CMPT 275: Software Engineering I
Fall 2017

HW1 - Project Plan

Project Group 2 - The Night Owls

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Revision History:

Revision	Status	Publication / Revision Date	By
1.0	Created.	09/22/2017	Shawn Thai
1.1	Risk Management section.	09/24/2017	Shawn Thai
1.2	Project Organization section, Project Summary and Overview draft.	09/26/2017	Shawn Thai, Karamveer Dhillon
1.3	Gantt Chart, Project Scheduling and Planning.	09/27/2017	Karamveer Dhillon
1.4	Project Planning, Overall Editing, Project Overview	09/27/2017	Fahd Chaudhry

Project Summary:

goTalk - Press GO to talk!

goTalk will be an Alternative and Augmentative Communication (AAC) application designed for children under the age of 10 that have been diagnosed with Autism. This iOS app will contain an image-to-speech feature which will aid users with expressing themselves. Compared to other speech assistance applications on the market, goTalk will be free.

goTalk will be an invaluable tool for Autistic children, as well as their parents, teachers and caregivers. The ability to communicate will help children with learning and growing, and bring them closer to their friends and family. Caretakers will also be able to take better care of the children since they will know their likes and dislikes.

Project Overview:

goTalk will focus on one of the most challenging problems that autistic children and their caregivers face in their everyday lives. Autism can manifest in some people as social awkwardness, speech impediments or even an inability to speak[2][4]. We aim to tackle this problem in a tried and tested way - an interactive iOS image-board with image-to-speech capability. Whereas most of the good quality apps that assist non-verbal autistic children are priced at over $100, goTalk will be completely free [5]. Therefore, goTalk addresses financial issues that come with the existing apps in the market.

The stakeholders for goTalk are nonverbal children diagnosed with autism. Also, anyone that needs to communicate with these children, such as family and teachers, would also be a stakeholder, as this app would directly benefit them as well.

Users:

1) Non-verbal Autistic Children

   These children do not have the ability to speak at all. This is very troublesome for parents and caretakers as they have to "guess" what the child is saying or wanting to say. It is also very difficult for these children to express themselves and show others information or things they know as they do not have a straightforward way of showing it. They can use nods, hand gestures and facial movements only to answer any questions which limits their potential.

2) Caretakers/Parents/Friends/Relatives

   Caretakers/parents/friends/relatives of autistic children have a hard time understanding them. This makes it a challenging task to tend to the needs of the children as it creates a major obstruction in communication. Paper methods can usually work but are extremely slow and inefficient as a paper holds limited amounts of information. Another barrier is that caretaker/parents do not know the child's potential due to the lack of verbal communication.

List of features:

1) Ability to communicate via the applications easy-to-use GUI

   The user can tap pictographic buttons on the screen and the application will use a voice assistant to say what is shown on the button so that users can formulate sentences or phrases to let others know what they are trying to say.

2) Ability to understand Autistic children

   The caretakers/parents can understand what their children are wanting to say. This will help them characterize the children's thoughts, likes and dislikes. This is essentially boost the overall quality of time caretakers/parents spend with their autistic children.

3) Ability to create and save custom sentences

   The user can create a custom sentence and save it to the app. These sentences can then be accessed at any time. Commonly used, or important sentences can be saved this way for easy access.

Overall Architecture:

The user starts by launching application from the application drawer. The application will display the name and logo to the user and then greet them with a "Welcome" screen. The user will setup the application for first time use and input their general information. This can also be done by the caretaker/parent if the user is unable to so. Once the initial setup is done, the app will display the home screen of the app. The application will be a user friendly GUI that contains large text and legible fonts with pictures. Each button will have a specific function behind it. There will be multiple rows each with it's own categories. Each row will be able to slide to the left or to the right to view more options. At the bottom, there will be a textbox that will display the phrase or sentence being formulated by the user. Beside the textbox, there will be a delete button so that user can edit sentences or phrases they are trying to formulate. Grammar and punctuation will be automatically handle through autocorrect. Just above the textbox, there will be a "Go" button that will enable the app to speak what phrase or sentence has been formulated. At the very top of the screen, there will be a home button that takes the user to the "Welcome" screen of the app. On the "Welcome" screen, the user can choose their profiles.

Project Planning:

Good communication will be an integral part in the success of this project. Therefore, the team has decided to use multiple communication platforms for different purposes. The team has three weekly meetings. The team will meet on Mondays from 1:30 PM - 2:30 PM, Wednesdays from 6:00 PM - 7:00 PM and Fridays from 3:30 PM - 4:30 PM. All weekly meetings will have Meeting Minutes so if any member of the team is not present, they can easily be briefed about what was discussed. The times of meetings may also be extended or shortened based on the agenda of the meetings. Emergency meetings will be held in case an unexpected event occurs. During the group meetings, the team will be able to assess their progress, and if need be, make any changes to the team's approach or schedule.

A group in the Whatsapp mobile app will be used as the first mode of communication. This group allows for easy and quick communication, such as locating group members or asking quick questions. The team's main communication platform for productivity will be Slack. Slack allows the team to organize all discussions into different channels, and gives the ability to easily share files between members. A third way of communicating, as well as planning, will be Trello. Trello is a Kanban style workflow app that aids in work designation, scheduling, and planning. It will also be used to visualize due dates and progress made so far. Using these three different methods will ensure that the team's communication is organized and effective, but the team will also implement effective external communication.

Externally, the team will need to communicate with Professor Tsang often, therefore a website has been created using GitHub Pages. This website contains information about the team,

The Night Owls, and an up-to-date overview of our project. All relevant documents and files will be linked to this page. Fahd, as the Project Manager, will represent the team for all assignment submissions and emails to the Professor.

Team Website: https://yvadher.github.io/cmpt275App

The team will be using GitHub as the configuration control software. All software revisions will be stored on the team's GitHub repository. All members of the team will have full access to the repository and will be allowed to make any changes necessary during the development process.

The team will self-finance this project wherever required. No third party will be involved in the project except the Professor, and maybe friends and family whose assistance may be needed/used during the development and testing stages. All devices used in the project will be provided by the team members themselves.

Project Schedule:

The initial planning stages of this project began on September 15, 2017. The deadline for the completion of this project is on December 4, 2017. Therefore, the team has 80 days and five members to complete the app.

There are six major milestones for this project that coincide with the due dates of the homework assignments. These milestone are as follows:

Milestone	Date	Deliverables
1	September 27, 2017	Project Plan and Website
2	October 18, 2017	Requirements Doc.
3	October 20, 2017	QA Plan and Design Doc.
4	November 6, 2017	Version 1 and Presentation
5	November 20, 2017	Version 2, Test Plan, and Work Assignment Doc.
6	December 4, 2017	Final Product, Documentation and Presentation

The total work has been broken up into smaller tasks, which have been assigned to group members. The gantt chart below displays the work schedule, and who is assigned which task.

These tasks are further broken down using a Kanban board mobile app called Trello in order to organize workflow.

In Trello, smaller tasks, such as specific document sections and functions to test, can be assigned to staff, while letting members know each other's current progress and contributions.

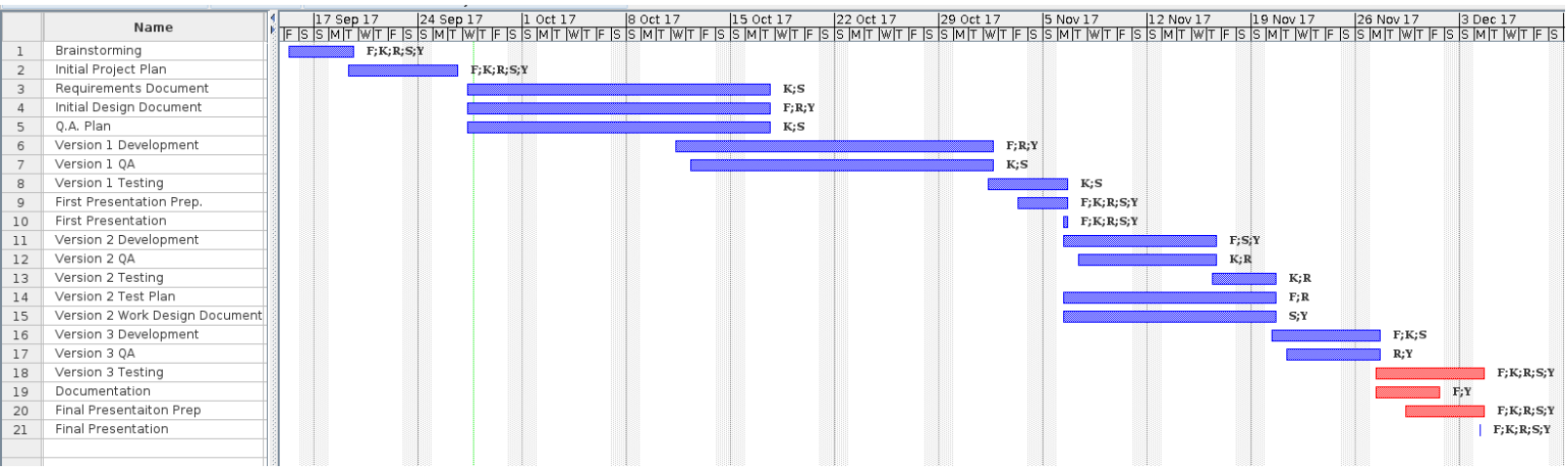

Fig 1: Gantt chart

Risk Management:

For any feasibly large project, it is imperative to anticipate potential risks and actively prevent them. The following table lists and describes several possible risks that our group may encounter, as well as noting our mitigation strategies for reducing the impact of each risk.

For our scale on the seriousness of the risks, we will use the assessment given in Section 22.1 of "Software Engineering" by Ian Sommerville:

"...catastrophic (threaten the survival of the project), serious (would cause major delays), tolerable (delays are within allowed contingency), or insignificant."

Risks	**Potential Impact on Project**	**Likelihood of Occurrence**	**Impact Area**	**Mitigation Strategy**
--Estimation--				
Underestimated size of the project; lack of time or training to complete project.	Serious	High	Project	Adjust project scope and scheduling ahead of time; remove nonessential features or functions.
Underestimated time required for coding and debugging software.	Serious	High	Project	Allocate more work among staff towards developing. Adjust project requirements to accommodate lack of time.
Requirement / Specification delays.	Serious	Moderate	Project, Product	Investigate and analyze the project, requirements, and specifications.
--People--				
Staff member(s) leave the project.	Catastrophic	Low	Project	Reorganize team; allocate work evenly and/or efficiently among staff.
Staff become unavailable at critical times.	Serious	Moderate	Project	Overlapping of work distribution such that people can fill in missing staff.
Staff requires unexpected training.	Serious	Moderate	Project	Early on, staff should be responsible for training to mitigate personnel shortfalls.
--Requirements--				

Requirements change, which require reconsideration of project design.	Serious	Moderate	Project, Product	Maximize information hiding; team meetings to discuss importance of the change(s) and whether or not project can continue without large delay.
--Technology--				
Technology or software are inadequate / inefficient.	Tolerable	Low	Product	Benchmarking, simulating, and frequent analysis.
--Tools--				
Software incompatibilities with mobile devices.	Serious	Low	Product	Frequent experimentation on simulations or on actual mobile devices. Review capabilities of software and plan ahead accordingly.
Inefficient code.	Insignificant	Moderate	Product	Prototyping frequently; analysis on coding structure.

Project Organization:

Fahd Chaudhry - Project Manager

Fahd is a keen Engineering Science student studying at Simon Fraser University. With a deep interest in technology and computers, Fahd is ready to tackle the challenges in the real world. Having an innate passion for coding, Fahd can develop in C/C++, Python and VB/VBA programming languages.

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Fig 2.1 Fahd Chaudhry

Karamveer Dhillon - Quality Assurance

Karamveer is an inquisitive computer engineering student currently studying at Simon Fraser University. He loves technology in all its forms, and uses his knowledge of C and C++ to further explore the field. In addition to engineering, Karamveer has also studied business management, which gives him a unique perspective on things.

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Fig 2.2 Karamveer Dhillon

Ryan Serkouh - Developer

Ryan is a fourth year computer engineering student. With ENSC 251, CMPT 128, 225, and 300 under his belt, Ryan is ready to tackle this course! Relevant skills include Mobile Programming with Java/XML, web design with HTML/CSS, and Embedded Programming with C++/ARM Assembly!

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Fig 2.3 Ryan Serkouh

Shawn Thai - Developer

Shawn is a third year SFU Engineering Science student with an interest in computer engineering. Shawn codes primarily in C++ and Python to create small programs and games, and during his free time, tries to learn new programming languages. Motivated by the coming of new, fast growing technologies, Shawn is eager to learn more about software development and project management.

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Fig 2.4 Shawn Thai

Yagnik Vadher - Developer

Yagnik is an avid computer engineering student with a passion for software systems. Yagnik codes mainly in Javascript with Angular framework, Python and C/C++. With co-op work experience in both IoT firmware projects and backend system software, he has developed a great software background. Yagnik has also worked with machine learning, and has diverse experience in software technologies.

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Fig 2.5 Yagnik Vadher

References:

[1] "Autism Spectrum Disorder: Communication Problems in Children", *NIDCD*, 2017. [Online]. Available: https://www.nidcd.nih.gov/health/autism-spectrum-disorder-communication-problems-children. [Accessed: 27- Sep- 2017].

[2]"Autism - Autism Spectrum Disorders", *Asha.org*, 2017. [Online]. Available: http://www.asha.org/public/speech/disorders/Autism/. [Accessed: 27- Sep- 2017].

[3]I. Sommerville, Software engineering, 9th ed. Boston: Pearson, 2011, pp. 593-650.

[4] I. Noens, I. van Berckelaer-Onnes, R. Verpoorten and G. van Duijn, "The ComFor: an instrument for the indication of augmentative communication in people with autism and intellectual disability", Lirias.kuleuven.be, 2017. [Online]. Available: https://lirias.kuleuven.be/handle/123456789/216355. [Accessed: 28- Sep- 2017].

[5] S. Dredge, "AssistiveWare talks autism apps, price challenges and iOS versus Android", the Guardian, 2017. [Online]. Available: https://www.theguardian.com/society/appsblog/2013/apr/02/assistiveware-autism-apps. [Accessed: 28- Sep- 2017].

Appendix A - *Team Meetings, Agendas and Minutes*:

1. [Meeting 1] - Monday, September 18, 2017 (https://drive.google.com/open?id=0B7aK5G9fAl8ySWl3ZmxlUzRWckU)
2. [Meeting 2] - Wednesday, September 20, 2017 (https://drive.google.com/open?id=0B7aK5G9fAl8yWUpvYm0wb3g5Snc)
3. [Meeting 3] - Friday, September 22, 2017 (https://drive.google.com/open?id=0B7aK5G9fAl8yNmUtYnhYTXdEVlU)
4. [Meeting 4] - Sunday, September 24, 2017 (https://drive.google.com/open?id=0B7aK5G9fAl8yOEdZWUVFWXBRdnM)