David Hesketh Honours report

Introduction

## 2.1 Glossary of Terms

Sight Loss – An individual is described as suffering from sight loss when their visual acuity is found to be 6/12 or worse as per the ‘State of the Nation Year in Review’ carried out by Specsavers in cooperation with the Royal National Institute for Blind People (Specsavers, 2017).

Project Sprint – The term used to mean a small but intensive period of work done to a short deadline.

Bugs – An error or flaw in the software system which causes the program to behave in unexpected ways or provide an incorrect result.

Binaural recording – A way of recording audio with 2 microphones arranged in such a way as to create a 3D sound effect for the listener.

Skill Ceiling – The point at which a player has mastered their ability to play a game and as such can improve no further.

## 2.2 The Project

The subject of this report is the design and development of a computer game with the specific aim of being easily accessible and enjoyable to those who suffer from sight loss. The intent behind this is to widen the reach of gaming to those who do suffer from this condition and to shine a light on the community of gamers with this disability.

## 2.3 Background

This project begun as an attempt to design and develop a game following specific constraints. There was the additional aim to show that the community of gamers suffering from sight loss need not be ignored in favour of greater graphical fidelity. To this extent a game has been designed and developed with those who suffer from sight loss as the key target audience. This game can also be played by those with full sight without difficulty.

### 2.3.1 The Problem/Rationale/Reasoning for project

People suffering from sight loss have difficulty playing games with visual effects designed for fully sighted users. Many developers do not take into account the possibility of those without sight playing their game and as such do not include several simple features which make many games much more accessible to those within this community. It is this is inherent lack of accessibility that is the problem within the games industry. This leaves a large market of potential players untapped. This market, treated by many developers as empty or even non-existent, is a wide and diverse one. It is possible that ignorance of developers toward this community is due to the fact that the majority of those suffering from blindness are 50 years of age or older (World Health Organisation, 2010) but the majority of those who play video games are under the age of 36 (Grubb, 2014). Despite this, the community of those who play video games without full access to their sight is a diligent one, taking to message boards and modding communities to help widen many game’s accessibility on their own. The response from many developers regarding this is a positive one, and these outlets can enact real change, as shown when a blind fighting game player raised concerns on the “Killer Instinct” forums (Yin-Poole, 2016). With this in mind, it should not be the responsibility of these gamers to ensure accessibility in the industry.

### 2.3.2 Accessibility in Gaming

The Video Game industry has been a growing economic powerhouse since its creation. From its simple origins in arcades where each play cost 25 cents to the increase of the total industry to a worth of 99.6 billion dollars as of the Newzoo 2016 global games market report (Newzoo, 2016). Despite what is suspected to be continued financial growth, there has been very limited development in the untapped market of accessibility in gaming. With approximately 360,000 people in the UK being registered as blind or partially sighted (1 in 30) as of 2014 according to the Royal National Institute of Blind People (RNIB). The number of those with sight loss is predicted to increase to over 2,250,000 as of 2020 as stated by the RNIB for reasons such as an aging population (Transversal, 2014). This increasing population is however comparatively underserved in the current games market. Audiogames.net shows only an available 606 audio games at the time of writing (Audiogames.net, 2017).

Companies such as Audiogames.net and AppleVis both of which provide gaming accessibility help to those with limited to no sight capabilities. AppleVis provides reviews of iOS games based on how accessible they are. Audiogames.net has compiled a list of games available and accessible to those with visual impairments, primarily in the field of the audio game genre. Being started by two lecturers, Richard van Tol and Sander Huiberts to provide an online information point for audio games. Companies like these are comparatively few and far between whereas companies that do not put accessibility at the forefront of their development model are far greater in number.

Development of audio games as a genre is not inherently more difficult than the development of any other genre of games. It does, however, require a paradigm shift. Many companies put cutting-edge graphical technology as their primary concern allow audio to be an afterthought. The required paradigm shift would put the audio development of a game to the forefront and push visuals to a more secondary consideration by comparison. Which up to this point in the mainstream games industry has not occurred.

### 3.4 Ethical Considerations

Participants who are over the age of 18 are required to take part in this project. Due to the fact that this development and subsequent experimentation will require human participation, an ethics approval form will be required to be filled out, signed by the project supervisor and subsequently sent off to the ethical approval committee. Receiving ethical approval as early as possible will be essential for the ongoing success of this project.

Autonomy – Any participants who wish to leave at any time during the experiment are welcome to do so. All participants will be advised exactly what this research will be used for and what is required from them at time of request for participation. No one will be persuaded or coerced by researchers or outside influences during any meetings. All participants will be notified that they have the option to leave at any time. All who take part will be anonymous and be advised as such.

Confidentiality – All information relating to participants will be kept anonymous and will not be released. Information will exclusively be used for the project and will be destroyed at completion of project.

Special Needs – All special needs will be taken into account for any participants who require any additional support, such as those who have visual impairment requiring a researcher to guide them to the project area. Participants will be made aware that they have the option for this additional support.

Protected Vulnerable Groups – To ensure there is no conflict regarding protected vulnerable groups disclosure no one who is in receipt of any of the following will be asked to take part in this test; Registered Care Services, Community Care Services, Health and Welfare Services. To determine this, participants will be asked in advance and any who receive these services or refuse to answer will not be considered eligible for the test.

**Update of Literature Review & Technology Assessment (approx. 25% of total word count)**

* A review of the experts in the field that relate to your topic
* Evaluate the information
* Where is the evidence in the article to support author(s)’ claims
* What is missing from the article?
* What do other ‘experts’ state in their article
* How do these comments ‘fit’ with your topic?

**Execution approx 25% of word count**

### 2.3.1 Risk Assessment

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Risk ID | Risk | Risk Severity | Risk Probability | Contingency Plan | Tools Used | Plan to Subvert Risk |
| 01 | Not enough participants to obtain meaningful data | High | Medium | Offer possible participants gifts such as pizza, fruit, juice etc. in order to encourage participation other students. | Participants, lecturers, email addresses | Contact lecturers and request that they send out emails requesting participants and invite students to participate |
| 02 | Game Not Developed Properly (excessively buggy/broken) | High | Low | Run consistent playtesting sessions prior to the experimental sessions in order to ensure bugs are quickly found and fixed. | Game Engine, Computer, Integrated development environment (IDE) | Risk cannot be fully subverted. Minimised through the full knowledge of the code and research of the techniques to be used coupled with time management. |
| 03 | No meaningful conclusions can be drawn from data gathered | High | Low | No contingency plan necessary as this would simply show invalid hypothesis | Computer with SPSS software installed | Successfully analyse data with SPSS |
| 04 | Participants drop out of experiment after agreeing to do so. | High | Low | Offer possible participants gifts such as pizza, fruit, juice etc. in order to encourage participation from other students. | Participants, lecturers, email addresses | Regularly contract prospective participants with reminders about dates and times scheduled |
| 05 | Game incomplete or unfinished | High | Low | None available as if the game is incompletely testing and further experimentation cannot be done | Game Engine, Computer, Integrated development environment (IDE) | Carefully plan stages and follow development timescale throughout the creation of the game. |

**Does the execution section**

* Clearly **discuss**  original problem?
* Clearly **analyse** the features of the problem?
* Clearly **relate** those features to the literature review’s conclusions
* **Indicate** where they support and or disagree with literature review’s conclusions
* **Explain** your ‘solution’, its approach, design & implementation/instrument
* **Justify** your ‘solution’, its approach, design & implementation/instrument
* **Present** your ‘solution’, its approach, design & implementation/instrument

**Evaluation & Discussion approx 30% of word count**

How can questions below be **demonstrated** in the report?

**Evaluate = attempt to form a judgement about, be specific about the basis for this judgement**

* What does the ‘solution’ its approach, design & implementation/instrument **contribute?** What are **key criticisms** of the solution its approach, design & implementation/instrument
* What are **the advantages/limitations** of the ‘solution’ its approach, design & implementation/instrument
* Do the results **identify** what is more or less important?
* Are the results **compared**  to other knowledge about the project?
* Is there comment on the **consequences** and **implications** of the results?

**Conclusions & Further Work approx 10% of word count**

* **Summarise** the main findings from the lit review, the execution, the evaluation & discussion chapters.
* **Explain** with evidence the final conclusions of your report. What do you want your reader to remember about the report?
* **Discuss** what else could take place to enhance, extend the project.
* Which direction could your project take in the future?

<http://www.rnib.org.uk/nb-online/video-computer-games-people-vision-impairment>

<http://www.rnib.org.uk/rnibconnect/technology/audiogames-and-playing-videogames-without-sight>

<http://game-accessibility.com/documentation/visually-impaired-gamers-where-to-go-what-to-play/>

<http://ifiction.org/>

<http://blog.aidis.org/audio-output-a-review-of-games-for-blindvi-gamers>

<http://www.eurogamer.net/articles/2016-03-29-meet-the-blind-gamer-with-a-killer-instinct>