Benefits of prototyping in every stage

Reflective Report

While providing a design guideline is important, it is not clearly delivered when they are just in words. Just like our key point in our project design guideline, visualisation is important when explaining information. Prototyping is a useful tool to be used when developing a product. Even our team was not focusing to produce a product as a solution, prototypes were developed and used throughout the project. It has been effectively used during the process of developing design guideline. This report will show how prototype were produced and revised each time and how it was used in the team's process of developing a guideline. Also, difficulties encountered during prototyping and benefits that have been achieved will be discussed. In conclusion it is recommended to use prototyping frequently as possible especially in a situation where team must work remotely.

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06/07/2020

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Introduction

This report discusses about benefits and importance in use of prototype during the process of developing a solution. The focus of our team's project is to improve the patient's understanding of their health data by making the data presented to users with more approachable manner. Instead of making a specific application that can be a solution to specific stakeholder, our team has decided to develop a design principles and guidelines that can be applied to any system that any team who wishes to improve medical data approachability.

This reflection report focuses on the use of prototype models throughout the development process of our design guidelines. Even though our team has focused on creating a design guideline instead of actual product, this report will explain how developing a prototype helped the team in the process to create the design guideline.

Each stages of change in prototype and any learning that has been achieved will be explained. Also, difficulties that have been encountered and benefits that has been found with prototyping will be discussed.

Background Survey

Parts I have worked on mainly was presenting and visualising our team's work and developing prototypes and interaction paradigms. Since our team's key solution to the problem was visualisation, this was key piece of work that needed to be worked on. The way how data is presented to users and how accessible and understandable these presented visualised data to the user was focus that I have worked on.

My focus on this project was to design what appeals the user and how to implement visualisation that suits best for users to understand. In order to find out appropriate visualisation of our work, prototyping was essential. Multiple different prototypes were developed, tested and used to find the principle.

Prototyping is well known tool for UX design and benefits developers during the development process for a product. The benefit of creating prototype is getting a first glance into what features your audience will use. [1] Even our team was not developing a product as a solution, prototypes were produced at every stage to show the current idea of solution. Being able to look at current stage of solution in a visualised way is much direct than textual explanation and aids both team members and non-team members to understand the current stage.

Online tools of prototyping such as Adobe XD was very useful, as any ideas that is applied on the prototype was able to be seen and tracked real-time, allowing team members to check and suggest any ideas.

Stages of use

Prototype has been created in multiple different types and levels throughout the process of developing a solution. From beginning where the team gathered ideas for a solution to final stage where team has fully developed design guideline. How use of prototype has been effective in each stage will be explained.

First stage

The first stage where prototype was used is when our team was generating ideas to tackle the problem space we have decided. Our main problem was to improve the user's understanding of medical data, but we were lacking ideas on how to overcome this problem. Each member had different ideas on what the problem is and how to improve the situation. There has been long remote discussion over Zoom which ended up confusing every member of the team. To understand each member's thought more clearly, basic paper based low fidelity prototypes were created by each member sharing their idea to solve the problem.

At this stage the ideas were more of products than actual solution of guideline that our team wanted to develop, but every team member drawing their ideas of product helped the team understand each member's thoughts better. Based on these product prototypes, some key ideas, such as using graphs to convert numeric and textual data was found, and our team could start creating a big picture to solve the problem space.

Without creating visualised prototypes, it would have been time consuming confusing for all team members when discussions were going over the Zoom meeting.

Second stage

The second stage of prototype was when all the ideas were gathered, and basic design guideline has been created. Based on member's prototype and team discussion, number of few key ideas including visualising textual and numerical data to graphs has been set. Our very first idea was to convert numerical and textual information that is in a piece of paper that people receive after their blood test from hospital.

From this I have created a basic low fidelity prototype. With this low fidelity prototype internal evaluation and testing has been conducted. This prototype has been extremely useful, as the result of internal evaluation provided our team with idea that visualising data into graph is not enough to make users understand health data better than text and numbers.
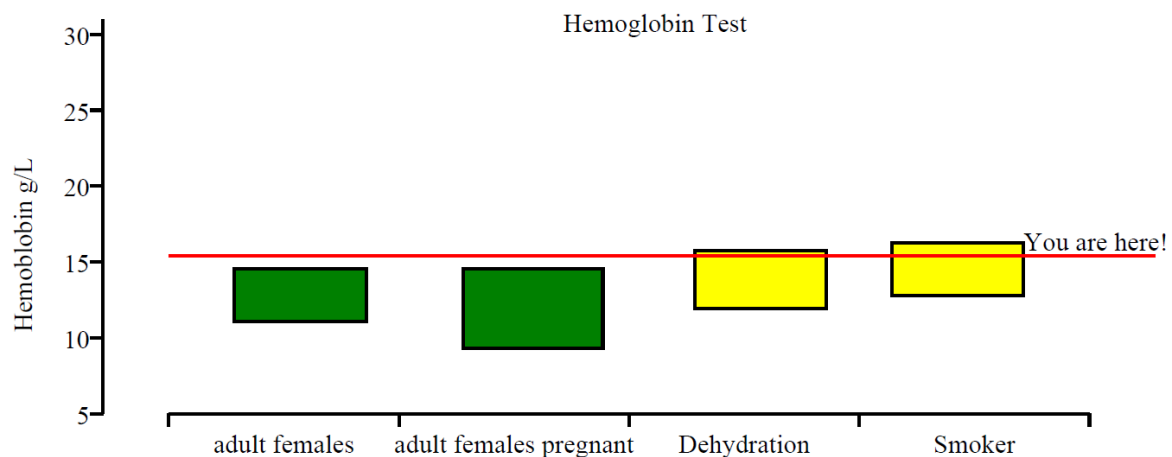

Image 1 – visualised graph prototype of blood test result (Created by Hyun Jeon)

Image 1 is an example of prototype that was designed in this stage. This prototype does compare and show the current status and position of the blood test result, but our team has found that for people with less health literacy this is not enough to make them understand better.

From this stage, our team has discussed other visualisation methods that can be done to improve user's understanding. If this prototype was not made at this stage and tested internally, our team would not have thought that there is problem with converting textual and numerical data to present in graph format is not effective enough.

Third stage

Since previous prototype was found to be not very effective, new ideas and methods on how to present data had to be developed. Number of other ideas, such as making a visualised calendar for medicine and making virtual human anatomy model(image 2) has been produced. Based on these ideas, I have created basic prototypes for each visualisation method, so it can be understood more clearly.

Image 2 – Prototype of virtual human anatomy model created (Created by Hyun Jeon)

Again, with these prototypes that have been produced, internal testing and discussion has been performed and some visualisation methods were found effective in explaining medical data to users.

These findings would not have been possible if the visualised prototypes were not made, but just textual ideas. By looking at the visualised explanation of ideas and testing them, team could find out which methods work better.

Fourth stage

The fourth stage of prototype usage when some user testing and survey was required. Based on findings from previous prototype I have improved our idea and developed a new prototype. This prototype included all the ideas that were thought to be useful from previous prototypes.
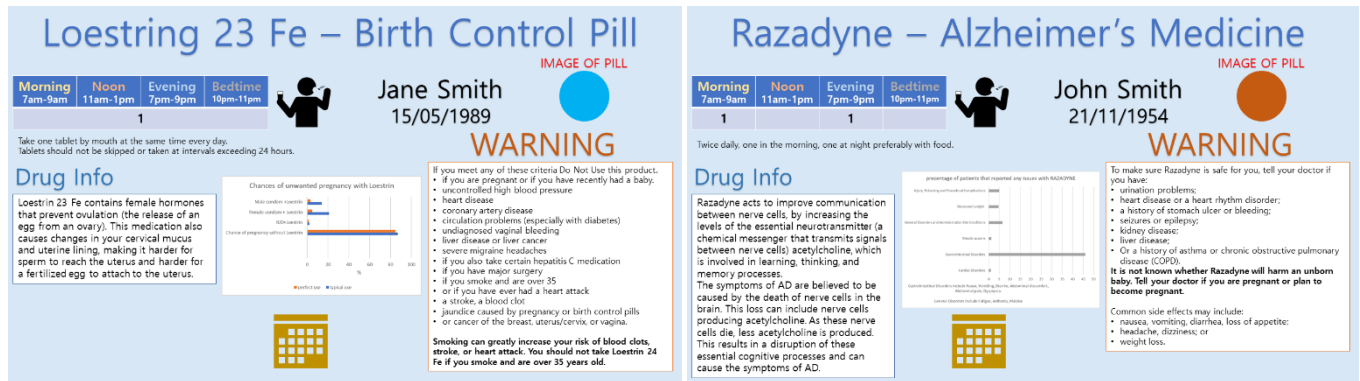

Image 3 – medium fidelity prototype developed for user testing (Created by Hyun Jeon)

Since the prototype was developed based on internal testing conducted by team members, external ideas and thoughts were required. A prototype in a poster form was generated and printed so potential users could see and test them.

Without a prototype we can not test our idea with potential users, so a prototype played important role here. Potential users were given the prototype to think this was a web system and some scenarios were giving to test these out.

Based on responses from this prototype more improvement could be made and some of these responses were critical that our team did not thought of. With these responses our team could update key design principles and design guidelines.

Final stage

In final stage high fidelity prototype has been developed which is improved version from previous prototype based on user testings and surveys. High fidelity prototype was created with Adobe XD following the design guideline, conceptual model and interaction guideline. This high-fidelity prototype included all key visualisation method our team has found to be useful from previous prototypes.
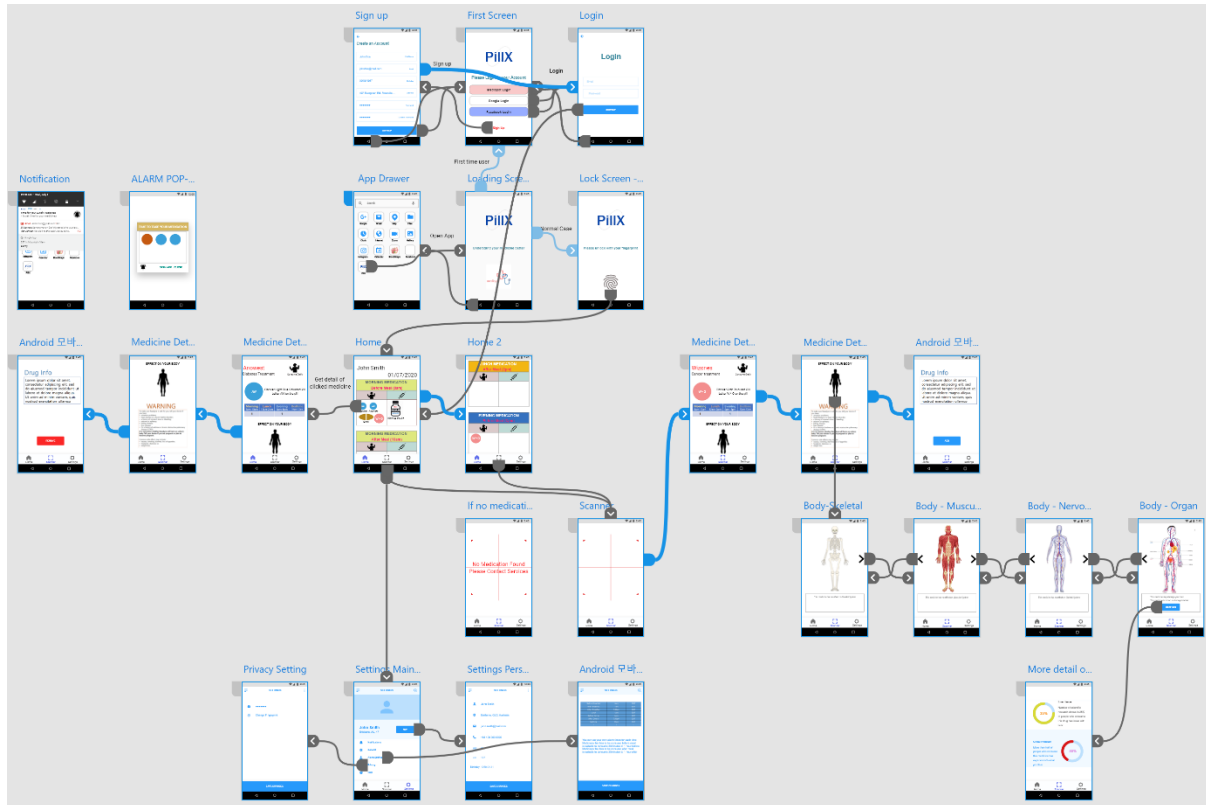

Image 4 – High fidelity prototype produced (Created by Hyun Jeon)

As this prototype was developed based on our design guidelines and principles, this prototype best explains how our guideline can be used to develop a product using our guideline. Without this example of image 4, it would be difficult for another team to understand our guideline fully as it is only explained in text. This example can give inspiration to people who decide to follow our guideline to develop a product.

Difficulties

During the process of developing a prototype, I have faced few difficulties. As I oversaw producing prototypes, it was difficult to generate a prototype that meets every team member expectations and needs. Every member of the team had different ideas on prototype and adjusting prototype to meet everyone's expectation was time consuming. This would have been much easier, if everyone could see and draw prototypes on a big piece of paper or a white board and when everyone agrees on the design, final version is produced.

Also due to COVID-19 situation, it was difficult to get user testing and interviews. To create a solution to our problem finding out what users want, and need was very important. Not being able to conduct physical user testing and observing users was inconvenient and less efficient.

Benefits

Even there has been many difficulties due to COVID-19 situation, making prototype for every stage helped our team to develop an idea during this situation. By making visualised prototype of ideas produced at each stage, team members could understand better how our process of producing a solution is heading. Many key findings would not have been possible if prototypes were not producing at each stage. Even most of prototypes developed in early stages were low fidelity prototypes, they were enough to understand and give ideas.

Also, as these prototypes were produced on computer, it was easy to share around team members and to show to potential users to test without getting in to contact. User testings would be difficult if users would just take surveys and interview that are explained in text or verbally.

Conclusion

In conclusion this report shows how prototyping has been useful in process of developing a solution to our problem space, especially in a situation where all team members must work remotely and contactless. At every stage of development regardless of quality prototype has been developed and produces. This prototype was presented to team members and any other necessary people and gave better understanding of current stage of our design. By looking at the prototype and testing the prototype gave many inspirations and ideas that improved our design guidelines. Also, it kept all the members in the team to be in track and follow the stage easily. From the experience with this project, it is recommended to create and update the prototype frequently, as it is much easier to keep everything in track and understand the process better during the situation of not being able to get in contact.

Reference

[1] Jeremy Duimstra. Prototyping: Where, When, How. Mjd interactive. 2020. [online]. Available: https://www.mjdinteractive.com/insights/prototyping-why-when-how/ [Accessed 04-07-20]

[2] R. Hartson and P. S. Pyla, The UX Book: Process and guidelines for ensuring a quality user experience. Elsevier, 2012. [Accessed 04-07-20]