
EECS 2311 Software Requirements Specification

for

<Talk Box>

Version vF approved

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Revision History

Name	Date	Reason For Changes	Version
Mohammed Haque	03/04/19	Final Submission, Added new requirements	vF
Mohammed Haque	24/02/19	Midterm Submission Draft	vM
Tony Ly	04/02/19	Initial Lab Task Draft	v1.0

1. Introduction

1.1 Purpose

The purpose of this document is to give a detailed breakdown of the requirements for the EECS 2311 Talk Box software project and how it satisfies the needs of the customer. This document is primarily intended to be proposed to a customer for its approval and a reference for developing the first version of the system for the development team. It will cover the purpose, use, system features, common usage cases.

1.2 Intended Audience and Reading Suggestions

The intended audience for the Talk Box SRS (Software Requirements Specification), consists of participants in York University's, EECS 2311 (Software Development Project).

- Developers can use this document to evaluate the project and gain further insight into where future improvements and features could be added.
- The 2311 Professor and his TAs can use this document as a baseline of what to look for when examining the software and see where future improvements will be made.
- The end user can gain greater knowledge of the software history and the future developments that are planned in later versions and also how it satisfies the requirements of the end user.

The rest of the SRS (Software Requirement Specification) document is organized nicely and you would have no trouble going through all the subtopics sequentially, but you can always jump towards a section that you would like to specifically read.

1.3 Product Scope

The purpose of the Talk Box software is to allow users with speech impairments the ability to communicate confidently and effectively with others around them. It is also for introducing the virtual environment which allows the simulation of the TalkBox. The benefit of the software is that it allows for a cheap low budget Talk Box to be easily created/simulated. Some key objectives for the software are to be able to run on any operating system, easily used by anyone, work for any Talk Box layout, allow for easy changes/modifications, and be useable on a Raspberry Pi. The goal of the software is to not only help mute people communicate but also give Talk Box devices a greater life span, by allowing these devices to be easily modified and changed for case by case basis on top letting the users who aren't able to speak, communicate in an effect and intuitive way.

1.4 References

The entire project and all the relevant materials can be found on this GitHub link:

<https://github.com/amaanvania/TalkBox>

2. Overall Description

2.1 Product Perspective

The goal of the Talk Box software is to act as a low budget SGD (Speech-generating device) for users with speech impairments, while they wait for their personalized SGD.

2.2 Product Functions

- Creating new configuration files
- Editing existing configuration files
- Saving configuration files
- Recording Audio
- Opening existing configuration files
- Volume adjusting
- Add and Delete Audio buttons
- Ability to add custom images and audio files to audio buttons
- Ability to playback audio files
- Intuitive User interface features like Drag and Drop and Autofill
- Logger support
- Pagination Support

2.3 User Classes and Characteristics

Caretakers:

These users can be the parents or any other person or persons that aid the speech impairment (or mute) person in their day to day life. The Talk Box software is very intuitive and only requires basic computer and literacy skills to be able to set the application up in order for the speech impairment (or mute) person to use. There is a user manual that comes with this application that is easy to understand and can be read in order to know how to use this system.

Users with Speech Impairment:

The common characteristic shared among these users is that they cannot fluently communicate vocally. Since the Talk Box requires physical touches to be used and so it is assumed the user will be able to move their hands/fingers to activate audio buttons. Depending on how the audio button is set, this class of users can effectively communicate with others.

2.4 Operating Environment

The Talk Box software has been tested and is capable of operating in the following platforms:

- Windows 8
- Windows 10
- Mac OS X

- Linux

2.5 User Documentation

Further documentation can be found at the project GitHub repository (Includes the User Manual, the Testing Document, and this Requirements Document):

<https://github.com/amaanvania/TalkBox/tree/master/Documentation>

If there is any bugs/issues (or feature requests) they can report it directly to:

<https://github.com/amaanvania/TalkBox/issues>

If you want to reach the developer team who are currently working on the project, reach us via:

<https://github.com/amaanvania/TalkBox/wiki>

2.6 Assumptions and Dependencies

The TalkBox applications are developed in Java and therefore requires Java to be installed on the user's system. The latest stable version of TalkBox requires Java version 7 or higher. This applies to Windows and Linux users. On Mac OS X, Java is bundled with the application.

3. External Interface Requirements

3.1 User Interfaces

The TalkBox application comes with three User Interfaces. The TalkBox Simulator, the Configuration App and lastly the the Logger Application. The Simulator has a welcome screen that allows the intended users to play audio buttons and the Configuration app allows the same groups of users to configure these audio buttons. The logger application shows stats regarding the usage of both the simulator and the configuration apps.

3.2 Hardware Interfaces

- Mouse or trackpad required for navigating program (input)
- Keyboard for naming files (input)
- Microphone for audio recording (input)
- Monitor to display the program (output)
- Speakers to play audio clips (output)

3.3 Software Interfaces

The TalkBox application or applications are to built using Java and thus requires the latest version of Java (7 or 8) to be able to work properly and to also make use of all its features.

3.4 Communication Interfaces

The TalkBox application connects to the internet to use some of its features. Mainly, the Autofill feature of the TalkBox configuration App. A good internet connection is assumed when this application is being used in order to ensure that the application is working as intended.

4. System Features

Common Use Cases for the applications are noted below. Each application has its own set of use cases.

4.1 TalkBox Configuration App

4.1.1 Configurable Audio Buttons

Users can create audio buttons that can be configured to whatever the user wants it to play. This is really important because it allows the user to have the freedom of saying what they intend to say. The app allows the user to create more or delete existing audio buttons so that the user has a collection of buttons that the user can click on depending on whatever they scenario they might be in. The user can also add as many buttons they want as there is no upper limit to the number of audio buttons the app can create. The user can further personalize these buttons as the app gives an option to the user to associate an image with these audio buttons. The user can also create these audio buttons by using drag and drop or by using the Autofill feature that automatically creates these audio buttons. Finally clicking on these audio buttons result in the application playing the sounds the user associated with an Audio button.

4.1.2 Saving Files

The Talkbox configuration app allows the user to save the state of buttons so that they can come back to it a later point in time for further configuration or play the same buttons again. There's no need to create these audio buttons from scratch anymore. These saved files can also be open by the simulator which the caretaker can pass it on to the speech impaired users to start communicating with them through this device. This feature also allows the user the flexibility of having multiple different saved 'states' which can be opened up depending on the scenario the user is in.

4.1.3 Testing the file in the TalkBox Simulator

The configuration app allows the user to test the current audio buttons that have been filled in the Simulator itself before moving on to configuring more audio buttons. This feature allows the user to see what their current audio buttons will look and sound like in

the simulator itself before they want to use these files in an actual Talkbox running on a Raspberry Pi.

4.1.4 Recording Audio

The Configuration App allows the user to create their own audio by using an interactive way of recording the user's voice assuming they have a microphone installed. The caretaker can prepare some recorded audio that makes the experience more personal and welcoming for the speech impaired user. These recorded audio files can be added to the configurable audio buttons afterwards which can then be carried over to the simulator and so the speech-impaired user can play the device that mimics the voice of their caretakers.

4.1.5 Adjusting the Volume

The Configuration app allows the user to set the volume of the audio playback of the configurable buttons as desired. This can be used in scenarios when the speech-impaired user may not want to surprise the caretaker and so they might lower the volume to get their point across.

4.1.6 Help options

The configuration app allows the user to ask for help depending on what they run into. The help menu allows the user to consult the user manual, to contact the developers regarding anything specific. or report any bug reports that the user comes across.

4.2 TalkBox Simulator

4.2.1 Open an existing file

The simulator allows the user to select which files they want to open. For eg; They can open a file that has audio buttons related to playtime and so the user can get the help of their caretaker to open that file which will allow the speech-impaired user to communicate with audio related to playtime themes like 'I want to play football' etc.

4.2.2 Create a new file

The simulator gives the user a choice of opening up the configuration app from the simulator. For instance, the caretaker can open up the simulator in the speech-impaired user's device and then aid them in opening a file that they have created prior. For eg; the speech impaired user can open a file that corresponds to 'Dinner Time' and so they will have audio buttons that play sounds like 'I am hungry', etc.

4.2.3 Editing an existing file

The simulator also allows the editing of the configurable audio buttons through the simulator itself. The speech-impaired user or the caretaker can quickly edit existing audio buttons on the device itself instead of having to boot up the computer to edit existing files through the configuration app.

4.2.4 Adjusting the volume slider

The simulator allows the user to adjust the volume of the sound the audio buttons make when they are clicked. This can be used in scenarios when the speech-impaired user may not want to scare the caretaker and so they might lower the volume to get their point across

4.2.5 Help

The configuration app allows the user to ask for help depending on what they run into. The help menu allows the user to consult the user manual, to contact the developers regarding anything specific. or report any bug reports that the user comes across. The caretaker can consult these to ensure the continued development of the project to fix any critical issues that may arise when users who are speech-impaired come across bugs.

4.3 TalkBox Logger

4.3.1 Log User Actions

The Logger application allows the user to see how they are using the application. It shows a summary of the major events that took place in the TalkBox application. The caretaker can use the logger application to decide if the speech-impaired user is having trouble using the application and the caretaker may fix this by arranging buttons or edit the existing audio buttons to have newer audio or update the pictures. This lets the caretaker ensure that the TalkBox application doesn't become too overwhelming for the speech-impaired user.

4.3.2 Show Stats

The logger application also allows the user to show stats regarding the no. of times the user performed a certain action in the simulator and the configuration apps. The caretaker can see how the speech-impaired user is using the application and they can, for instance, see the stats of all the audio buttons and how many times they were clicked will help the caretaker determine which buttons to delete and also which buttons to add.