RESEARCH INTO THE SIMULATION OF SHOCK WAVES

Front End Testing

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Introduction

A number of different types of tests were performed on the front end at relevant stages throughout this project, in order to ensure that the system was as stable and user friendly as possible. The types of testing used and the results achieved are outlined in this document.

User Testing

This type of testing was partaken at various stages of the project. The first of which was during the sketching and wireframe stage. Although the user could not fully interact with the system, they gave their opinions on the placement and potential ease of use of the low-fi designs.

Once we had many of the main features implemented, we did a second round of testing, where the tester could actually use the system. We simply let the tester have free reign of the system, whilst we noted down any comments or troubles that they came across. Items tested included all menus, pause, play and the time slider.

The third and final round of user testing took place at the poster fair. This was a great opportunity to have a wide range of users test our system and obtain written feedback from their experience. We put together a short survey for the users to take, which was based on the initial system requirements. The feedback gained from this stage was then used in our functional tests - see section below.

Furthermore, although no records of this exist, the system was also constantly being checked by the back end team. The front end team would make changes on the system. The back end team would then need to use the GUI in order to complete their own testing. As such, this constant use of the updated system provided vital improvements and error checking throughout the project.

Results

For the sketch/wireframe testing, all feedback was verbal as we were all working as a group at the time and resultantly changes were made immediately. Evidence of this can be seen in "*Graphical User Interface - Plan"*.

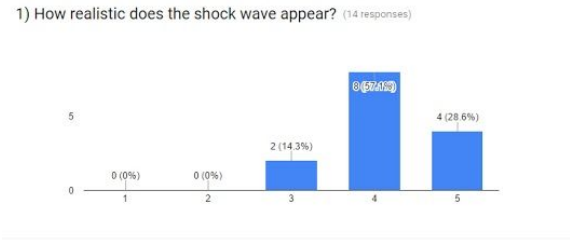
Some of the comments from the second round of user testing were extremely useful and directly affected the way in which the GUI was built. The most notable of these comments are:

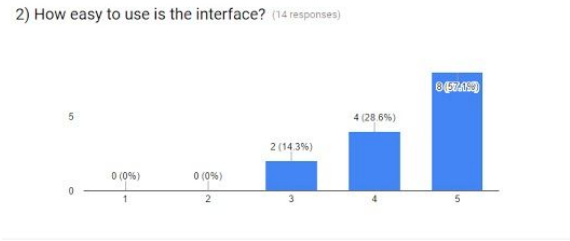
- "Is there anyway to reset the scene?"
- "How do I get back to the main menu?"

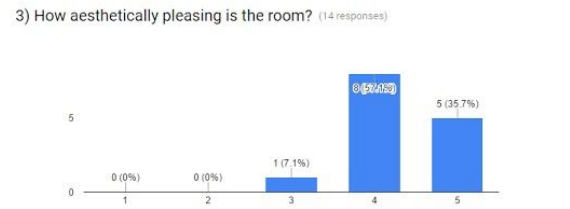
- “Can it start paused? Having it running as soon as you press play, kind of makes it awkward. If I had known I would have moved the camera beforehand.”
- “What are the controls again?”

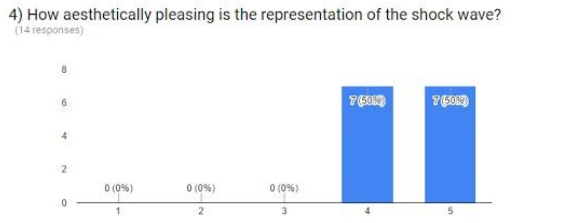
The effects of these comments are evident in the difference between the initial designs and the final system GUI.

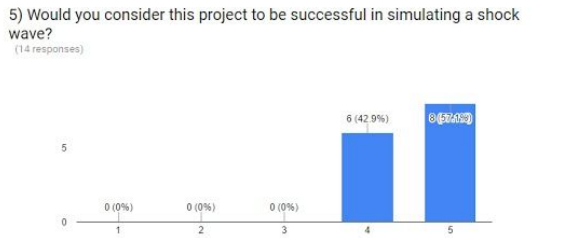
The results of our final round of user testing can be seen below. Although extremely useful, due to time constraints all edits suggested here could not implemented. However, if we were to continue to made alterations to this system, most - if not all - of these comments would be acted upon.

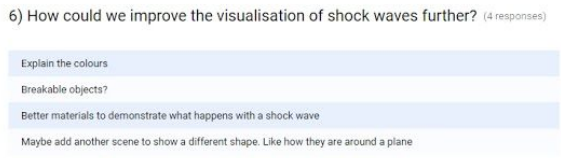


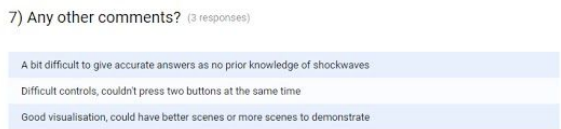












Functional Testing

This type of testing was carried out after development of the GUI was complete. The way in which we implemented this testing was to create a table which included all the GUI requirements, initially set at the project start, and to then navigate through the program to check whether or not we completed that requirement.

Results

The following table displays the results of functional testing on our initial GUI requirements:

Reference Name	Feature	Description	Pass or Fail
Home-01	Start button	This button is on the homepage and when pressed will display an overlay to either create a new scene or load a scene.	Pass
Home-02	Help button	This button is on the homepage and when pressed opens a page which describes what the program does.	Pass
Home-03	Quit button	This button is on the homepage and when pressed is closes the program.	Pass
Option-01	Create Scene button	This button is on the options screen which appears after the Start button is pressed on the main menu. Once pressed it opens an empty scene into which the user can place objects.	Fail
Option-02	Load Scene button	This button is also on the options screen. When pressed it opens a list of pre made and saved scenes each of which can be selected and loaded.	Fail
Pause-01	Save Scene button	Exists within the Pause menu of the open scene. Once a scene has been edited, it can then be saved under a new name; making it available in the load scene list.	Fail
Scene-01	Prefab	A menu which holds assets.	Fail

	menu	Users can drag assets into the scene or remove assets from the scene using this menu.	
Scene-02	Pause button	This button on the scene control menu will halt the scene running and resume when pressed a second time.	Pass
Scene-03	Time slider	This slider is on the GUI. Moving the slider affects the speed of time at which the scene plays at.	Pass
Scene-04	Wave shape	This dropdown on the scene control menu allows the user to change the shape in which the shock wave spawns.	Fail

Although our functional tests resulted in a 50% failure rate, the design of the final GUI included features that weren't initially mentioned in the "*Front End Requirements*" document. The new features implemented have also been evaluated separately, along with the entirety of the GUI, in the document entitled "*Graphical User Interface Evaluation*", this can be found in the corpus index.