for the other participants.

F Looking to the Future

Throughout the prototyping session, the participants made a number of suggestions about improvements that they would like to see to the application.

Some users felt a bit lost with all the different screens that were available to them and wished that there was something to guide them within the application itself. The addition of a tutorial section which would execute during the first run of the application would resolve this issue. A tutorial segment would not be difficult to maintain or implement, and would also vastly improve the usability of the application.

A common request was the improvement of the accessibility of the application for use by the disabled. The application could certainly have accommodations for some disabilities like colour blindness, deafness, etc. which are relatively common and easy to account for. However, it is simply not practical to account for some other disabilities, as it would increase the overhead for the project. The target user of the application is a farmer, who are assumed to be able bodied individuals and increasing the size and processing power demands of our application would be unfeasible, since we must account for a variety of devices and minimize the application's footprint on the user's device.

When the participants were attempting to complete the use case where they harvested a crop, some tried entering very large numbers for their yields. They suggested that the application should attempt to validate these fields before approving the changes. Since all the information is provided by the user themselves, it becomes very difficult to validate any of the information, if the initial amounts are invalid as well. There is no way to know what is a valid input for something that has such a high degree of variation across different users and times. From an extensibility standpoint, catching errors like these are nigh impossible. One method that would ensure some degree of validity, is to ensure that the harvested amount is less than or equal to the initial amount planted.

Some participants asked asked for a better way to sort the research articles displayed within the research section of the application. They felt that simply searching for key-

words within articles was not enough and wanted a way to browse through the articles without knowing what they were looking for. Adding functionality to browse through research articles by date, category, author, or crop would help resolve this difficulty. Allowing users to see what research articles have been viewed or used the most would also help them choose which article would be helpful to them. This functionality would not be difficult to implement as it would require a few more database queries and would also be straightforward to maintain.

One of the participants requested for background images and music in the application. While this could potentially improve the aesthetic of the application, it would not conform with the application's design standards and would also increase the size, and processing power demands of the application. Since we are under tight data constraints, and are attempting to cater a wide range of devices, some of which may have less processing power, this change would have an adverse effect on our application and its user experience. It would also require tedious maintenance to ensure that the images and music display and play well across various devices and operating system versions.

G Individual Contributions

G.1 David DiMaria

Yes! And... Using Improv

Considering I was the facilitator, and I chose to go without a script, I had to use some of the improv skills that we learned in class from The Making Box. First of all I had to make eye contact when explaining the purpose of our app and what paper prototyping is. This was a helpful skill because I needed to make sure they understood how to paper prototype, and maintaining eye contact makes it easier for them to listen to what I was saying.

One of the skills that I actually couldn't use was the Yes, And... skill. The reason for this is when a participant asked for clarification on a use case, I wasn't allowed to lead them in the right direction. As much as I wanted to lead them in the right direction with a new idea, it would have made it more difficult to determine if the system was intuitive to them. Also I explicitly wasn't allowed to give suggestions in the paper prototype session, so I had to abandon the Yes, And... tactic for the morning.

G.2 Braydon Johnson

The Yes! And... Lab Demo

During the lab demo I did not use any of the skills from the Yes! And... philosophy, this was because I was a note taker and did not interact with the participants at all. Honestly, I don't believe the skills would have been that useful, previously when I talked about it they were helpful because they gave us the tools to build on other people's ideas rather than shut them down in place of our own ideas.

In the prototyping session it was mostly watching and listening to the client, which certainly limited the options of techniques to use especially for those of us who had no real reason to interact with the participant. While there are some tools that promote our listening skills I previously stated that I wasn't very fond of First Letter Last Letter as it made it too hard to focus on what they were saying as a whole because I was too busy listening for the end of their sentence.

G.3 Josh Lemieux

Yes!And...Lab Demo

For our paper prototyping session, I personally did not use any of the techniques as I was the Human Computer (Beep Boop). I was not allowed to communicate with the client. I was only there to provide smooth transitions between screens following the client's' input. There were times where my group members used a little bit of knowledge gained during the prototyping session though.

The last client had some rather odd suggestions that were not typical in mobile applications. Rather than immediately shutting the idea down we thought about how that would be implemented and work in our app. It turns out that they just didn't work out with our app, but that's okay! By taking that time to review a suggestion that initially seems to not fit with our application, we may come to see that an odd suggestion could add benefit to our application.

A lot that we learned in the improv session is not exactly applicable to the paper prototyping session. This is because you are supposed to keep your interactions with the client to be as limited as possible. This is to get their "natural" reaction to using the application. I can see us using these techniques for our wire framing session when we are communicating more directly with the client.

G.4 Neivin Mathew

Improv and Open-Mindedness

It was rather difficult to completely apply the techniques I learned during the Improv session during the lab demo, mostly because I was simply observing the participants of the prototyping session and taking notes detailing their interaction with the application model.

However, even though I did not directly interact with anyone during the session, the principles behind the "Yes!And..." philosophy did help me analyze the prototype more critically.

It is easy to get invested in something when you have worked on it for a long time. You begin to look at your brainchild through rose coloured glasses and often remain oblivious to glaring errors in design. It's very hard to even accept criticism for your work, especially after you have spent hundreds of hours perfecting it.

However, the methods I learned in the Improv session definitely helped me keep an open mind about our design and forced me to be more flexible about possible changes. Accepting every change suggested by the user really opened my eyes to some design flaws that I would not have seen otherwise. For example, I was under the impression that our menu icons were rather intuitive and that anyone would be able to figure out what each icon meant. I was sorely mistaken, since all our prototyping participants found the icons very confusing and ambiguous. Remembering the methodology of "Yes!And..." really helped me realize the importance of considering different perspectives in design, especially that of a potential user.

G.5 Like Zheng

Yes!And... Philosophy

During the prototyping session, my role was that of observer and note taker. I was responsible for observing the user's behaviour, taking notes about how the system performs, and how the user responds as well.

Thus, it was not my job to talk to the participant. However, our facilitator was responsible for that. I noticed that the way our facilitator communicated with participant was much more listening than talking. This is important to minimize any influence our words would have on the participant, and allow them to give us their unbiased opinion. They can now give us a true reflection of what they are thinking.

The "Yes! And..." philosophy was not useful during prototyping session. It is a tool for changing ideas, and in prototyping session, we were listening to the user's ideas for most of the time. Thus, I did not find the technique helpful for the prototyping session.