

# Computer Games Laboratory

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## Alpha Release



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## Introduction

The last 3 weeks our team was trying to bring together all the separate elements we developed and then make sure there are no loose ends in the core gameplay of the game. After doing that we worked on completing the ending scene and fixing minor bugs that were spotted here and there both from us and from friends that also tested the game and gave us some tips on what to improve/change.

As you will see in more details below, we created three state machines. One for the office scene, in order to create a task oriented tutorial, another for the main farm scene in order to establish an advice/tip flow that would get the player out of difficult situations and the final one for the ending scene in order to trigger the correct events based on the feedback the system gets from the user's movements. We also completed the first version of our voice acting goals, which will probably be improved later on but still works quite well for now. Another thing we came up with for the player to be able to defend himself against the enemy is a simple, but very realistic shooting system, including a gun model, some vfx that is triggered when the bullet hits a target.

This phase of development was quite smooth but a little bit more troublesome than we thought because we came across with more bugs than we expected. They were all solved but we are sure more little bugs will pop up once we start playtesting.

In this document you will be able to read about our progression in :

- Office Scene
- Farmhouse Scene
- Puzzles & Riddles
- Gun & Projectiles
- Ending scene

You will be able to see the table in higher resolution as a separate document.

	Your Low Target	Your Desired Target	Your High Target	Your Extras
Functional Minimum	Your Low Target	Your Desired Target	Your High Target	Your Extras
Interaction	Interaction	interaction	interaction	interaction
Grab And Throw	Combine tools	Use as weapons	Use object - all items	
Use object - item specific (Only what is in the bag + riddle specific)	Use object - more items	Use object - more items		
		Exchange items from one hand to the other		
Navigation	Navigation	Navigation	Navigation	Navigation
Vive Tracking	Use Controller navigation		Space Rotation	
	Teleportation			
Environment	Environment	Environment	Environment	Environment
Office		Bam	Neighbor house	Hospital
	House 7 rooms	Car		
Special Effects	Special Effects	Special Effects	Special Effects	Special Effects
Dialogue/Notebook	Dialogue/Notebook	Events	Weather Effects	Fire
		Dialogue/Notebook	Dialogue/Notebook	Water
		Detective mode		
Audio	Audio	Audio	Audio	Audio
	Sounds of items		Background music	Voice Acting
Puzzles	Puzzles	Puzzles	Puzzles	Puzzles
Single Layer	Double Layer	Triple layer		
Animation	Animation	Animation	Animation	Animation
Hands	Items		Decoration items	Object specific animations
Fighting Mechanism	Fighting Mechanism	Fighting Mechanism	Fighting Mechanism	Fighting Mechanism
		Punches	Guns and health system	
Modeling	Modeling	Modeling	Modeling	Modeling
Riddles only, Case file, bag, bag items	Decoration, Chief	Extra Decoration	Extra Decoration	

## The office

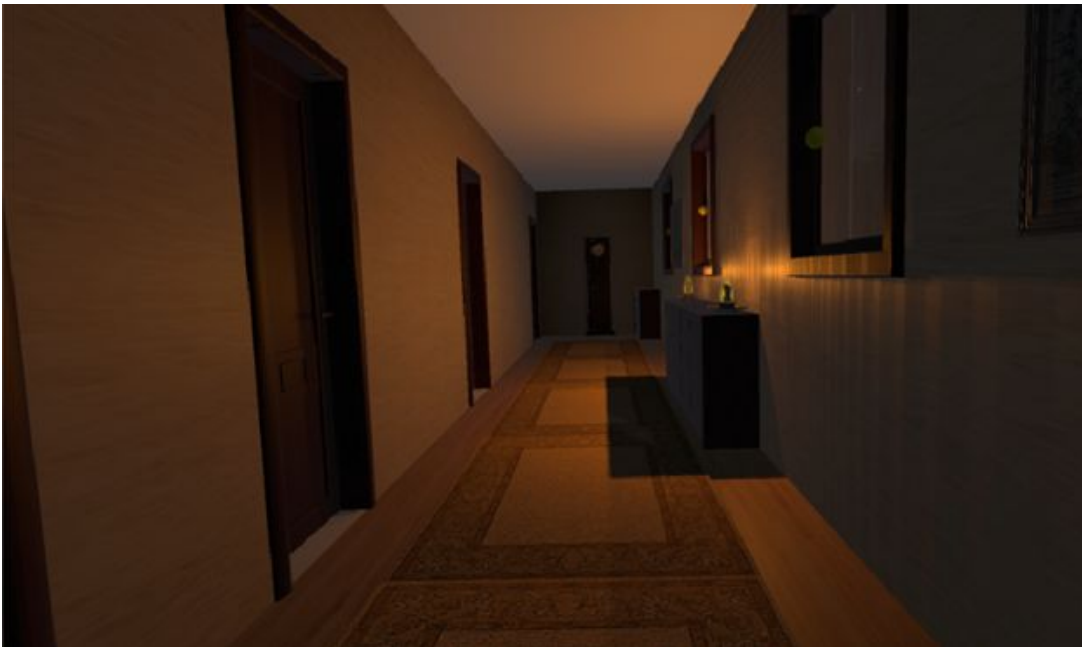
In the Unsolved: Hinterkaifeck, the first scene that opens the game and introduces the player to the dark world of the atrocious crime is taking place in an office. The player is located in the headquarters of Munich's police department, inside the chief's office. This sequence consists the tutorial and the very first introduction to the gameplay and the controls of the HTC Vive. The player, in the role of the famous detective who was assigned to help solving the case, is free to wander around the office, manipulate and interact with the objects that surround him. In that way, the user is getting familiar with the various controls and also takes a small taste of the various combinations that can be achieved with the objects. Furthermore, in enhancing that experience, the player is taking instructions from the chief through an intercom like picking up a book or opening a cabinet so that the player understands the limits & restrictions of the game. So, in order to elaborate at this point, the development of the voice acting that needed for the intercom is completed and the player can complete a few tasks that will help him understand the basics of the game. As mentioned before, these instructions are given through a speaker but towards the end of the scene, a small animation of the chief was created and added and he is walking into the office and talking to the player. The chief is assigning to the player the mission and with the end of this scene, the player is teleported to the next scene which is the main one of the game, the farm and the barn.



## The farmhouse

As soon as the player finishes all tutorial tasks, gets the details of the murders and gets assigned for the case in the office scene, he will move on to the main scene, scene of murder, - the Hinterkaifeck farm. In this part the core gameplay takes place, where the player wanders around the farmhouse, finds clues and evidence, solves the riddles to put everything into one piece and identify the murderer.

For this stage of development, we have finished the farmhouse model where all the main gameplay takes place. The farmhouse model was first drawn by hand on paper, to decide how it should look like, design the rooms, choose where to place different furniture and more importantly all the riddle-related things. Then the farmhouse model was made in Blender and exported into Unity scene.



Then we were in a lengthy process of interior design: finding the appropriate objects (furniture), exporting them into desired format (usually from .max to .fbx, since most models online are in .max format), tweaking them according to our needs, applying the suitable textures onto those objects. After that, there arose a problem. We have put the furniture first, and then decided to apply textures on walls, floors, etc, so that we could set the tone for the game atmosphere. The problem was a miscommunication between Blender and Unity. In order to apply textures for objects in Blender, one has to manually create UV maps for all those objects. Unity has UV mapping by default. It was not obvious until we applied textures on the exported farmhouse model - it was simply not working. Then we had to go back to Blender, apply UV mapping, export it again and redo the previous work of placing objects in the house. Finally, we found and applied textures to inner and outer walls, floors and roof.



After it all looked appealing and convincing for the eye, we proceeded with putting physics inside the game scene. For the simple geometry (walls, floor, and some simple shaped furniture), we applied box colliders so that the player could not go through them like a ghost. For more complex geometry we applied mesh colliders and some were simplified by putting non-rendered collider planes (stairs, tabletop, some wardrobes). For example, the stairs model is very complex with lots of details and applying mesh collider would really drop the frame rate. It actually happened at an early stage. Instead, we put four invisible plane colliders so that the player can still walk on the stairs and the game processing is not severely affected by complex and useless computation. Additionally, we have put rigid body components on the objects that are supposed to be interactive.



The gameplay happens in the night, so we have put lamps and other lighting in each room to create an immersive atmosphere. All the furniture fits the time of the game (1910-1920s); furthermore, we have put wooden crosses in all the habitable rooms to enhance the realism of the farmhouse in the village of Bayern in the early 20<sup>th</sup> century.

As the main story progresses here, the player walks around the house, explores the environment, finds and solves a riddle, and goes to the next one from one room to another. If he is stuck, the hint system in a form of a voice in the head will come to the help. There are scripts to make the objects interactive: doors opening, bottles breaking, baby carriage moving, lights turning on/off, clock hands, safe code, books, keys and padlocks, etc. Most of them are directly related to puzzle solving.



Further work will include putting more objects in the house, but in a more cosmetic way, since all the core objects required for the gameplay are present. Additionally, through playtesting we will mostly discover little bugs and try to resolve them.

## Puzzles

The puzzles are separated into seven big puzzles. Each puzzle has a prerequisite tip, hint to help the user solving the puzzle and proceed in a story section.

### **Puzzle 1:**

Prerequisite:

- The casefile with a patterned torn piece of paper.

Story:

- The paper has on it: I am not feeling safe R:4B:5

Hint:

- The Hint will tell the player to search in Viktoria's room.

Solution:

- The player will start this journey by searching for the diary of Viktoria. He should find the diary in the library of Viktoria's room at row 4 at book number 5. The diary will be locked.

### **Puzzle 2:**

Prerequisite:

- Pattern on the diary.

Story:

- No Story in this puzzle.

Hint:

- The hint says: try to find the matching pattern in the house.

Solution:

- The player will find a room matching the pattern on the diary. There will be bottles of wine on a table, one of them has the key for the diary. The player will smash the bottle to get the key and unlock the diary.

### **Puzzle 3:**

Story:

- The diary will have the following on its last page: I am suspecting the events that happened in the last few days. I decided to run my own little investigation. Honestly, I am not convinced with the idea of metaphysical events...

Prerequisite:

- Then at the end of the page there will be a hint to the next puzzle, time is passing Tik,Tok, Tik ,Tok... 5:10

Hint:

- The notebook will say search for a clock maybe ??

Solution:

- The player will find an old clock. The player will set the time of the clock to 5:10. A compartment will open and a piece of the diary will be found.

### **Puzzle 4:**

Story:

- The piece of paper says: I guess I might have an idea of who may want to harm us. I may sound crazy, but he is more crazy me. I need to verify...

Prerequisite:

- A hint will say twinkle twinkle little star.

Hint:

- Go to the baby's room.

Solution:

- The player goes to the baby room. He finds the baby's car and when he starts to push it, music will play. At the end of the song a compartment will open. A new paper will be found.

**Puzzle 5:**

Story:

- The paper says: I paid a visit to our old maid, After giving her a good sum of money she started to talk. She verified my doubt, it is our Neighbor. He is a creepy guy. He wanted to marry me last year but my father rejected him. He always had an interest in our farm. And now I know that he paid our maid to spread the rumors of ghosts existence. But why all that ? What is the motive ? Need to find the motive before going to the police.. I need to separate my findings across the house in case of any harm catches me.

Prerequisite:

- The eye above sees all and count all.
- A rusty key.

Hint:

- Hint 1: Go To the cellar.
- Hint 2: try to guess the code.

Solution:

- The player goes to the cellar and finds an old safe. He see the eye on the wall looking at the window at the end of the cellar. He looks there and sees the fence is broken into a pattern. He will use the pattern to figure out the numbers and open the sage to find lots of documents.

**Puzzle 6:**

Story:

- The papers says: I found the motive the old ownership and the blueprints you are not gonna believe what I have discovered in the blueprints. Don't expect to find them with the ownership papers. After all we don't throw all the eggs in the same basket, right ?

Prerequisite:

- After all we don't throw all the eggs in the same basket, right ?

Hint:

- NoteBook: what basket ?

Solution:

- The player will go to the father and mother room; there is a basket of easter eggs on the wardrobe. The player need to find something to pick the basket with. He need a long stick. The blueprints are under the eggs.

**Puzzle 7:**

Story:

- No Story.

Prerequisites:

- The Blueprints.
- Notebook go to the big X.

Hints:

- No Hints

Solution:

- The player goes to the barn
- He Will find the hidden tunnel...



## Gun & Projectile System

As mentioned before our game ends when the player figures out who committed the crime and confronts him in the final scene. Part of this event is that the user uses his gun to end the enemy's life as soon as a chance appears. More about the ending sequence is written in the next paragraph. In order for the player to come up with the idea of using the gun we wanted it to be available throughout the whole game and not for it to be a part of an animation. So we expanded the office tutorial to also include a gun usage tutorial and then in the farm scene it can be used at any time.

The gun is an old model that fits 1920 (Makarov) and we animated different parts of it so that it gives a realistic feel when fired. The barrel moves to the back, there is a slight kick and also a muzzle flash. Also we combine it with some haptic feedback in the form of tremble on the controller. For the projectile itself we decided to use a ray tracing method. Whenever the player hits the trigger a ray gets shot from the barrel of the gun. If it encounters an object with a rigid body component then it adds some force to it whereas if it encounters an enemy it applies some damage onto him and some blood splatter particles spawn from the wound.



**Problems:** The only issue we encountered with the gun which is not really a problem is how the user aims. Most people do not know how to aim with a real gun, they are used to normal pc games with cursors and aim helpers, so it can take some time until they realise how to really aim. And also if they do not try that themselves this could cause some frustration and some deaths/failure in the final scene of the game. The fun aspect of it is that everyone realises they are terrible at aiming and that the gun is probably the most realistic asset in the game since it works exactly as in real life.

**Changes:** None, realism is what we are after.

## Ending Scene

The final thing we added to the game is the ending scene. When the user explores the barn for the first time there is a chance that he will get a glimpse of a hatch covered by some hay. When he reaches and solves the final riddle, he will find a blueprint with an X over the spot where the hatch lies. He will quickly understand that this is how the culprit had free access to the house and will head there to investigate. The moment he arrives to the desired spot the hatch will be there but the hay will unveil that someone has been there before him. As soon as that happens the final scene starts with the enemy commanding him from behind to raise his hands in the air. The murderer unveils his plan and threatens the player. During that monologue there will be a moment where the enemy looks away and our player has a chance to shoot him.

The scene consists of a series of events and animations that are controlled by a state machine. The different states follow one another based on the user's actions as well as the monologue progression. For example, after you get commanded to raise your hands, any suspicious movements will cause the enemy to shoot you. A mechanism that resets the whole game to the moment before you enter the hatch was also implemented.

**Problems:** The only thing that in some way makes the scene seem a bit strange is that the voice acting is done by us and none of us have a really clear/strong accent. We will do some further testing though with users that have never played the scene before and see if they feel the same way.



**Changes:** In order to make the ending more exciting we tweaked our original version and added a set of particle emitters that cause the whole barn to burn down after the enemy throws a lantern to the hay stack in order to leave you burn alive. The visuals combined with the slow progression of the fire towards the player give the game the edge that we were after.