

UVic Breakout

Functional Specification and Management Plan

Ability Software

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Project Summary

This document is in response to Almost Games' RFP for a team to develop a GPS Based Text-Adventure RPG video game. The requirements and constraints of the game are described, as well as desired aspects of the final product. Project objectives are outlined along with the user-product interaction.

Project Objectives

The proposal requests a GPS Based Text-adventure RPG Video Game. The game must be completed within a 3 month period. The game will include RPG-like elements mirroring game styles of 80's text adventure games. The game will incorporate a modern element, GPS and smartphones, into the old genre. The game will be playable as an application on a smartphone. The in game map, of which the player will traverse, is a replication of the UVic campus. In order to visit locations in the game and progress through the story, the player must also physically visit the in game locations in real life. The GPS on the smartphone will detect when the player is in the right location and progress the game. Riddles based on landmarks may be incorporated into the game to incentivize the physical aspect. Though, users will generally interact with the game using the traditional text based game approach. It is intended that the in-game setting of UVic will have some themes within certain areas, game story will be designed around those themes. The story of the game is intended to be satiric, heartwarming, and ridiculous. A variety of stories will be present in the game, a main story as well as smaller side stories.

Vision

The game will incorporate traditional elements of RPG, such as quests, items, secrets, and levels. The game will run in a state to state manner, a player's current state consists of their items, level, prior interactions, and their point in the story, from the current state the next state the player can enter is determine from their decisions and current state elements. The number of states the game includes will be negotiated, though it should so much that through one typical playthrough less than 50% of the state elements are used. Inclusion of puzzles and riddles is encouraged though difficulty should remain easy to not induce frustration in the player. Hints should be readily available to a player. No player should get stuck for an elongated period of time. Emergent gameplay and multiple ways to progress through a game element is a stretch goal.

The game will make interesting use of the GPS built into smartphones. The in game map will be a replica of the floor plan and environment of areas at UVic. The player's location in real life will be synced to the player's location in the game. The GPS on the phone detects when the user in is in a specific location and triggers game elements accordingly. The in game map will load a map for each location of interest the player walks into. The outside UVic campus will have its own map as well as buildings of interest.

The game contains a variety of characters, items, and character skills. Characters will populate the game world at a rate of about 1-2 per area. The characters will all have distinct personalities. The characters will offer the player insight, advice, items and other game-related elements. Some characters will attempt to harm the player. Items are available to the player from character interaction and finding them in the map. Randomization and luck in finding items should be used sparingly. Items include consumables and weapons. Consumables are used by the player and affect player status and other game elements. Weapons are mostly aesthetic since the game does not feature an active combat system. Some weapons will have special effects however. The character will level up in various skills at arbitrary intervals. These skills will have a weak effect on the game and are mostly there to make the player feel good about themselves.

User Interaction

The user interface for the GPS-enabled text-based RPG will be kept as simple as possible, while still giving the user all the information they need on demand. The interface will be divided into four sections, a title, an image or map, a situation description, and a list of options the player can perform.

Title

Each zone will have its own title to remind the player where they are. This title will be split into two parts, the first will tell the player what game zone they are in, and the second will tell them what part of that zone they are in. Examples are provided below.

Damaged Spaceship – Outside
Zombie Bunker – 3rd Floor Main Hallway

Image



Each zone the player is in will have its own image, either an edited image of the real UVic at that location, or a picture of the UVic map with their position marked on it. The edited images will mostly be a picture of the building or area the player is currently in, and may have some edits to go with the theme for that area. The images will also be pixelated to fit in with the style of the game in general.



Description

Below the image will be a text description of their situation. This might include details such as their current status, what they see, and where they could go.

You are in the third floor of the Zombie Bunker. Around you are many tables and chairs, mostly lined up against the left wall. It looks as though this area was used primarily for food stations during the zombie invasion of '06. There are still moldy shapes resembling pizza slices on the tables. There are a few doors, but all are locked. There is another hallway to your right, and a short hallway to your left.

You are outside a broken metallic structure. It looks as though this was once a spaceship, but the hull is broken in many places. Perhaps there is still parts of use inside?

Actions

Finally, at the bottom of the screen will be a list of options the player can perform. This list will have a scrollbar if there are many possible options, but it will usually be limited to 3 or 4. This will also include the 'Inventory' button, which will always be available for the player to view their collected items.



Zombie Bunker - 3rd Floor Main Hallway



You are in the third floor of the **Zombie Bunker**. Around you are many tables and chairs, mostly lined up against the left wall. It looks as though this area was used primarily for food stations during the zombie invasion of '06. There are still moldy shapes resembling pizza slices on the tables. There are a few doors, but all are locked. There is another hallway to your right, and a short hallway to your left.



User Interface Example

Users

The intended users for the UVic **GPS** enabled **text-based RPG** are students attending the University of Victoria. The **GPS** portion of the game requires the users to be on the University of Victoria campus. Additionally, the content of the game is based on the physical aspects of the campus, such as buildings.

The game is intended to be a single player experience. That is, there aren't player-player interactions in the game.

Environment

The environment of UVic **GPS**(Global Positioning System) enabled text-based **RPG**(Role Playing Game) is based around the campus of the University of Victoria. While the environment will not be identical to the University of Victoria campus, it will have similar aspects to the University of Victoria environment.



The environment will be segregated into large areas based on the layout of the University of Victoria. As an example, the location close to the Engineering Lab Wing (ELW) and the Engineering and Computer Science (ECS) building would be centred around technology and invention.

The in-game environment will be bounded by physical, **GPS** related boundaries. If a player physically walks outside of the boundaries, there will be in-game consequences. These in-game consequences may include injury, capture, or even death.

Story Progression

The game will be primarily narrative and the story will be a major emphasis on the story. However, the game will be designed to be short. This means the story must have appealing elements beyond pure character building. The story of the game is not explicitly defined, yet it will had emphasis towards relating with university students, primarily to those at the University of Victoria. The story will satiric, exciting, and uplifting, with areas that instill fear and a sense of ridiculousness.

The conflicts of the game will primarily be in the form of puzzles. This replaces the need of an active combat system, and staying more true to the text-based **RPG** genre. However, there will still be combat and conflicts, but within the parameters of the text-based **RPG** genre. The puzzles will vary in difficulty and style. All styles of puzzles will include some, and varying, levels of physical world interaction. One style will be similar to solving a maze and another will be of a lock-and-key style. In the lock-and-key style of puzzle, the player will be presented with a lock, for a door, chest, etc., and must find the 'key', or code, in a different location in the physical world. As an example of the lock-and-key style of puzzle, the player may be presented with a locked location in-game while on the first floor of the building X in the physical world and the code to unlock the location will be the address of building Y.

The game will include non-player characters (**NPC**). These **NPCs** will interact with the player, offering items or quests, providing conflicts, or acting as a shop. Some **NPCs** will be integral to the game, some to a specific storyline, and some will be completely optional. **NPCs** will add to the emotional aspect of the game, with witty one-liners or offering heartwarming feelings.




As one of the **RPG** elements of the game, the game will include items and an inventory system. Items will be collected as rewards, through **NPCs**, or by exploration. Like **NPCs**, items may be integral to a specific storyline, aid the player, or even hinder the player.

Side Quests

While the story is the main focus of the game, it will also offer side quests. This offers additional stories and activities to the game. These side quests will enforce the ideas of exploration, puzzle completion, and conflict. These side quests will involve **more randomness and chance** than the main quests, offering additional replay value.

Story Completion

The game may be completed in multiple ways.

Business	The business completion strategy involves earning enough currency, via quests or exploration, to open an in-game shop and set up a trade route between the player owned shop and NPC shops. This ending offers the player character a reason to remain the game environment and able to survive comfortably.
Completionist	The completionist storyline involves the character completing all the areas of the in-game world. This involves completing all puzzles in each location. This offers the player character a sense of mastering and ownership over the in-game world and thus a reason to remain. 
Cultural	The cultural completion method involves resolving all major conflicts peacefully. This ending unites the locations of the in-game world and the NPCs revere the player character as a hero, and thus offers are reason for the player character to remain.
Engineering	The engineering-style completion is accomplished by accumulating in-game items to build a spaceship to escape the in-game world. The parts may be found via exploration, interaction with NPCs , or via a crafting. This ending offers the player an escape from the in-game world, back to the player character's original home.
Philosopher	The philosophical completion strategy involves the the player character finding inner peace. This is accomplished by completing one stage of each of the other completion strategies. This ending offers the player character a sense acceptance of their place in the in-game world, and thus a reason to remain.
Science	The cultural completion method involves the categorization of species of the in-game world. The species may be discovered via exploration or interaction with NPCs . The game ends upon discovery of all species. This ending offers the player character a sense of order and accomplishment within the in-game world and thus a reason to remain.

Management Plan

Minimal Systems Requirements

The product is a video game for mobile platforms, it will be released on Android, initially and an iOS version release in the future. The game will be available on the mobile device's respective app stores.

The game will be available only on the current version of Android Lollipop version 5.1.X and it will not be backwards compatible. It is entirely possible that the application will work on previous versions of software but the developer bears no responsibility for any damage to hardware or software if the mentioned specific requirements are not met. Along with that, It is recommend that the Android software support for OpenGL is also present on the hardware, although this is a included in most Android platforms the developers take no responsibility in ensuring and checking that the OpenGL is working with all its dependencies on the current device.

The hardware requirements for the project to operate smoothly and seamlessly are listed below:

- Android Smartphone with the following specifications:
 - Operating System: Android "Lollipop" 5.1.1
 - System on chip: Qualcomm Snapdragon 810 v2.1
 - CPU: 2.0 GHz octa core 64-bit ARMv8-A
 - GPU: Adreno 430
 - Memory: 3 GB of LPDDR4 RAM
 - Storage: 32 GB (minimum)
- GPS Sensor (working & tested)

** For any further clarification on compatibility please visit the Google's Android Compatibility Definition for Android "Lollipop" 5.1.X

(<http://static.googleusercontent.com/media/source.android.com/en//compatibility/android-5.1-cdd.pdf>)

Implementation

The implementation of the game will be done entirely in Android Studio. The team will be using a combination of different platforms among themselves to coordinate the development.

Android Studio is the official IDE for Android application development, based on IntelliJ IDEA. Android Studio uses Java for functionality, and XML for GUI and UI.

The Android API for GPS sensors is also used for retrieving a user's current location on the smartphone to progress the game. Most Android devices allow applications to determine the current geolocation. This can be done via a GPS module, via cell tower triangulation or via wifi networks.

Android contains the android.location package which provides the API to determine the current geo position. The LocationManager class provides access to the Android location service. This services allows to access location providers, to register location update listeners and proximity alerts and more. The LocationProvider class is the superclass of the different location providers which deliver the information about the current location. This information is stored in the Location class.

The Android device might have several LocationProviders available and you can select which one you want to use. In most cases you have the following LocationProviders available.

LocationProvider	Description
network	Uses the mobile network or WI-Fi to determine the best location. Might have a higher precision in closed rooms than GPS.
gps	Use the GPS receiver in the Android device to determine the best location via satellites. Usually better precision than network.
passive	Allows to participate in location of updates of other components to save energy

The Google Maps API will also be used for pointing the locations of the users and characters within the map. Following is a simple example of Google Maps API in use setting a location point on Google Maps

