Implementation of a Serious Game in Academia: Educating Healthcare Professionals on Gender Specific Violence

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Introduction

Serious games have been applied in a variety of fields and join the familiarity and dynamism of video games with educational content. This project is a single application of serious games in healthcare, and aims to educate and train healthcare professionals on gender violence. The game is as of yet unfinished. This poster outlines portions of the project's development process that have been completed thus far.

Objective

The game for which development was done was entitled C*aixa de Pandora(Pandora's Box)*. Pandora's Box is designed to provide healthcare professionals with contextual information regarding victims of gender violence, in order to enhance their ability to properly administer care.

Current Work

Pandora's Box is designed to provide healthcare professionals with contextual information regarding victims of gender violence, in order to enhance their ability to properly administer care. The contextual information in Pandora's Box takes the form of a narrative that follows a girl through various stages of her life. At regular intervals the player is prompted to answer questions regarding socio-cultural aspects of the story, which are immediately scored, and contribute to the game's win or lose conditions. Feedback is given to questions by way of specific responses, which are provided to a player once they have answered. Required point values are fixed, and represent a minimum amount of "correctness" required for the completion of a game level. If a player at any point answers too many questions incorrectly, they lose.

This document only concerns itself with one portion of the development process: production. Other portions of development are Design, Preproduction and Postproduction. Figure 1 illustrates a typical project development cycle, with the current phase highlighted in blue. Iterations through Design, Preproduction, Production, and Postproduction phases are considered development cycles, with each producing a complete game [Marfisi-Schottman et al. 2010; Rodrigues 2010].

Figure 2. A conceptual map representing the various topics that were addressed during the production phase, and that correlate to the application logic in one form or another.
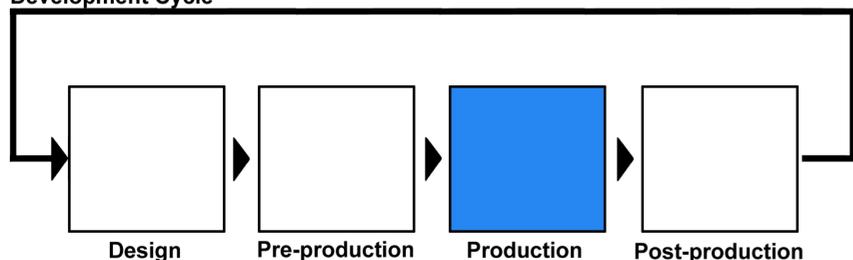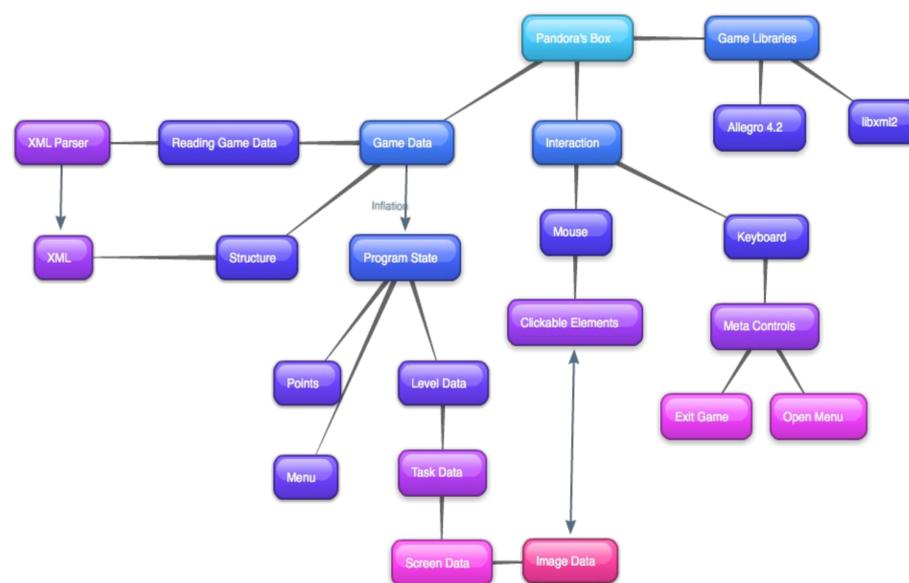
Development Cycle

Figure 1. The production phase was the primary focus of this project. Other phases are Design, Pre-production, and Post-production.

The production team consisted of 4 members, and included one individual assuming the role of game design and project coordination, one concerning themselves with programming, and one assuming game design, markup, image composition, and various programming tasks, as necessary. Graphical components were completed by a third party, considered the fourth member, but they were not closely involved with the implementation effort. Placeholder graphics were created for the application logic by the individual filling multiple roles. Figure 2 shows the various conceptual modules that were created for this phase of the project. Interrelationships between modules are indicated by arrows.

Discussion

The development team during the production period was somewhat atypical [Dixon 2005]. The team's size was relatively small, so flexibility was necessary to effectively accomplish some tasks [Marfizi-Schottoman et al. 2010]. Knowledge about tool use, design and programming patterns was shared readily between team mates, and contributed greatly to team flexibility by allowing work to be parallelized [Kelly et al. 2007].

The Allegro game library was chosen on the basis of it's functionality. Allegro is implemented in the C programming language, which subsequently became the development language. With the addition of XML based data files, libxml2 was incorporated. Application logic was written in the VIM and Gedit text editors, GCC 4.2 was used to compile program code, and GNU Make was used to organize the build process. These tools were chosen because of their availability on the development platforms, Fedora Core 9 and Ubuntu 12.04.

Development itself began with a team familiarization of the implementation language, and the Allegro game library. This was accomplished by an iterative production paradigm in which incremental goals were set by the project coordinator. During this time team members familiarized themselves with the various tools used to organize and produce builds.

Code refactoring, or a reorganization of program code without external change to behavior, took place periodically during development. One of such instances led to the introduction of external game data in the form of the aforementioned XML data file. Previous to this, resource paths had been tediously hard coded, or written directly into the application logic. Another such refactoring led to the introduction of GNU Make as a means to compile and link multiple source files with a single command. These two project changes illustrate further iterative development, as well as meta elements which benefitted the project organization as a whole.

Conclusion

Pandora's Box has a number of design elements that suggest high efficacy once it is complete. This seems unaffected by it's somewhat atypical development team during the production phase. Development on the game itself was reasonably complex, and used a number of tools and design patterns that aided development. Final graphical elements were not present for a large part of production, but this presented no significant problem in the development and testing of application logic. As a serious game in healthcare, Pandora's Box has the potential to become an effective tool to enhance the care professionals are able to provide to victims of gender violence.

References

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