

HUMAN COMPUTER INTERFACE ASSIGNMENT 1 PART 1

AUDACITY

TEAM MEMBERS

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1 Introduction - Brendan

xDesign is a new interaction design company that has been started to design and produce interfaces that follow good user experience and usability principles. The team includes members from different backgrounds and specialities allowing a multi-faceted approach to designing and implementing systems.

This particular report is designed to outlay the entire process used to design and create a new interface for the open source audio-editing program, Audacity, with regards to the learning outcomes and content of the Human Computer Interaction unit at Curtin University.

The report is structured to reflect the user centred approach taken, beginning with background information and the initial goals set for the project. It then progresses through requirements elicitation into low and high-fidelity prototyping, followed by conclusions and reflections on the design process.

Finally, the appendices at the end contain much useful information, including: weekly meeting minutes outlining attendance, goals set/reached and problems encountered, the initial project proposal and the actual prototypes produced as a result of the continued research and design throughout the semester.

1.1 Team Members/Roles

The project is heavily focused on productive teamwork in order to achieve the best results and come up with the most well rounded interface design. Although each team member worked more on certain tasks throughout the assignment depending on their role, we decided at the outset that everyone would be involved in all of the decisions and everyone's opinions would be taken into account for all aspects of the system. Having said that, the assignment of positions was as follows: the Project Manager - Brendan Lally, the Document Controller and Graphic Designer - Harry Pickworth, the Statistician and Psychologist - Jesse Gherbaz and the Graphic Designer - Kai Tong Teoh. Along with these specialist roles, each team member has a similar programming background and is utilised effectively to implement designs.

2 Background - Brendan

Audacity is an open-source audio editor application that was originally released back in 2000. It is generally used for audio recording and post-processing with a large amount of functionality to achieve good results in a myriad of applications. Audacity is generally targeted at beginner to intermediate level users and is often used for educational purposes.

Audacity was chosen due to each team member's familiarity with the program, as well as meeting the required criteria of a complex program that runs on either Windows or Linux. The source code for Audacity is written in C/C++, which will make it unlikely that we will be able to programmatically connect the newly designed GUIs (which will be written in Java) to the back-end functionality. However, our team believes that we can still achieve the desired outcomes by following good user centric design and usability principles to design a new interface using Java Swing.

The current user interface (shown in Figure 1) that Audacity employs is graphically quite plain and can be quite overwhelming to new users with minimal to no experience using audio workstations. The majority of the interactive interface is restricted to the top part of the window, with a large amount of functionality implemented as clickable buttons. Some of the buttons have an obvious use with universal icons used for things like play, stop, forward, backward and record. On the other hand, a lot of the buttons and other interactive features are not so obvious or intuitive. We believe that there is certainly room for improvement to make the interface of Audacity more user-friendly and intuitive, without overwhelming new users. We want new and experienced users alike to be able to quickly start on their intended project and accomplish the tasks that they have set out to do.

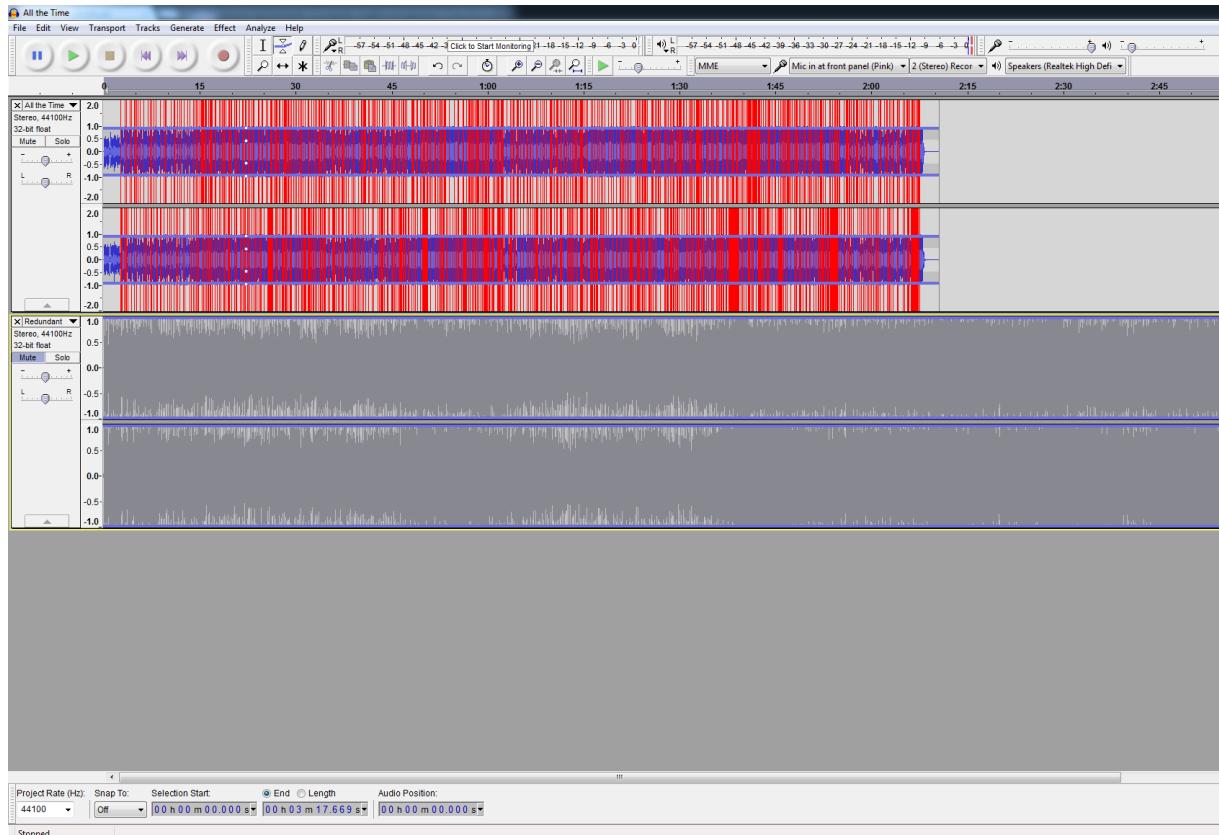


Figure 1: The original Audacity main window with two stereo tracks loaded in.

3 Design Process

Following the ideals of Sharp, Rogers and Preece (2011) xDesign has taken a user-centred approach to the design process. This includes: early focus on users and tasks, empirical measurements and an overall iterative design. There are many different life-cycle models to choose from in order to successfully complete the project from start to finish, and the group settled on the Usability Engineering Lifecycle model. The next section describes the reasoning behind our decision.

3.1 Lifecycle Design Model - Jesse

Our team decided to follow the Usability Engineering Lifecycle (UEL) model. The UEL is a Human Computer Interaction model which was proposed by Deborah Mayhew in 1999 (Sharp, Rogers, and Preece 2011). We believe that the phases it involves will help bring about the finished product in an efficient and methodical manner that will ensure the end result adheres to our users' needs and requirements, and fulfils our usability goals. Mayhew (1999) describes the UEL as a combination of three parts: requirements analysis, design/testing/development, and installation and feedback. The requirements analysis section is a hugely important phase of the project and is fully discussed in the 'Requirements' section of this report. The second section is very involved, focusing on design, testing and development of the system (Sharp, Rogers, and Preece 2011). However, at this stage of the project

we are only concerned up to and including the Design phase. The other two phases will be completed over the remainder of the semester. Likewise, the Design phase is found in detail in the 'Design' section of the report.

3.2 Risk Management - Brendan

Risk analysis and management is a hugely important part of any engineering project. Risk management is something that xDesign takes very seriously and as such, the team sat down at the outset of the project to discuss and document several key areas that could potentially pose risks to the successful outcome of the project. Some of these risks included: team members unable to complete certain tasks due to skill inefficiencies, team members not pulling their weight, team members not having sufficient time due to other work/university commitments, changing requirements and wrong initial requirements. We decided to rank these risks using a risk matrix. The matrix was produced using a combination of the severity of the risk along the top row and the probability of the risk actually occurring along the first column. This matrix is shown beneath in table 1. Most of the risks that the team determined were ranked in the middle, meaning there was a 'possible' chance of them occurring, resulting in marginal to critical effect to the project.

	Negligible	Marginal	Critical	Catastrophic
Certain				
Likely		Time/commitment issues		
Possible		Member skill inefficiencies	Members not pulling their weight	
Unlikely		Changing requirements	Wrong initial requirements	
Rare				

Table 1: Risk Matrix.

It is not possible for risks to be completely eliminated in an engineering project. The best compromise in that case is to minimise the probability of them occurring as well as their potential impact, should they occur. Because of this, the team created contingency plans in case any of these risks happened to eventuate. With the set of risks relating to team members performance, the first step was to sit down as a team and discuss the reasons for the issue at hand. After a warning and discussion, if the same issue were to be raised again, the team would, along with manager, discuss potentially firing the team member. The risks related to the wrong/changing requirements was a little more tricky to plan. For if the initial requirements turned out to not be what the client had in mind, it depended on where abouts in the overall design process the project was at. If this was discovered early enough on in the project, the impact would be significantly lesser than discovery near the deadline. The solution to this was to try and have strong user input by conducting user surveys and designing prototypes which were shown to the client for feedback.

4 Requirements Elicitation

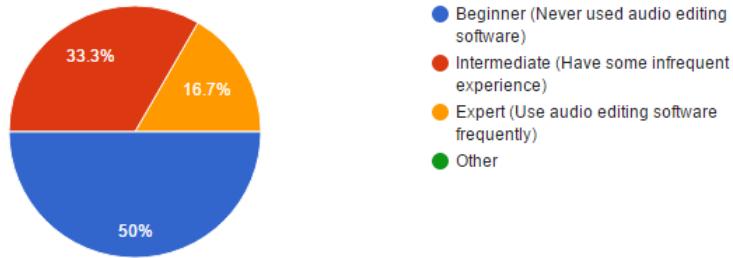
Like any engineering problem, the key to building a good solution is based around requirements elicitation. Capturing the requirements of the client can be a difficult task, with new and changing requirements discovered at different stages of the project. Some of the techniques that xDesign used for this particular project include: user surveys/questionnaires, the creation of scenarios which are broken down using Hierarchical Task Analysis (HTA) and Use Cases, and the study of similar products already in the market place. User involvement is a key aspect of our design philosophy and such plays an important role in requirements elicitation. Due to the nature of this particular project and its short time frame, we can't necessarily get the degree of user involvement that we would like, in order to achieve a well-rounded design.

Due to the nature of the program and it's users, it is difficult to determine specific stakeholder groups in order to elicit requirements. People that use Audacity tend to be everyday people around the world, most likely having no prior training or education in the software. Because of this we have used some techniques to gather data that enable us to try our best to understand peoples wants and needs for our redesign of the Audacity interface. We understand that it is impossible for every user to have their say, but we have done our best in order to accommodate different peoples ideas and goals.

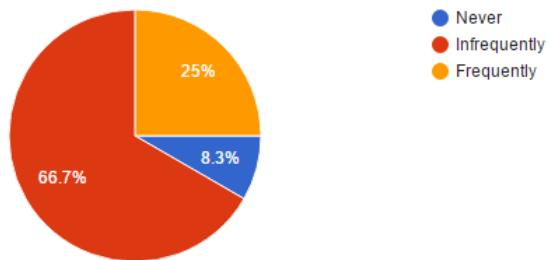
4.1 User Survey - Brendan

A user survey was produced to try and gain some insight into the current users of Audacity. The full survey is attached in Appendix A. The survey ranged from basic questions about the type of user/frequency of usage, to more open-ended questions about feature likes and dislikes. Figures 2 and 3 show the results of the survey, showing the multi-choice answers and open answers respectively.

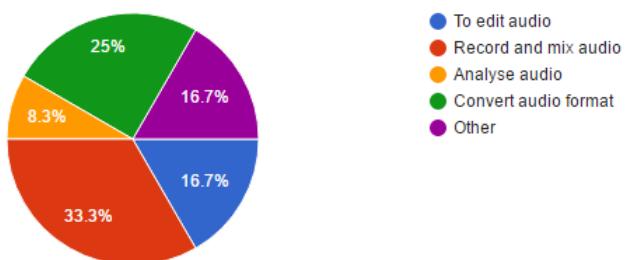
What type of user would you classify yourself as? (12 responses)



How often do you use Audacity? (12 responses)



What is your main goal in using Audacity? (12 responses)



How long did it take you to learn the required functionality? (12 responses)

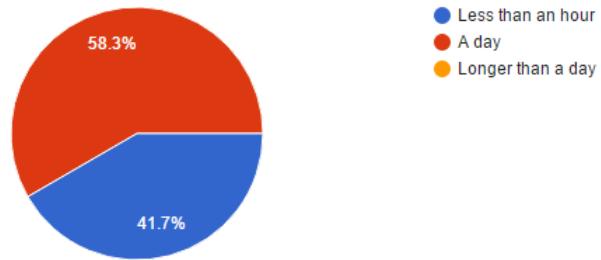


Figure 2: Responses to the multiple choice user survey questions.

What do you like the least about Audacity? (12 responses)

- Audacity is too confusing
- It is lacking in some of the more powerful features found in other workstations
- I'm unable to hide parts of the toolbar section
- The amount of information on the main window is overwhelming to a beginner like myself
- Overwhelming information in the startup screen
- Steep learning curve
- Arrangement and size of icons are not good
- I think that it is too hard to find the right way to find things
- The colour scheme
- Trying to keep which track of which track is clipping
- The lack of high-powered functionality
- Too many options

What do you like the best about Audacity? (11 responses)**Which features are most important to you? (12 responses)**

Figure 3: Responses to the open answer user survey questions.

The results of the survey indicate that the majority of users consider themselves to be either a complete beginner or on an intermediate level of competence. This gives a good indication that the target user groups are focused around entry level users.

Looking at the open-ended answers, a common theme amongst the survey participants is that they think the interface is too clunky, with a lot of information considered to be irrelevant to them for the simple tasks they want to complete. Another issue that popped up multiple times.

We followed the approach of Butow (2007) whilst gathering information using user surveys, reviewing points such as: 1. User profile; with the options of beginner, intermediate, and expert. 2. Contextual analysis; asking for the user's main goals, how often they use the software, and what they liked least and most about Audacity. 3. Usability; asking how long it took to learn the required functionality. After the information was gathered we were able to set our usability goals and establish the requirements for our initial designs.

4.2 Personas/Scenarios - Brendan

The purpose behind creating a persona is to try and create a realistic representation of different user groups who might use Audacity. According to the U.S. Department of Health and Human Services Usability website (<https://www.usability.gov>, last accessed on 20/09/16), personas aid in uncovering different features and functionality as well as giving a clear picture of the user's expectations and how they are likely to use the program.

Referring to the same website, scenarios are described as an informal narrative that provide simple, personal and non-generalisable tasks that could be solved by the system. We have authored a number of persona/scenario combinations that describe various everyday problems that different users could solve by using Audacity. The scenarios aim to identify and highlight some different reasons why people may choose to use Audacity. The scenarios are listed below and are grouped by 'type of user', either beginner, intermediate or expert. The scenarios also serve to identify the main tasks that can be done in Audacity and are further analysed and broken down using HTA and Use cases in the following sections.

Scenario 1 - Jessica (Beginner)

Name: Jessica Andrews

Job/Responsibilities: University Student, Waitress at Homan Bar and Bistro

Demographics:

- 21 years old
- Female
- Single

Motivations:

- To change the world through art and creativity
- To produce the next big artist

Frustrations:

- University democracy
- Having just enough money to get by



"Jessica is currently studying a degree in audio engineering at her local university. Jessica is in her first year of study and is currently learning the fundamentals of how audio and hearing work. In order to better understand the audible frequencies, found in an audio track, her teacher has asked the class to find a way to analyse an audio track and report back on their findings. Her teacher has encouraged the students to research a program that has the possibility to do this, and carry out a frequency analysis on a given track. Although Jessica is relatively new to the audio world, she knows that she will be spending more and more time in it, the further her degree and career progress. As such, she wants the software to be easy to remember and provide a good work-flow. After spending some time, Jessica finds a program called Audacity, which apparently has the functionality required to analyse an audio track, and for free!"

Scenario 2 Susan - Beginner

Name: Susan Smith

Job/Responsibilities: University Careers Advisor

Demographics:

- 38 years old
- Female
- Married

Motivations:

- Helping students reach their potential
- Being a role model in the community

Frustrations:

- Using technology
- Paying the bills



"Susan works at the university and helps organize and set up career events, where she invites representatives from different local businesses and organizations to give talks about what they do. This year, Susan has decided that she wants to record the events and put it up on the university website so students that can't attend are still available to listen to the great content. During the event, Susan sets up a portable microphone to record the whole evening. The next day, Susan decides that she wants to take the recording from the previous night and split it up into the individual talks, so that people from certain faculties can listen to relevant talks, without having to listen to all of them. Susan has no experience in this and asks her co-workers if they can suggest a tool to accomplish this task. She also doesn't want to spend all day learning a program that she will only use occasionally. One of her friends suggests that she try Audacity."

Scenario 3 Joshua - Beginner

Name: Joshua Clarke

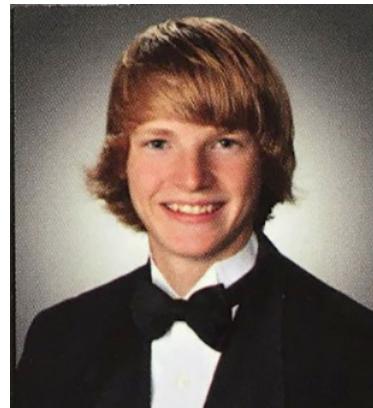
Job/Responsibilities: High-school student, works casual at McDonalds

Demographics:

- 16 years old
- Male
- Single

Motivations:

- Showing off his awesome taste in music!
- Being able to hear incoming calls



Frustrations:

- Having to listen to the factory ringtones
- Only being able to set a full song as the ringtone

“Joshua has recently purchased a new phone and has decided that he needs to set up a new ringtone for it. He has a particular riff in mind from one of his favourite songs that he bought off iTunes. Joshua decides to google how to get a particular section from an audio track, and is directed towards Audacity. He downloaded and installed Audacity on his computer. Once Joshua has opened up Audacity he looks around trying to find how to import the song that he wants to use for his ringtone. He eventually finds out how to import the track, but wishes that it was more straightforward. Now he needs to find out how to edit his track so he is just left with the section of the song that he wants for his ringtone. Joshua doesn’t really know where to begin, as he finds that there are too many buttons at the top of his screen.”

Scenario 4 Jarryd - Intermediate

Name: Jarryd Nordstrom

Job/Responsibilities: IT Help staff

Demographics:

- 29 years old
- Male
- Engaged

Motivations:

- Enlightening the world to good music
- Realise a dream of putting out a record

Frustrations:

- Having to work 9 to 5



“Jarryd plays bass in a local band. He and his bandmates have been feeling really inspired lately and have decided to record an album. After a lengthy discussion, the band decides that they will record and mix the album themselves to cut down on costs. None of the other band members have any experience in recording and mixing audio, but Jarryd puts his hand up and volunteers. Jarryd remembers doing some casual recording a few years before where he learnt the basics of recording and spent some time using a computer program to aid him. Since it has been a few years, Jarryd researches on the internet to try and find a cheap (but still functional) solution. Although he does have some prior experience, Jarryd wants the software to be easy-to-use, while still having high functionality should he require it. He also wants the software to be enjoyable to use as he is planning on spending some time using it over the next few weeks.”

Scenario 4 Murray - Expert

Name: Murray Turner

Job/Responsibilities: Retired Live Audio Engineer

Demographics:

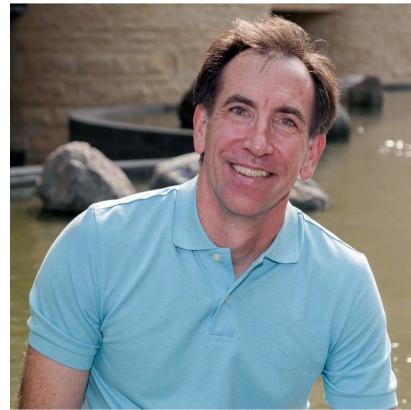
- 51 years old
- Male
- Married

Motivations:

- Bringing music to life on stage
- Travelling around the world

Frustrations:

- Housework



"Murray is a retired engineer who has made a good career in live sound mixing. Murray's wife Anne works at a well-known newspaper and has recently been asked to try and clean up some old audio recordings to preserve them for posterity. Due to the nature of the equipment back when they were originally recorded, there are numerous pops and crackles that make some of the audio hard to understand. Anne knows her husband works in audio and asks him to help her out. Murray has spent a lot of time using audio software, but this is owned by the venues he works at. He thinks that he should be able to find some free software where he can clean up these old audio tracks in his spare time at home. Although Murray is quite an experienced user he is looking for a program that is effective and efficient, as he wants to use his knowledge to quickly achieve the task."

4.3 Hierarchical Task Analysis - Tony

Based on the results of the user survey and the scenarios, the team identified several reoccurring tasks. These tasks represent what and why users want to use a program like Audacity. In order to gain a better understanding of these tasks and how they interact with the system, a series of HTA's representing these tasks, were completed. The tasks included: recording an audio track, editing an audio track and analysing an audio track. The task for editing an audio track is quite broad, with a vast number of possible ways to perform edits, depending on the specific user goals. Due to this, writing a separate HTA for every possible type of edit would be a huge undertaking. As such, we have tried to include the steps and subtasks that are common to all edits.

Recording an Audio Track

1. Open Audacity
2. Open project
 - a. Load previous project
 - i. Select open project
 - ii. Navigate to correct project path
 - iii. Click on project
 - b. Create new project
 - i. Select new project
 - ii. Enter project name
 - iii. Enter project destination

- c. Import 3rd party project
 - i. Select import project
 - ii. Navigate to correct project path
 - iii. Click on project
3. Select stereo or mono track
4. Select input source
 - a. Select microphone
 - i. Ensure microphone is plugged in
 - b. Select direct input
 - i. Ensure direct input is plugged in
 - c. Select another track
5. Select input level
6. Record track
 - a. Press record button
 - b. Stop recording
7. Save record

The sequence of tasks for recording a track have two main routes: one for the first track that is recorded and the other for other tracks recorded in the same session. The first route will follow steps 1 – 7. If a user is recording multiple tracks in a session, the task route will change to follow steps 3-7, eliminating the set-up of opening/creating a project required in steps 1 and 2.

Editing an Audio Track

It was decided that the editing HTA should be divided into two categories: adding an effect to a track and also splitting a track. Based off the user requirements, these were two popular functionalities that represented ways users wanted to edit audio tracks.

Adding an effect to an Audio Track

1. Open Audacity
2. Open project
 - a. Load previous project
 - i. Select open project
 - ii. Navigate to correct project path
 - iii. Click on project
 - b. Create new project
 - i. Select new project
 - ii. Enter project name
 - iii. Enter project destination
 - iv. Click OK
 - c. Import 3rd party project
 - i. Select import project
 - ii. Navigate to correct project path
 - iii. Click on project
3. Add track
 - a. Record new track (See Recording a track HTA steps 3-7)
 - b. Import an external track
 - i. Select open

- ii. Locate track to import
 - iii. Click load
4. Select track to apply effect
 - a. Select entire track
 - b. Select section of track
 5. Select effect
 6. Apply/change effect parameters
 7. Save/Export track(s)

The initial sequence of tasks for adding an effect to a track will follow steps 1 – 7. If a user is recording/adding multiple tracks throughout a session, the task route will change to follow steps 3-7. A user may also apply multiple effects to one track. In this case, the task sequence would loop around steps 4-7.

Splitting an Audio Track

1. Open Audacity
2. Open project
 - a. Load previous project
 - i. Select open project
 - ii. Navigate to correct project path
 - iii. Click on project
 - b. Create new project
 - i. Select new project
 - ii. Enter project name
 - iii. Enter project destination
 - c. Import 3rd party project
 - i. Select import project
 - ii. Navigate to correct project path
 - iii. Click on project
3. Add track
 - a. Record new track (See Recording a track HTA steps 3-7)
 - b. Import an external track
 - i. Select open
 - ii. Locate track to import
 - iii. Click load
4. Select track to split
5. Split track
 - a. Split stereo track
 - b. Split stereo to mono
 - c. Split by labels
 - i. Add labels
 - 1. Manually add labels
 - 2. Select Silence Finder option
 - 3. Select Sound Finder option
6. Save/Export track(s)

The sequence of tasks for splitting a track will initially follow steps 1 – 7. If a user is splitting multiple tracks in a session, the task route will change to follow steps 3-7 if they are adding new tracks to split, or 5-7 if they are splitting one track multiple ways (ie. stereo to mono and then by manually

adding labels).

Analysing an Audio Track

1. Open Audacity
2. Open project
 - a. Load previous project
 - i. Select open project
 - ii. Navigate to correct project path
 - iii. Click on project
 - b. Create new project
 - i. Select new project
 - ii. Enter project name
 - iii. Enter project destination
 - c. Import 3rd party project
 - i. Select import project
 - ii. Navigate to correct project path
 - iii. Click on project
3. Add track
 - a. Record new track (See Recording an Audio Track HTA steps 3-7 from above)
 - b. Import an external track
 - i. Select open
 - ii. Locate track to import
 - iii. Click load
4. Select section of track to analyse
5. Select analyse menu
6. Select analysis tool *
7. Conduct analysis

The sequence of tasks for analysing an audio track can have a few possible routes. The first route will follow steps 1 – 7 and will be done if a user is opening up a session to complete some analysis. If a user is already in a session but wants to perform analysis on a new track, then they will follow steps 3-7. If a user is conducting multiple analyses on a single track, the task route will change to 4-7, eliminating the set-up required in steps 1, 2 and 3.

* There are a few different analysis tools available in Audacity including: volume and frequency analysis and the ability to place labels at specific sections of the track to find areas of sound and/or silence.

4.4 Use Cases - Jesse/Tony

The Use Cases described below refer to the same sets of tasks as those described in the previous HTAs. The point of the Use Cases, however, is to describe the users point of view of a system's behaviours as it responds to a request (<https://www.usability.gov>, last accessed on 23/09/16).

Opening a Project

Goal:

- For the user to open a project

Primary Actor:

- User of Audacity

Preconditions:

- User is on main screen of Audacity

Trigger

- User selects the File drop-down option

Flow of Events:

1. System displays a list of options
2. User selects Open option
3. System displays file navigating window
4. User locates and selects project
5. User selects Open option
6. System loads and displays selected project

Alternative Courses for opening a project

- 6A.1. System could not load project
- 6A.2. System displays error message
- 6A.3. System returns to step 5

Creating a new Project

Goal:

- For the user to create a new project

Primary Actor:

- User of Audacity

Preconditions:

- User is on main screen of Audacity
- Users system has enough space

Trigger

- User selects the File drop-down option

Flow of Events:

1. System displays a list of options
2. User selects New option
3. System displays a new blank main screen

Adding a new Track

Goal:

- To allow the user to add a new track

Primary Actor:

- User of Audacity

Preconditions:

- User is on main screen of Audacity
- Trigger
- User selects Tracks drop-down option

Flow of Events:

1. System displays a list of options
2. User selects Add New option
3. System displays a list of new track options
4. User selects a track option
5. System displays the new track on the track window

Alternative Courses for adding a new track

- 4A.1. User selects to import an audio track
- 4A.2. System loads specified track
- 4A.3. System returns to step 5

Recording an Audio Track

Goal:

- For the user to record an audio track

Primary Actor:

- User of Audacity

Preconditions:

- System is not currently recording
- Sufficient space on disk for new recording

Trigger

- User selects record option

Flow of Events:

1. System display functionalities on the main screen
2. User clicks on the “Recording” button
3. System starts the recording process immediately
4. System halts the recording process when user:
 - i. hits “Pause” option
 - ii. hits “Stop” option
5. User selects save option
6. System prompts user if they want to save as project or export as audio file
7. User selects option
8. System prompts user for file name and destination
9. User enters file name and destination
10. System saves the project/audio file

Alternative Courses for recording a track

- 9A.1. If the user enters an invalid filename or address
- 9A.2. System display error message
- 9A.3. System returns to step 8

Splitting an Audio Track

Goal:

- For the user to split an audio track

Primary Actor:

- User of Audacity

Precondition:

- Audio track loaded and selected

Trigger:

- User selects Audio Track drop-down option on track window

Flow of Events:

1. System displays a list of options
2. User selects Split Stereo Track option
3. System splits track into two separate, panned tracks

Alternative Courses for splitting a track

- 2A.1. User selects Split Stereo to Mono option
- 2A.2. System returns to step 3

Adding an effect to an Audio Track

Goal:

- For user to add an effect to an audio track

Primary Actor:

- User of Audacity

Precondition:

- Audio track loaded and selected

Trigger:

- User selects Effect drop-down option on main screen

Flow of Events:

1. System displays a list of effect options
2. User selects an inbuilt effect option
3. System displays corresponding window for selected effect
4. User selects options to change effect parameters
5. User selects apply/OK option
6. System applies effect to selected track

Alternative Courses for adding an effect to a track

- 2A.1. User selects to add external effect via plugin
- 2A.2. System checks plugin directory
- 2A.3. System loads plugin
- 2A.4. System returns to step 3

Analysing an Audio Track

Goal:

- For the user to analyse an audio track

Primary Actor:

- User of Audacity

Precondition:

- Audio track loaded and selected

Trigger:

- User selects the Analyse drop-down option on main screen

Flow of Events:

1. System displays a list of options
2. User selects an analysing tool
3. System displays the analysis tool window
4. User changes required parameters
5. User selects analyse option
6. System conducts analysis
7. System displays results

4.5 Product Research - Brendan

Another important technique that was used to gather user requirements data was researching similar products that are already in the market-place. This technique can give useful insight into what already works and what doesn't work, without having to completely re-invent the wheel.

There are already numerous audio-editing/workstation programs for sale, ranging from more basic, entry-level programs, to fully functional workstations used by top-end professionals. In terms of use and cost, Audacity has typically fallen further towards the lower, entry-level end of the spectrum. However, there can still be many useful things gleaned from looking at popular higher-level software products. One such example: Avid's Pro Tools, is considered by many to be the industry standard for recording, mixing and post-production audio work. Due to its large popularity and wide spread use, we feel like this would be a good program to analyse and see what works well and what doesn't.

4.5.1 Pro Tools

Most audio-editing programs share a fair bit in common when it comes to interface design. The nature of the work that these programs are designed for requires several features that are near universal. This includes the general layout, with the main part of the interface dominated with a window, housing the actual audio tracks. In regards to Pro Tools, the overall window design has many similar characteristics to Audacity. Figure 4 below shows a screen capture of the Pro Tools 10 interface.

Something to be aware of in this analysis is that Pro Tools is designed to be used by professionals with access to high-end hardware and generally some form of technical training (or a fair bit of self-teaching). There are large amounts of functionality that are beyond the scope of a program like Audacity. As this is the case, we can already separate some of the usability and user experience goals from the Pro Tools design, and focus on how they could be applied to our redesign of Audacity. It is obvious that Avid have focused more on usability goals such as: being efficient and effective to use,

rather than easy to learn and remember. Although the level of functionality differs between that of Pro Tools and Audacity, there are a number of features and interaction decisions that seem to enhance certain user experience goals, such as being helpful and supportive of creativity.

One such feature is the central upper window that keeps track of detailed time and spatial information (Figure 4). In comparison to how Audacity currently keeps track of similar information, this is a huge improvement. It is often important to know precisely the time or position within the track when applying effects or removing artifacts. Another feature that we believe promotes good work-flow is by having the monitoring information for each track on the actual track, instead of one set at the top as is the case currently in Audacity. This makes sense as you want to monitor each track individually to see if it is clipping and how much available headroom is left.

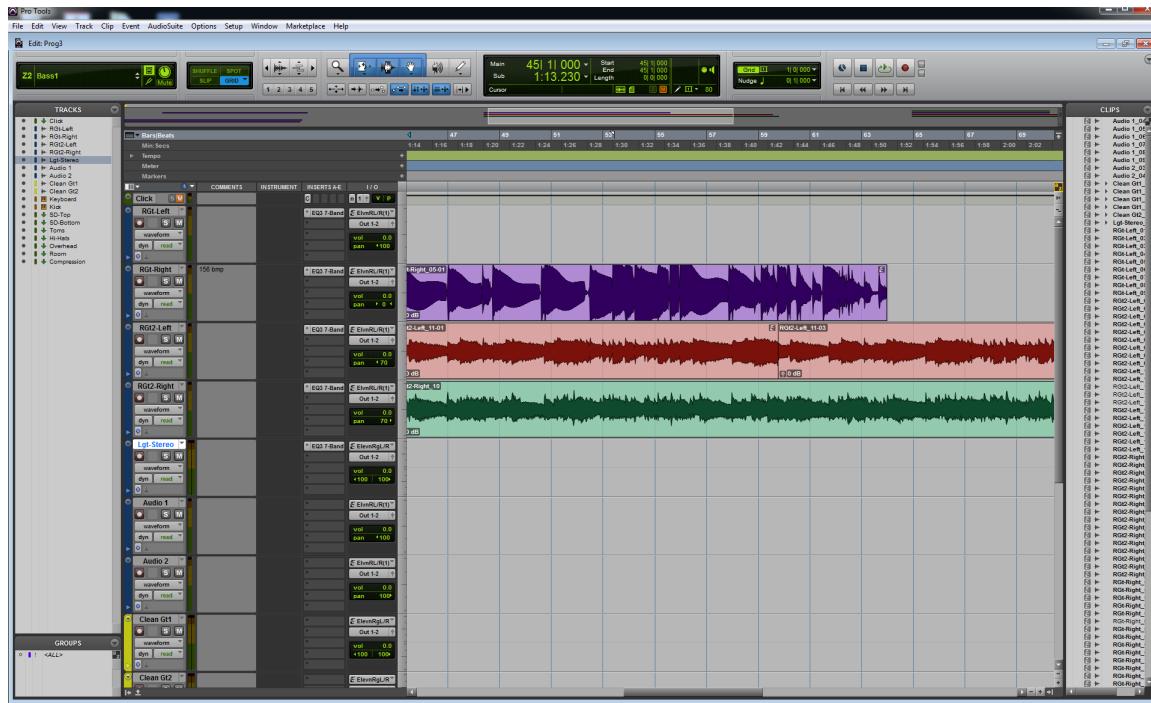


Figure 4: Avid's Pro Tools main window with multiple audio tracks.

5 Low-fidelity Prototypes

The first part of the design phase included designing the low fidelity prototypes, based on the previously gathered requirements. Once these initial, alternative designs had been completed, we went through an iterative process of evaluating and refining the prototypes until the team was satisfied with the new interfaces and conceptual functionality. This stage also involved a client meeting which was crucial in getting direct feedback on whether the team had understood the requirements and whether or not the different alternatives represented by the prototypes were what the client had in mind. The low-fidelity prototypes were created using Balsamiq, a free (for the trial at least) download for designing and creating mockups for interface development.

The main goals that the team set out to achieve with these designs was to try and reduce the clutter of the interface, while enhancing the overall work-flow by making things easy to locate whenever the user requires them. Most of the users time is spent in the main window and so this was a major focus in the new designs. Each prototype gives some ideas about what the interface will look like during different tasks, whether this involves new pop-up windows, or changes to the main window. Each low-fidelity prototype design is included in Appendix B. The discussions concerning design choices and functionality are contained in the following section, High-fidelity Prototypes.

6 High-fidelity Prototypes

After discussion and feedback was received on the low-fidelity prototypes, they were updated to reflect the changes before they were implemented as high-fidelity wireframes. These prototypes were implemented using Adobe Photoshop, using the current Audacity interface as the background. These prototypes can also be found in second half of Appendix B under High-fidelity prototypes. To create the high-fidelity prototypes, the designers had certain requirements and goals that they tried to achieve.

Before the prototype design, the team created some screen design standards that the designers followed to ensure the interfaces complied with the usability and user experience goals. Having screen design standards also assisted the designers in being efficient since it allowed parts of the interface to be reused and prevented other designers from having to “reinvent the wheel” (Mayhew 1999).

6.1 Requirements

The requirements for the high-fidelity prototypes were gathered and discussed in detail in the ‘Requirements Elicitation’ section earlier in the report.

6.2 Look and Feel - Harry

The look and feel of a program is determined by many aspects of the design including: the colours used, the overall layout, the response of menu and button clicks and the speed at which different windows/pages load.

Whilst the colour scheme still resembles the current Audacity interface, there have been a few subtle changes, namely the introduction of the blue and orange, which have been pulled from the Audacity logo to resonate the Audacity brand. The colours have been used sparingly to highlight the most important aspects of the interface; the waveforms, and the currently selected tools. The colours illustrate the important distinction of the left and right channels of any stereo track, which might otherwise not be so obvious to an entry level user.

The overall layout design for each prototype is similar, with a large part of the screen consisting of the audio tracks. This is done to keep with the familiarity of other audio editing software and allow for ease of access to the most important component: the audio track! Each prototype has incorporated different styles/positioning of toolbars around the main window to try and improve the user workflow.

Certain parts of the look and feel such as the responsiveness of buttons and menus is hard to fully gauge/implement at this stage of the design, but will be a major focus during the implementation stage.

6.3 Usability Goals - Harry

According to Sharp, Rogers and Preece (2011), usability goals are used to provide the interaction designers with a concrete means of assessing different aspects of an interactive product. Based off the information gathered in the requirements elicitation stage along with each team members past experience, we decided on a set of usability goals that we believe are crucial in designing a good

interface for our users. These goals include: the program is effective to use, efficient to use, it has good utility and it is easy to learn and remember. Each of these usability goals will be discussed in the context of the prototype design below.

6.4 User Experience Goals - Harry

Along with the Usability goals, the user experience goals are hugely important in interaction design. In contrast to usability goals, user experience goals deal with how users experience an interactive product from their perspective (Sharp, Rogers, and Preece 2011). The main user experience goals that were identified were: the program must be helpful, supportive of creativity, enjoyable, rewarding and fun. Likewise, these goals are discussed in relation to each prototype design.

6.5 Prototype 1 - Brendan

One aspect of all the prototypes that the team introduced was to have a quick start window that opens at the start of every Audacity session. The quick start window would enable a user to instantly create a new project or open a previous session that they have been working on. An example of this is shown in Figure 14 where the user is presented with three options: to create a blank project, load a recent project or browse the computers file directory for other projects. The reasoning behind this window is twofold. Firstly, it provides new users the ability to create a project right away without having to search for the functionality in a menu. Secondly, it lets return users load a previous project with the click of one button, increasing the usability and efficiency.

The idea with the main window is to reduce the clutter and only have basic functions/options directly visible to the user. Figure 27 shows the basic transport controls (central bottom), track-editing controls and cut/paste options (upper left), with a central box now housing the spatial/time controls for the project. We believe that this results in increased efficiency, making the program easier to learn and easier to remember, as the user should spend less time trying to find the right tools. The time window can now track the time in terms of beats as well as minutes/seconds. Sometimes the user may want to add effects or make other edits at very specific intervals that are better represented in terms of beats. This increases the utility of the design as well as being helpful and rewarding.

To help support creativity, the different effects have been grouped by 'type' in comparison to listing them all in one menu (Figure 28). This allows the user to search effect by type and leave them open to experiment with different effects, if they already have an idea of the type of effect they want.

Another feature of prototype 1 is to change the information readily available in the audio track window. It made more sense to have individual track monitoring on the actual tracks, rather than one set of monitors for the whole project. This can be seen in Figure 27 on the right edge of the track information. The idea behind this is that a user would gain much more benefit knowing if an individual track is clipping and how much headroom is available. As well as these changes, some of the track information was removed, such as the sample rate and whether the track is mono or stereo. Most of the time the user does not need this information so readily available (it is still available under the track properties) which in turn reduces more of the clutter and lets the user focus on their audio goals.

Figure 28 shows the pop-up style window from selecting an option from one of the drop-down menu's. The look and feel of these windows now reflects the same smart, sharp design used in the main window, keeping the overall feel consistent, no matter where the user is in the program.

6.6 Prototype 2 - Tony

One of the focuses for prototype 2 was to increase the learnability and memorability of the program by simplifying the amount of information on the main screen as well as colour coding certain aspects. The colour green was used to primarily identify "forward" or "positive" functionality such as: play, zoom in, paste and redo. On the other hand, the colour red represents the opposite: stop, zoom out cut and undo. This can clearly be seen in Figure 30. By creating a toolbar loaded with all the common functionalities such as the Undo and Redo buttons, we were able to achieve one of the goals, which is improve the efficiency of the program since it reduces the number of clicks required to achieve the desired effects. The toolbar also allowed us to place all the common utility functions in the toolbar while removing unnecessary buttons. Therefore, we are able to provide good utility to the user.

Another way that prototype 2 aims to increase the learnability is by having clear mouse-over tooltips for each button or menu heading. If the user is in any way unclear about what a button or menu does, mousing over it will give a description of its functionality.

The expandable/collapsible side toolbars were designed to achieve information hiding (Figure 31). By organizing the functionalities provided into a categorized Accordion menu, the functions are made distinct from the other sections of the main screen, therefore making it easier to locate. This makes the program easy to learn and re-learn and more enjoyable and fun while manoeuvring around the interface. Also, the other reason for this design is that it reduces the number of items appearing in the drop down list in the menu bar.

6.7 Prototype 3 - Jesse

The design choices for prototype 3 stem from the information we gathered from users completing our online surveys, the usability and user experience goals we set accordingly and the feedback that was received in response to our low fidelity prototype proposals at the client meeting. The aim for this prototype was to get rid of the 'overwhelming' amount of information on the main screen, but at the same time keep the required functionality that will help support the users' creativity.

To achieve this, we designed an interface that incorporated the toolbar types to have the ability to be minimised, maximised, removed and re-added (Figures 33 & 34). Designing the expandable toolbars to be semi-transparent provided more space to the main window so that more tracks are visible on one screen, we felt this was a key advantage in this prototype since screen real estate is paramount in sound editing software.

As discussed in the User Survey section, users found that some of the tools on the main screen are rarely used, if used at all. Thus, being able to minimize or remove certain toolbar types will simplify the interface and assist the software in achieving the usability goals such as: easy to learn and easy to remember. The simplicity obtained from removing or minimising irrelevant tools will also play a role in fulfilling user experience goals such as 'fun' and 'enjoyable'.

The choice to keep full functionality of the current software ensures that users are able to focus on their favourite features as well as using features that aren't used as often, guaranteeing that the software will satisfy the 'effective to use' and 'good utility' usability goals.

In terms of efficiency, the option to add a removed toolbar is found directly underneath the toolbar section (Figure 34), thus if a toolbar is accidentally removed, it is quick and easy to re-add it. Furthermore, the transport toolbar type was placed directly and permanently expanded above the

expandable toolbar section, since the play, pause, stop, next, previous and volume adjustment tools were found to be the most important.

For beginners or users who are new to Audacity, knowing what toolbar type the icon represents may be confusing or unclear. To assist the users in finding the type of functionality that will be found from the toolbar, and also contribute to a ‘helpful’ user experience, the user can hover the mouse over the icon and the toolbar type will appear next to it.

6.8 Prototype 4 - Harry

The results from the user survey indicate that most of the users are entry level, and that it is likely that Audacity is the first piece of sound editing software most users have experienced. A common complaint of the current interface is that it is overwhelming, or confusing, for this reason it is important that the look and feel of the interface is familiar to the user, even if it is their first time using the program.

To achieve this, we have designed an interface that bears a resemblance to common word processing, entry level image editing, and other business application programs. Upon launching the program, the user is presented with a clean, well-organised and categorised ‘ribbon’ style toolbar (Figure 35). Due to this intuitiveness and familiarity of the new interface, the usability goals such as ‘easy to learn’ and ‘easy to remember’ are accomplished.

To fulfil the user experience goals ‘helpful’ and to make browsing the interface further ‘enjoyable’, this prototype uses larger icons, which were more thoughtfully selected and labeled to alleviate any ambiguity.

The quick and easy to access ribbon style toolbar also helps to achieve the usability goals ‘effective and efficient to use’, as each tab contains the most common tools used during audio editing, but are kept in a neat and organized manner so the contents don’t appear overcrowded and unclear. The look of simplicity gained from this style consequentially contributes to a fun user experience.

The decision to keep all the current functionality was made to ensure that the prototype was supportive of the users’ creativity, and this design choice also contributes to the ‘good utility’ usability goal.

7 Implementation - Brendan

After successfully designing the new interface for Audacity, the team went about implementing two of the high-fidelity prototypes using Java Swing and the Netbeans Integrated Development Environment (IDE). As previously stated, the code for Audacity is written in C/C++ and as such, our Java implementation was not able to work directly with the current Audacity. Having said that, our team managed to implement the interface, along with several key features, to show how the improved design would work under real conditions. The two prototypes chosen for implementation by the client were: Prototype 1 and Prototype 4. Both these prototypes posed different problems and solutions for the team to overcome.

The Netbeans IDE allowed the team to visually implement the interface using the drag-and-drop functionality provided. This enabled the team to jump in straight away and begin the implementation without having to worry about the declaration and initialization of a large amount of buttons and menu items. Due to several time constraint issues (further discussed in section 8), we decided on some core functionality that would be implemented. This was mainly the ability to load in an audio track, display its waveform and play it back. All the tasks previously discussed in this report require an audio track being loaded and displayed in the system. Some third party Java Classes were used in order to paint the waveforms from the audio data as well as play the audio.

7.1 Prototype 1 - Brendan/Tony

The layout for prototype 1 was quite straight-forward, with one main window housing most of the graphical elements, with additional functionality available through the menu system. As previously mentioned, an audio track can be loaded in by two methods. The user can load a track in using the Audacity quick start menu (Figure 5) or via the File menu tab. Once a track has been loaded in, it then becomes listed under the recently used menu tab.

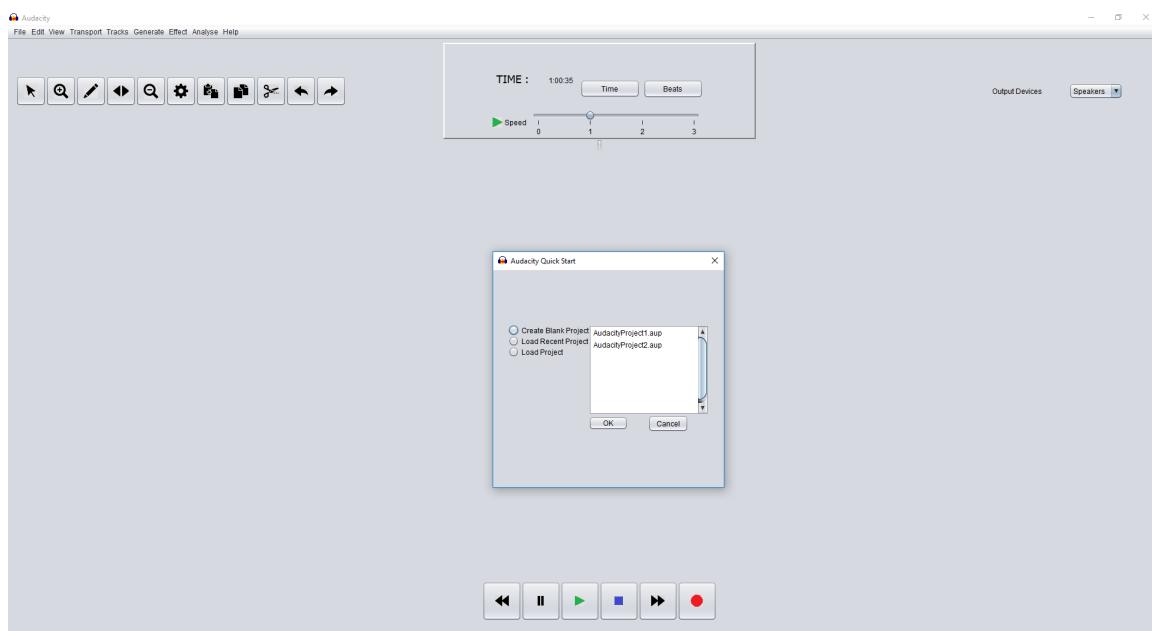


Figure 5: Prototype 1 Main window and quick start menu.

Once an audio track has been loaded in (Figure 6), the user is then able to play the track using the play button at the central bottom of the window. Many of the options available in the menu only make sense when they are applied to an audio track. The team decided to grey-out these particular menu items until a track is loaded (Figure 7). They are then greyed-out when the track is closed.

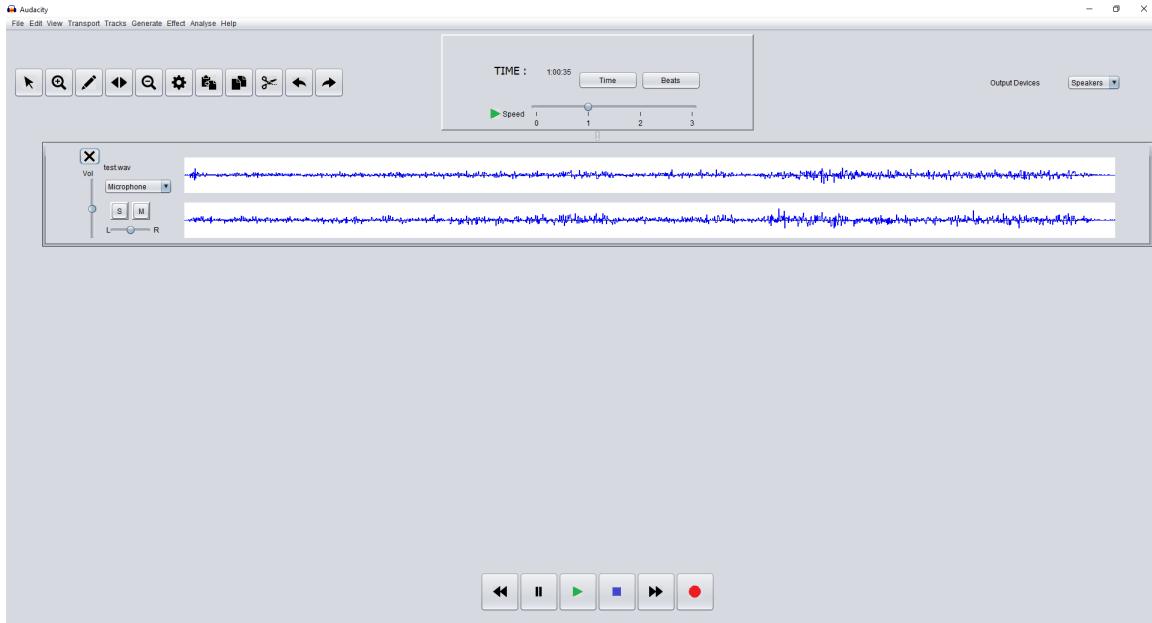


Figure 6: Prototype 1 with a stereo audio track loaded.

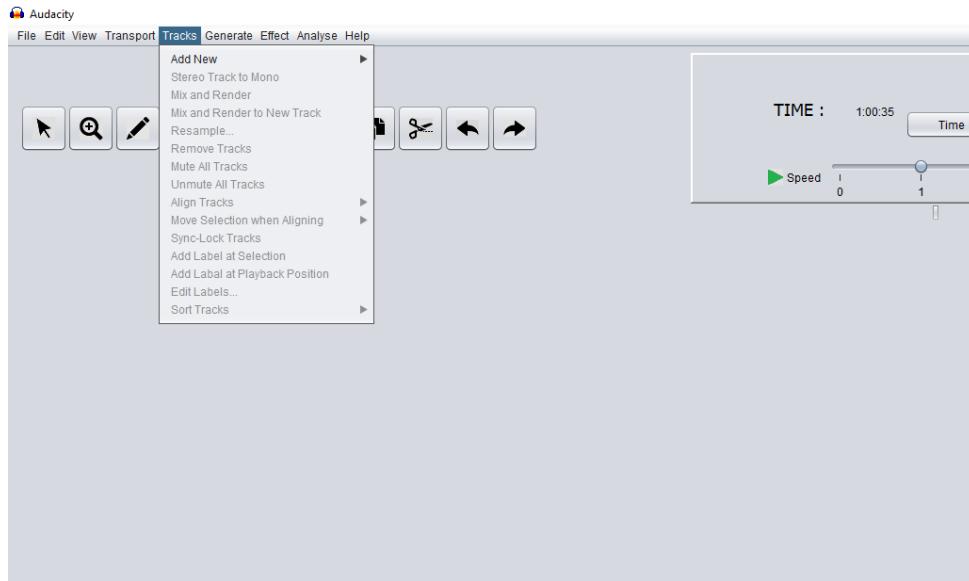


Figure 7: Prototype 1 Tracks menu. All options that require a track are greyed-out.

All buttons and important labels have mouse-over tool-tips for new and infrequent users in case they are unsure of what something does.

Links in the Help menu are provided for "quick help", the online Audacity manual and other information about Audacity. This provides 2-click access to vast amounts of information that a user may need at any time of their session.

Adding a plugin or a "Generate" effect from the Generate menu provides a dialog box with the required layout for user data (Figure 8).

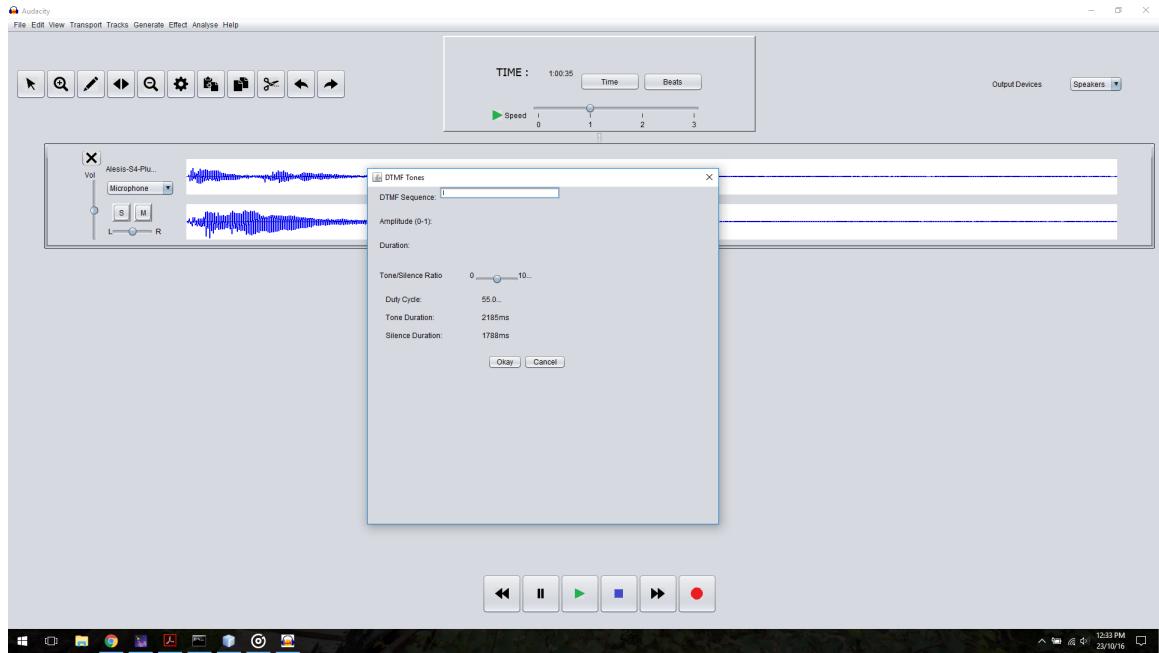


Figure 8: Prototype 1 Effect window.

7.2 Prototype 4 - Harry/Jesse

The implementation of prototype 4 includes the simulated functionality of some of the important features of Audacity, including track loading, recording, saving, effects and tool ‘ribbon’ switching. The track loading functionality can be accessed by selecting the ‘Open’ option from either the dropdown menu (File >Open) or via the tool ribbon (Quick Edit >Open or File >Open). The user is presented with a file chooser dialog box which allows them to select a file from their directory to open in Audacity (Figure 9).

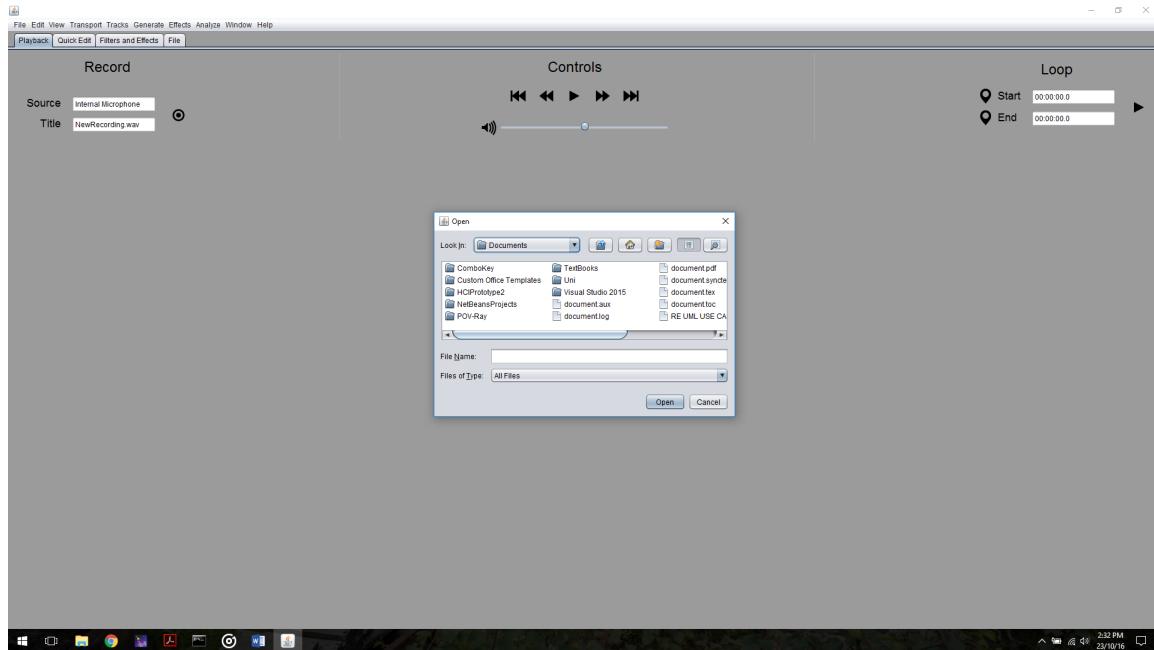


Figure 9: Prototype 4 File choosing window.

Similarly the ‘Save’ functionality, which can also be accessed through the dropdown menu (File >Save) or the tool ribbon (Quick Edit >Save, or File >Save) opens a dialog box which allows the user to select the location to save their project. The record button in the ‘Playback’ ribbon simulates the audio recording functionality of Audacity, a new track is created and the recording immediately starts (Figure 10). If any effect is chosen, via the dropdown menu or the tool ribbon, a generic effects dialog box appears which provides a graphical representation of the effect, as well as a value slider.

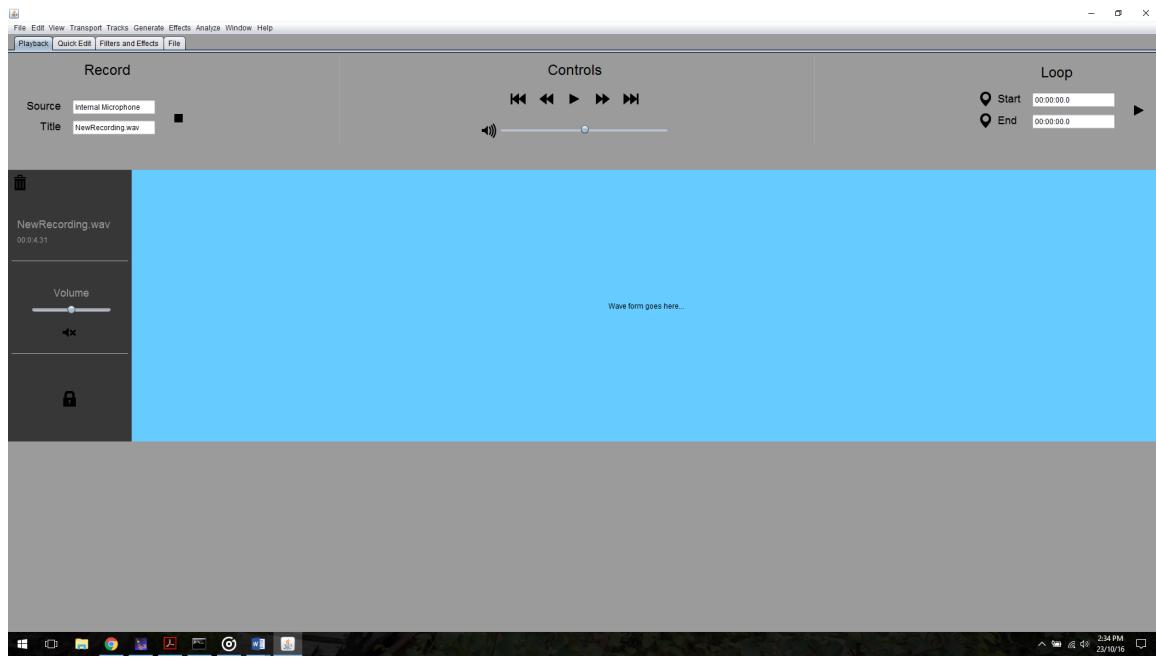


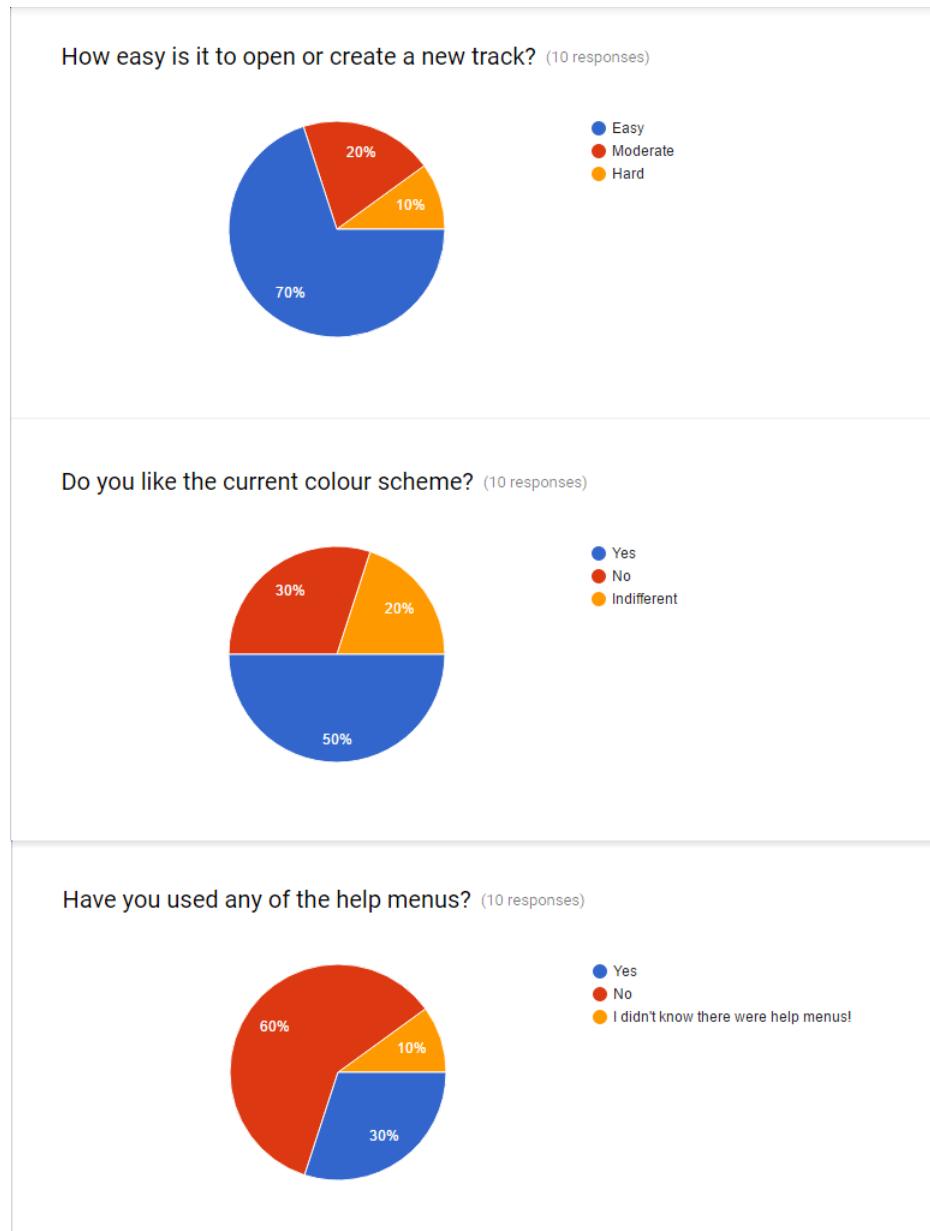
Figure 10: Prototype 4 recording track.

7.3 User Involvement - Brendan

As throughout the design process, user involvement remains a critical part of our design philosophy. After the initial implementation of several features, the team produced another survey to gauge the users thoughts on certain aspects of the interface and whether or not they thought there could be any improvements made. The full survey questions are provided in Appendix A.

The results of the survey (Figure 11) show that the majority of users found that opening and adding a new track was a simple and straight-forward task. Many reported that the current colour scheme was fine, although a bit mundane.

A future task that the team would like to achieve would be to plan some more formal sessions with users to try and produce some quantitative data about the efficiency and utility of the interface (i.e. The number of clicks to achieve a certain task). A controlled environment would allow the team to directly monitor this and provide support where needed.



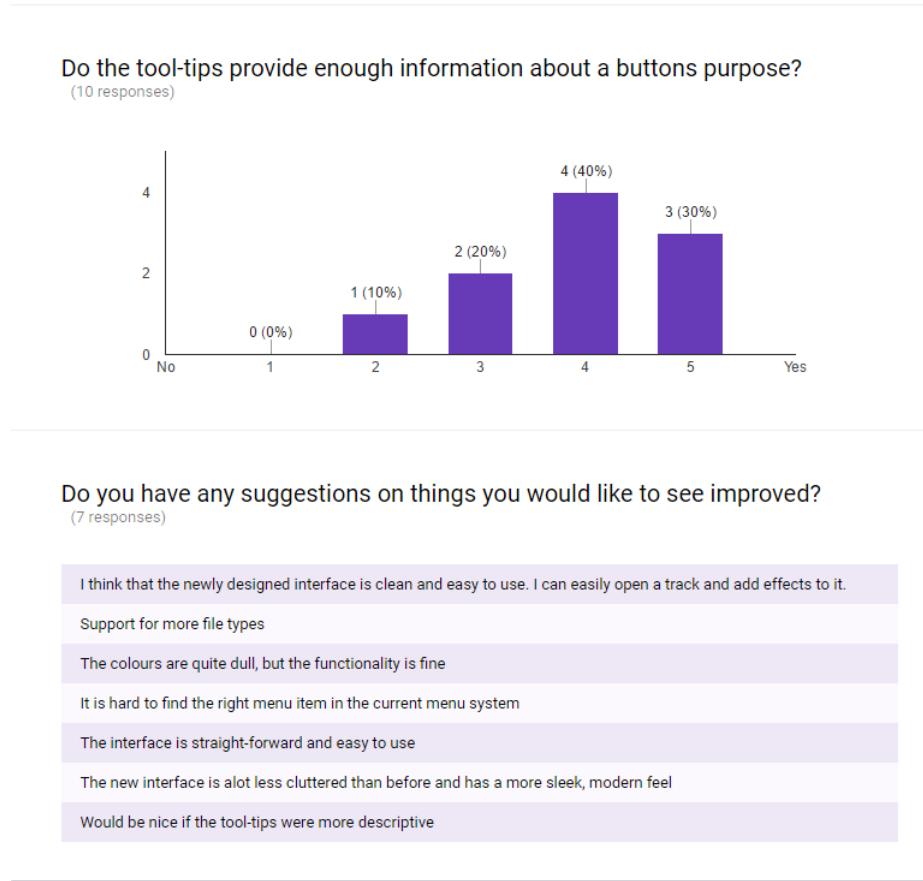


Figure 11: Implementation survey results.

8 Problems Encountered - Brendan/Jesse

There were numerous problems that the team encountered throughout the planning, design and implementation process. In the planning stages, the biggest hurdles were based around deciding which team members were going to work on which part of the project. Thankfully, due to good and frequent conversation, this did not seem to become a big issue and was resolved early on, leaving each team member to work on their own and collaborate with other members.

The main problem encountered in the design phase was that due to particular team members skill-sets, some members ended up having a heavier workload than others.

The implementation phase had the most problems to overcome, as team members were limited for time due to a heavy workload from other units. Although each member had experience in Java programming, no-one had any previous GUI programming experience, in particular, using Java Swing. This proved to be a time intensive learning experience for all involved and resulted in the team not being able to implement as much functionality as was originally hoped. This resulted in a trade-off as we focused on implementing some of the more time-intensive, core functionality such as loading an playing a track, rather than making sure that all the different effects and functions were available.

File sharing between team members was another hurdle to overcome. This became more apparent during the implementation phase when code had to be shared between members. It was decided that the version control software, Git, should be used to handle this. The team was able to create repositories on Github to enable members to work on code at the same time and share it effectively.

9 Conclusion - Brendan

The aim of this report was to document the process of designing the interface for the audio editing program, Audacity. Through adopting the Usability Engineering Lifecycle model, xDesign has completed the design by using an iterative approach that combined requirements gathering through techniques such as user surveys, personas/scenarios, hierarchical task analysis and use cases, with both low- and high-fidelity prototyping design methods. User interaction and involvement was crucial in providing feedback for the team in order to focus in on the resultant designs. Based on further feedback of the high-fidelity designs from the client, the team implemented two of the high-fidelity prototypes using Java Swing.

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10 Appendix A - User Survey

10.1 Design Survey Questions



Audacity User Survey

This is a brief survey designed to find out information about the users of Audacity and what they currently like/dislike about the software and specifically the user interface.

What type of user would you classify yourself as?

- Beginner (Never used audio editing software)
- Intermediate (Have some infrequent experience)
- Expert (Use audio editing software frequently)
- Other : _____

How often do you use Audacity?

- Never
- Infrequently
- Frequently

What is your main goal in using Audacity?

- To edit audio
- Record and mix audio
- Analyse audio
- Convert audio format
- Other : _____

What do you like the least about Audacity?

Your answer

What do you like the best about Audacity?

Your answer

Which features are most important to you?

Your answer

How long did it take you to learn the required functionality?

- Less than an hour
- A day
- Longer than a day

SUBMIT

Never submit passwords through Google Forms.

Figure 12: Design user survey questions.

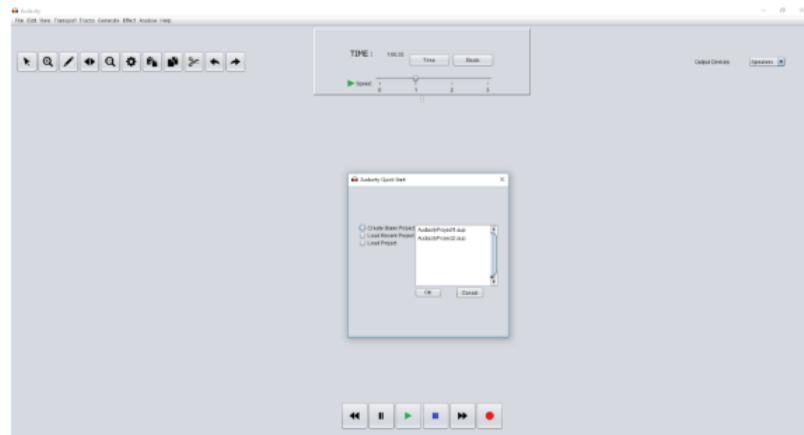
10.2 Implementation Survey Questions

Audacity Implementation Survey

How easy is it to open or create a new track?

- Easy
- Moderate
- Hard

Audacity colour scheme



Do you like the current colour scheme?

- Yes
- No
- Indifferent

Have you used any of the help menus?

Yes
 No
 I didn't know there were help menus!

Do the tool-tips provide enough information about a buttons purpose?

1 2 3 4 5

No Yes

Do you have any suggestions on things you would like to see improved?

Your answer

SUBMIT

Never submit passwords through Google Forms.

Figure 13: Implementation user survey questions.

11 Appendix B - Prototypes

11.1 Low-Fidelity Prototypes

11.1.1 Prototype 1

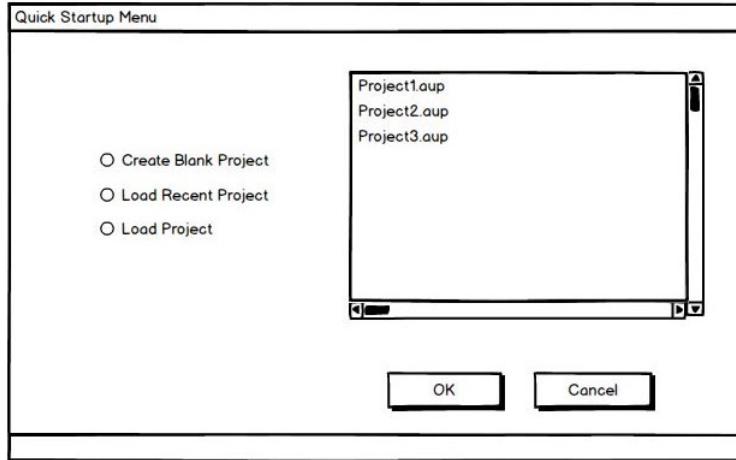


Figure 14: Quick start window.

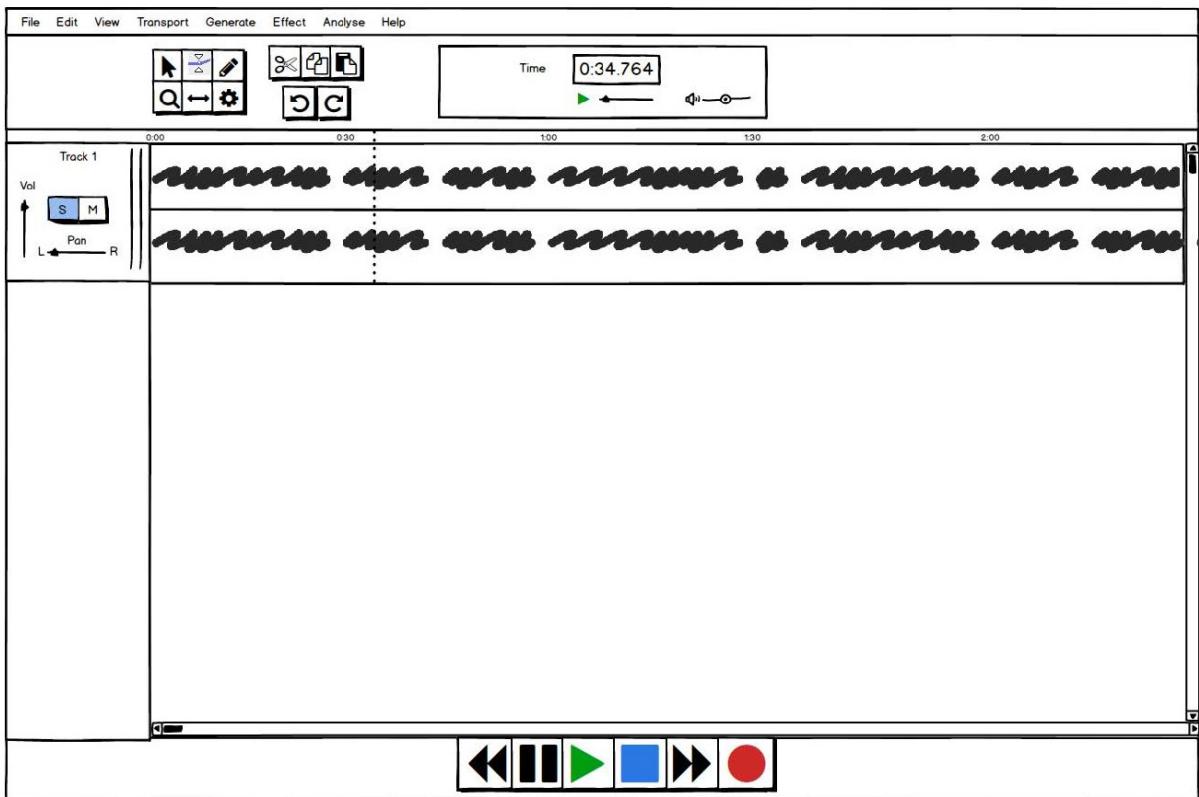


Figure 15: Main project window.

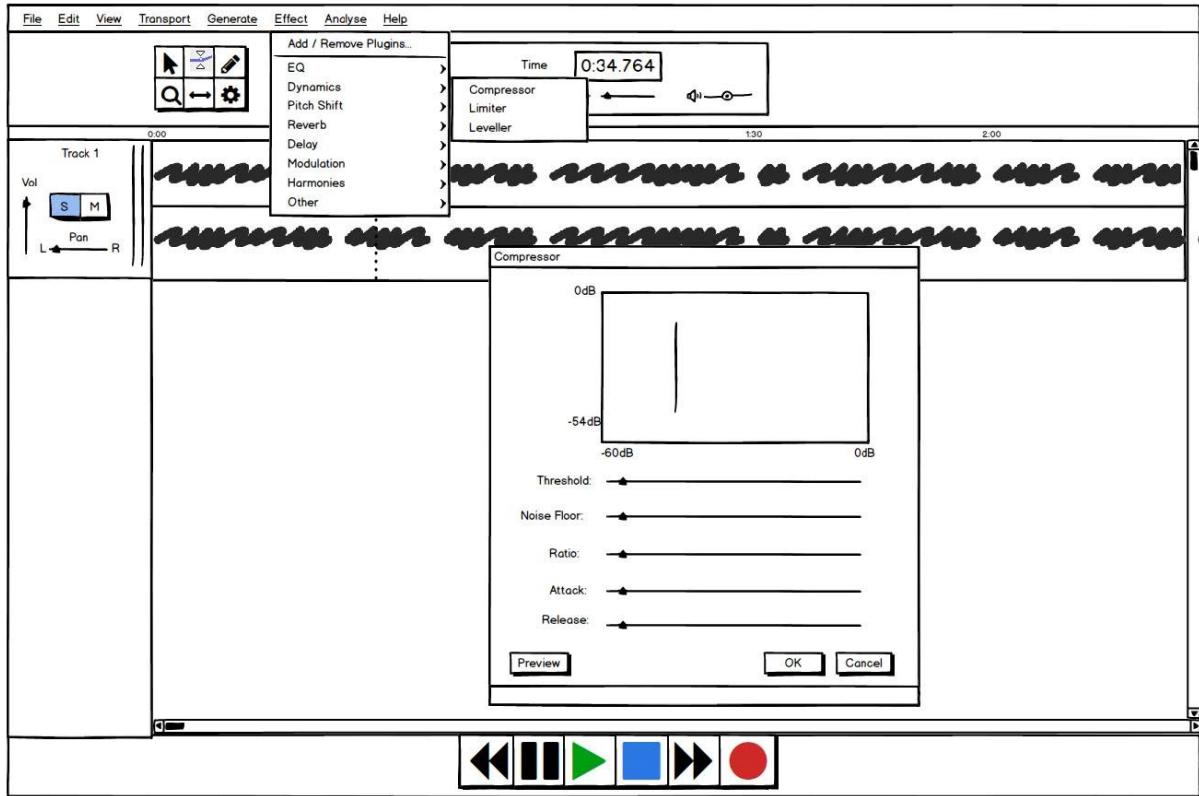


Figure 16: Example of a pop-up window from choosing a compressor effect under the Effect menu tab.

11.1.2 Prototype 2



Figure 17: Prototype 2 quick start menu.

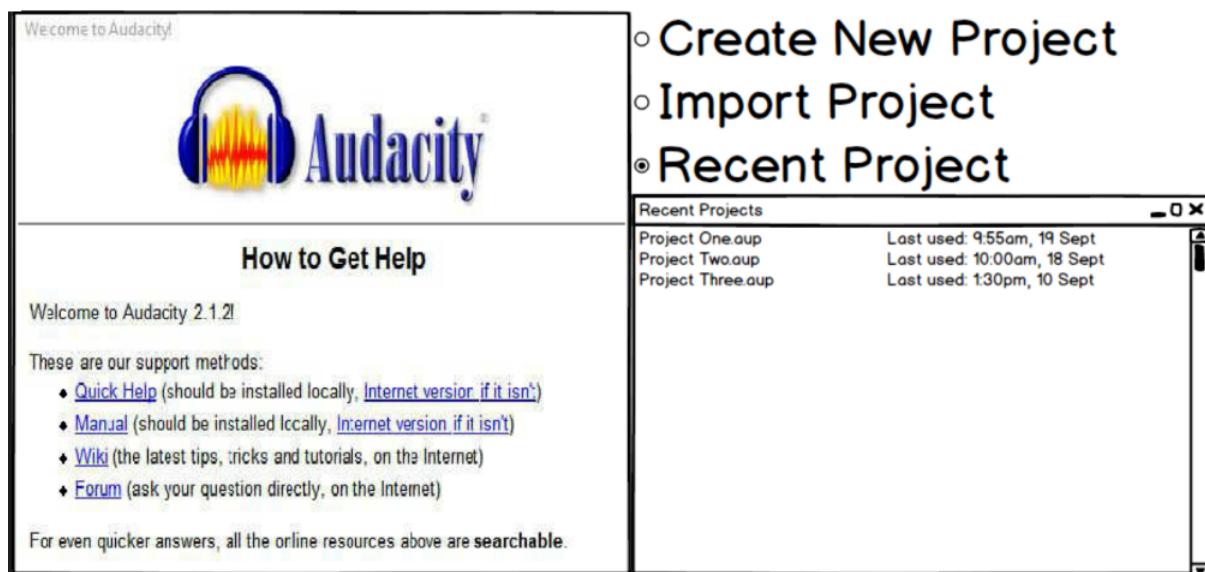


Figure 18: Prototype 2 quick start menu with recent projects selected.

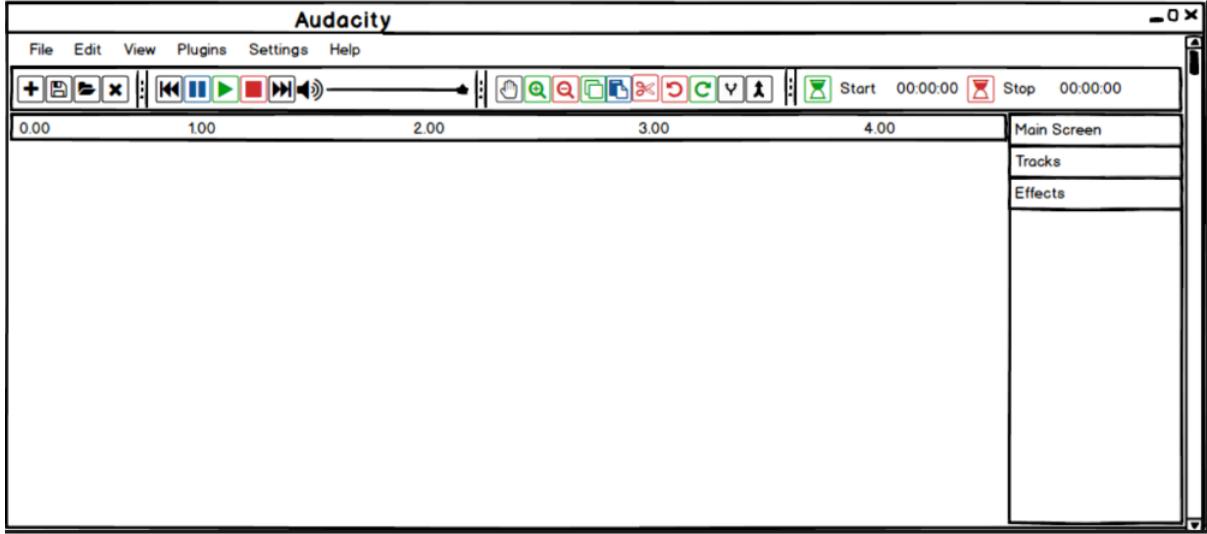


Figure 19: Prototype 2 main project window.

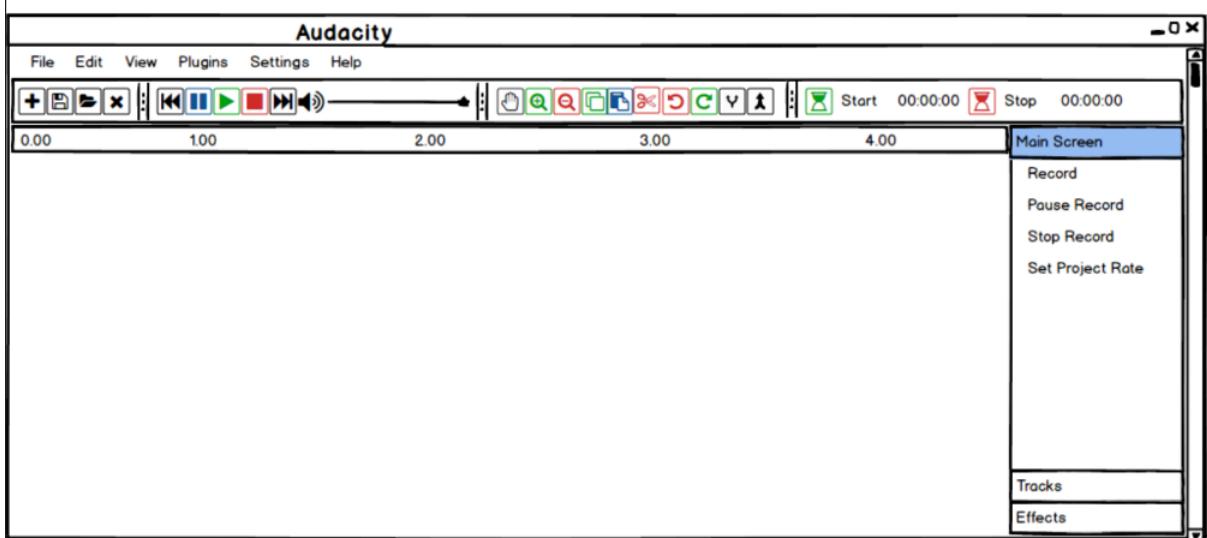


Figure 20: Prototype 2 main project window with the 'Main Screen' tab selected.

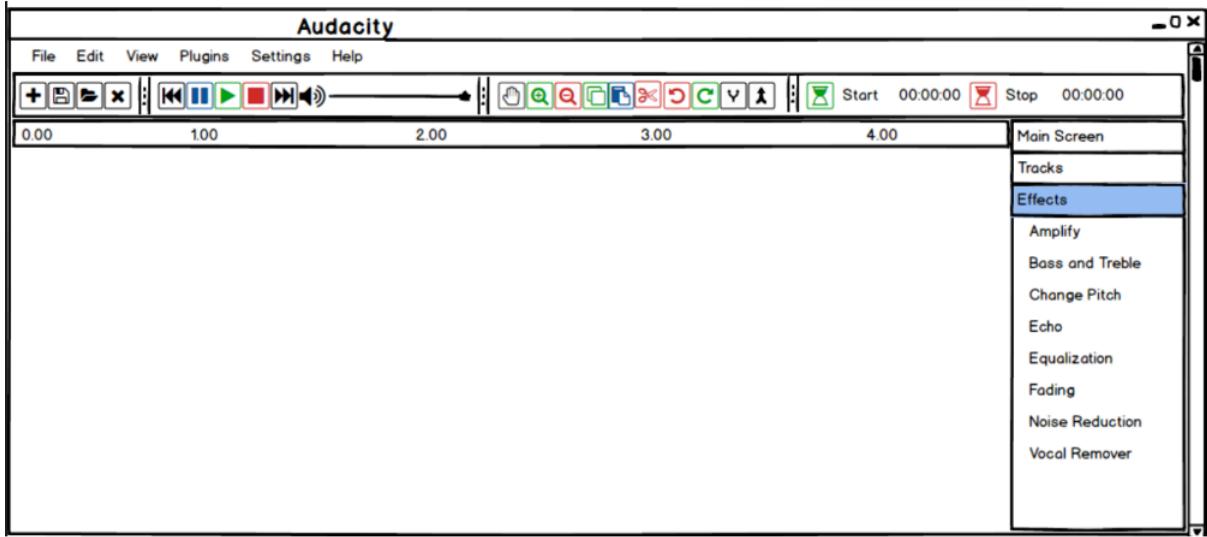


Figure 21: Prototype 2 main project window with the 'Effect Screen' tab selected.

11.1.3 Prototype 3

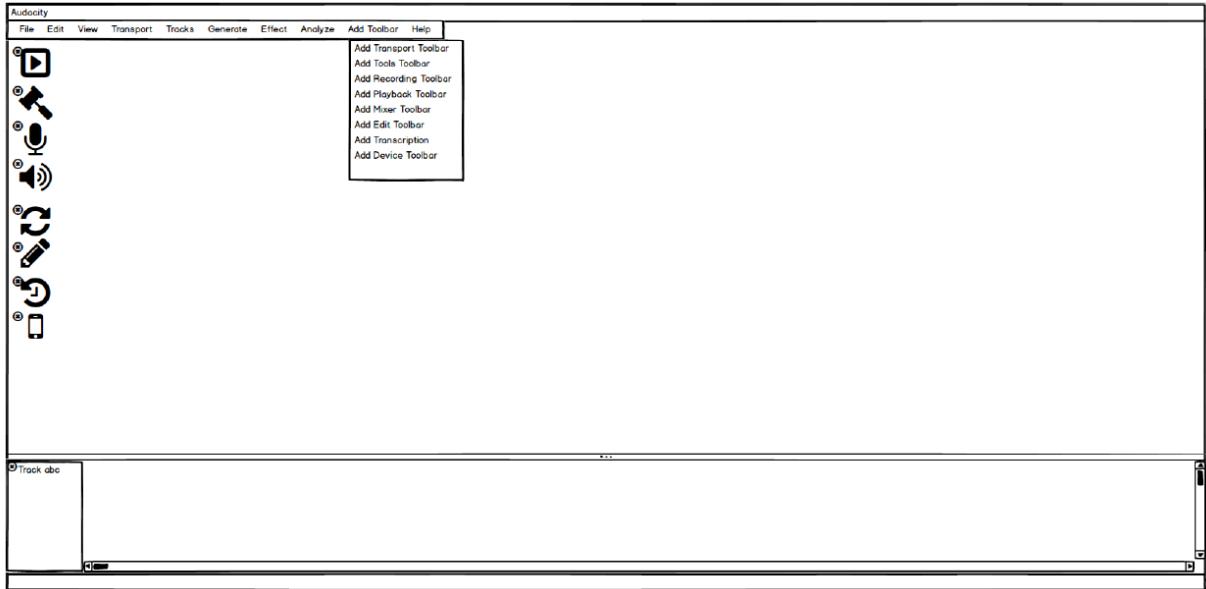


Figure 22: Prototype 3 showing the 'add toolbar' drop-down menu. Toolbars can be added and removed from the side of the main window.

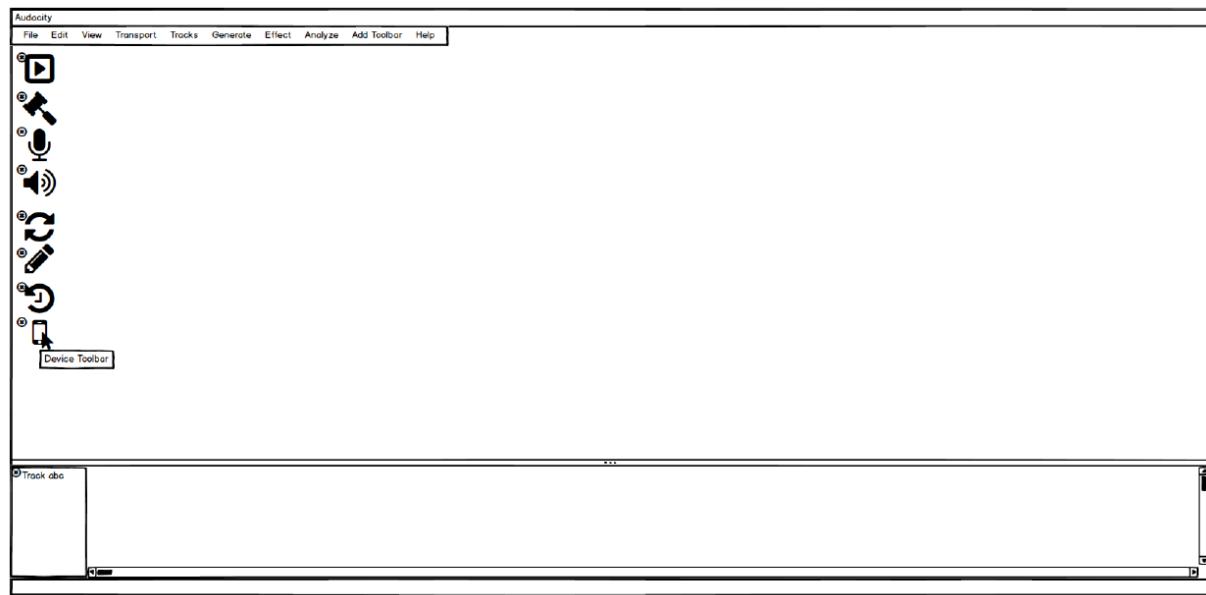


Figure 23: Prototype 3 showing mouse-over tool-tip for the device toolbar.

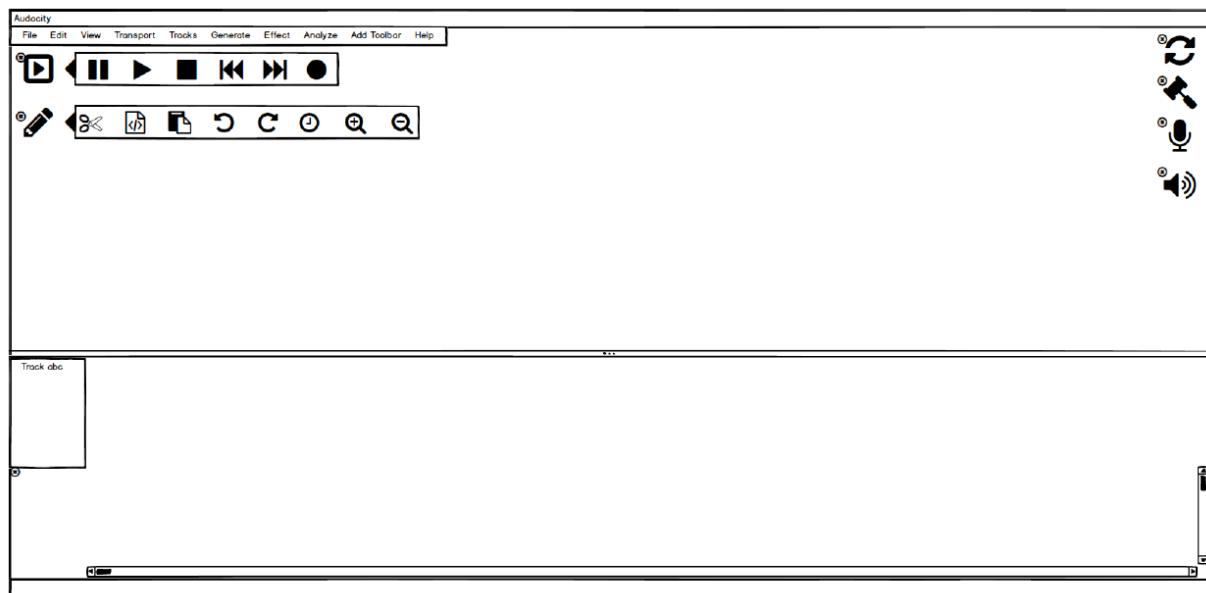


Figure 24: Prototype 3 showing the expanded toolbars for transport controls and edit controls.

11.1.4 Prototype 4

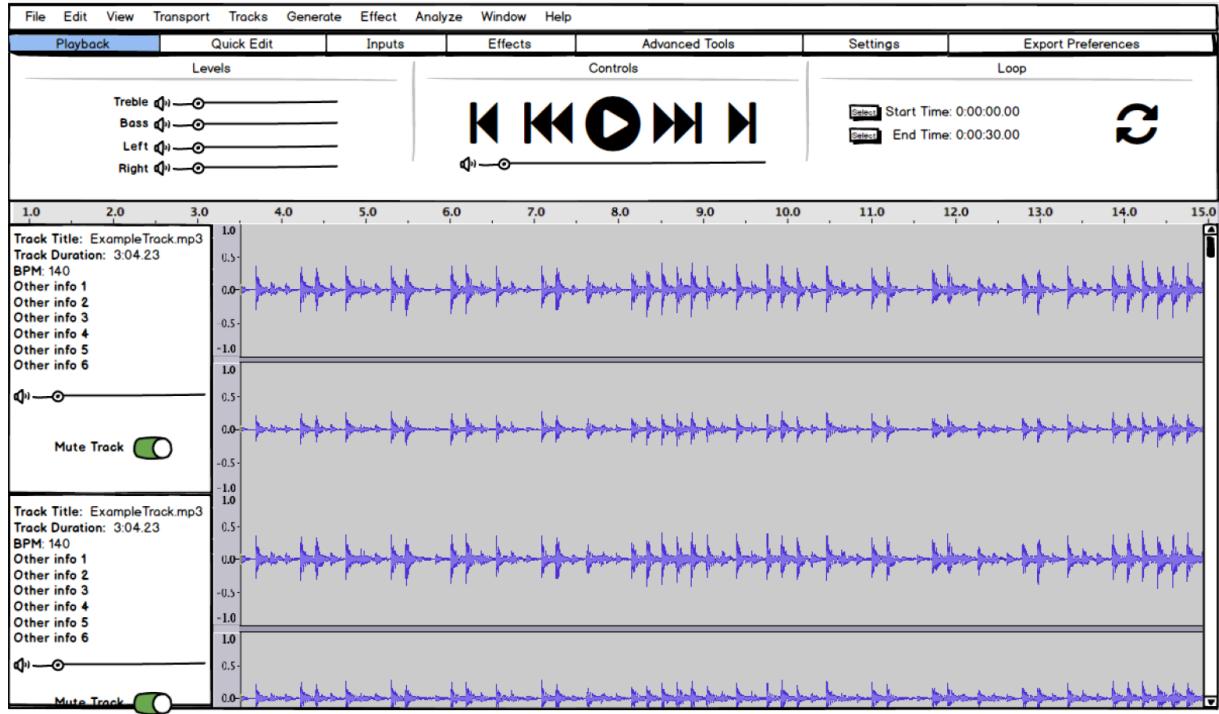


Figure 25: Prototype 4 showing main window and different tool tabs.

11.2 High-fidelity Prototypes

11.2.1 Prototype 1

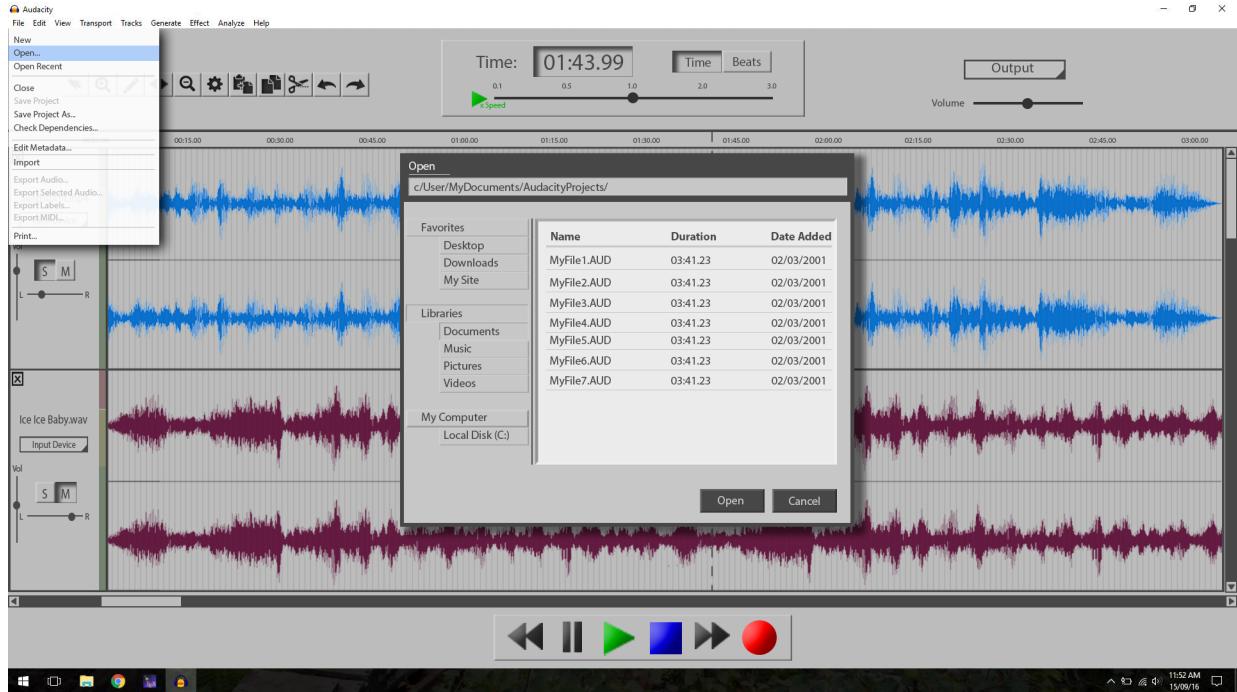


Figure 26: Prototype 1 showing the open project window.



Figure 27: Prototype 1 showing the main window.

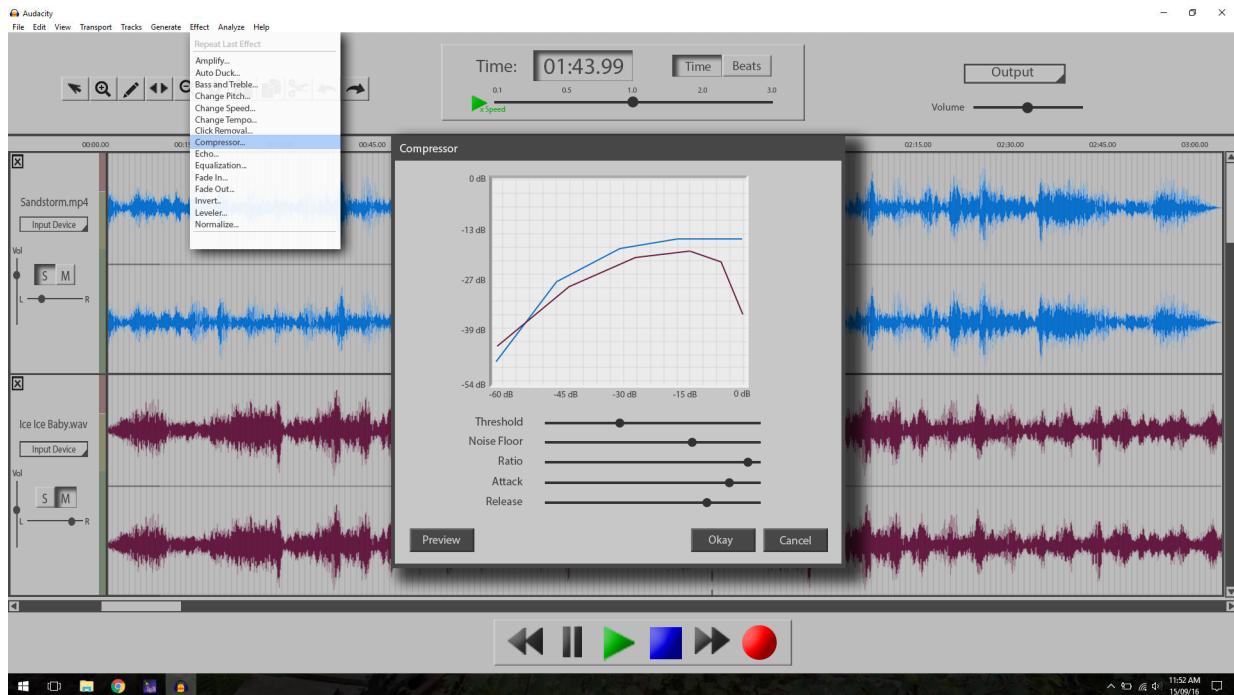


Figure 28: Prototype 1 showing the compressor effect window with the configurable parameters.

11.2.2 Prototype 2

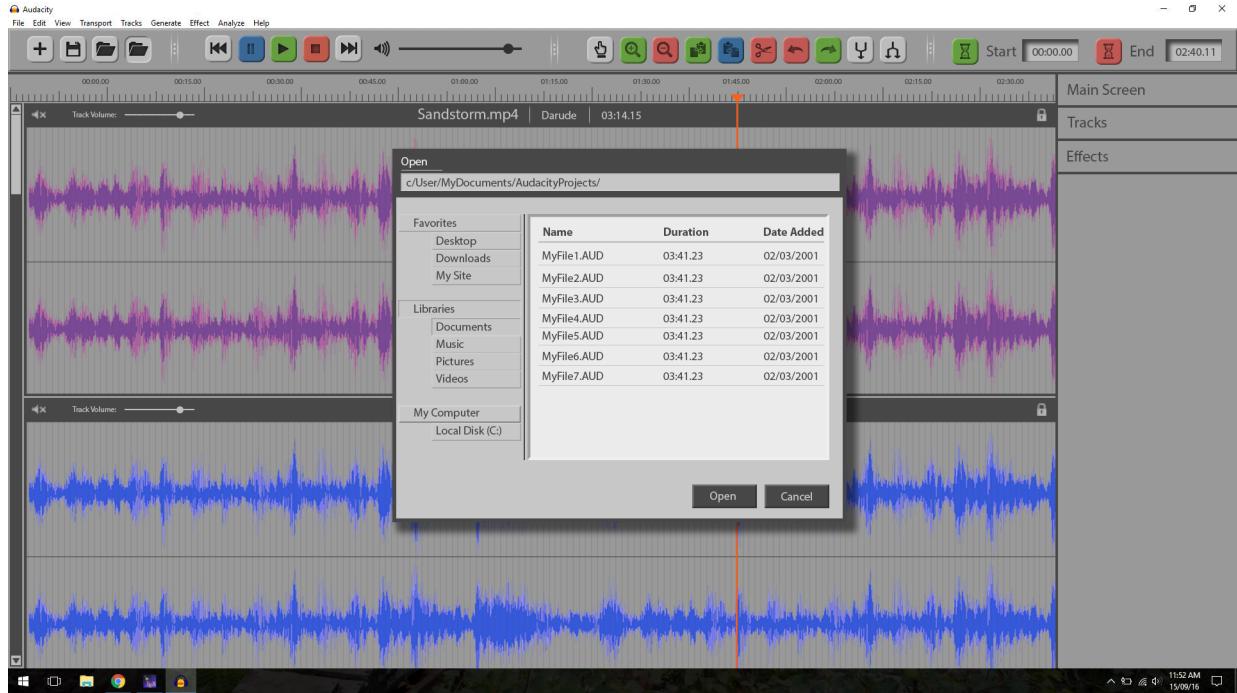


Figure 29: Prototype 2 showing the open project window.



Figure 30: Prototype 2 showing the main window along with the side toolbar.



Figure 31: Prototype 2 showing the expanded tracks side toolbar.

11.2.3 Prototype 3

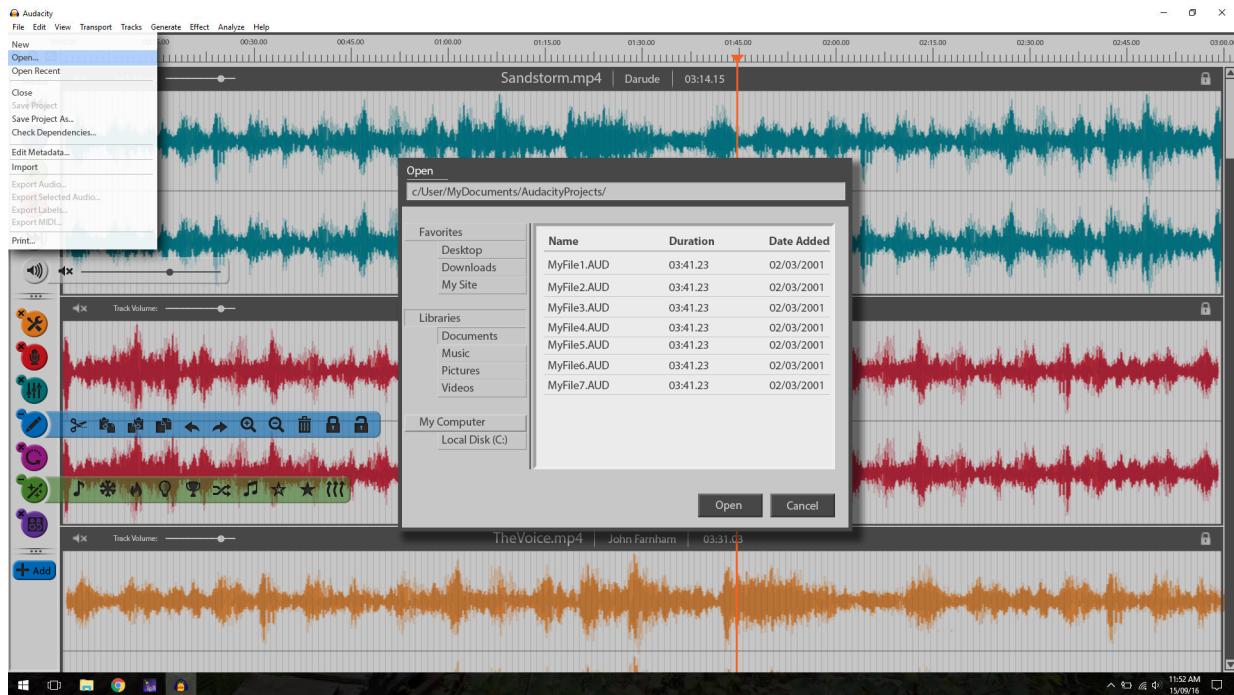


Figure 32: Prototype 3 showing the open project window.

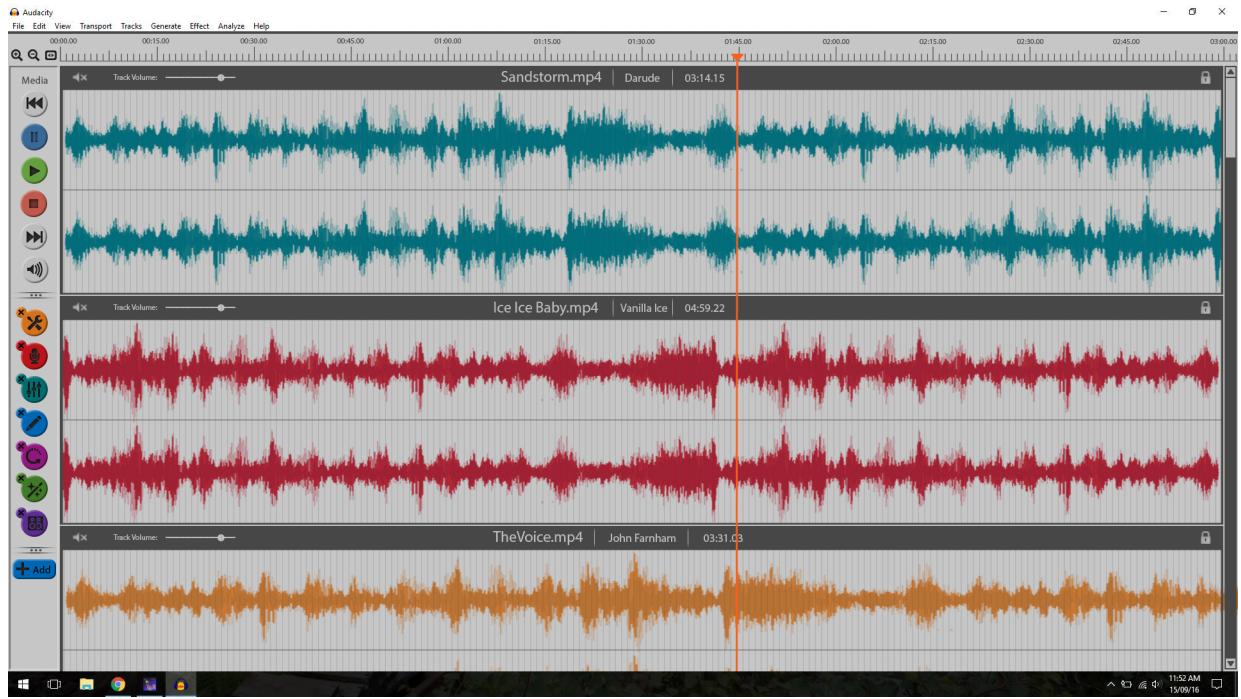


Figure 33: Prototype 3 showing the main window with the side toolbar, enabling strong customisation.

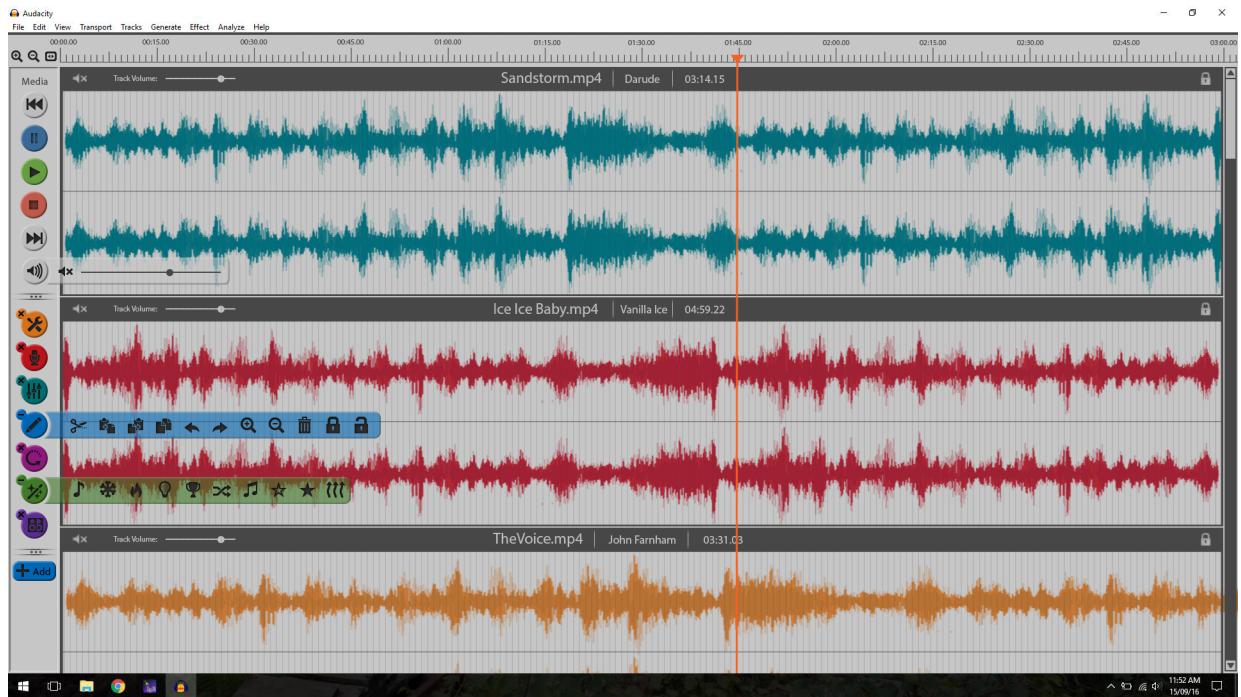


Figure 34: Prototype 3 showing the interactive 'pop-out' side toolbars.

11.2.4 Prototype 4

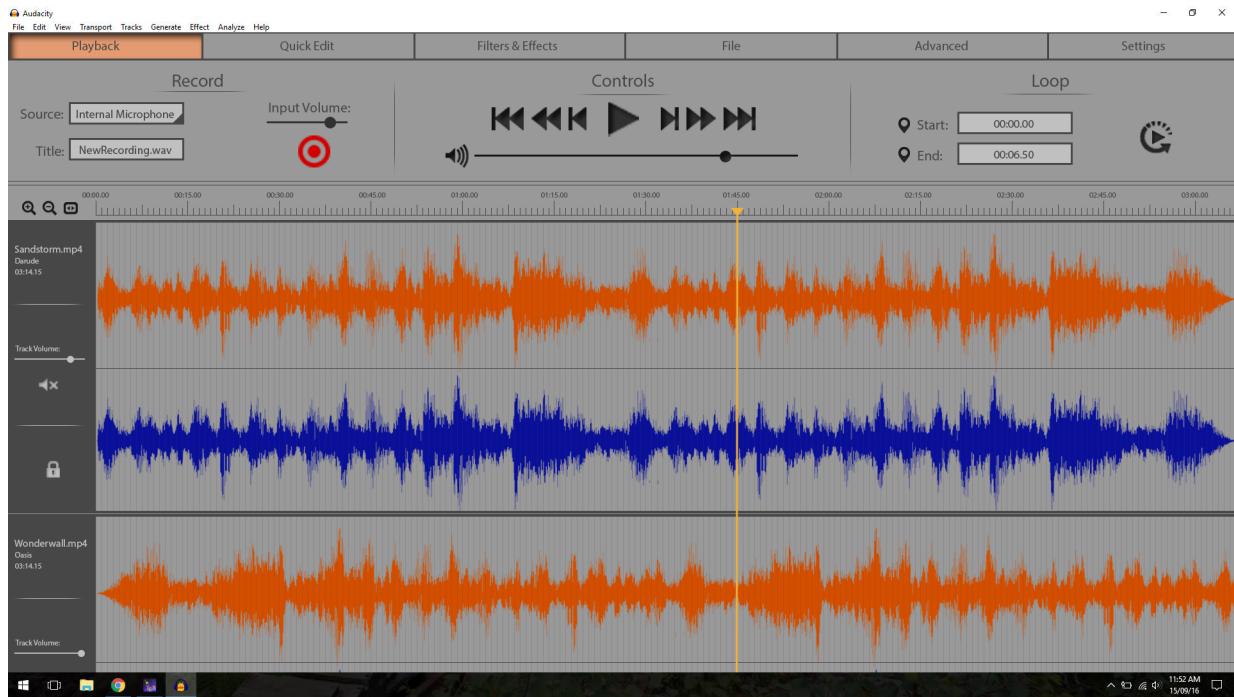


Figure 35: Prototype 4 showing the Playback options.

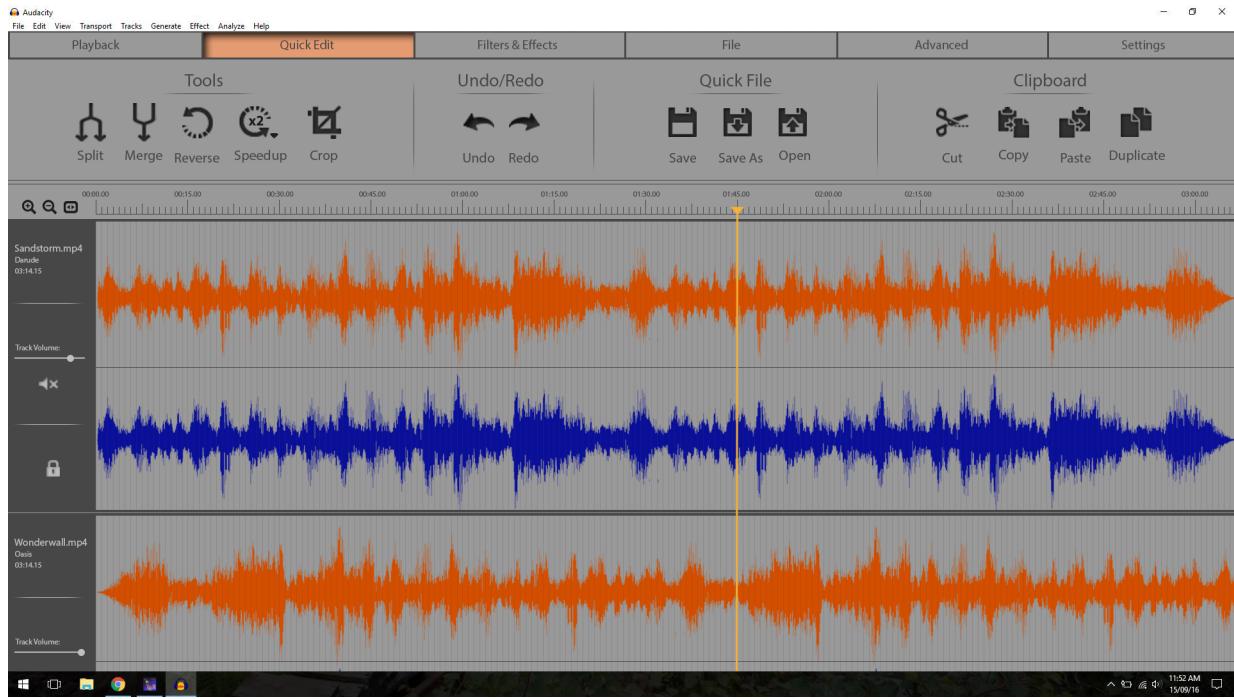


Figure 36: Prototype 4 showing the Quick Edit options.

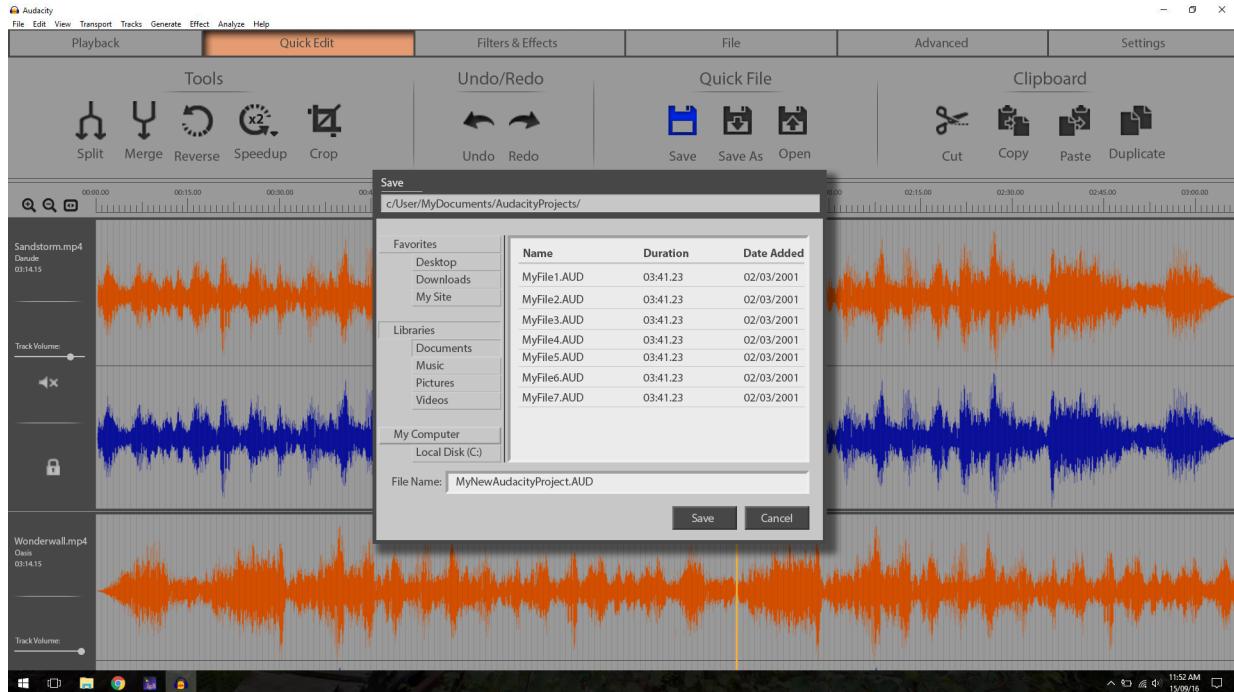


Figure 37: Prototype 4 showing the save file window.

12 Appendix C - Meeting Minutes - Harry

12.1 Meeting 1 – 17/08/16

Attendees:

- Harry Pickworth
- Kai Tong Teoh
- Brendan Lally

Apologies:

- Jesse Gherbaz

Agenda:

1. Make a decision on the application to be used
2. Allocate roles to each member
3. Create at least 1 milestone

Application/Program:

Shortlist:

- ImageMajik
 - Bitmap image editing tool
 - Command line wrapper
- Audacity
 - Audio file editor

Roles:

- Harry Pickworth: Document Controller and Graphic Designer / Programmer
 - Kai Tong Teoh: Psychologist / Programmer
 - Brendan Lally: Project Manager / Programmer
 - Jesse Gherbaz: Statistician / Programmer
-
- Roles are subject to change and are not set in stone at this point in time
 - We have all assumed the role of “Programmer” as we all want to gain experience in Swing

Goals/Milestones:

1. Email proposal to unit coordinator
 - Date: 22/08/16
 - Group Members: Brendan Lally
2. Generate 4 hand drawn interfaces
 - Date: 29/08/16
 - Group Members: All

12.2 Meeting 2 – 24/08/16

Attendees:

- Jesse Gherbaz

- Kai Tong Teoh
- Brendan Lally

Late:

- Harry Pickworth

Agenda:

1. Marking guide breakdown
2. Project goals
3. Retrospective from last meeting

Goals/Milestones:

- Everyone complete an initial prototype UI by the end of next week.

Retrospective:

- 1 of the 4 interface prototypes has been completed
- The email proposal was sent to the unit coordinator and accepted

12.3 Meeting 3 – 07/09/16

Attendees:

- Jesse Gherbaz
- Kai Tong Teoh
- Brendan Lally
- Harry Pickworth

Agenda:

1. Report labor allocation
2. Plan client meeting
3. Retrospective from last meeting

Goals/Milestones:

- Everyone complete an initial prototype UI by the end of next week
- Everyone fill in user survey

Retrospective:

- Everyone completed at least 1 low fidelity prototype each

Report Labor Allocation:

- Harry will likely spend less time on the report as he is doing the high fidelity graphic design work

Plan Client Meeting:

- The meeting will be next Thursday (15/11/09)
- Jesse will be unable to attend due to work commitments, there is no workaround
- All low fidelity designs will be presented at the client meeting

12.4 Meeting 4 – 14/09/16

Attendees:

- Jesse Gherbaz
- Kai Tong Teoh
- Brendan Lally
- Harry Pickworth

Agenda:

1. Plan for client meeting
2. Discuss report writing allocation
3. Retrospective from last meeting

Goals/Milestones:

- Complete HTA/Use Cases by next week
- Complete High-fidelity designs by next week

Retrospective:

- low-fidelity prototypes have been completed

12.5 Meeting 5 – 21/09/16

Attendees:

- Jesse Gherbaz
- Kai Tong Teoh
- Brendan Lally

Apologies:

- Harry Pickman (Working on High-fidelity prototypes)

Agenda:

1. Discuss how everyone's work is coming along
2. Discuss issues and layout arrangement for report
3. Retrospective from last meeting

Milestones:

- Finish the designs and the report

Retrospective:

- High-fidelity designs are taking longer than expected and only 2 of 4 high-fidelity designs completed
- Report structure and most requirements content completed

12.6 Meeting 6 – 12/10/16

Attendees:

- Jesse Gherbaz
- Kai Tong Teoh
- Harry Pickman
- Brendan Lally

Agenda:

1. Discuss feedback on assignment part 1
2. Discuss improvements to be made for part 2
3. Discuss the progress of the implementations
4. Discuss the breakdown of the marking guide for part 2

Milestones/Goals:

- Complete the implementation of assigned prototype
- Make changes to the report based on feedback

12.7 Meeting 7 – 19/10/16

Attendees:

- Jesse Gherbaz
- Kai Tong Teoh
- Harry Pickman
- Brendan Lally

Agenda:

1. Discuss current state of implementation
2. Clarify points with the manager

Milestones/Goals:

- Complete the implementation of prototypes and the final report

Retrospective:

- Both prototypes are coming along well. Most of the functionality that will be implemented, has been.

13 Appendix D - Project Proposal

PROPOSED PROGRAM: AUDACITY

Audacity is an open-source audio editor application that was originally released back in 2000. It is generally used for audio recording and post-processing with a large amount of functionality to achieve good results in a myriad of applications. Audacity is generally targeted to beginner to intermediate level users and is often used for education purposes.

WHY WE CHOSE THIS PROGRAM?

Audacity was chosen due to each team member's familiarity with the program, as well as meeting the required criteria of a complex program that runs on either Windows or Linux. The source code for Audacity is written in C/C++, which will make it unlikely that we will be able to programmatically connect the newly designed GUIs (which will be written in Java) to the back-end functionality. However, our team believes that we can still achieve the desired outcomes by following good user centric design and usability principles to design a new interface using Java Swing. Each team member will bring their unique ideas, thoughts and skills to their job roles in order to successfully work as a team and complete the assignment.

WHAT IS WRONG WITH THE CURRENT INTERFACE?

The current user interface that Audacity employs is graphically quite plain and can be quite overwhelming to new users with minimal to no experience using audio workstations. The majority of the interactive interface is restricted to the top part of the window, with a large amount of functionality implemented as click-able buttons. Some of the buttons have an obvious use with universal icons used for things like play, stop, forward, backward and record. On the other hand, a lot of the buttons and other interactive features are not so obvious or intuitive. We believe that there is certainly room for improvement to make the interface of Audacity more user-friendly and intuitive, without overwhelming new users. We want new and experienced users alike to be able to quickly start on their intended project and accomplish the tasks that they have set out to do.

HOW MANY WINDOWS WE WILL MAKE?

The majority of the functionality and use of Audacity occurs in the main window, where each audio track is represented as a waveform. The rest of audacity revolves around editing and manipulating these waveforms. The other windows that make up the GUI are for general file and directory searching and changing certain settings or preferences. For our assignment we will aim to focus on redesigning the main window along with some of the preference windows. Redesigning the main window will be the major task. The group has already started brainstorming some ideas about how to improve on the current interface by rearranging and relocating certain functionality to create a more intuitive and expressive work flow, while easing new users into learning and remembering how to use the application.