Timescape

Game Design Document

Softwarepraktikum

Uni Freiburg WS23

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Group 08

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Inhaltsverzeichnis

1. List of Changes

GDD-Section	Changes
2.1 Game summary	• Added additional information • Reformulated sentences
2.2 Game Summary	• Rewrote text
2.3 Gameplay Loop	• Added section 2.3
3.1 Player Interface	• Changed image to current state of the game and edited image description
3.2 Menu Structure	• Added new Diagram • Removed 'Other Menu", Moved "Statistics" into "Pause Menu", Moved "Techdemo" and Loading Game into "Game Creator Menu", Added options for resolution and fullscreen to "Settings Menu", Made "Achievements Menu" accessible form the "Main Menu"
4.1 Game Development Tools	• Added Photoshop, Latex, Tiled and Overleaf to tools used
4.2 Minimum Requirements	• Added Linux to minimum requirements
5.1 Game Objects	• Added graphics to table. Split "Description" into "Properties" and "Functionality"

5.1.1 Minimum Requirements	• Removed timer from Bat C03 and Rat C02
5.1.2 Minimum Requirements	• Removed Table E05 from Enviroment, added to Interactive Enviroment as O12 • Removed O07 "Lightsource", instead implemented O14 "Torch" • Added O15 "Puzzle"
5.2 Actions	• Changed format for chain of events. • Added AI to missing actions (A01, A07) • Renamed A03 from "dash" to "sprint" • Changed A03 from having a simple timer to having a stamina systemm • Changed wording to be more neutral in Description A05 • Removed A15 as Pause/Unpause • Added A17 "Open chest"
5.3 Game Structure	• Rewrote texts to give more of an inside into the game play
5.4 Statistics	• Removed Best time • Added new statistic
5.4 Achievemetns	• Added best time to achievements • Modified achievement "The Flash"

2. Game Concept

2.1 Game Summary

You wake up in a cold, mouldy dungeon. At first, you don't know where you are; then, you remember that you are a student from the "Technische Fakultät," and you realize that you have traveled back in time to the Middle Ages. Due to your strange appearance and the technological devices you possess, the townspeople accuse you of witchcraft and plan to execute you in the morning. Now, there is only one option left: escape. Luckily, you have aces up your sleeve—two robot pets that almost completely resemble their natural form. They can help you find keys to the exits and get past the guards unnoticed. However, the problem is that you only have one night and one chance to get back to your old life. Now it is up to you to make it through the dungeons and escape your fate. "Timescape" is a 2D Stealth- and Puzzle-Game portrayed in a 3/4-Top-Down perspective where the characters and objects are slightly shown from the side. You jump into the role of a student from the TF who has been captured in the time and space of the Middle Ages, and thrown into the deepest dungeon they had. You now need to advance through three floors to see sunlight again and successfully escape back to your time machine. Not a fighter, you can't use brute force to get out of your predicament. Instead, you will have to rely on your wits to avoid the armed and dangerous guards while solving puzzles that lead you to the keys needed to open the doors that stand between you and the next floor. Are you smart and cunning enough to escape the guards' clutches? Or will your existence be erased?

2.2 Central Game Mechanics

The player controls the traveler, navigating through the levels, and must avoid the guards. Throughout the game, they will discover objects that can be utilized to distract and disorientate, luring the guards to specific areas. As a helpful feature, the player can switch to controlling either the bat or the rat, both of which can access areas beyond the player's reach. Additionally, they possess abilities that aid in keeping the guards at bay, whether by stunning them or creating distractions. Each level presents puzzles that the player must solve. These puzzles either open new pathways for progression to the next level or reward the player with keys essential for unlocking doors, bringing them closer to a successful escape.

2.3 Gameplay Loop

The core loop of the game is avoiding the guards and solving puzzles to get new keys. In detail the loop can be described as follows:

Second-to-Second Gameplay:
The player moves through one Level of the dungeon using sneaking or sprinting in the right moments to keep hidden from the guards.

Minute-to-Minute Gameplay:
The player collects keys or solves puzzles to open doors and new pathways for their escape. They find new objects that can be used to divert the guards attention

Hour-to-Hour Gameplay:
The player gains more and more knowledge of the guard's patterns and learns the puzzles and location of useful objects. They use this knowledge to get faster at winning the game in continuous play-throughs. As an additional incentive, the player can also get achievements for which they will need several play-throughs to attain.

3. User Interface

3.1 Player Interface

Figure 3.1: Current in-game version of the HUD.

Figure 3.1 illustrates a mockup of the player interface during a typical playthrough of the game. The game adopts 2D Pixel Art and employs a top-down camera perspective. In the top right corner of the screen, a timer is displayed, indicating to the player the elapsed time in the current playthrough. At the bottom right corner, the character indicator is present, showcasing which playable character the user is currently controlling (the time traveler, the rat, or the bat). In the figure, a yellow line surrounds the rat, signifying that the player has selected the rat as their active character. When switching to a different character, the corresponding icon of the selected element would be outlined in a similar fashion.

In the bottom left corner, text is visible, indicating to the player the current level they are on. At the central lower end of the screen, the Itembar is depicted, showcasing the player's current inventory items and providing information on the occupied slots within the five available inventory slots.
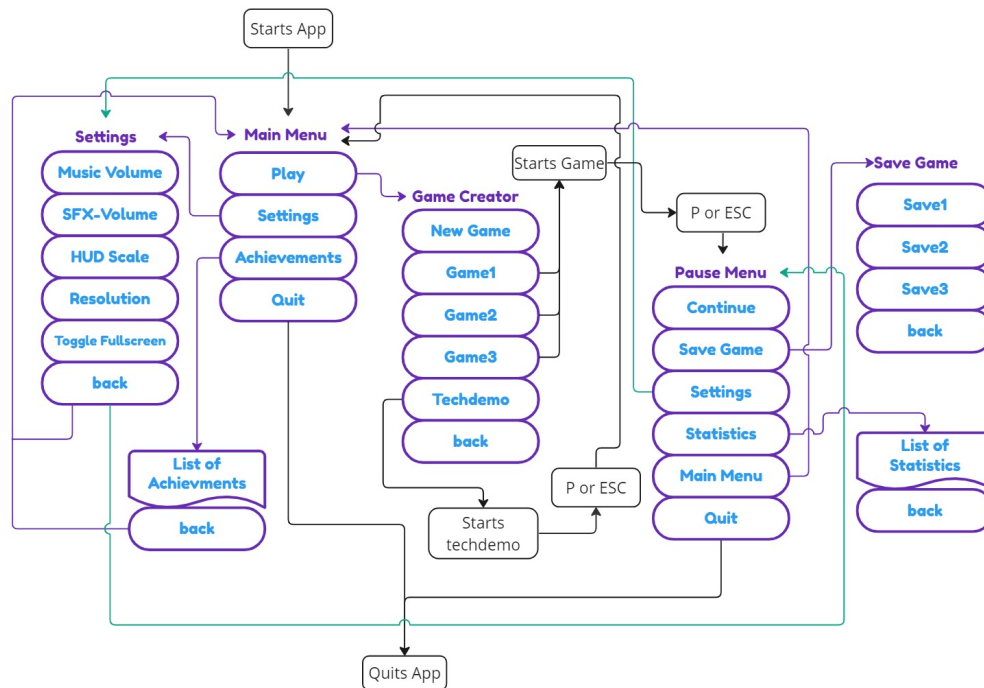
3.2 Menu Structure

Figure 3.2: Diagram representing all menus, the navigation between them and functionalities.

Grouped buttons collectively constitute one menu, and clicking on a button initiates the opening of the menu indicated by the attached arrow. Black buttons (and arrows) signify a state or action not inherent to the menu, such as the P or ESC key being pressed, applicable either in the tech demo or the game. The Rectangles without attached arrows denote selectable objects, such as draggable bars, that do not require a separate window for their function. The inclusion of back buttons allows users to return to the previous menu.

3.2.1 Main Menu

The main menu appears when the game is started. From here, you can do the following things by pressing the buttons in the order of the figure:

- Enter the Game Creator (Menu) to create or load a game

- Enter the Settings (Menu) to change settings

- Enter the Achievements Menu to view Achievements

- Quit the Game

3.2.2 Game Creator

In this Menu you can start a game by either creating a new one or loading one of the three saves. Additionally you can access the Techdemo from here.

3.2.3 Saved Games

In this menu you can save your games current progress to one of the three save files by pressing the corresponding button.

3.2.4 Settings

Pressing on Music Volume, SFX-Volume, HUD Scale or Resolution will open up a slider with which the corresponding value can be altered. By pressing "Toggle Fullscreen" the game will switch it's display mode from fullscreen to windowed or vice versa depending on the initial state.

3.2.5 Pause Menu

You enter the Pause Menu by pressing (ESC) or (P) either in a game or in the tech-demo. Pressing (ESC) again will return you to the game, the "continue game" button serves the same purpose. You can go to the Saved Games and save the game you're playing in a slot provided there. Another option is going to the settings to immediately adjust the gameplay. Finally, you can either exit to the main menu or leave the game directly.

3.2.6   Statistics Menu

In this Menu a list of all tracked statistics of the current playthrough are displayed.

3.2.7   Achievements Menu

Here you can see a list of attained and unattained achievements as well as the progress of each achievement.

4. Technical Specifications

4.1 Game Development Tools

- C#
- .Net 6
- Visual Studio Community 2022
- Monogame 3.8.1
- JetBrains ReSharper
- Gitea
- Tiled
- Google Docs
- Photoshop
- Latex
- Overleaf

4.2 Minimum Requirements

- Windows 10 or Linux
- .NET 6
- Monitor/Display
- Mouse and Keyboard
- CPU: Dual core CPU @ 2.50GHz
- RAM: 8 GB
- GPU: Intel® HD Graphics 630

5. Game Logic

5.1 Game Objects

Tables 5.1, 5.2, and 5.3 show detailed listings of all objects in the game. The tables show the Object with the corresponding ID and name and also a description of the properties and functionalities of each object. Alongside that, the table also contains graphic assets to showcase how the objects will likely look in the finished game.

5.1.1 Characters

Table 5.1 shows a list of characters in the game. Characters are all the objects that have a part in the game's story.

ID/Name	Properties	Functionality	Graphic
C01/Traveler	The Traveler is the main character of the game, they can sneak, sprint, and interact with objects. They have to reach the end of each level to advance. If the traveler is caught, the game is over.	controllable, collidable, movable	
C02/Rat	The rat is one of the traveler's companions. The rat can reach areas the traveler can't. It can also stun the guards.	controllable, collidable, movable	
C03/Bat	The bat is one of the traveler's companions. It can reach areas the traveler can't and can interact with objects outside of the player's reach.	controllable, collidable, movable	
C04/Guards	The guards are controlled by the AI; they try to find and catch the player. The guards have a limited field of vision, shown by a cone in front of their heads. The guards can hit the player to kill them.	controllable, collidable, movable	
C05/Inmate	At the start of the game, the inmate is in a prison cell with the player. He is not controllable by the player or the AI. When interacting with him he will display messages.	controllable, collidable, movable, selectable	

Table 5.1: All characters in the game and their description.

5.1.2 Environment

Table 5.2 shows objects classified as non-interactive. These are static objects that the player can't interact with. They are part of the map either as obstacles or as decoration.
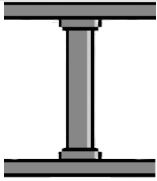
ID/Name	Properties	Functionality	Graphic
E01/Wall	The wall is a collidable object; it is used to seal off the level. No other object can pass through it.	collidable	
E02/Bars	The bars are a collidable object. The traveler, the guards, and the bat can't pass through them. However, the rat can pass through.	collidable	
E03/Floor	The floor is not collidable with any of the characters; it is a free space on which they can stand.		
E04/Water	The water is a collidable object on the floor of the map. Only the bat can fly over it.	collidable	

Table 5.2: Objects in the Environment

5.1.3 Interactive Environment

Table 5.3 presents a list of all interactive objects in the game. Interactive objects are those that the player can interact with to change their properties or that can themselves influence other objects.

ID/Name	Properties	Functionality	Graphic
O01/Door	A door is an object. It can be opened or closed. A key is needed to unlock a door.	collidable, selectable	
O02/Chest	The chest holds an item that the player attains interacting with the chest.	collidable, selectable	
O03/Crate	Crates can't be opened. They can be moved around the room as long as they're being grabbed.	collidable, selectable, movable	
O04/Drawbdridge	Drawbridges are needed to walk over water. A lever has to be triggered to control the bridge.	collidable	
O05/Lever	Levers can be used to control the bridges.	selectable	

Table 5.3: Interactive Objects

O06/Exploding Barrel	The player can activate the exploding barrels by interacting with them, initiating a timer. Once the timer concludes, the barrel explodes, causing the guards to run to the location of the explosion. This can be used tactically to distract the guards.	selectable, collidable	
O07/Empty Barrel	The player can interact with empty barrels in which they can hide from guards.	selectable, collidable	
O08/Key	Keys can be collected and used to open doors. They can be found lying on the floor, in chests, or on tables.	selectable	
O09/Stairs	Stairs are a collidable object. When using them, the player moves to the next level.	collidable	
O10/Ladder	Ladders are positioned throughout the map. The player can interact with them to access elevated areas.	selectable, collidable	

O11/Vase	The vase is an object found on shelves throughout the map. When pushed, it breaks and makes a noise, alerting the guards.	selectable, collidable	
O12/Table	The table is a non-collidable object for the bat. Tables can have items lying on them.	selectable, collidable	
O13/Flintstone	Flintstones are items that can be found on tables. They are needed to light torches and ignite explosive barrels.	selectable	
O14/Torch	Torches can be lit by the player if they possess a flintstone. Torches are part of puzzles or serve a decorative purpose..	selectable	
O15/Puzzle	Puzzles are a grouping of various objects that monitor the state of other objects. If the required state of those other objects is reached, the puzzle will be solved, and it will give a reward to the player. An example of a puzzle might be to light the right combination of torches to unlock a new pathway.		

5.2 Actions

ID/Name	Actors	Chain of Events	Initial Condition	Completion Condition
A01 Walk	Player, AI	**For the player:** 1. The player presses the **W,A,S,D** keys. 2. The selected character moves. **For the AI:** 1. The AI sends a new Position to a Guard. 2. The guard calculates a path. 3. The guard moves along that part to it's endposition.	**For the player:** The player controls either the rat or the traveler as long as there is no object with which it could collide. **For the AI:** A path from the current position to the destination exists.	**For the Player:** The player has moved in the intended direction. **For the AI:** The guard has arrived at the given location.
A02 Sneak	Player	1. The player presses the **CTRL** key. 2. The traveler toggles in or out of sneak mode.	The player controls the traveler. **To sneak:** The traveler is in walking mode. **To stand up:** The player is sneaking.	**To sneak:** The player is in sneak mode. **To stand up:** The player is in walking mode.
A03 Sprint	Player	1. The player holds down the **SHIFT** key. 2. The player goes into sprinting mode and their speed increases.	The player is controlling the traveler. The traveler still has enough stamina.	The player stops pressing the key or rouns out of stamina and is returned to walking mode.

Table 5.4: Table of Actions

		1. The player moves behind a guard. 2. The player presses the **SPACE** key.	The player controls the rat. The rat is standing close to a guard. The rat has not been noticed by the guard.	The rat has bitten the guard and the guard is stunned.
A04 Bite	Player			
A05 Ignite Barrel	Player	1. The player presses the **SPACE** key. 2. The barrel is activated and a timer of 5 seconds start. 3. The timer ends and the barrel explodes. 4. All guards in the immediate area have received the barrels position as their next position to move to.	The player is controlling the traveler and is standing near an exploding barrel. The player is in possession of a Flintstone.	The barrel has exploded. The guards have been called to the position.
A06 Hide	Player	1. The player presses the **SPACE** key. 2. The player moves in or out of the barrel. When inside, the traveler is invisible to the guards.	The player is controlling the traveler. **To get in:** The player is standing near an empty barrel. **To get out:** The player is inside of a barrel.	**To get in:** The player is hidden in the barrel and invisible to the guards. **To get out:** The player is outside of the barrel.

		For the player: 1. The player presses the SPACE key near a door. The player opens/shuts the door. For the AI: 1. A guard moves towards a door. 2. The guard opens the door. 3. The guard walks through. 4. The guard closes the door.	For the player: The player is near a door. The door is unlocked. For the AI: A guard is moving through a door.	For the player: The door is open/closed. For the AI: The guard has moved through the door. The door is closed.
A07 Open or Shut Door	Player, AI			
A08 Fly	Player	1. The player presses the W,A,S,D keys. 2. The bat moves.	The player controls the bat. There are no obstacles in the desired path.	The player has moved the bat in the intended direction.
A09 Move Crate	Player	1. The player presses the SPACE key to select a crate. 2. The player presses W,A,S,D to move the crate.	The player is controlling the traveler. The player is standing near a crate. There is no obstacle in the direction of movement.	The player has moved the crate.
A10 Ignite or Extinguish Torch	Player	1. The player presses the SPACE key. 2. The player ignites/extinguishes a torch.	The player controls the traveler. The player is in possession of a flintstone. The player is standing near a torch.	The torch is ignited/extinguished.

A11 Pick up Item	Player	1. The player presses the **SPACE** key. The item is moved into the player's inventory.	The player controls the traveler or the rat. The player stands near an item he can pick up. The player has free inventory slots.	The item has been moved into the player's inventory.
A12 Flick Lever	Player	1. The player presses the **SPACE** key. 2. The lever is toggled.	The player is controlling the traveler. The player is standing near a lever.	The lever is flicked and the object the lever is controlling is deactivated/activated.
A13 Climb	Player	1. The player presses the **SPACE** key. 2. The player moves to the ladder's endpoint.	The player is controlling the traveler. The player is near a ladder.	The player has moved to the ladder's endpoint.
A14 Hit	AI	1. The guard moves towards the rat. 2. The guard is close enough and hits the rat.	The guard has to spot the rat inside its view cone. The guard must not be stunned before this action.	The guard has hit the rat.

		1. The player presses the TAB key. 2. The next character in the line is cycled to.	**For the rat:** The rat has not been stunned.	The player has switched to a different character.
A15 Switch character	Player			
A16 Unlock Door	Player	1. The player presses the **SPACE** key. 2. The door is unlocked 3. The door is opened,	The player is controlling the traveler. The player has the right key that fits the door.	The door has been unlocked, and the door has been opened.
A17 Open chest	Player	1. The player presses the **SPACE** key. 2. The chest is opened. 3. The item inside the chest is moved into the player's inventory.	The player is controlling the traveler. The player's inventory is not full. The player is standing near an unopened chest.	The chest is opened, and the item is transferred to the player's inventory.

5.3 Game Structure

5.3.1 Early-Game

At the start of the game, the player and their two companions are locked inside a prison cell. Here, the player will need to use the rat's abilities to get the key needed to escape the cell. In the cell itself, the player can consult the inmate who might randomly give the player helpful tips while talking to him.

Outside of the cell, the player then needs to avoid the first guards while moving towards the first puzzle. Along the way, the player can collect items, which will be vital later on to solve those puzzles. The player also has to find the necessary keys to unlock doors and further make their way through the level.

In the first level, they will encounter two puzzles, during the latter of which they will have to ignite the right combination of torches to open up the way to the second level. The first level is generally lower-paced with a lower number of guards to keep track of. The player can focus on learning how to interact with the objects and use the abilities of all their characters.

5.3.2 Mid-Game

When the player enters the second level, the difficulty increases due to a higher number of guards. The player now has to actively use the rat's bite mechanic as well as the bat's distraction mechanic by pushing vases to divert the guards from their path. New objects like the crate will also be introduced as part of the two puzzles in this level. While the player is trying to solve those puzzles, the pressure is increased, in comparison to the first level, by the guards patrolling the puzzle rooms.

5.3.3 Late-Game

The third level is the last level the player has to face. Here, they will encounter the highest difficulty in the game. The number of guards is again increased. Additionally, the player will face puzzles at this level that involve the guards themselves. So, the player has to closely observe the guards' patterns instead of simply avoiding them

5.4 Statistics

The following statistics are recorded during the game and displayed at the end of the game or accessible in the pause menu:

- Time required to escape in a play through

- Number of guards the rat has bitten

- Number of vases the bat has pushed

- Number of times the rat got caught

- Number of the times the player has switched characters

5.5 Achievements

While playing the game, it is possible to achieve various achievements to increase the replay value. The following achievements can be obtained:

- **Michael Scofield:** The player has beaten the game 20 times.

- **A life? I don't have one:** The player played has spent more than 5 hours in the game.

- **Rat King:** The player played as the rat 50 times.

- **Bat Man/Woman/Person:** The player played as the bat 50 times.

- **The Flash:** The player has beaten the first level in under 2 Minutes.

Alongside those achievements, the Achievements Menu will also display the player's fastest time of all their walkthroughs.

6. Screenplay

6.1 Backstory

The year is 2025. In the city of Freiburg, Germany, a student experiences a mishap in one of the labs of the infamous Technische Fakultät: a time machine that they were working on malfunctions and transports them through time and space into the unknown. Unsure of what has happened, they take out their smartphone to light their surroundings. 'What is that sorcery?', a guard cries out: he has spotted the time traveller and their "magical" device. 'You must be punished for using demonic powers! You shall be burnt at the fire come dawn!', he says, knocking over the traveller, and everything goes black.

6.2 Story

The time traveller suddenly wakes up in a dungeon, and they discover what they have been fearing: they have travelled to the Middle Ages. Luckily, the time traveller's loyal robot companions are by their side, a friendly rat and a cunning bat. Layers beneath the earth, in darkness, torches light up the walls with menacing fire. Looming guards move around the hallways, ready to recapture anyone who dares to get in their way. Once the traveller gets used to their surroundings, they have only one goal in mind: to get out and return home. The road ahead is rough: our hero will encounter puzzling enigmas waiting to be solved, all whilst avoiding the dangers of the prison. Will the three of them be able to escape? Or will they be killed at the prime of their life, misunderstood as intruders, in a place that deprives them of their humanity and dooms them for their intellect, a place so cold and far away from what they know? That is up to you. If you stay determined through the tumultuous encounters with unrelenting guards, having to get up again and again, and mastering puzzles, you finally manage to make it to the top floor. The exit stands before you; hesitating, you start heading towards it and open the door with 18 trembling hands and discover the glimmer of the midday sun washing away the cold and darkness of the all-too-recent nightmare. You find yourself in a forest and after some walking, you remember: this is the forest where you first landed. Frantically, you start searching for the cursed invention that started all of this: your time machine. A sun ray bounces off something metallic, and you realize you have found your ticket back home. You have to hurry: you can't miss your maths exam again.