CM4017 -Advanced Multimedia Development

Coursework Part 1 - Design

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Contents

Introduction

The coursework for the CM4017 course required students to design and create a multimedia entertainment application using Adobe Animate, ActionScript 3.0, SQLite and XML. The finished application was required to: allow users to create playlists of music, control the playback of media, select visualisations to accompany any audio being played, watch videos and view images - both individually and in a slide-show format.

The first task within the design phase of the project was to choose a theme for the application. In recent years there has been a resurgence of 80s-style, synth-based music. The genre has been coined “Retro Wave”, it seeks to replicate and build upon the styles and sounds of the 1980s. I believe this theme suits the project task well as it has a very distinct aesthetic style.

Having settled upon a theme, I then began to design and storyboard the layout of the application. I did this by creating wireframes of the various sections within the application. The wireframes were then used to prototype the interactions that users would have with the application. Once the wireframes were complete I went on to create some mock-ups of the application. The mock-ups would serve as a visual/style guide during the implementation stage of the project.

The next task was to evaluate the usability of the application. I created a table based on Lidwell, Holden and Butler’s “Universal Principles of Design”. The table contains a number of principles of usability and describes how I have considered these in my approach to the design for this project.

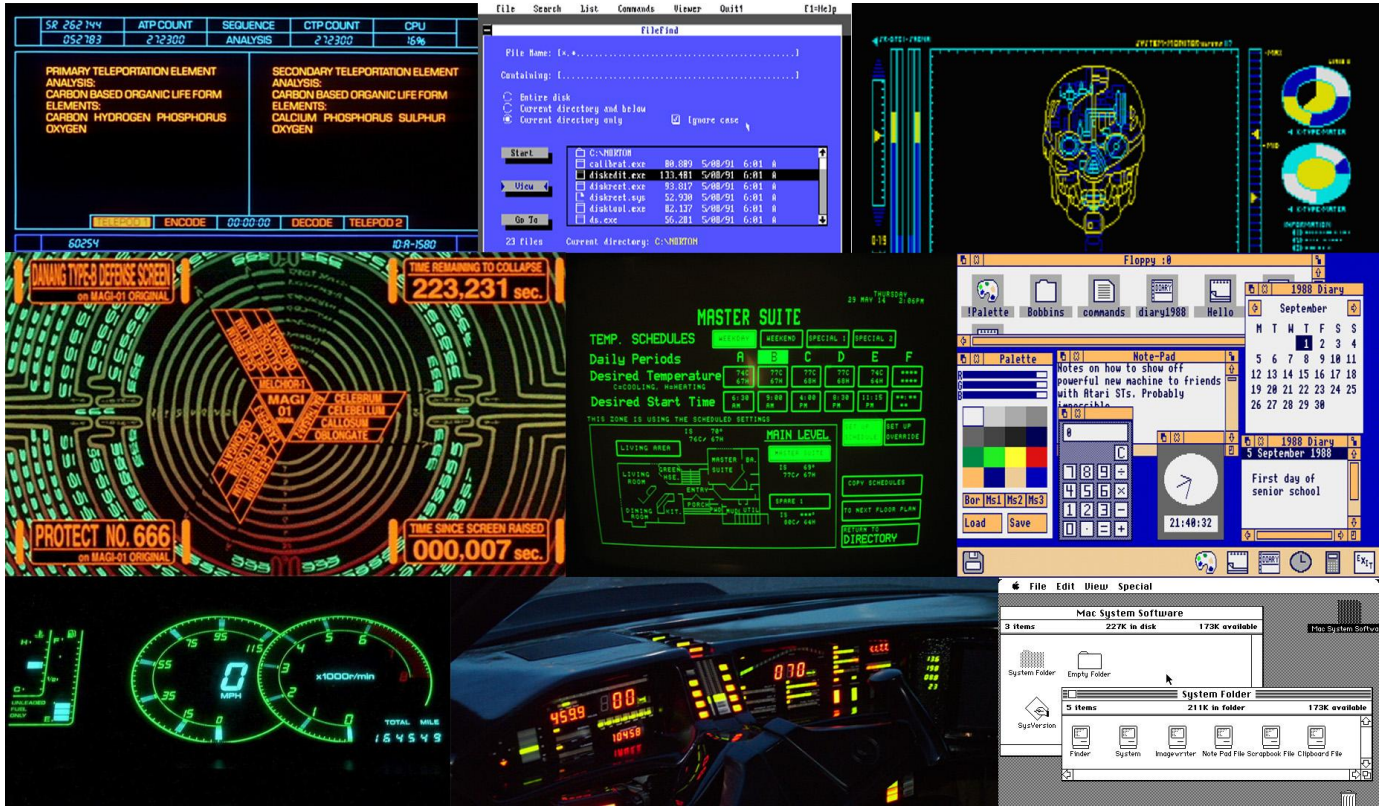
Introduction Cont.

I then went on to create two user profiles which served to enhance the cognitive walkthrough of the design. The cognitive walkthrough was conducted by describing different interactions that users will potentially have with the application. I listed the steps that were necessary to reach the desired outcome for each interaction, and mapped these out onto the wireframes. The cognitive walkthrough helped to determine whether there were any aspects of the design that needed to be made more user-friendly.

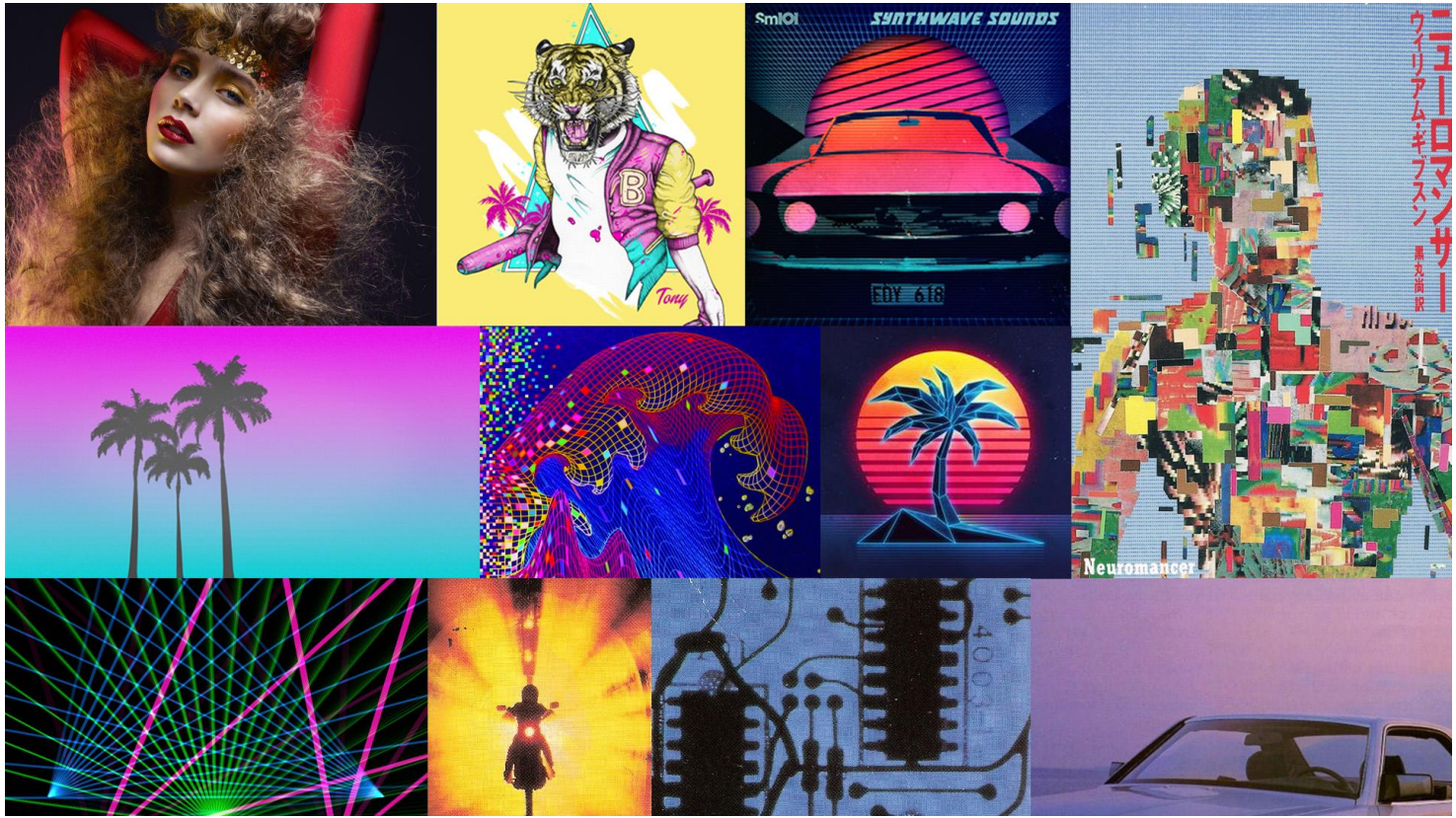
Moodboards

Objects, media and software that inspired the design of the media player application.

Moodboards Cont.



Moodboards Cont.

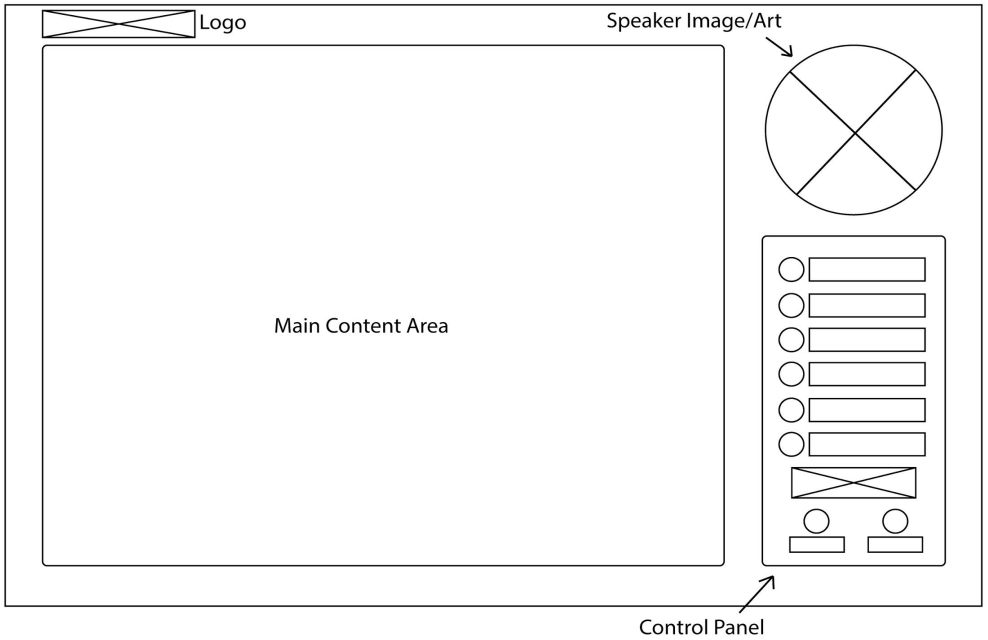


Storyboards/Wireframes

After research into the theme for the application and having spent time creating a moodboard and style guide, the next step was to create wireframes. The wireframes are intended to show the layout of each section within the application, and where user interface elements will be placed.

Layout/Background

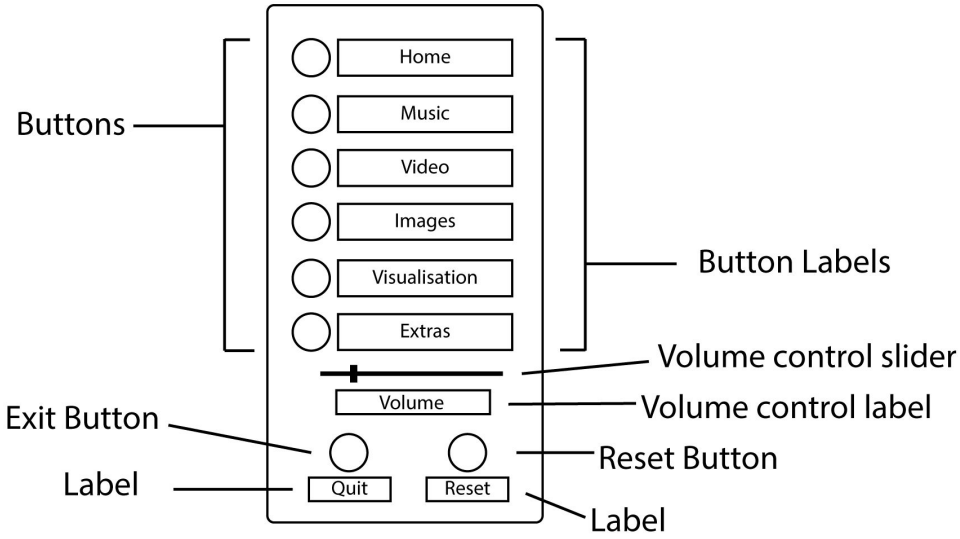
The first wireframe I created shows the basic layout of the application and user interface. The interface described in this wireframe will remain constant throughout the entire application.



Wireframes Cont.

Control Panel

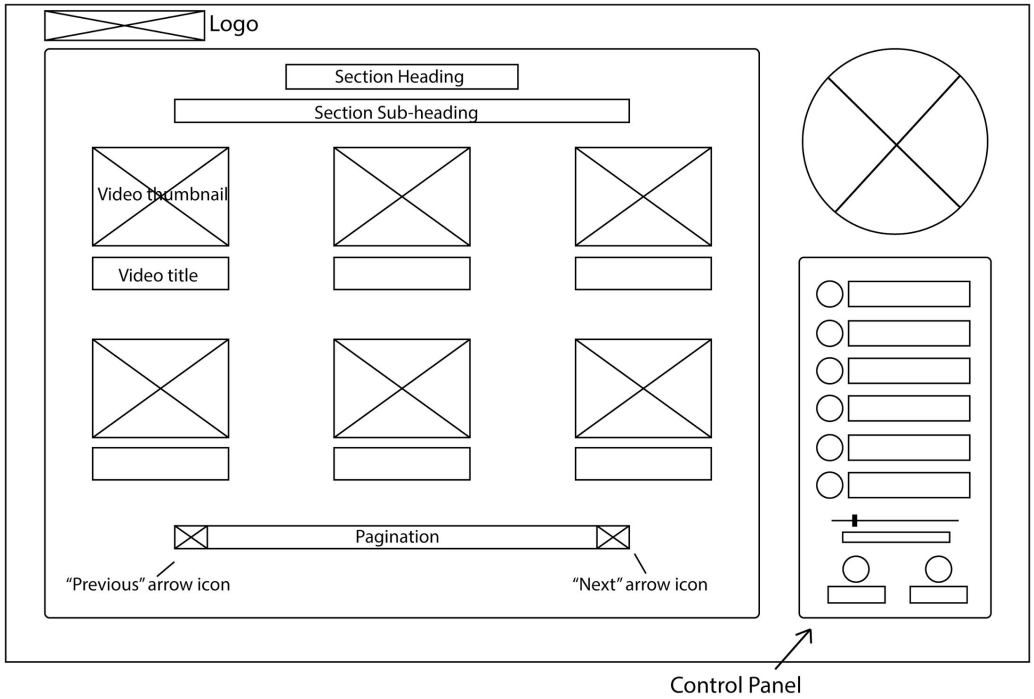
This wireframe provides a closer look at the control panel UI element. The control panel is an essential part of the application's design. From here users can navigate between different sections of the application, adjust the volume of media playback (videos and music). Users are also able to exit the application or reset the application to its default state through this interface.



Wireframes Cont.

Videos

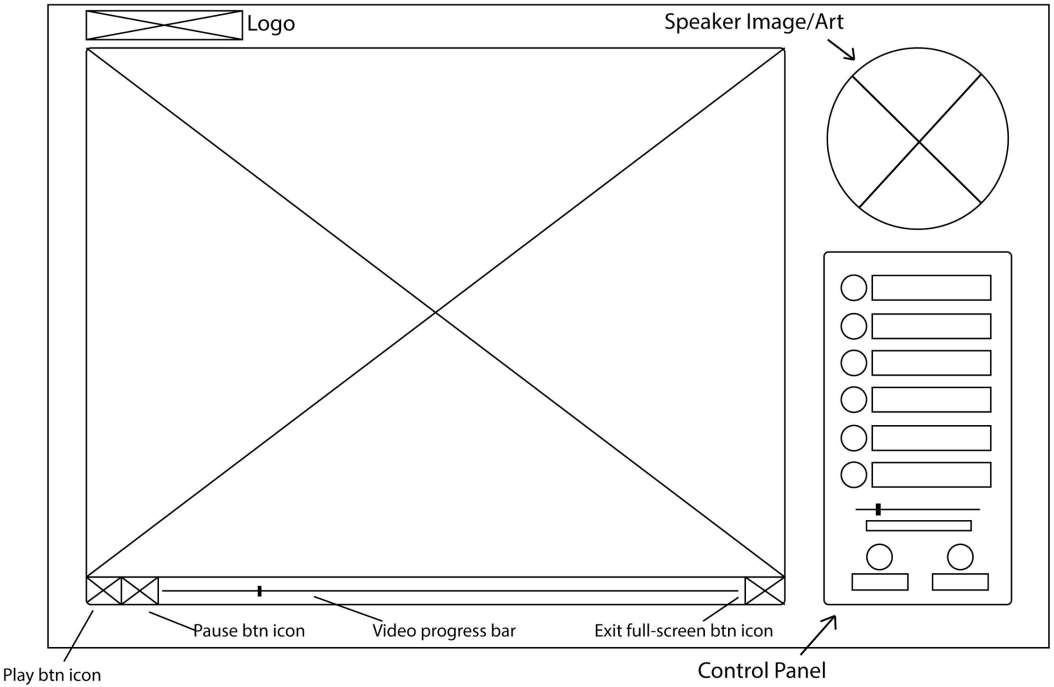
This wireframe shows the “Videos” section of the application. Here the main content area displays six thumbnail images representing individual videos. Below each thumbnail is a label which informs the user of the title of the video shown in the thumbnail.



Wireframes Cont.

Videos - Playing

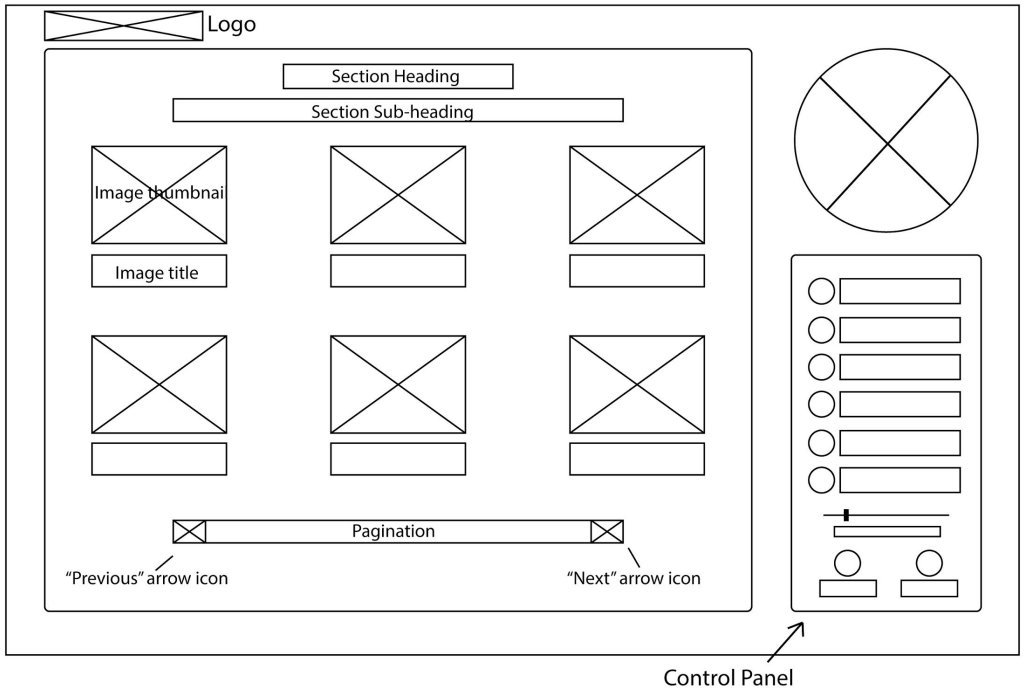
After clicking on a video's thumbnail or label, the video begins to play. The video maximises to fill the content area. The video playback controls are present at the bottom of the content area. Here the user may pause or play the video. The user may also skip to a particular time within the video by using the slider on the progress bar at the bottom of the screen. To return to the "videos" page, the user may either click on the exit button in the bottom right, or click on the videos button in the control panel.



Wireframes Cont.

Images

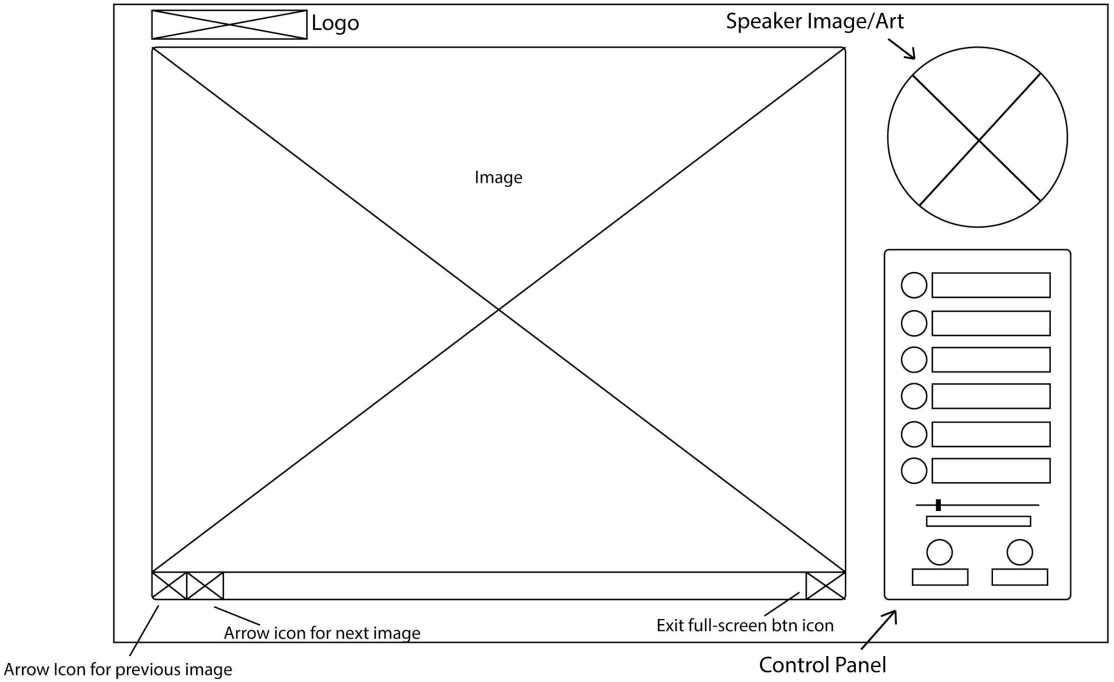
The images section is designed in a similar fashion to the videos section mentioned previously. Again, the user may select an image to view by clicking on the thumbnail or label of a particular image. The selected image then expands to fill the content area, with controls appearing below.



Wireframes Cont.

Images - Viewing

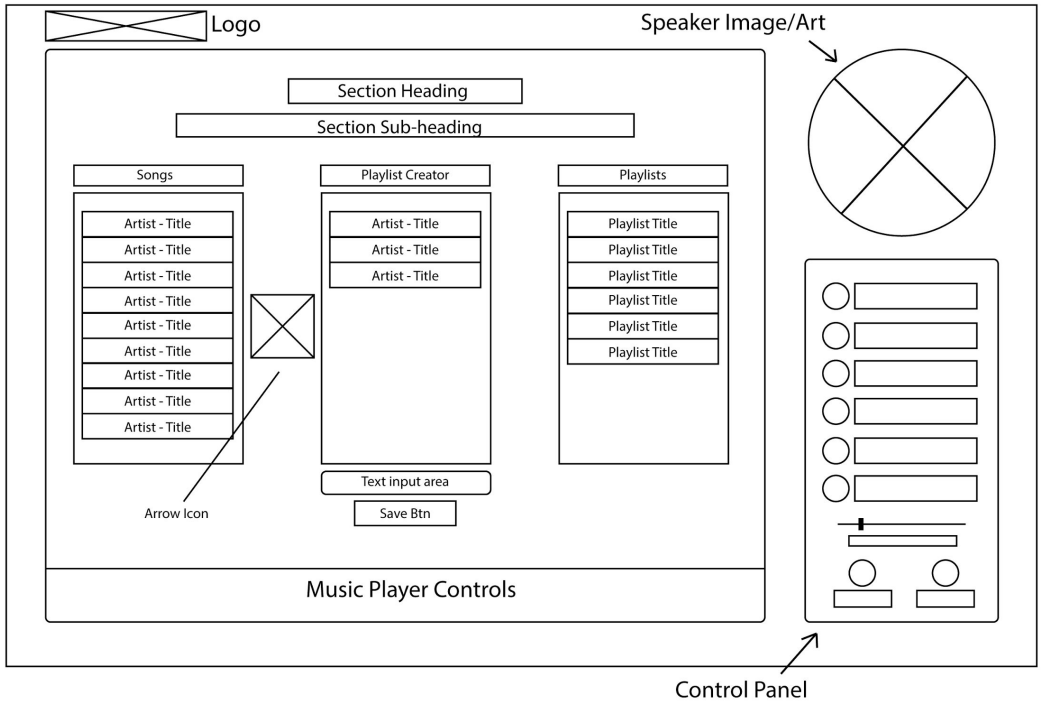
While viewing an image users have the ability to move to the next or previous image in the library. This is done by clicking on the arrow icons in the bottom left of the screen. Users may return to the list of images by clicking the “exit full-screen” button in the bottom right or by clicking on the “Images” button in the control panel.



Wireframes Cont.

Music

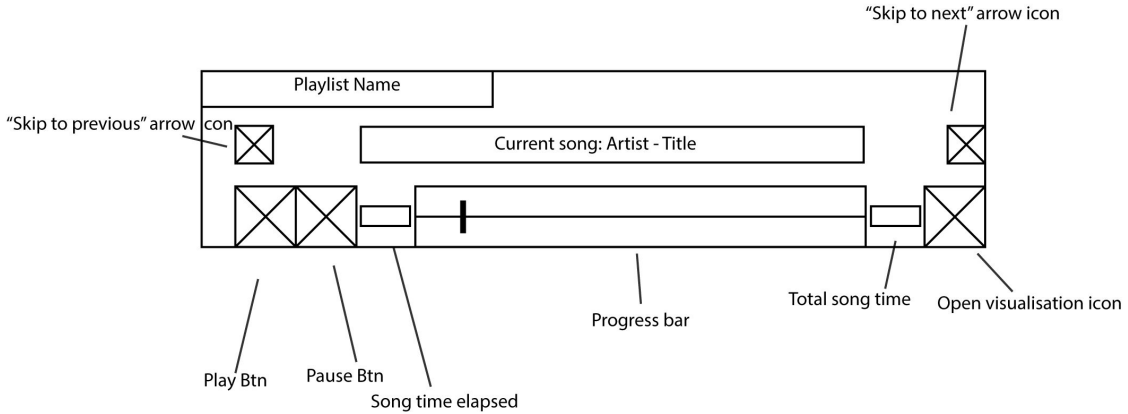
The music section is accessed by clicking the “Music” button in the control panel. Here the user is presented with three lists. The first list, furthest to the left, is a list of all the songs available through the media player application. The second list is the “playlist creator”. The third list contains all of the saved playlists created by the user. Users may create a new playlist by clicking and dragging songs from the “Songs” list into the “Playlist Creator” list. In order to save a playlist, users must first name the playlist by entering a name into the text input area below the list and then clicking the “Save” button. Saved playlists appear in the list on the far right of the screen. The bottom of the content area in this section contains the music player controls.



Wireframes Cont.

Music - Playback controls

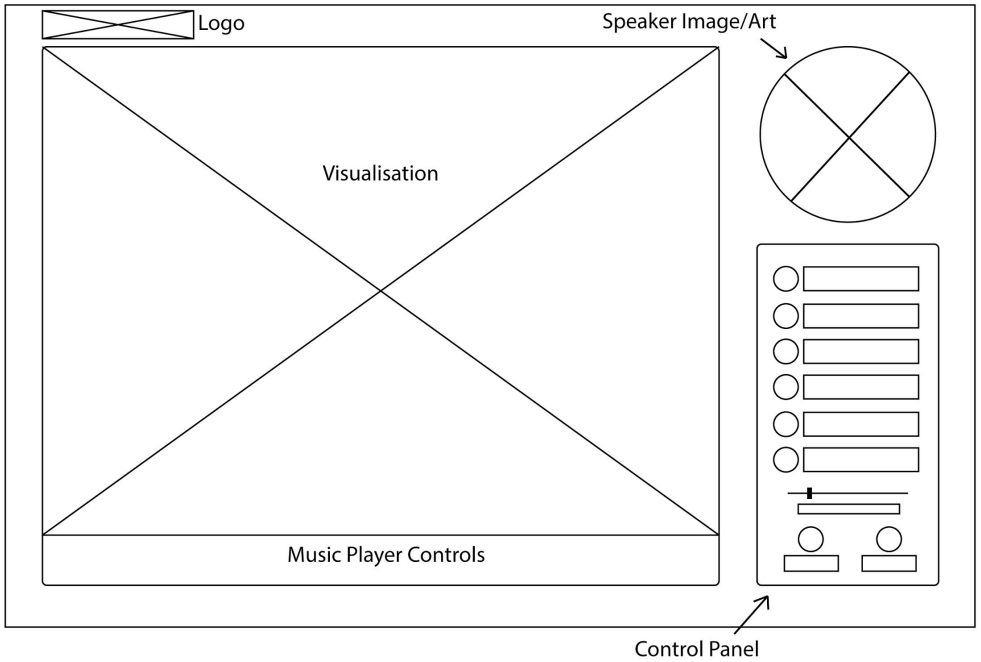
The music player controls allow users to skip between songs, skip to a particular section within a song and also to pause or play the current song. From here users can also activate the visualisation feature of the media player application. The playback controls also provide information to the user, such as: the artist and title of the currently playing song, the name of the playlist that is currently active, the length of the song and the current time elapsed within the song.



Wireframes Cont.

Music - visualisation playing

When a user clicks on the “open visualisation” icon in the music player controls the “Music” section is replaced with a visualisation. The visualisation is an animation that plays alongside the music and changes in response to changes in the music. The visualisation can be closed at any time via the music player controls.

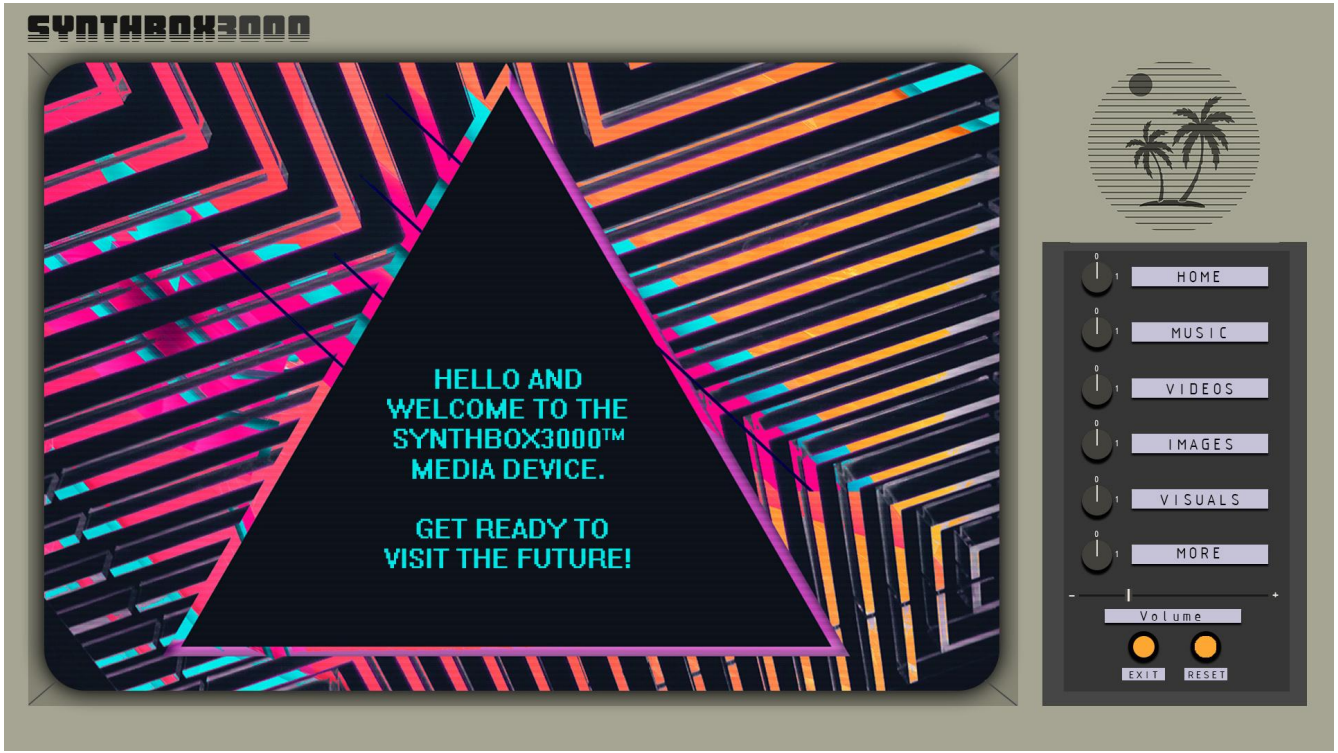


Mock-Ups

To aid with the implementation of the media player I created a mock-up of the “Home” section. This mock-up was intended to represent how I anticipate the final product will look. The mock-up uses the same fonts and colours that will appear in the final version of the media player application. The logo was created using the font “Lowrider BB”, the copy text is written in the font “Console” and the labels in the control panel use the font “Isocteur”.

Mock-ups Cont.

The “Home” section



Usability

Below is a table that provides a heuristic evaluation of usability principles, and describes how I have sought to achieve a high level of usability within the application.

Design Principle	**Application Achieves this by:**	**Application does not achieve this because:**
80/20 Rule	By positioning the most useful and important UI elements (i.e. “Music”, “Videos” and “Images”) in the most prominent positions within the user interface I hope to maximise the usability of the application.	
Accessibility	The design I have created incorporates fonts that are clear and legible, font sizes are also relatively large. The fonts I have chosen are clean and simple sans-serif fonts. The language used in the application is straightforward and of a level that can be understood by as many users as possible. Videos and images used are of a high resolution and are, by default, maximised to fill the screen when viewed.	
Aesthetic - Usability Effect	The application has a distinct and clearly defined aesthetic which seeks to recreate hardware and user interfaces of the time period in which it is set. The colours, fonts and images all help to contribute towards this aesthetic style.	
Affordance	The design incorporates techniques such as drop shadows to give affordance to the user interface elements. Creating a “3D” effect helps to inform the user that certain elements - such as buttons - are able to be pressed or interacted with. Labelling user interface elements also guides the user towards the intended interaction. An example of this from my design is the buttons on the control panel. The buttons are designed to mimic knobs from an old television or computer. By furnishing the buttons with labels such as “On” and “Off” I hope to indicate that users can interact with them as they would with a real-world equivalent.	
Confirmation	Where appropriate, confirmation dialogue boxes are used to prevent the user from accidentally making an error. This is particularly relevant to the “Reset” button in the control panel. The “Reset” button allows the user to reset the application to its default state. This involves removing any playlists that they may have created or reverting changes they have made to settings like volume and brightness. Forcing the user to make a second click, on the appropriate button (“Yes” or “No”) in order to activate the reset function, will hopefully prevent them from doing so erroneously.	

Usability Cont.

Consistency	The background is consistent throughout the application and user interface elements such as the control panel are also consistently placed throughout.	
Constraint	The application, by default, will be sized to fit the screen of the user.	
Control	Users can control the playback of media such as music and videos. Videos and songs can be paused or skipped, users may also skip forwards and backwards within a song or video using the progress bar. Images can be cycled through in a slideshow format or viewed individually. Users may also adjust the volume of media playback using the volume slider in the control panel.	
Cost-Benefit	Images and other media will be optimised to ensure that they are of a high standard of quality, yet of a file-size that ensures playback and load times are smooth and prompt.	
Entry Point	When a user opens the application they will be greeted with a welcome screen that introduces the application to them and guides them towards the appropriate user interface elements.	
Errors	Ensuring that the navigation elements and user interface are clear and defined will help to prevent errors. Clear affordances and techniques such as mimicry and iconic representation will also help in this regard.	
Fitts' Law	UI elements are consistently placed and also close together. Navigation elements are large enough to make them easily clickable and are distinct from their backgrounds.	

Usability Cont.

Forgiveness	Users can reset the application to undo any changes should they wish. Users may also edit music playlists that they have created.	
Hicks' Law	Menus and navigation elements are straightforward and do not contain unnecessary or superfluous layers of navigation. I have kept drop-down menus and scrolling to a minimum. Thumbnails are large, and labels are clear and relevant. Keeping the maximum amount of thumbnails on a page to 6 and using pagination and "previous" and "next" arrows should also help in this regard.	
Hierarchy	The most important navigation elements are located at the top of the control panel section. Key information on pages is displayed at the top of the page.	
Iconic Representation	Familiar icons for media playback, such as "Play" and "Pause" buttons, have been used in the design. Arrows for "Next" and "Previous" sections are also used.	There is not a widely recognised icon for music visualisation.
Immersion	The application has been designed to mimic a real-world media device. User interface elements, background design, and the media contained within all help to create a convincing imitation of device that could have been produced in that era.	
Inverted Pyramid	The most relevant and important information is located towards the tops of pages and navigation.	

Usability Cont.

Layering	Information is grouped in a logical and sensible fashion. For example the “Videos” section contains only content that is related to videos.	
Mapping	I studied the designs and layouts of existing applications and hardware to help create natural mapping that is intuitive and reflective of real-world counterparts.	
Mimicry	The entire application has been designed to mimic a conceptual device that could have potentially been manufactured in the 1980s. The content area is contained within a background that replicates such a device. Background colours mimic the beiges and greys of televisions and computers of that time period. The navigation area is designed to represent a control panel from an old TV. It contains knobs and labels that turn and light up, much like a real TV. The fonts have been chosen to mimic the system fonts of old computers and consoles. The background contains an area that mimics a speaker on an old TV.	
Performance Load	Tasks are simple and intuitive and have been designed to make the interaction between the user and the application as natural as possible. The use of mimicry helps to provide an interface that many users will already be familiar with.	
Progressive Disclosure	Interface elements that may require usage instructions (such as the playlist creator) are preceded by brief text that provides explanation and guidance to the user.	

Usability Cont.

Readability	Fonts are large and contrast well with their backgrounds. Language is straightforward and of a level that should be understandable by many.	Some text within the application may be slightly obscure. Song or video titles have been created by artists and are outwith my control.
Recognition over Recall	UI elements are intuitive and consistent throughout. The use of mimicry and well established design patterns help to reduce cognitive load by presenting a familiar interface to users.	
Signal-to-noise ratio	Although the application makes use of many bright colours and detailed designs, there is also plenty of white space and good contrast, allowing important content to stand-out.	
Wayfinding	Page titles and section headings along with labels and icons help to keep the user aware of where they are within the application and help to prevent them from getting lost. I intend to use sound effects to help indicate that a button has been pressed. When a user is viewing a particular section, such as the “Videos” section, the relevant button in the control panel will be turned to the on (“1”) position and the label will be given a backlit effect. This will help to reinforce that the user is browsing a particular section.	

User Profiles/Personas

To supplement the cognitive walkthrough, I have created two distinct personas. The personas are intended to represent members of the expected target audience of the application. The user profiles were used to help storyboard various scenarios that formed part of the cognitive walkthrough.

Persona A

Name: Henry
Age: 22
Occupation: Student of Computer Science
Background: Henry is in his final year of an undergraduate course in computer science. He likes listening to music and spending time with friends. He has a high level of competency when it comes to technology. Recently he has been trying his hand at producing electronic music.

Persona B

Name: Jane
Age: 45
Occupation: Systems Administrator
Background: Jane works as a systems administrator for a large Oil and Gas company in Aberdeen. She was a teenager in the 1980s and has a particular fondness for that time-period. A lot of the music that she listens to is from that decade. A friend recommended that she check out the genre of music called Retro-Wave as it may be relevant to her tastes.

Cognitive Walkthrough

I began the cognitive walkthrough by creating, what I expect to be, typical usage scenarios for the application. I assigned various tasks to the personas I had created previously. Each task involved a number of steps, or subtasks, that were necessary for their completion. These scenarios are intended to test the usability of the system and how accessible and intuitive it is to users.

Scenarios/Interactions

Scenario one: Persona A (Henry) wants to create and listen to a playlist of his favourite songs on the application.

Scenario two: Persona B (Jane) would like to take a look at some of the images in the media player.

Scenario three: Persona B (Jane) would like to watch some videos through the application.

Scenario four: Persona A (Henry) would like to watch a visualisation while listening to a music playlist.

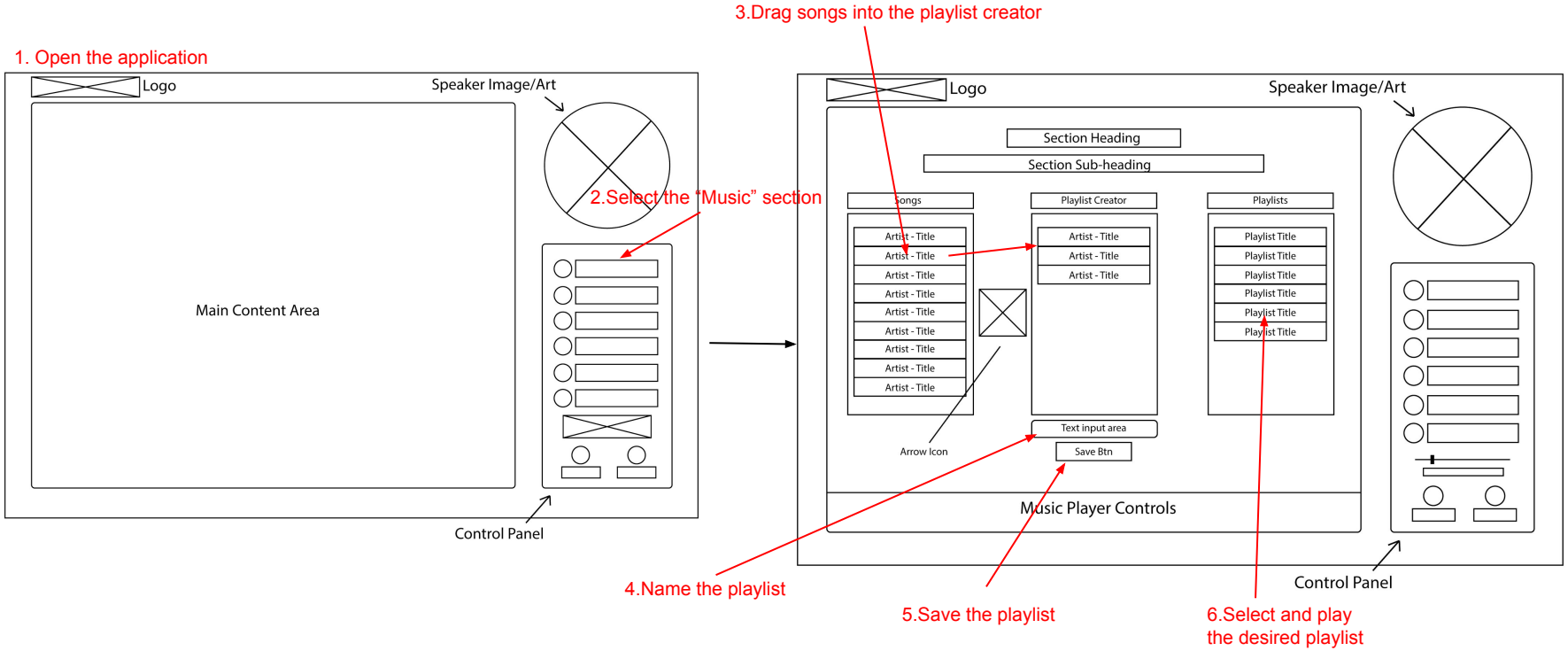
Cognitive Walkthrough Cont.

Scenario one: Persona A (Henry) wants to create and listen to a playlist of his favourite songs on the application.

Subtasks:

1. Open the application.
2. Navigate to the “Music” section by clicking the appropriate button within the control panel on the home screen.
3. Drag the desired music tracks from the list of songs and drop them into the playlist creator.
4. Name the playlist.
5. Save the playlist.
6. Select and play the playlist by double clicking on the name of the playlist.

Cognitive Walkthrough Cont.



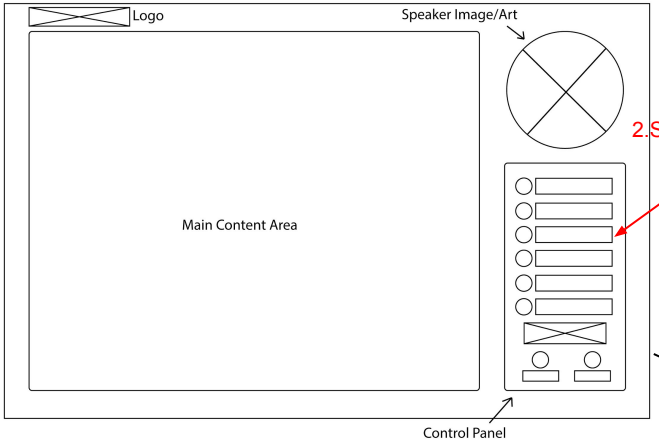
Cognitive Walkthrough Cont.

Scenario two: Persona B (Jane) would like to take a look at some of the images in the media player.

Subtasks:

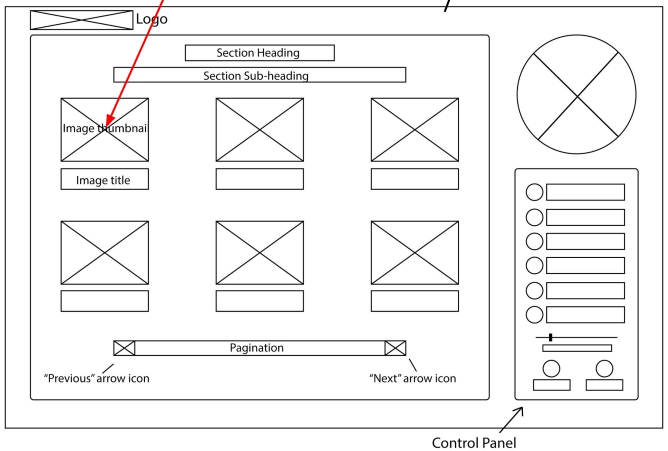
1. Open the application.
2. Select the “Images” section from the control panel on the home screen.
3. Select an image to view by clicking on either the thumbnail or the label for that image.
4. Use the arrow icons to navigate through the images.

Cognitive Walkthrough Cont.

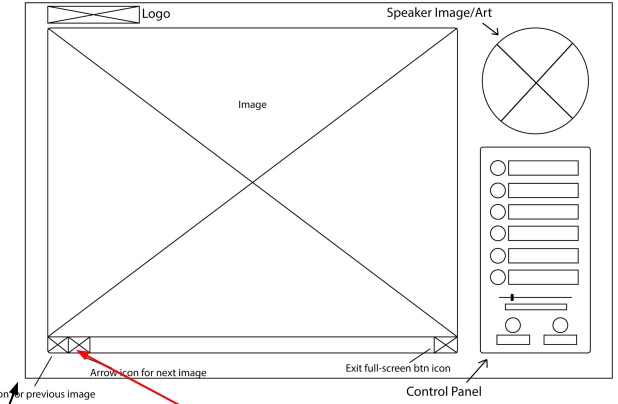


1. Open the application

2.Select the “Images” section



3.Choose an image from the thumbnails



4.Use arrow icons to navigate through images

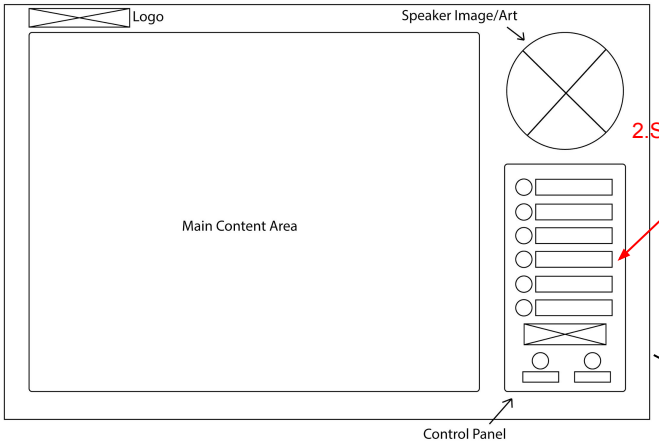
Cognitive Walkthrough Cont.

Scenario three: Persona B (Jane) would like to watch some videos through the application.

Subtasks:

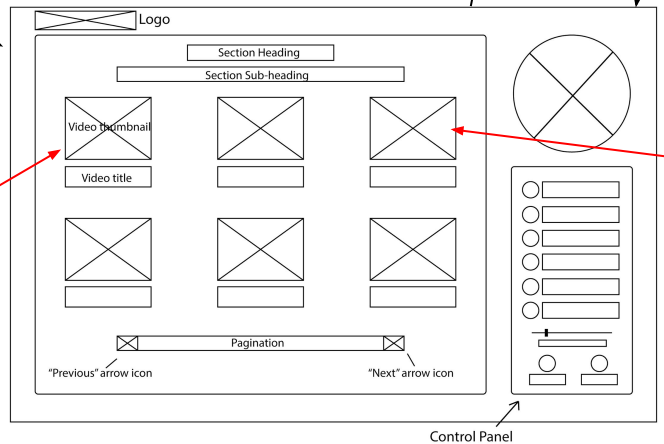
1. Open the application.
2. Select the “Videos” section from the control panel on the home screen.
3. Select a video to view by clicking on either the thumbnail or the label for that video.
4. Watch the video.
5. Close the video by clicking the “exit fullscreen” button.
6. Select another video by clicking on either the thumbnail or the label for that video.

Cognitive Walkthrough Cont.



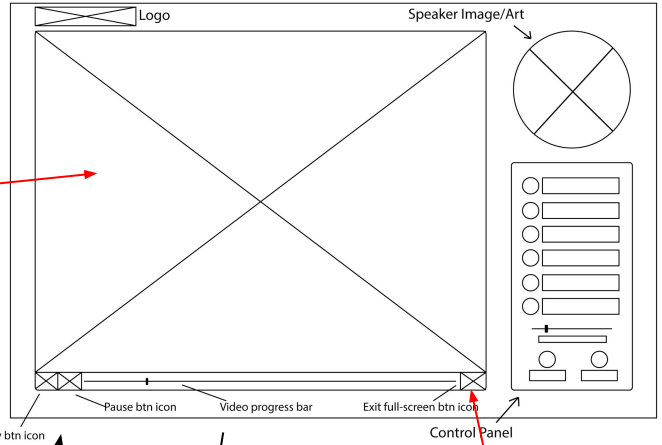
1. Open the application

2.Select the “Videos” section



3.Choose a video from the thumbnails

4.Watch video



5.Close the video by clicking the “exit fullscreen” button.

6.Choose another video from the thumbnails

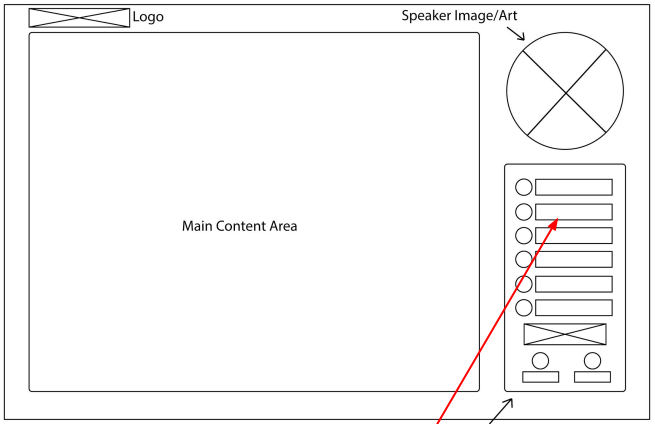
Cognitive Walkthrough Cont.

Scenario four: Persona A (Henry) would like to watch a visualisation while listening to a music playlist.

Subtasks:

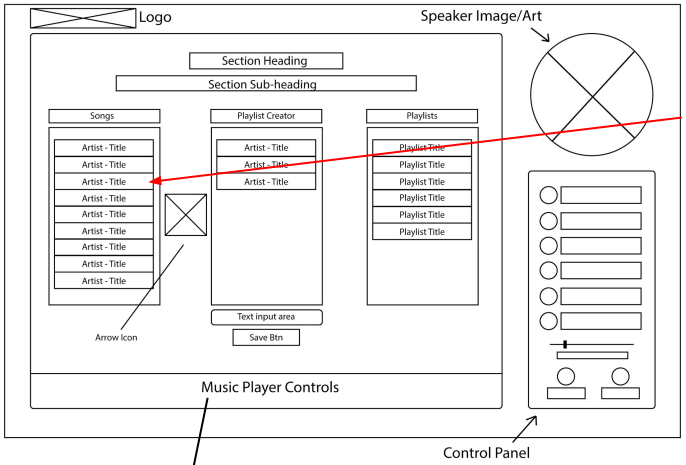
1. Open the application.
2. Select the “Music” section from the control panel on the home screen.
3. Select and play a song by double clicking on the label for the song.
4. Select the “Open Visualisation” icon in the music player controls.
5. Watch visualisation while listening to music.

Cognitive Walkthrough Cont.

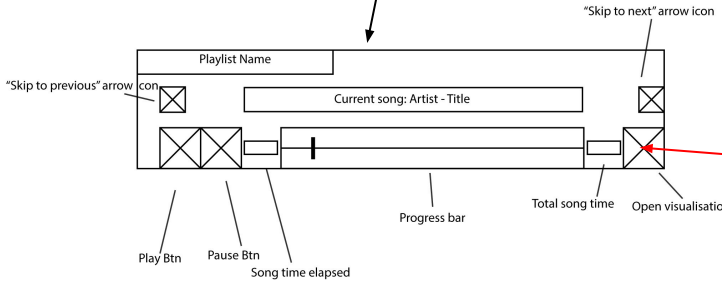


1. Open the application

2.Select the “Music” section



3.Select a song to listen to.



4.Select the “Open Visualisation” icon

Cognitive Walkthrough - Results

Having conducted a cognitive walkthrough that involved a number of tasks and relevant subtasks, I feel that the application design is suitable and fit for purpose. All of the steps required to perform a task are apparent and intuitive. The menus are clear and understandable, and each section can be reached from anywhere within the application. Once concern I have however, is that the “Open Visualisation” icon will not be instantly recognisable to users. Other existing media player applications with a similar feature have used icons resembling an eye, or a projector screen - neither of which I believe are completely intuitive to the user. There are a number of ways in which I could compensate for this. I plan to use the sub-headings for each section to provide a brief description of the section along with instructions on how to interact e.g. the sub-heading for the music section will say something along the lines of: “Drag your favourite songs into the playlist creator to create a new playlist!”. I could add more text to this that informs the user of the visualisation feature. Another possibility is adding tooltips that appear when users hover over certain elements within the application. Having a tooltip that reads “Click to activate visualisation” could help to make the user more aware of this feature.