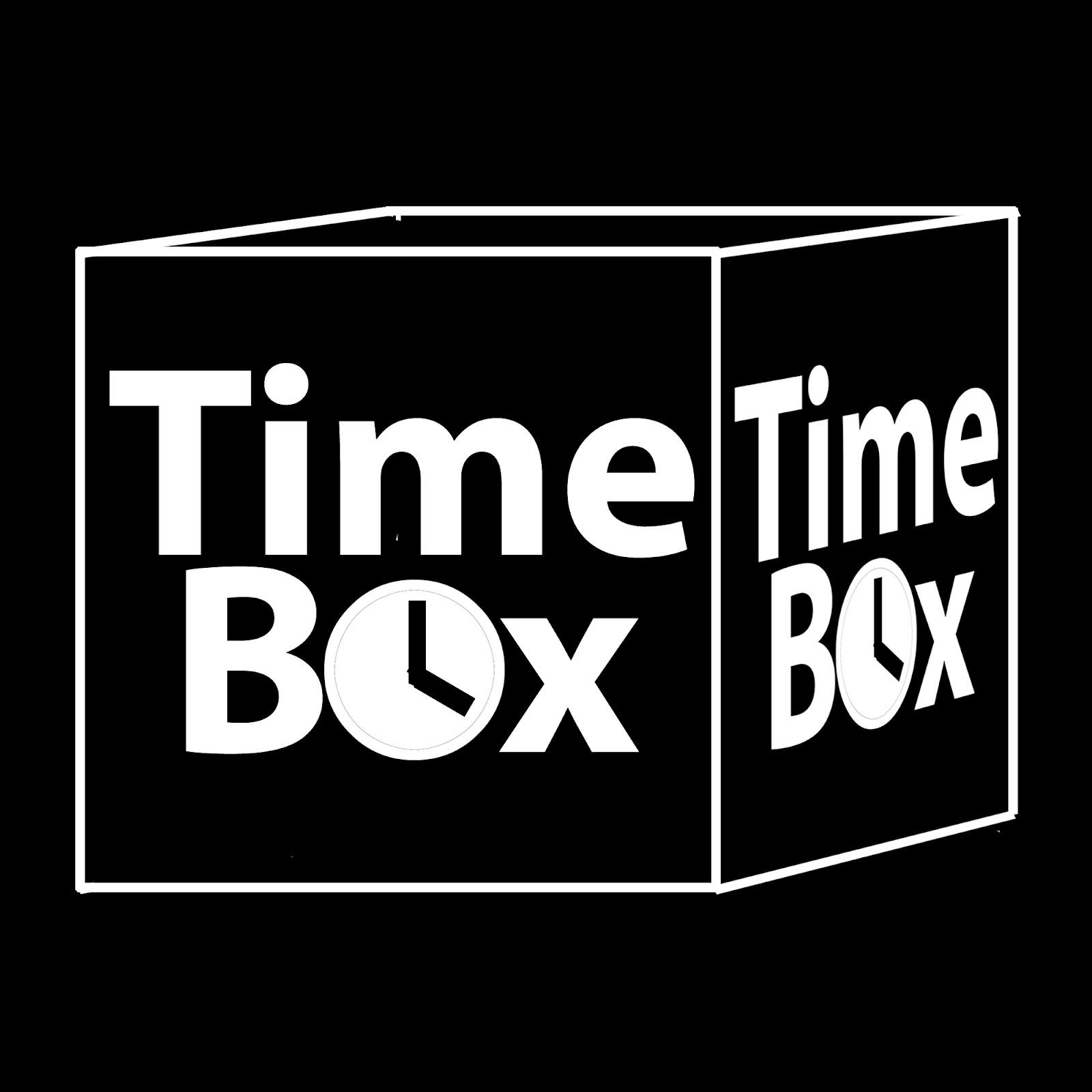


**Design Document for:**



**The time travel game.**

*“We fix the past so you don’t have to!”™*

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# Table of Contents

**Introduction 4**

Specification 4

**Game Overview 5**

Common Questions 5

What is the game? 5

Why create this game? 5

Where does the game take place? 5

How many characters do I control? 5

What is the main focus? 5

What’s different? 5

**The Physical World 6**

Overview 6

Key Locations 6

Travel 6

Camera 6

Mini-map 6

Lighting Models 6

Field Training Course (Tutorial Stage) 6

The Manhattan Project 6

Hitler's Mansion (Outside) 6

Hitler's Mansion (Inside) 7

Collectibles 7

The Manhattan Project 7

Hitler's Mansion (Outside) 7

**Game Characters 8**

Overview 8

Andy 8

Sgt. James P. York 8

Security Guards 8

The Anti-Time Repair Agency 8

**Weapons and Obstacles 9**

The TAD 9

Laser Guns 9

Trip Lasers 9

Security Cameras 9

**Single-Player Game 10**

Overview 10

Story 10

Hours of Gameplay 10

Saving and Loading 10

Victory Conditions 10

**Artificial Intelligence 11**

Overview 11

Enemy Behavior 11

**Graphics Design 12**

Overview 12

Modeling 12

Field Agent Training Course (Tutorial Stage) 12

Manhattan Stage 12

Hitler's Mansion (Outside) 12

Hitler's Mansion (Inside) 12

Andy and Enemy Scientists 12

Final Boss - Mecha-Hitler 13

**Sound Design 14**

Overview 14

Music 14

Field Agent Training Course (Tutorial Stage) 14

Manhattan Stage 14

Hitler's Mansion (Outside) 14

Hitler's Mansion (Inside) 14

Boss Battle 14

Dialogue 14

Sound Effects 14

# Introduction

TimeBox is a single-player stealth, platformer game. The game was inspired by the card game *Chrononauts*. It toys with the concept of traveling through time to alter the course of history. Still, one must be careful not to change history too much. This is where the stealth component comes in.

# Specifications

This game is built using the Unity game engine.

Developed for Windows

Scripts written in C#

Development time 15 weeks.

# Game Overview

## Common Questions

### What is the game?

TimeBox is a single-player stealth time-travel game.

### Why create this game?

TimeBox was inspired by the card game [Chrononauts](http://en.wikipedia.org/wiki/Chrononauts). It toys with the concept of traveling in time to alter the course of history. Still, one must be careful not to change history too much. This is where the stealth component comes in. This game concept adds a breath of fresh air to the stealth game genre.

### Where does the game take place?

The more important question is *when* does this game take place? This game takes place in the years leading up to and including 1945. The player will lead the main character through missions to make adjustments to important points during World War II. The missions will take place in Oak Ridge, Tennessee (the headquarters of research for the Manhattan Project) and Adolf Hitler’s mansion.

### How many characters do I control?

There is only one player-controlled character in the game. His name is Andy.

### What is the main focus?

The goal of this game is to “fix” history. For example, one of Andy’s missions is to sabotage the Manhattan Project by stealing Dr. Robert Oppenheimer’s research. This successful completion of this mission, along with a few others, would lead to achieving world peace.

### What’s different?

This is a game where you get to change the past, and therefore the future.

# The Physical World

## Overview

The game has several stages, most of which are indoors. The player must move from room to room, avoiding security cameras and guards, and accomplish his mission. The following describes the key components of the physical world.

**Key Locations**

There are two main locations: the Manhattan Project in Oak Ridge, TN, and Hitler’s mansion.

**Travel**

The character is controlled by the WASD keys. Movement of the mouse is translated into controls for the camera. Pressing the spacebar makes him jump, and pressing “Shift” toggles between crouching and standing.

**Camera**

The camera is attached to the player, and gives a third-person view of the main character and the environment.

**Mini-map**

Another camera is attached to the player and gives a smaller top-down view of the area around him. It only renders a few things such as enemies, walls, terrain, and enemy/camera vision. The enemy and camera field of view is represented by a vision cone which communicates to the player what the enemy or camera can see at all times.

**Lighting Models**

The lighting is relatively low in the scenes, as the character is sneaking around at night.

*Field Agent Training Course (Tutorial Stage)*

The training course is bright and well lit. Strong spotlights make sure that there are no surprises so the agent can focus on his training.

*The Manhattan Project*

The Manhattan Project scene is lit with dramatic spotlights. Each spotlight only lights a small area instead of the whole room, which gives the feeling of an eerie warehouse at night.

*Hitler’s Mansion (Outside)*

The outside of Hitler’s mansion is lit by one directional light, lighting the entire stage. Not much thought was given to simulating day and night, since the level shouldn’t take long enough for that to matter.

*Hitler’s Mansion (Inside)*

The inside of Hitler’s mansion is lit in each individual room, and the lighting varies depending on the intended look and feel of each room.

**Collectibles**

There are two levels with collectible objects: the Manhattan Project stage and the outside of Hitler's mansion. Once all of the collectibles are found in these levels, the player can then move on.

*The Manhattan Project*

In order to complete the level, the player must find all five parts of Dr. Oppenheimer's research. The research looks like glowing pieces of paper. Once collected, the TimeBox will appear and the player can complete the level.

*Hitler’s Mansion (Outside)*

In order to get into the mansion, the player must find five keys. Once all of the keys are found, the player can enter the mansion through the door near the garage.

# Game Characters

## Overview

The characters in the game are Andy (the main character), Sergeant York, security guards, scientists, and people from the Anti-Time Repair Agency.

#### Andy

Andy was yanked from his normal life in 2012. He was just your average college graduate, until he had a chance meeting with the Federal Bureau of Time. The young lad found himself in the heat of one of the FBT’s critical missions. When they needed his help, he answered the call and was initiated as a permanent member of the organization.

#### Sgt. James P. York

Sergeant York was a sergeant back in World War II. The Federal Bureau of Time went back and recruited him in order to give them a tactical advantage during their missions during that decade. He may be retired from active duty, but he is able to provide vital knowledge and training to new recruits of the organization.

#### Security Guards

Security guards patrol the Manhattan Project building. If Andy walks into a security guard’s line of sight, the security guard will begin to chase him. If the guard catches Andy, he will take damage. However, if Andy gets away, the security guard will give up and return to his post.

#### The Anti-Time Repair Agency

At some point, Andy will run into members of the Anti-Time Repair Agency, an

antagonistic group working to stop world peace. There will be some sort of altercation or fight.

**Weapons and Obstacles**

**Overview**

The main weapon used by the main character is called the Time Alteration Device (TAD). This weapon is used to take or give time to people.

#### The TAD

The TAD closely resembles a Ghostbusters backpack. The main character uses the TAD by pointing the nozzle at whoever he wants to give time to or take time away from. Using the TAD on someone will either result in them becoming a baby, or becoming extremely old.

#### Laser Guns

Some enemies are equipped with a laser gun. These enemies are able to shoot at the player at a specified delay of time and accuracy. If the laser beam collides with the player, then it inflicts one unit of damage. If it misses, there is no damage applied.

#### Trip Lasers

Throughout the Manhattan Stage, and briefly in the tutorial stage, there are trip lasers that will alert enemies to your presence. Passing through one of them will cause two new enemies to spawn nearby and chase you, as well as causing all other enemies in the stage to chase you.

#### Security Cameras

In the Manhattan Stage, there are randomly-placed cameras with vision cones that appear on the mini-map. If the player is spotted by one of these cameras, it has the same effect as the trip lasers.

**Single-Player Game**

**Overview**

The single-player mode takes the player through Andy’s missions. The player will need to complete a series of tasks and collect items in order to finish the game.

**Story**

Andy is the newest agent of the Federal Bureau of Time. On his first mission, he makes a critical mistake, changing the course of history and landing him in our 2012 America. In order to make things right again, he must travel back in time to fix history and return home to his timeline.

**Hours of Gameplay**

A full session from start to finish can last up to half an hour depending on the skill level of the player. Several aspects of our game provide replayability, including random placement of security cameras and collectibles.

**Saving and Loading**

There is no option to save progress made in the game.

**Victory Conditions**

Andy must complete all of his missions in order to win.

**Artificial Intelligence**

**Overview**

One key aspect of our game is stealth. The player must be cautious and sneak around the stage in order to succeed. The enemies must have AI that can react to the player’s actions.

**Enemy Behavior**

The basic enemies in the game have a very basic AI. They patrol along a preset route until something interrupts this. This is known as the Oblivious enemy state. This can be interrupted by either the player triggering an alarm, causing the enemy to immediately enter the Alert state, or the player walking into the enemy's range of vision, which initially changes the state to Cautious, and then full-blown Alert if the enemy confirms the player's presence. If the player escapes, then the state is reset and the alerted enemies go back to their regular patrol.

When it comes to attacking, there are two different sorts of enemies: those that continue to pursue until they collide with the player and those that shoot at the player with a weapon. The latter starts shooting when it gets within a certain distance of the player and then continues to pursue the player until it gets within a certain distance. At this second defined distance, the enemy stops and focuses on shooting the player as a normal person generally would.

The enemy AI was also coded in such a way that different aspects of each enemy are contained by public variables that can easily be changed to make each enemy unique. Examples of such variables include an enemy's speed, jump height, hearing radius, and shot accuracy.

**Graphics Design**

**Overview**

The game requires well designed stages for the player to explore.

**Modeling**

*Field Agent Training Course (Tutorial Stage)*

The tutorial stage was entirely modeled in Unity using primitives like cubes and cylinders. The stage has areas filled with water rendered using the simple water asset that came with Unity.

*Manhattan Stage*

The Manhattan stage was modeled in Unity using cubes and planes. The objects featured in the Manhattan Stage were almost all created in Autodesk Maya. Classic Science Fiction films like Lost in Space and historical photos of 1940s-1950s era science laboratories were the main source of inspiration for this stage which is filled with colossal supercomputers, chemistry workstations, and even an atomic bomb.

*Hitler’s Mansion (Outside)*

The outside of Hitler’s mansion is a free model by ERLHN that we downloaded off of TurboSquid. The model was then edited in Autodesk Maya and imported into Unity. The keys were created by Denys Almaral and were also free models that we downloaded off of TurboSquid. The trees on the stage were modeled using Unity’s built in tree generation tool, and the stage terrain itself was generated using the Unity Terrain Toolkit.

*Hitler’s Mansion (Inside)*

The rooms in Hitler’s mansion were each modeled in Autodesk Maya and then imported into Unity. The objects inside of Hitler’s mansion are from a few different sources. All of the furniture in the dining room, the bookshelves on the lower floor, the couches and framed artwork were created in Autodesk Maya. The piano and the stairs were downloaded from TurboSquid, and were created by TripRay Company and Cained, respectively. All other objects such as the upstairs bookcases, the bed, the bathtub and the kitchen countertops and cabinets were downloaded from Archive3D.

*Andy and Enemy Scientists*

The rigged models used for Andy and the enemy characters were obtained from KatorLegaz. Due to some unsupported features of 3D Blender, the models needed to have some of their normals flipped in Autodesk Maya. In addition, the models were animated in 3D Blender.

*Final Boss - Mecha-Hitler*

The final boss was modeled in segments in Autodesk Maya. Because FBX files, the preferred file format for digital content creation, do not support texturing effects like transparent textures, a great deal of the texturing for the model had to be done in Unity. In addition; flamethrower, jet engine, and Gatling gun effects were added to the model to bring it to life.

**Sound Design**

**Overview**

Music and sound adds a whole new layer of experience for the player.

**Music**

*Field Agent Training Course (Tutorial Stage)*

The music in the tutorial stage was composed and recorded by Brett Seekely, music major at The Ohio State University. The song was arranged such that it could play in a loop throughout the duration of the level.

*Manhattan Stage*

The music here is called “Crawl and Hide” and was composed by Tillman Sillescu, and found on freeplaymusic.com. There is also a record player in the library room that plays “In the Mood”.

*Hitler’s Mansion (Outside)*

The background music in this stage is titled “Risky Adventure,” and was composed by Stephen Akina, and found on freeplaymusic.com.

*Hitler’s Mansion (Inside)*

The music for inside Hitler’s mansion is procedurally generated classical music based off of Bach’s Cello Suite no. 1. The algorithm used to generate the music is a combination of a Markov Chain of the Prelude and counterpoint rules.

*Boss Battle*

This piece is called “Operation Eagle”, and was also composed byTillman Sillescu and found on freeplaymusic.com.

**Dialogue**

We were able to record the instructional dialogue for the tutorial level in a recording studio. We then manipulated the recording in Adobe Audition by making it lower and faster-paced in order to more match the tone of the conceptual character. We also added some distortion in order to make it sound as if the speech was coming over the intercom so that the voice could follow the character wherever he went within the level.

**Sound Effects**

We recorded short phrases of dialogue for the guards as well as short exclamations of pain for the main character. We then also recorded a “pew” sound for the beam-based weapons in the game and found a siren sound effect online for the “high alert” mode triggered by lasers and cameras. The tone for the T.A.D. beam is simply derived from a looping sine wave.