

Armageddon My Wheelchair

Game Design Document

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1 Introduction

This document gives information about the game's mechanics, progression, and graphics. Programmers and artists should easily be able to implement the described features with no need for liaison with the author of this document. Cross references to different sections in this document are provided as italicised section numbers within brackets, for example "(1)".

1.1 Software

The game will use Microsoft Kinect™ and the KINECT^{Wheels} toolkit to get input from wheelchair motion. The game will be developed in C# and use the Microsoft XNA Framework 4.0.

1.2 Platforms

The game will be produced for Microsoft Windows 7(+) and Microsoft Xbox 360 only. This is a consequence of developing in XNA and using KINECT^{Wheels}. The mechanics and controls of both versions of the game will be identical because all inputs to the game are wheelchair gestures.

2 Game Design

2.1 Story and Setting

The game is set in fantasy mediaeval Europe after the four horsemen of the apocalypse brought about the apocalypse and killed two thirds of humanity. After this, the horsemen, led by Conquest, conquered the world. With the conflict over, and all semblance of human authority vanquished, War declared war on the only remaining power – the other three horsemen.

2.2 Gameplay Summary

"Armageddon my Wheelchair" is a single-player, hack-and-slash, wheelchair-controlled, mounted combat game where the player takes the role of War, one of the four horsemen of the apocalypse.

The gameplay is similar to most hack-and-slash games, where the player is overpowered and the enemies are very underpowered. The majority of the game involves slaying hundreds of enemies around key locations in order to gain entry to those locations or to trigger key events.

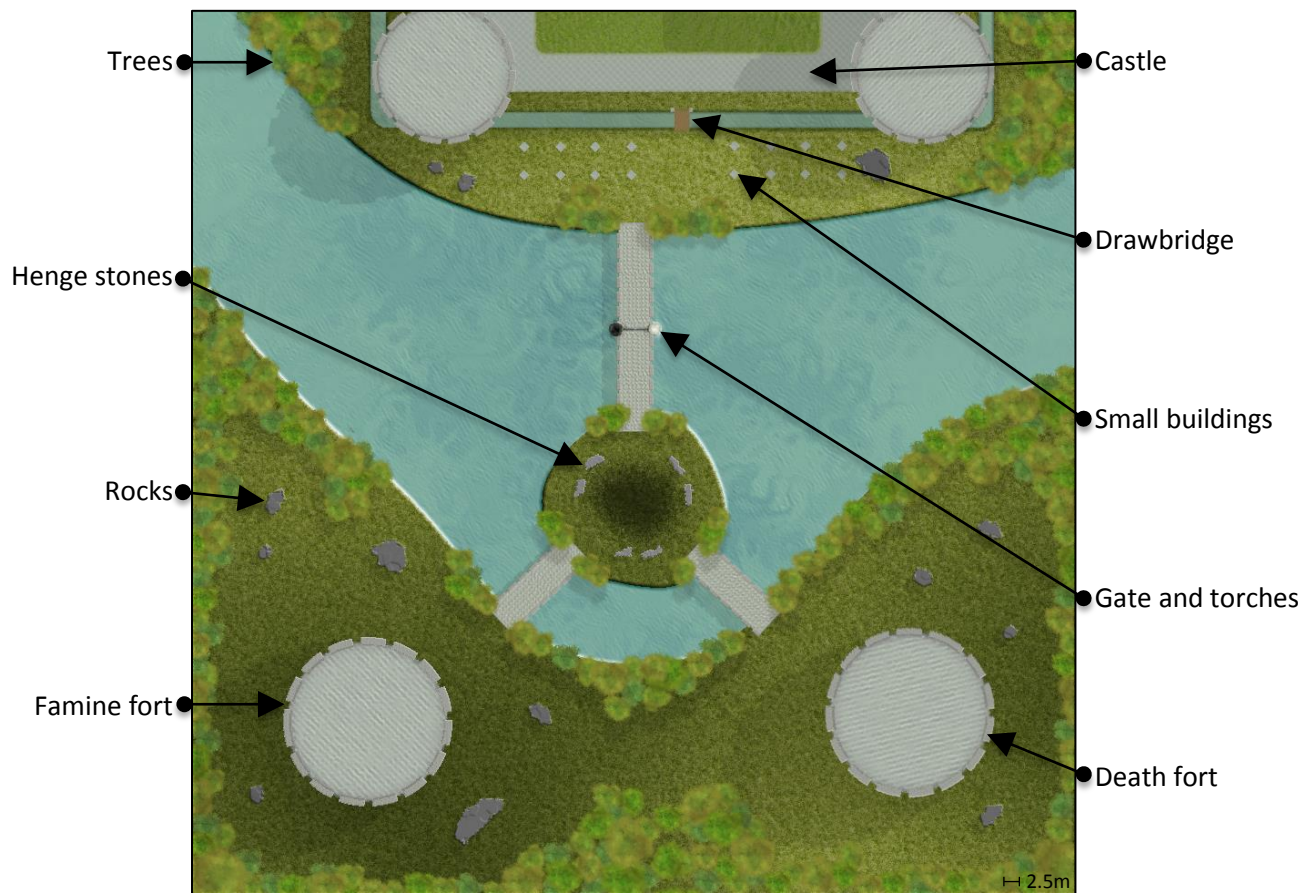
There are two enemy types – infantry and cavalry. The player will slay infantry enemies quite quickly, similar to infantry in games like Dynasty Warriors. Cavalry will be killed most effectively with a lance, which the player must point manually. By killing enemies, the player advances the game and regains health.

The game has three key locations – two forts and a castle. The forts can be attacked in any order, and the castle can be attacked after the two forts are destroyed. A single boss resides within each of these locations. The game ends when the player kills all three bosses.

3 Level Design

This section describes the different parts of the level and ties them together to describe the game's flow. The game flow subsection will make use of cross referencing to refer back to the subsections that describe key objectives, so as to avoid repeating large amounts of information.

3.1 Map



Map of the level.

The entire game takes place on one level consisting of three landmasses connected by bridges, which are 5m wide. Trees, water and the bridges' walls prevent the player from leaving these areas. The top landmass contains the castle and its spawn buildings, and is the final area of the game. The bottom landmass contains the two forts. The areas around each fort and the castle give enough room for the player and enemies to keep moving. Rocks are scattered around the landmasses as well, providing cover for the player to retreat behind.

3.2 Objectives

3.2.1 Forts

Forts are circular and have two sets of double doors opposing each other. The radius of the forts is 15m, and the width of the combined double doors is 5m (2.5m for each door). The double doors are oriented to be in line with the bridges. A maximum of 128 infantry units and 8 cavalry units can surround a single fort. Around each individual fort, there are 8 "group points", which are equally spaced into an octagon (rotated to put a group point in front of each double door). The units spawned by a fort cluster around these group points, and each group point can be assigned 16 ground-based infantry units.



Fort interior, with double doors at the top and bottom.

The double doors of a fort remain closed until the player removes 50% of the maximum number of infantry around the fort. When this occurs, one set of double doors will open and more units will spawn out of them. The doors with the most units on their side are the ones that open. Newly spawned units run towards random group points that do not have their full infantry quota.

The fort spawns infantry in waves every 10 seconds. Each wave consists of 16 infantry units which are released over a 10 second period; each infantry unit appears at regular intervals and the last appears at the 10-second mark. At the start of a wave, the doors open; at the end of the wave, the doors close. If there are fewer than 8 cavalry around the fort, a single cavalry unit will spawn on the first wave. Once the spawning of infantry begins, it does not stop until the maximum number of infantry is replenished.

While the double doors are open, the player has a chance to enter the fort and complete one of the game's objectives. Inside each fort is a horseman of the apocalypse; the left fort contains Famine and the right fort contains Death. Upon entering the fort, the doors immediately close, infantry stops spawning, and the boss spawns in front of the opposite double doors to the doors the player used. Graphically, the roof of the fort fades out to reveal the fort's walls and interior.

With the exits closed, the player is forced into a 1-on-1 fight with the boss in the closed circular arena of the fort. The boss is much more difficult to kill than the normal cavalry, and has a special ability which the player gains once it is defeated.

When the player defeats the fort's boss, the boss will begin to explode, eventually resulting in a flash of light that fills the whole screen. After the flash of light, the fort will be completely ruined and on fire (which does not harm the player). The player will be able to exit the fort through the now opened double doors, and all the enemies around the fort will have vanished.

3.2.2 Castle

The castle is a three times wider than a fort and is surrounded by an impassable moat. The drawbridge that spans the moat is initially upright.

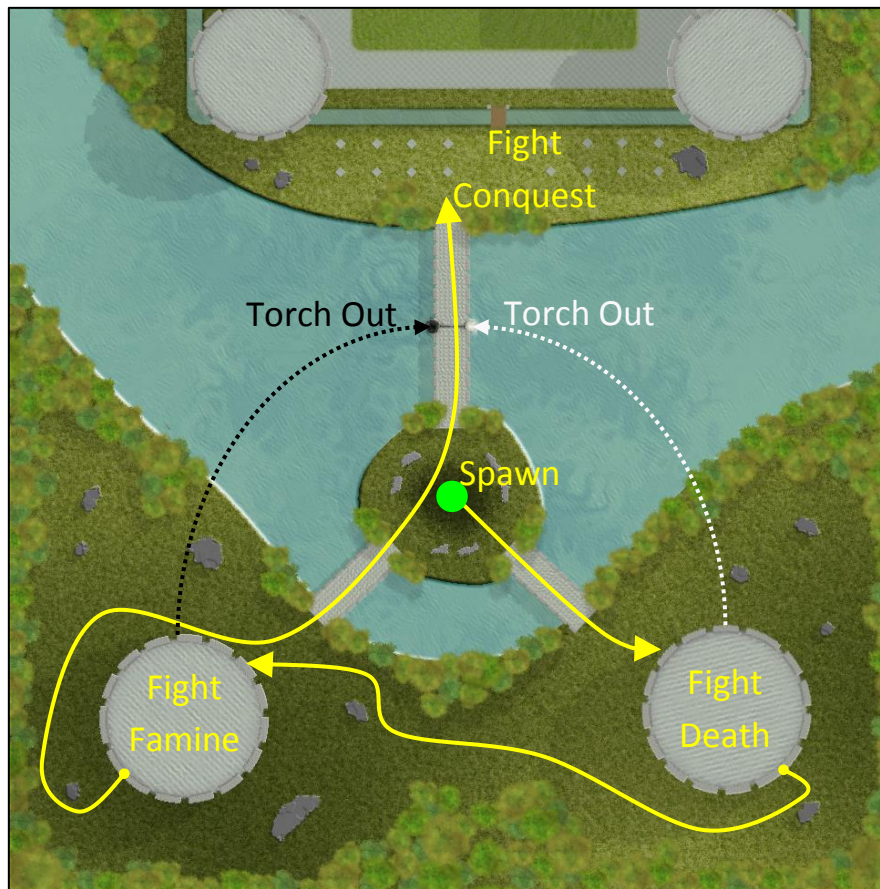
The castle shares many similarities with the forts, however it has a few key differences. One difference is that the castle does not have any double doors for enemies to spawn through. Instead, enemies spawn out of 16 small, indestructible buildings in front of the castle. These buildings also function in the same way as the group points of the forts as enemies cluster around them.

Another difference is that instead of a maximum of 128 enemies, 256 enemies guard the castle, meaning each small building (as a group point) can still be assigned 16 enemies. In addition, enemies constantly spawn at a rate of 1 spawn event per 10 seconds while there are fewer than 256 enemies around the castle. When this spawn event occurs, 1 enemy leaves each of the small buildings and runs towards a random building that does not have its full quota.

When the player kills enough enemies, such that fewer than 50% of the maximum number of enemies are alive in front of the castle, the game will pause and a cutscene will take place. In this cutscene, the camera pans towards the drawbridge, which lowers to allow the final boss and three generic cavalry units to cross the moat. These spawn at the beginning of the cutscene and are initially hidden underneath the castle. After the last cavalry unit crosses the drawbridge, the drawbridge rises, the camera pans back to the player and the cutscene ends.

After this cutscene, the player enters battle with the final boss. In contrast with the boss battles within the forts, the final boss fights amongst all of the other units in front of the castle. Just as with the fort bosses, the final boss will begin to explode when it is killed, and eventually fill the screen with a flash of light. After the flash of light, all the enemies in front of the castle will have vanished.

3.3 Game Flow



**Simplified game flow where the player attacks the right fort first.
(If the player attacks the left fort first instead, the flow is mirrored horizontally).**

The player begins on the small island in the middle of the map, facing towards the castle. This island connects to the other two landmasses with three bridges. The bridge that connects to the castle landmass is twice as long as the other two bridges. Half way across the long bridge there is a closed gate with two torches either side of it; the torches burn as long as their corresponding horseman is alive, and the gate only opens (to let the player pass) when both torches are out.

Since the player cannot pass the long bridge's gate at first, they will choose to traverse one of the other two bridges. Upon leaving their chosen bridge, the player will be directly outside of one of the forts. The player can now begin fighting in front of their chosen fort in order to try to enter it (3.2.1).

After destroying the first fort, a short cutscene will play in which the game will pause and the camera will pan towards the torches on the long bridge. When the camera reaches the torches, the torch that corresponds to the fort's boss will go out. The camera will then pan back to the player and the cutscene will end.

At this point, the player has no choice in their next objective – they must attack the other fort. For the player's convenience, a forest path connects the forts so the player can move between them without having to go across the middle island.

After destroying the second fort, a similar cutscene to the previous one will play. The game will pause and the camera will pan towards the torches on the long bridge. When the camera reaches the torches, the torch that is still lit (which will logically be the one that corresponds to the fort's boss) will go out. Since both torches are now out, the gate will open. The camera will then pan back to the player and the cutscene will end.

Having opened the gate, the player can now proceed to the castle, which is the final objective of the game (3.2.2). The castle contains the final boss and it is similar to the forts in many ways, however the player must fight in one large area and eventually face the final boss.

At the end of the game, a victory fanfare will play and the "victory" screen will fade in. Alternatively, if the player dies at any point in the game, a defeat fanfare will play and the "defeat" screen will fade in (4.2.7).

4 Technical

4.1 Controls

4.1.1 Menu Navigation

The player navigates all menus using wheelchair motion. In this document, "selecting" a menu item is equivalent to single-clicking the item with a mouse to highlight it; "executing" or "focusing on" an item is equivalent to double-clicking the item; and "defocusing" an item is equivalent to clicking away from the item so as to stop manipulating it.

Turning the wheelchair selects different items:

- If the player turns right, the next item of a menu will be selected.
- If the player turns left, the previous item of a menu will be selected.

These actions will only move the selection forwards or backwards in the menu by one item, and the player should have to return to face forwards before being able to navigate to another item again.

Forward and backwards wheelchair motion manipulates the currently selected item:

- If the player moves forwards, the selected item will either be executed (e.g. buttons) or be focused on (e.g. options with changeable values).
- If the player moves backwards, and the selected item is focused, the item will be defocused.

The player's forward and backward motion should be calculated from the velocity of the wheelchair rather than its deviation from a central point. This will allow the player to manipulate selected items without having to move their wheelchair back to a central point after each action.

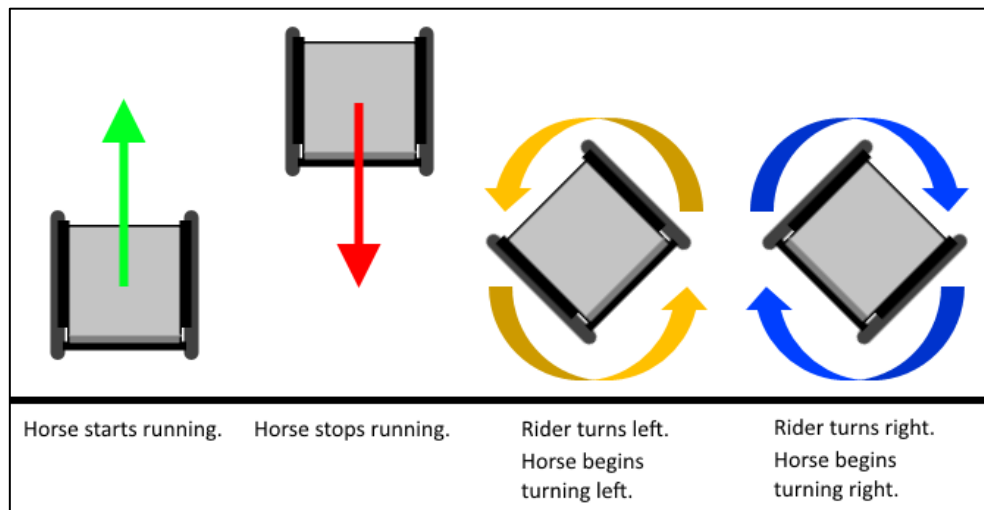
4.1.2 In-Game

The game is controlled entirely with wheelchair motion:

- If the player moves forwards, the horse will begin running in the direction it is facing.
- If the player moves backwards, the horse will slow down to a full stop.

- If the player turns left or right, the rider of the horse will turn to face the same direction as the player, relative to the horse's current forward direction.
- The horse itself turns half the angle that the rider turns, meaning the lance can be pointed in a slightly different direction to the direction the horse is running in.
- While the horse turns, it moves forwards at a reduced speed.

These controls are easier to understand when the game's top-down camera is rotated so that the horse faces the top of the screen at all times. When imagined in this way, the angle the rider deviates from "directly upwards" matches the angle the player deviates from "straight forwards".



Summary of in-game controls. Note that the player can move forwards while turning.

With these controls, it is possible that the player will leave the Kinect's range. For example, the player could be near the left edge of the Kinect's field of view, then turn left and move forwards. For this reason, if the player moves out of range the game will automatically pause.

4.2 Screens

These subsections describe the functionality of screens. The graphics of the screens are elaborated on in the Graphics section (5.1.2).

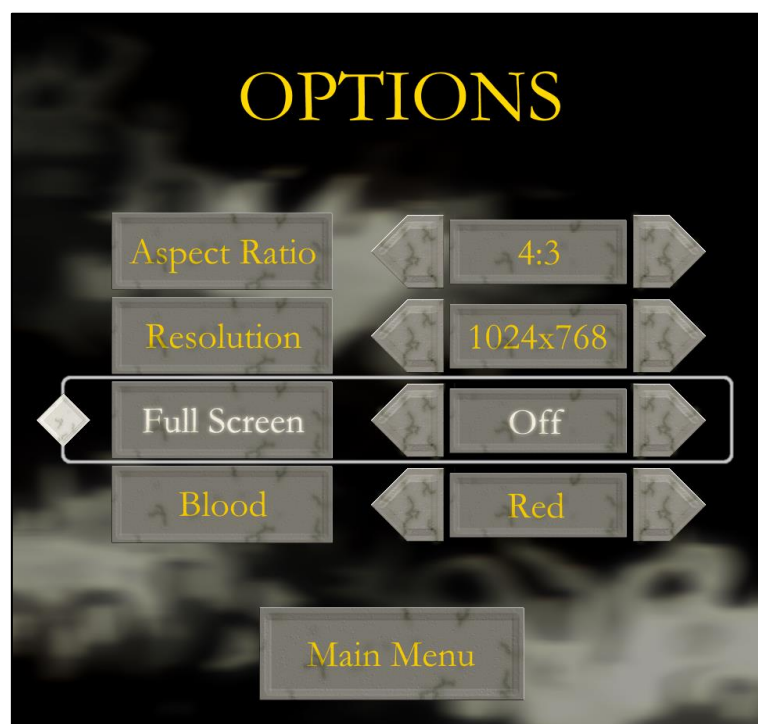
4.2.1 Main Menu



Main menu with “Play” selected.

The main menu is laid out horizontally. The button in the centre of the screen is the current button the player has selected. If the player turns left, all of the buttons slide to the right by one space so as to select the next button to the left. If the player turns right, all of the buttons move to the left by one space so as to select next button to the right. Executing the selected button takes the player to that button’s corresponding screen: “High-Scores” takes the player to the high-scores screen; “Options” takes the player to the options menu; “Play” begins a new game; and “Quit” exits the game. By default, the “Play” button is selected.

4.2.2 Options Menu



Options menu with “Full Screen” focused and set to “Off”.

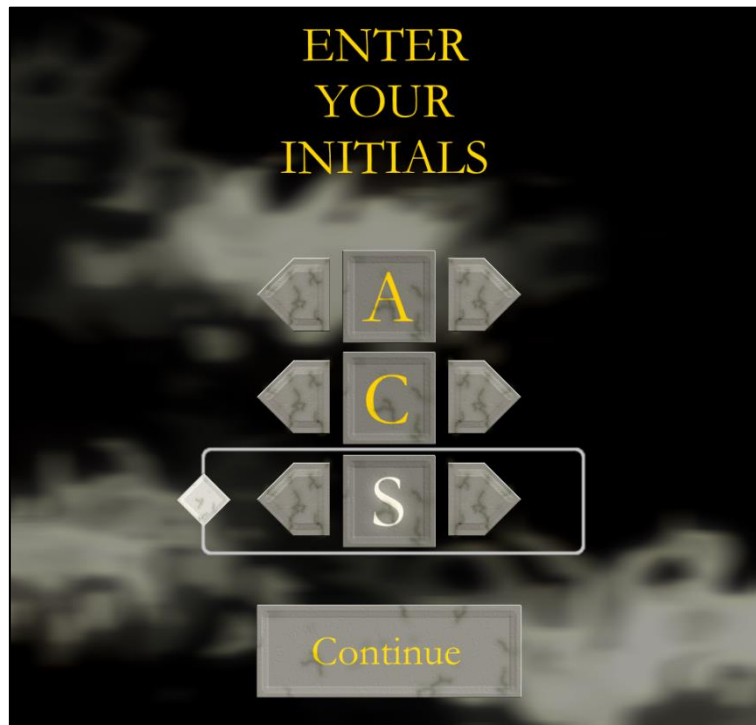
The options menu is laid out vertically so the player can immediately see every option available instead of having to scroll through all of them first. A marker to the left of the list of options identifies the selected option by moving next to it. If the player turns left, the marker moves up the list by one item, and if the player turns right, the marker moves down the list by one item. When the player focuses on the selected option by moving forwards, the option becomes encircled by a white rounded rectangle. While an option is encircled, turning left or right will cycle its value left or right rather than moving the marker up or down. When the player defocuses from the option by moving backwards, the encircling rectangle disappears.

There are four options in this menu:

- Aspect Ratio
 - Changes the aspect ratio of the game.
 - The available aspect ratios should be 4:3, 16:9 and 16:10.
- Resolution
 - Changes the resolution of the game.
 - The resolution change should upscale the graphics rather than making the camera's visible area larger.
 - The available resolutions should range from 1024x768 to 1920x1200.
 - The set of resolutions available should be those supported by the chosen aspect ratio.
- Full Screen
 - Sets whether the game takes up the whole screen or is windowed.
 - Toggles between "On" and "Off".
- Blood
 - Determines how blood is represented in the game.
 - Cycles between "Off" for no blood, "Red" for red blood, and "Green" for lime green blood, in case the player wants a more vivid, "juicy" game with blood effects but is uneasy with the sight of red blood.

At the bottom of the menu is a "Main Menu" button, which saves all of the options (so they can be reloaded when the game begins) and returns the player to the main menu. The option marker should not be rendered when this button is selected.

4.2.3 Initials



Initials screen. (In this mockup, the third initial is selected and focused).

When the player completes the game, they are presented with the “initials” menu. This menu is laid out vertically in the same way as the options menu. The first three items of this menu are letters with arrows either side of them. A marker to the left of these items identifies the selected item by moving next to it. If the player turns left, the marker moves up the list by one item, and if the player turns right, the marker moves down the list by one item. When the player focuses on the selected item by moving forwards, the item becomes encircled by a white rounded rectangle. While a letter item is encircled, turning left or right will cycle the letter backwards or forwards in the alphabet, including an empty space after “Z” for those without middle names. If the player moves right at the end of the letters, or left at the start of the letters, the chosen letter will wrap around to the other side of the alphabet.

At the bottom of the menu is a “Continue” button. When this button is executed, the initials and the player’s scores are added to the high-score board, and the screen changes to the high-scores screen. The item marker should not be rendered when this button is selected.

4.2.4 High Scores



Completion Time		
1	ACS	10m 25s
2	SFG	11m 10s
3	LBS	14m 30s
4	JJA	14m 33s
5	TE	16m 58s
6	TK	16m 59s
7	AMG	20m 14s
8	JBS	21m 12s
9	NCS	44m 13s
10	SO	1h 04m 19s
↓	ND	1h 17m 41s

“Completion Time” high score board.

(In this mock-up, the player’s score is at the bottom because it was too low).

The high-scores menu is laid out horizontally in the same way as the main menu. The first three items of the menu are high-score boards, which each show different types of scores but do not have any executable function. The fourth and final item is a “Main Menu” button, which returns the player to the main menu upon execution. As with the main menu, moving left and right will shift the items so that the currently selected item is in the centre of the screen. The boards either side of the selected item are partially visible so that the player knows that there are more items in the menu.

The three high-score boards are in the following order:

1. Titled “Completion Time”, this board will show the shortest completion time in ascending order from top to bottom, with the shortest time at the top.
2. Titled “Enemies Killed”, this board will show the total number of enemies killed as a single value, which includes all enemy types and bosses, in descending order from top to bottom.
3. Titled “Least Damage”, this board will show the total damage received by the player in ascending order from top to bottom.

Each board is local to the system the game is played on, and up to 10 records can be stored on each board. If the high-scores were accessed through the main menu, only the records stored on the system will be shown. On the other hand, if the high-scores were accessed through the “initials” menu (i.e. after the player finishes the game), and any of the player’s scores were too low to be on their high-score board, they will be appended to the bottom of their board and assigned a down arrow “↓” instead of a number.

4.2.5 In-Game



In-Game GUI, a few seconds after the player defeated Famine.

The GUI of the game itself contains the most relevant information in the corners of the screen. The player is always in the centre of the screen, and their horse faces upwards at all times. The player's health bar is shown at the bottom left of the screen; the bar fills with red from left to right proportional to the player's health. The time the game has been played is shown at the top left of the screen and the total amount of enemies killed is shown underneath it. At the top right of the screen there are three icons which represent the three bosses of the game. When the player kills one of the bosses, a red "X" mark covers the boss's icon to mark that it is dead. Additionally, while the boss is exploding, a black bar will fade in for 5 seconds in the centre of the screen saying which boss has been defeated.

4.2.6 Pause Menu



**Pause menu superimposed on top of the game, with "Main Menu" selected.
The player is shown to be within the Kinect's range.**

The pause menu is superimposed on top of the game. The game underneath the pause menu is darkened to make the pause menu stand out. The menu is laid out horizontally like the main menu, but it only has two options – “Continue” and “Main Menu”. The “Continue” button resumes the game and the “Main Menu” button ends the game and returns the player to the main menu. The buttons in this menu move in exactly the same way as the buttons in the main menu. By default, the “Continue” button is selected.

An additional element on this menu is a 2D representation of the player’s physical location relative to the Kinect. This element is positioned underneath the menu buttons. If the player is out of range of the sensor, the circle representing them will appear red and immobile. If the player is in range, the circle will appear green and move with the player.

4.2.7 Game Over and Victory



“Game Over” and “Victory” screens.

The game over screen only has one button, “Main Menu”, which returns the player to the main menu when it is executed. The victory screen also only has one button, “Continue”, which sends the player to the “initials” menu when it is executed.

4.3 Actors

The actors in the game are either cavalry or infantry units. There are two types of infantry (knights and archers), and three types of cavalry (generic cavalry, bosses, and the player). All cavalry units have the same structure, with two main parts: the horse and its rider. The horse is 2.5m long and the rider sits in the middle of it, wielding a 2.5m long lance in their right hand. These two parts move separately, so the rider can point their lance in a slightly different direction to the direction their horse is travelling. The rider can’t turn further than 90° from the direction of the horse. Infantry units are simpler with just one part.

All enemy units will require pathfinding in order to avoid obstacles (rocks, forts, the moat, small buildings, trees) and seek the player. This pathfinding should not cause units to follow a grid-like path exactly, so an algorithm to make the path more natural or more direct (e.g. by removing superfluous intermediate path nodes) will be necessary. Enemies will also require a method of predicting which direction they should move in to intercept the player in the shortest time possible.

4.3.1 Knights

Health Points		2
Alert Radius		15m
Weapons		A 1m sword, which deals 1 point of damage per swing. Each swing covers 90° (45° behind and ahead of the knight) and takes 0.5 seconds to complete. At the end of each swing, after another 0.5 seconds, the direction of swinging reverses.
Movement		4ms ⁻¹ running speed.
Behaviour	Idle	Wanders around its designated group point randomly. Never moves further than 15m from this group point.
	Alert	Runs to get in front of the player and swings its sword for 5 seconds when within 2m its target position. Jumps out of the way of the player if the player is moving slower than 80% of their maximum speed.
Collision		The knight's body. (When dodging, this collider ignores trampling). The knight's sword. If intersecting another infantry unit, this unit should move away from that unit rather than solidly colliding.
On Death		Falls to the ground.

4.3.2 Archers

Health Points		1
Alert Radius		30m
Weapons		A bow that fires 0.5m long arrows every 5-10 seconds. Each arrow deals 1 point of damage.
Movement		6ms ⁻¹ running speed.
Behaviour	Idle	Moves towards its designated group point, then does nothing.
	Alert	Fires arrows at the player. Jumps out of the way of the player if the player is moving slower than 80% of their maximum speed.
Collision		The archer's body is the only collider. (When dodging, this collider ignores trampling). The arrows shot from the bow have their own colliders. If intersecting another infantry unit, this unit should move away from that unit rather than solidly colliding.
On Death		Falls to the ground.

4.3.3 Generic Cavalry

Health Points		5
Alert Radius		25m
Weapons		A 2.5m lance, held in the right hand, that deals 5 points of damage. A 2.5m horse that can trample the player (dismounted) to deal 5 damage.
Movement		11ms ⁻¹ when running in a straight line (maximum speed). 4ms ⁻¹ when running while turning through the maximum turning angle. 11ms ⁻² acceleration. 30°s ⁻² angular acceleration (Horse). 40°s ⁻² angular acceleration (Rider, idle). 60°s ⁻² angular acceleration (Rider, alert).

Behaviour	Idle	<p>Patrols around forts along a random path between each of the fort's group points.</p> <p>Path-finds towards the nearest group point if returning to idle from previously being alert.</p> <p>The rider turns to face the same direction as the horse.</p>
	Alert	<p>Path-finds towards the player if obstacles block a direct line of sight.</p> <p>If there is a direct line of sight to the player, one of three tactics will occur:</p> <ul style="list-style-type: none"> • Move to intercept the player as soon as possible. • Remain behind the player, following them directly. • Circle the player and move in to attack every 10-15 seconds. <p>The tactic used by the unit is chosen by random when it spawns and never changes, so different generic cavalry will have different behaviours.</p> <p>The rider turns to face the player.</p>
Collision		<p>Four colliders: the rider, lance, horse's body and horse's head.</p> <p>Only the horse's body and head collide with obstacles.</p> <p>If two horses collide (including the player's horse), one of two events will happen:</p> <ul style="list-style-type: none"> • If the smallest angle between the forward directions of the horses is less than 60°, the two horses will turn to face the average of the two forward directions in 0.5s. • If the smallest angle between the forward directions of the horses is greater than 60°, whichever horse collided headfirst will rear up and be unable to move until it returns to all fours. If both horses collided headfirst, whichever horse was travelling faster will continue travelling normally and the other horse will rear up. After rearing up, the horse will ignore collisions until it returns to all fours, which takes 3 seconds.
On Death		<p>The rider falls off the horse, and the horse becomes frenzied. The frenzied horse continues running in the direction it was headed (avoiding obstacles) at 15ms^{-1} until it is out of the screen, where it is destroyed. While the horse is running wild, it will be able to pass through trees.</p>

4.3.4 Bosses

Health Points		30
Weapons	Right Hand and Horse	The same weapons as generic cavalry.
	Left Hand (Famine)	Weighing scales, which weigh the boss's attack damage against the amount of health the boss has left. At maximum health, damage is halved. At half health, damage is dealt normally. At zero health, if the boss were alive, damage would be doubled. Between these three health values, the percentage of damage dealt is interpolated.
	Left Hand (Death)	A 2.5m scythe, which deals 5 points of damage per swing. Each swing covers 180° (90° behind and ahead of the rider) and takes 1 second to complete. At the end of each swing, after another 1 second, the direction of swinging reverses. The scythe swings continuously.
	Left Hand (Conquest)	A 1m crossbow that fires large crossbow bolts at the player every 5 seconds. Each crossbow bolt is 1m long, deals 5 points of damage, and travels in a straight line at 20ms^{-1} until it hits an obstacle or leaves the screen. The boss does not fire these bolts directly at the player's

		position; he fires them in the direction that will cause them to intercept the player in the future as quickly as possible.
Movement		10ms^{-1} when running in a straight line (maximum speed). 6ms^{-1} when running while turning through the maximum turning angle. 10ms^{-2} acceleration. 45°s^{-2} angular acceleration (Horse). 70°s^{-2} angular acceleration (Rider). Decelerates to a full stop at 20ms^{-2} if lanced by the player.
Behaviour	All	Bosses are constantly in an alert state from the moment they spawn. If lanced by the player, the boss rider falls off the horse and takes 5 seconds to remount once their horse has come to a full stop and is not rearing up. During this time, other horses can trample them. The special behaviours of each boss stop temporarily while they are off their horse. The rider turns to face the player.
	Famine	Above half health, the boss tries to intercept the player constantly. Below half health, the boss runs circles around the player and turns to charge them whenever he gets behind them.
	Death	Attempts to keep the player to its left side, with less focus on actually lancing them and more on keeping them within the scythe's range.
	Conquest	Chooses a random behaviour from the generic cavalry behaviours every 20 seconds. Never chooses the same behaviour twice in a row.
Collision		The same colliders and rules as generic cavalry, however Death has one extra collider – the scythe, and Conquest's crossbow bolts have separate colliders.
On Death		With the exception of the Conquest horseman, the player will gain the special weapon/ability of this horseman.

4.3.5 Player

Health Points		30
Weapons	Right Hand and Horse	The same weapons as generic cavalry.
	Left Hand (Normal)	A 1.5m sword, which deals 1 point of damage per swing. Each swing covers 90° (45° behind and ahead of the rider) and takes 0.5 seconds to complete. At the end of each swing, after another 0.5 seconds, the direction of swinging reverses. The sword swings automatically when the player passes enemies.
	Left Hand (Death Powerup)	A 2.5m scythe, which deals 5 points of damage per swing. Each swing covers 180° (90° behind and ahead of the rider) and takes 1 second to complete. At the end of each swing, after another 1 second, the direction of swinging reverses. The scythe swings whenever the player passes enemies.
	Other (Famine Powerup)	Weighing scales, strapped to the player's back. With these, the player deals damage proportional to the amount of health they have left. At maximum health, all damage the player deals is halved. At half health, damage is dealt normally. At zero health, if the player were alive, all the damage would be doubled. Between these three health values, the percentage of damage dealt is interpolated.
Movement		10ms^{-1} when running in a straight line (maximum speed).

	6ms^{-1} when running while turning through the maximum turning angle. 10ms^{-2} acceleration. Up to 45°s^{-2} angular acceleration depending on the angle between the rider's direction and the horse's direction. (Horse) Slowed by 10% of its current speed when attacked. Decelerates to a full stop at 20ms^{-2} if lanced by an enemy cavalry unit.
Behaviour	The rider and the horse's velocity are user controlled (4.1.2). If lanced by an enemy cavalry unit, the rider falls off the horse and takes 5 seconds to remount automatically as soon as their horse has come to a full stop (and is not rearing up). During this time, other horses can trample them. Upon killing a non-boss enemy, the player gets 10% of the enemy's maximum health points added to their own health (to a maximum of 30 health points). After killing a boss enemy, the player regains all health points.
Collision	The same colliders and rules as generic cavalry, plus one extra collider: the sword (or the scythe).
On Death	The game ends.

No actor should be able to pass through the water areas on the map. Also, no actor, nor their projectiles, should be able to pass through the following obstacles:

- Trees.
- Rocks and henge stones.
- Castle's moat.
- Castle's small buildings.
- Forts' walls.
- Forts' doors (closed).
- Bridges' walls.
- Long bridge's gate (closed).

Furthermore, no non-player unit should be able to cross bridges. When the player moves onto a bridge, any alerted units (including the final boss) should instantly become idle until the player returns to their area.

5 Graphics

5.1 Styles

5.1.1 Typeface

The typeface should be similar to Garamond. The chosen typeface should be used throughout the game and not change to a different typeface at any point.

5.1.2 Menus

The background of menus (with the exception of the "victory" and "game over" screens) should be black, and have animated smoke clouds that fade in and out. Aside from the main menu, which will have the game's logo, the title of all menus should be written in uppercase and be coloured gold.

The “game over” screen’s background should be black with animated grey fire which emanates from the bottom of the screen. The “victory” screen’s background should be black with animated fire that is coloured deep red and comes from the bottom of the screen. The red fire is supposed to reflect the red colour of the player.

Buttons, options and other menu elements should be aged, carved stone slabs with various cracks and chipped areas. The text on these elements should have be upper case at the start of each word and lower case for the rest of each word. When selected, the text should be white and have a white glow. When not selected, the text should be gold and the entire button should shrink to 70% of its selected size.

High-score boards should be larger stone slabs. Each high-score board should have their title at the top of the slab and have the records running down to the bottom of the slab, leaving enough space for an 11th entry in the case that the player achieved a low score. The title and records should be coloured gold, and the player’s record should be coloured white with a white glow.

5.1.3 Structures

5.1.3.1 Forts and Castles

The castle and the forts should look like grey stone mediaeval castles. Rather than being true forts, which were often rectangular, the forts should look like circular castle towers with battlements and a flat roof. The interior of forts should be a tiled stone floor covered in patches of dirt. When forts are destroyed, their walls should become crumbled and the fort should set on fire in random areas.

Double doors should jut out from fort walls far enough for them to be partially visible when they are closed. They should be made of wood, with a saturated brown colour that stands out from grey of the fort walls.

The castle’s drawbridge should be a darker wood than the double doors. There should be a stone path linking the drawbridge to the middle of the castle. The castles moat should be a murky blue-green colour. The small buildings in front of the castle should be diamond shaped and arranged regularly in two groups (2 down by 4 across).

5.1.3.2 Bridges

Bridges should be made from a lighter stone material than the forts, and also have more moss covering them. The walls of bridges should have a crenellation pattern like the top of forts.

5.1.3.3 Torches and Gate

The torches should be circular and gold. The fire that comes from the torches should not be coloured like normal fire. Instead, the left torch should be coloured black to reflect the colour of the Famine horse, and the right torch should be coloured pale green/grey to reflect the colour of the Death horse. The gate between these torches should be a darker gold than the torches.

5.1.4 Characters

5.1.4.1 War (The Player)

War should be a knight clad in bulky, red-trimmed, black or dark grey armour. His horse should have red skin and a red mane, and also have black armour. War’s lance should be black and have a red

tip. His sword should be black with a single straight red line down the centre of its blade. When the sword is swung, its arc should be shown by a transparent red trail.

Reference images:



http://features.cgsociety.org/newgallerycrits/g53/303553/303553_1330473910_large.jpg

http://www.dota2wallpapers.ru/_ph/1/525077436.jpg

5.1.4.2 *Famine*

Famine should be obese and zombie-like. His only armour should be a helmet and bracers. His horse should be black and have glowing red eyes. Famine's lance should be grey (lighter than his horse), and the weighing scales he holds in his left hand should be silver.

Reference images:



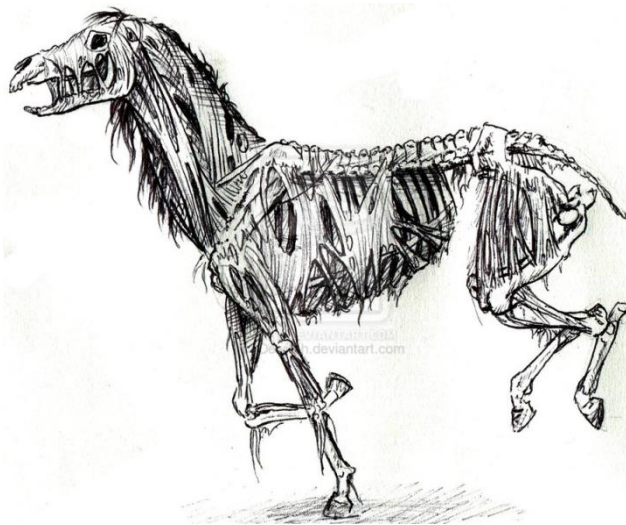
http://th00.deviantart.net/fs70/PRE/i/2010/304/a/6/famine_the_apocalypse_horseman_by_gimaldinov-d31wxs0.jpg

<http://media.dota-trade.com/img/screenshots/l/g/gladiators-revenge-helmet-zio1fhvvi.jpg>

5.1.4.3 *Death*

Death should be a skeleton within a black cloak, like the "grim reaper". His horse should be pale green, skeletal, and have glowing green eyes. His lance should be black and his scythe should have a black snath and a steel blade with a single green line running down the centre of it. Both of his skeletal hands should be visible holding each weapon. When he (or the player, when the player has his powerup) swings his scythe, its arc should be shown by a transparent green trail.

Reference images:



<http://i3.mirror.co.uk/incoming/article3425608.ece/alternates/s615/Grim-Reaper.jpg>

http://fc05.deviantart.net/fs70/i/2013/234/a/1/zombie_horse_sketch_by_dewilish-d669t2x.jpg

5.1.4.4 Conquest

Conquest should be a knight clad in ornamental gold-trimmed white armour. His horse should be white and have a pale blonde mane, and also wear (darker) white armour. Conquest's lance should be white with a gold tip. His crossbow should be gold and fire large silver crossbow bolts.

Reference image:



http://s113.photobucket.com/user/Stovie_2006/media/Conquest8copy.jpg.html

5.1.4.5 Knights, Archers and Generic Cavalry

Knights should look like mediaeval steel knights, and their swords should be a lighter silver colour. Archers should wear leather armour and a steel helmet, and wield a wooden bow. Generic cavalry should be mediaeval knights with grey lances, mounted on regular, brown, unarmoured horses.

5.1.5 Miscellaneous Scenery

The map should mostly be grassy, but also have patches of bare ground around rocks and other random areas. The ground around forts and the path that joins the two forts on the bottom landmass should look well-trodden and slightly muddy. The water between landmasses should be animated to look like a river.

The central island should have a scorch mark in its centre where the player spawns. The scorch mark should extend out to the henge stones, fading in intensity further from the centre. This is supposed to make the island look like a ritual/summoning area.

Rocks should be irregular shapes, mossy and have cracks that the moss has got into. Henge stones should be rectangular with parts chipped off, and they should be made of a lighter coloured stone.

Trees should look like oak trees and have four different colours of leaves, ranging from almost-dead orange-green to healthy green.

5.1.6 **Render Order and Shadows**

Since the game is played from a top down 2D point of view, objects will need to be rendered in a specific order and also given shadows to help give the illusion of depth:

1. Trees, fire, fort roofs/walls, castle, small buildings, henge stones, bridge walls, torches.
2. **1.**'s shadows.
3. Arrows, crossbow bolts.
4. Fort doors, bridge gate.
5. Player, bosses, cavalry.
6. **5.**'s shadows.
7. Rocks.
8. **7.**'s shadows.
9. Knights, archers.
10. **9.**'s shadows.
11. Terrain, fort floors, bridge floors, water.

When the player enters a fort, its roof should fade out and its walls should be rendered instead. When the player exits the fort, the top should not fade back in as it is destroyed.

5.1.7 **Particle Systems and Other Effects**

Particle systems will be used for very dynamic graphics. One such usage is fire. When a fort is destroyed, it will set on fire in various places and burn until the end of the game.

When an enemy dies, white particles should come from the enemy and move towards the player, similar to the soul absorption effect in Dark Souls (<http://youtu.be/i-hRBSqpx4o?t=1m49s>). If blood is enabled in the options, blood particles should spray onto the floor. The enemy's corpse and its blood should be written to the terrain image when they die so that they persist until the end of the game and other enemies can walk on top of them.

When a boss or the player dies, they will explode. This explosion effect should be a mixture of particles and sprites, and end with a white flash, for example: <http://youtu.be/zZu0OqUNEis>. The white flash should fill the screen and be completely opaque for half a second after fading in.

5.2 Asset List

- | | |
|---|---|
| <ul style="list-style-type: none"> • Horses <ul style="list-style-type: none"> ○ Regular horse. <ul style="list-style-type: none"> ▪ Running animation. ▪ Rearing animation. ○ Horsemen horses. <ul style="list-style-type: none"> ▪ Running animation. ▪ Rearing animation. • Horse riders. <ul style="list-style-type: none"> ○ Regular knight. <ul style="list-style-type: none"> ▪ Death animation. ○ War. <ul style="list-style-type: none"> ▪ Sword swinging animation. ○ Death <ul style="list-style-type: none"> ▪ Scythe swinging animation. ○ All Horsemen. <ul style="list-style-type: none"> ▪ Falling off animation. ▪ Remounting animation. ▪ Death explosion. • Infantry <ul style="list-style-type: none"> ○ Knight. <ul style="list-style-type: none"> ▪ Idle animation. ▪ Running animation. ▪ Sword swinging animation. ▪ Death animation. ○ Archer <ul style="list-style-type: none"> ▪ Idle animation. ▪ Running animation. ▪ Bow firing animation. ▪ Death animation. • Projectiles <ul style="list-style-type: none"> ○ Arrow. ○ Crossbow bolt. • Scenery <ul style="list-style-type: none"> ○ Grass. ○ Scorch mark. ○ Soil and mud. ○ Water. <ul style="list-style-type: none"> ▪ Flowing animation. ○ Moat water. ○ Trees (4 leaf colours). ○ Rocks (8 variations). ○ Henge Stones (6 variations). | <ul style="list-style-type: none"> • Structures <ul style="list-style-type: none"> ○ Bridges. <ul style="list-style-type: none"> ▪ Floor. ▪ Walls. ○ Forts. <ul style="list-style-type: none"> ▪ Roof. ▪ Floor. ▪ Intact Walls. ▪ Demolished walls. ○ Double doors. <ul style="list-style-type: none"> ▪ Open/close animation. ○ Castle. ○ Drawbridge. <ul style="list-style-type: none"> ▪ Raised. ▪ Raise/Lower animation. ○ Torches <ul style="list-style-type: none"> ▪ Flame active. ▪ Death active. ▪ Inactive. ○ Gate <ul style="list-style-type: none"> ▪ Opening animation. • Effects <ul style="list-style-type: none"> ○ Soul absorption. ○ Blood (red and green). ○ Fire. • Backgrounds <ul style="list-style-type: none"> ○ Menu background. ○ Victory background. ○ Game over background. • GUI <ul style="list-style-type: none"> ○ Garamond style typeface. ○ Item background slabs. ○ Item marker. ○ Item encircling rectangle. ○ Arrows slabs. ○ High-score board slabs. ○ Health bar. <ul style="list-style-type: none"> ▪ Background. ▪ Fill. ○ Boss icons. <ul style="list-style-type: none"> ▪ With and without red cross mark. ○ Black "[BOSS NAME] DEFEATED" bar. |
|---|---|

6 Audio

6.1 Styles

6.1.1 Menu Music

The music for the menus should be dramatic and war-like with heavy drums and chanting.

Example: <http://youtu.be/1Tow909q04s>

6.1.2 Victory and Game Over Fanfares

The victory fanfare should be use horns and be in a major key. The game over fanfare should also use horns but be in a minor key and an octave lower. While these fanfares play, the normal menu background music is muted. When the fanfares end, the menu music fades in.

6.1.3 In-Game Music

There will be three music tracks in-game. All tracks play at the same time, but are faded in for different situations. When a track fades in, the previous track fades out.

1. The first track fades in when the player is not in combat and is just roaming between areas. This track should not be too loud or evoke the idea of battle, but of roaming.
Example: <http://youtu.be/lrwXq-BI30k>
2. The second track fades in when the player alerts enemies around a fort. As the player is entering combat, the music should be quicker and more intense.
Example: <http://youtu.be/Uo9mEYuM2Mc>
3. The third track fades in when the player enters a battle with a boss. The music should give the idea of an important and epic event, with many orchestral instruments and chanting.
Example: <http://youtu.be/6WjE6C4nL6g>

If the player pauses the game, the music should still play but at only 50% volume.

6.1.4 Sound Effects

The majority of sound effects are self-explanatory in the asset list. For example, a “bow/crossbow firing sound” would obviously be played when the archer or Conquest fires their bow. Others may be less obvious or need clarification, such as the three horse sounds; a “trotting” sound should be looped when a horse is moving under 30% of its maximum speed and a galloping sound should be looped when a horse is moving faster than this. When horses rear up after collision, they should let out a surprised neigh.

There should be three crowd loops which play while the player is near infantry. When the player goes near forts or the castle, if the number of enemies is lower than 1/3 of the objective’s maximum amount, a small crowd sound of about 10 people shouting should loop. If there is more than 1/3 but less than 2/3, a medium crowd sound of about 30 people shouting should loop. If there is more than this, a large crowd sound of about 50 people shouting should loop. When the player enters a fort, these sounds should fade to 50% volume.

Example: <http://youtu.be/t9jOmU-qgvM>

When the double doors of forts open, a horn sound should play to signify the event of enemies spawning. Example: <http://youtu.be/LLTGuFzbfZo>

The menu navigation sounds should sound like scraping and clinking stone. The scraping sound should last as long as it takes a selection to change to the next item.

All in-game sounds should be 3D – as the camera moves towards them, they should get louder. If the camera is further than 60m from a sound source, no sound should be heard from that source.

6.2 Asset List

- Music.
 - Menu.
 - Victory fanfare.
 - Game over fanfare.
 - In-game music.
 - Roaming.
 - Combat.
 - Boss.
- In-game sounds.
 - Horse trotting loop.
 - Horse galloping loop.
 - Horse “surprised neigh” sound. (Upon rearing up).
 - Metallic striking/clattering sound. (Weapon connects).
 - Swishing sword/scythe sound. (Weapon swings).
 - Bow/crossbow firing sound.
 - Crowd yelling loop.
 - Small crowd (~10 people).
 - Medium crowd (~30 people).
 - Large crowd (~50 people).
 - Human pain sounds (various).
 - Horseman (bosses/player) pain sounds (filtered/alterd human pain sounds).
 - Horseman explosion sounds.
 - Build-up (crescendo and pitch increase).
 - Climax (loud, dull explosion).
 - Heavy door opening/closing sounds.
 - Drawbridge lowering/raising sounds.
 - Gate opening sound.
 - Torch snuffing out sound.
 - Blazing fire loop.
 - Horn signalling the opening of double doors.
- Menu sounds.
 - Scraping stone sound (player selects an item on a menu).
 - Striking stone sound (player executes an item on a menu).