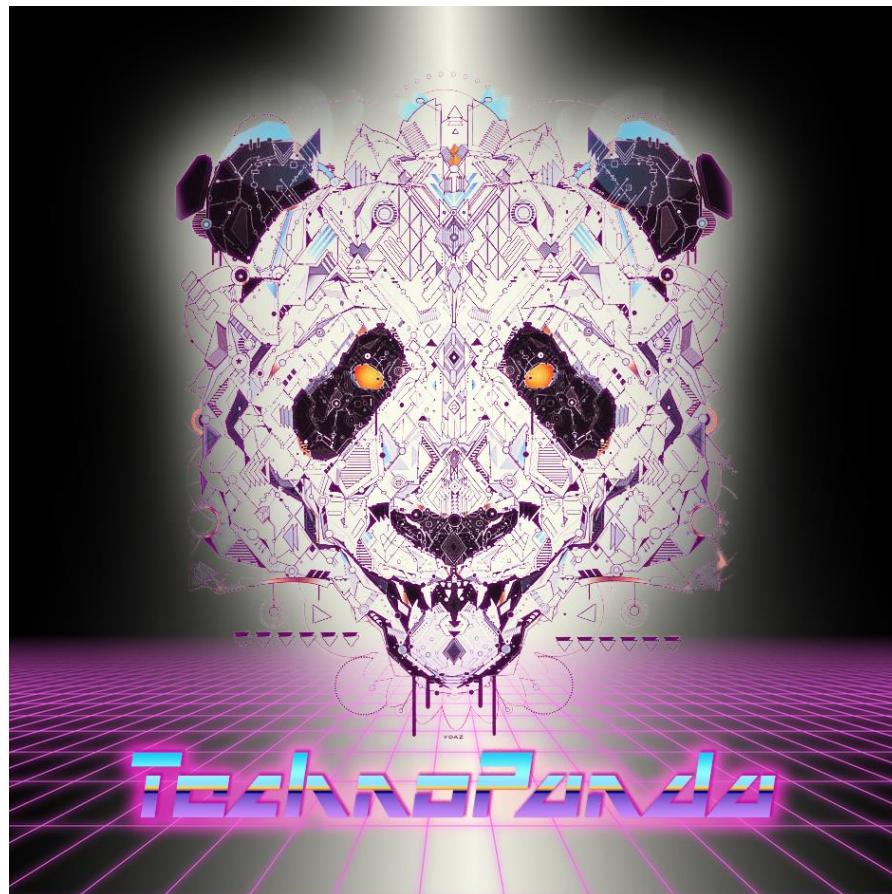




# GAME DESIGN DOCUMENT

TECHNOPANDA | ONLINE GAME DESIGN 2017-2018





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## **Design History**

[Version 1.0 dated 04/06/2018]: First version

[Version 1.1 dated 04/15/2018]: Added the courier and token mechanic

[Version 1.2 dated 04/23/2018]: Defined the business model and the rewarding and levelling systems; Added characters' special abilities and the shield tool; Reworked the token mechanic, the game start and the spawning of tools

[Version 2.0 dated 05/07/2018]: Defined the in-game AIs; Added the interfaces, the HUDs, a detailed description of the map, reference images for the 3D artist, the commentator (NPC), some new tools (laser rope, sticky sound device) and some new environmental-interactable objects (turrets); Modified the mine; Reworked the time steal attack; Removed the bomb tool.

[Version 3.0 dated 06/08/2018]: Defined tool crates spawning system; Added top competitors players data Added commentator and Time Stars quotes tables; Added rewarding system, levelling formula and list of achievements; Added new arenas and totems concept; Added storyboard appendix; Updated Hud section, reworked structure of game character section

# **Vision Statement**

## **High Concept**

Year 2980

Time is the most important resource on the planet and everybody wants to gain more of it. "Time Stealers" has soon become the most played and viewed virtual reality sport in the world, in which you can compete in anxious deathmatches set in natural environments where your life is time itself.

Relying on your animal instinct, join the most frenetic, stealthy-centered battle of 2980 where every second matters and be aware of your opponents that may sneak behind you to steal your time.

## **Introduction**

"Time Stealers" is a multiplayer online action game in third person with stealth core mechanics where 4/6 players battle each other inside an arena. Time passes for every player at a fixed rate, so they must regain it interacting with the opponents. It's literally a fight over the "time".

Because "Time Stealers" is set as a popular VR sport in a futuristic society, its gamers are in a stadium and plays through an avatar in an arena created around a real, natural environment such as a forest. In the arena, players can clearly hear the voice of a commentator and the screaming public that is viewing the match from big screens in the stadium. Due to the nature of the environments in which the arenas are set, players will encounter characteristic flora and fauna. Every arena is closed by virtual walls and a dome in which there is a big scoreboard that shows the remaining time of every player.

The game has a low poly style with an overall dark atmosphere, but full of neon lights to not overwhelm the players with anxious elements.

Sounds will be very important; from the audio effects to help the player find his opponents, to the soundtrack which will enhance the experience and hint the player about his status (time condition, etc.).

The game aims to make the player experience a battle in which the stealth component is predominant, but without losing in action. "Time Stealers" players should feel like they're competing in an anxious and frenetic sport under the constant presence of a cynic sport commentator and exalted spectators.

The experience we want to convey is oriented at "The Hunger Games" and inspired by a mixture of modern games based on that movie series like PUBG and Fortnite with the match velocity and ability usage of popular shooter games such as Overwatch.



## **Logline**

Don't waste time, steal it!

## Gameplay Synopsis

Joining a forest arena, the player must battle against 3/5 opponents in third person fast free-for-all deathmatches.

There's a different concept of "killing": the life of each player is measured in time and the last one remaining in the arena with some time left wins. Indeed, the main resource in the game is time, i.e. the player itself, that is connected to all the major game mechanics.

The game is symmetrical, i.e. every player starts with the same amount of time, the same abilities and without equipment. The player can get the latter from tool crates which spawn in the map at specific moments. Each player has its own totem and an animal spirit which is represented on it.

With a range attack, time can be stolen from other players to get an advantage; tools can be used to set ambushes or deal damage and interactable objects in the environment to set traps or gain bonuses.

During the game a flying robot spawns in the map to deliver a token to its center. Players can get the token from the courier or from another player who has it to activate one totem in the arena. The activation of a totem triggers the special ability of the animal on it and, if it corresponds to the player one, the effect is powered up.

Given that above, the player must wisely study his opponents' moves and the environment to play carefully and stealthy while not running out of time. This is the key feature of the game that should enhance the stealth experience we want to convey.



Figure 1 - Reference image for the forest arena



Figure 2 - Reference image for a futuristic forest arena

# Audience, Platform, and Marketing

## Target Audience

### Demographic classification of players

At a first analysis, given the competitors we have identified in the following section, our target audience is composed by a majority of young male adults 18-30 that are studying or working and wants to take a break playing fast matches in not too long play sessions.

The analysis has been made using Facebook Analytics Audience Insights<sup>1</sup>, considering people from the United States, China, Japan and from the main countries in Europe. We consider young adults (18-30) from West Europe countries and United States as our principal buyers.

We estimate to sell an amount of 21k copies of "Time Stealers" at the cost of 14,99 € per unit. We have considered our cost of production estimated around 200k and 200k users active per month. in the technical design document.

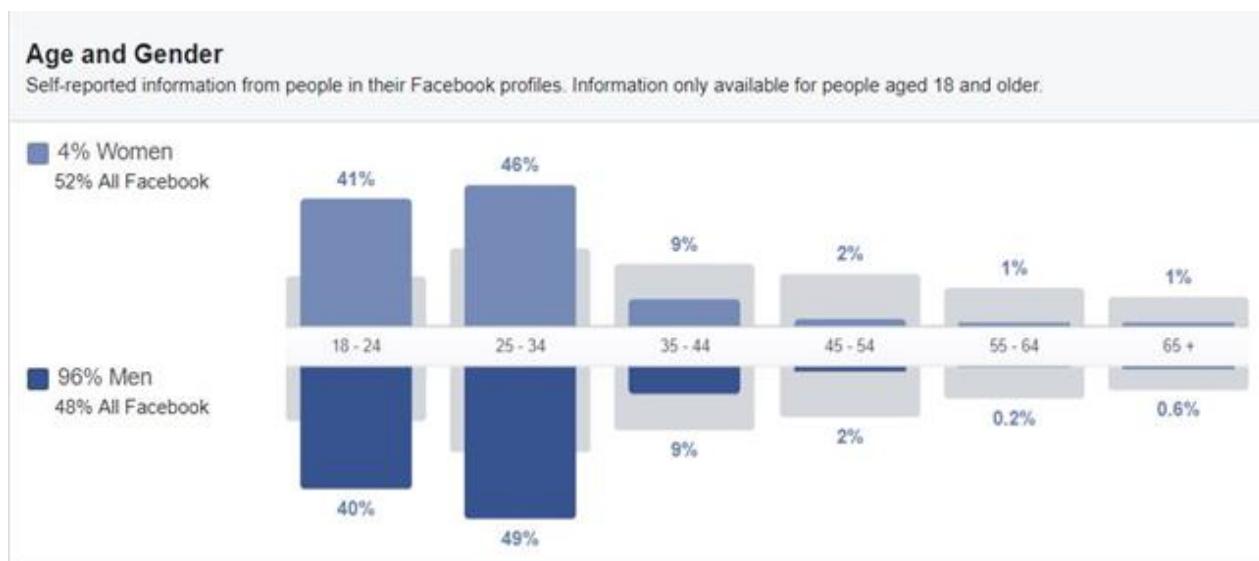


Figure 3 - PlayerUnknown's Battleground (PUBG)'s Facebook Insights analysis

Number of active monthly users on Facebook who play PUBG:

- Age 18-30: 150-200k
- Total users: 200-250k.

Peak of Steam's concurrent players as May 2018: 2.1 Millions<sup>2</sup>

<sup>1</sup> <https://www.facebook.com/ads/audience-insights/>

<sup>2</sup> <http://steamcharts.com/app/578080>

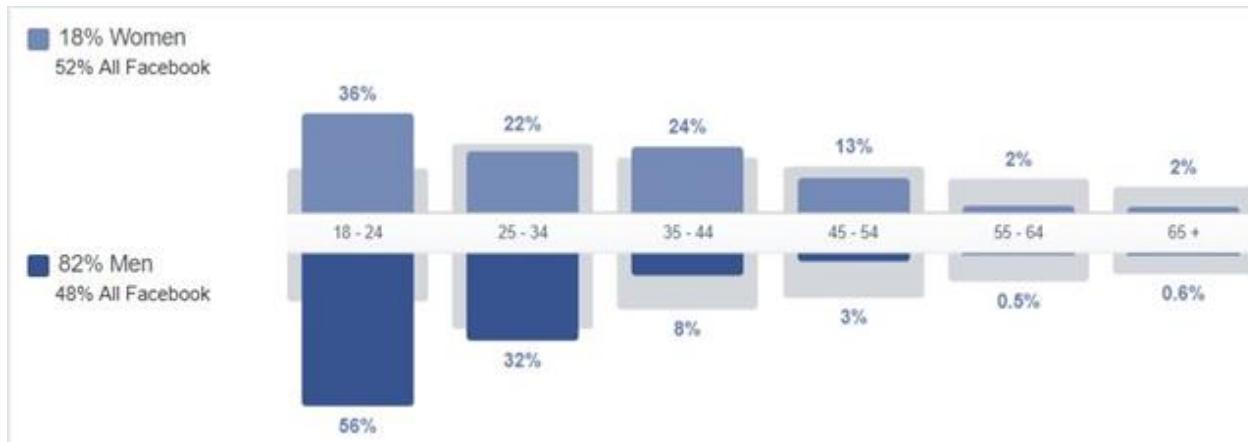


Figure 4 - Fortnite's Facebook Insights analysis

Number of active monthly users on Facebook who play Fortnite:

- Age 18-30: 6 - 7 Millions
- Total users: 8 – 9 Millions.

Total number of Players as January 2018: 45 Millions<sup>3</sup>

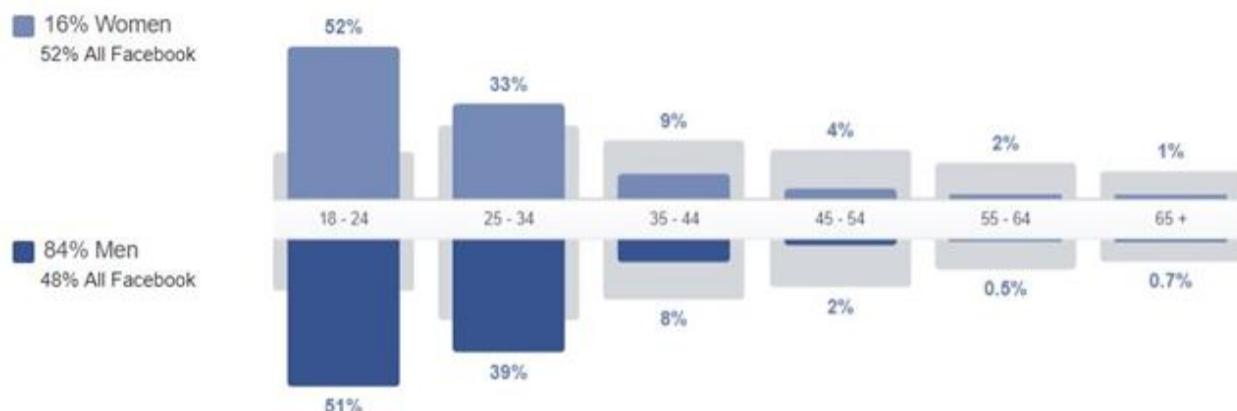


Figure 5 - Overwatch's Facebook Insights analysis

Number of active monthly users on Facebook who play Overwatch:

- Age 18-30: 1 – 1.5 Millions
- Total users: 1.5 – 2 Millions.

Total number of Players as May 2018: 40 Millions.<sup>4</sup>

<sup>3</sup> <https://www.pcgamesn.com/fortnite/fortnite-battle-royale-player-numbers>

<sup>4</sup> <https://www.pcgamer.com/overwatch-has-more-than-40-million-players/>

## **Psychographic classification of players**

In the following graphic we show how much "Time Stealers" is related to each type of players in the Bartle Taxonomy. Each category of players is ranked with range between 1 and 5.

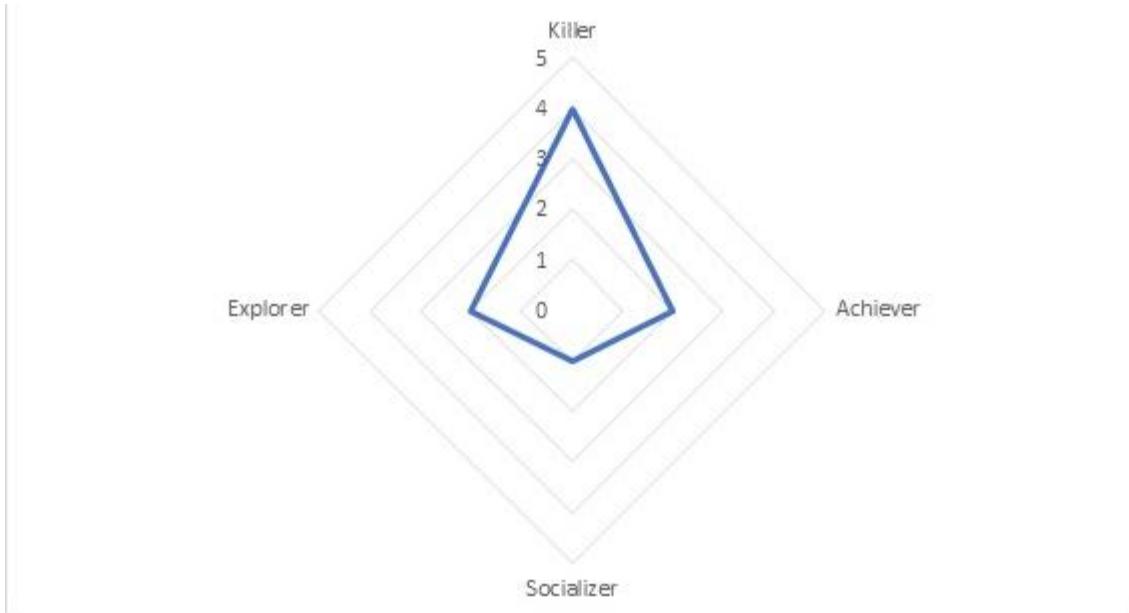


Figure 6 - Time Stealers' Bartle taxonomy

Killer 4/5: "Time Stealers" was created keeping in mind killer players as the main target. Tools and abilities available to players are used to damage others and to steal or subtract them time, with a stealth modality.

Explorer 2/5: The explorative component is important because the player must interact with the environment to escape from an attack or preparing an ambush. Landmarks in the map (like light rays to identify where the totems are) are very important to take gameplay decisions, e.g. choosing which totem to activate.

Achiever 2/5: At the end of each match players gain seconds, usable as an in-game currency to buy new skins and other things (see "Business model" section). They also gain experience, and of course prestige, which calculation is based on how they have played in the match. (see "Rewarding and levelling systems")

Socializer 1/5: "Time Stealers" is not a game for socializer players. In fact, being an action stealth game where players are all against each other does not require communication at all.

## Personas

<b>Luca</b>  "I'm dying to have more time to play, but I can't stay up all night"		
<b>Age:</b> 27		
<b>Location:</b> Milan, Italy		
<b>Occupation:</b> Junior data scientist		
<b>Goal:</b>  Play fast-matches online to relax after work		
<b>Background:</b>  Luca was a hardcore gamer when he was studying at the university. He lives with his roommates in an apartment in Milan, and since he has started to work full time he has not enough time to play long session of Dota2, his favorite MOBA. In the weekend he spends his spare time playing video games but, during the week he needs to take a break playing fast matches after dinner.		
<b>Games:</b>  Dota2, Overwatch, Team Fortress 2, Assassin's Creed: Origins		

<b>Sarah</b>  "I love to play different games genres and titles to live different experience. I'm addicted to games with stylized graphic"		
<b>Age:</b> 22		
<b>Location:</b> Hamburg, Germany		
<b>Occupation:</b> Pharmacy student		
<b>Goal:</b>  Play fast matches to enjoy different types of experience		
<b>Background:</b>  Sarah is a pendular student, who lives close to Hamburg with her parents. She usually spends her time playing games with her friends in her hometown using a console or playing board games. She plays every kind of games but gives to the visual aspect a lot of importance. She tends to play games with a stylized/toon graphic style. She has started playing online games with PC after she has met people at the University. Because she prefers playing long sessions with her hometown friends, she doesn't spend too much time online and prefers to join fast matches.		
<b>Games:</b>  Splatoon, Overwatch, Arcadia quest, Super smash bros Wii U		

<p><b>Nick</b></p> <p>"I don't care about waking up tomorrow. I want to play all night" "</p>	
<p><b>Age: 18</b></p> <p>Location: Liverpool, UK</p> <p>Occupation: Student</p>	
<p><b>Goal:</b></p> <p>Master every kind of action game.</p>	
<p><b>Background:</b></p> <p>Nick is a student who lives in a flat in Liverpool with his mother. As a student, Nick has more spare time than other gamers and he spends the most of it playing video games. He is a competitive gamer, who plays a variety of action and team-based games with his many online friends. He often like to switch game titles and demonstrate that is the best player. Out of all there is not a game in which he can define himself a hardcore gamer.</p>	
<p><b>Games:</b></p> <p>Fortnite, PUBG, Call of duty, etc.</p>	

## **Platform**

The platform for which the game will be developed is PC. The development for mobile platforms has been excluded because the gameplay and the controls don't fit well on them. System requirements have also influenced that choice. The development for consoles like Xbox One, PS4 and Nintendo Switch has been excluded after an evaluation of the pros/cons for an Indie team to deliver a game on those platforms.

### **System requirements**

"Time Stealers" requires a PC with the following minimum HW requirements to run the Unity 2017 engine:

- Processor: Dual core x86/64 Intel/AMD with 2 GHz or more
- Graphics: GeForce GTX 560+ or ATI Radeon HD 6xxx+
- RAM: 4GB+
- Storage: 4GB+ available on disk

and, also:

- an audio card
- one mouse and keyboard or one gamepad
- an internet connection

"Time Stealers" also requires the following SWs:

- OS: Windows 7 SP1+, 8, 10, 64-bit versions only; Mac OS X 10.9+; Steam Machines.
- Steam client

# Marketing

## Top performers

PlayerUnknown's Battleground (PUBG)



Figure 7 - In-game screenshot from PUBG

Developer: PUBG Corporation

Platform: PC, Xbox One, Mobile

Release: December 12, 2017

Description:

PUBG is a multiplayer online action game in which up to one hundred players fight in a battle royale game mode. Players can play alone, or with a small team (up to four). The last person or team left alive wins the match which, on average, lasts no more than 30 minutes. Players can play using the first-person or third-person perspective.<sup>56</sup>

Players will enter a last-man-standing battle where they try to locate weapons, vehicles and supplies in a graphically and tactically rich battleground that eventually forces players into a shrinking play zone as they engage in a tense and spectacular fight to the death. During the match there are some random events that pose a threat to players or give them a possible help such as loot boxes air drops.

At the completion of each round, players gain in-game currency based on some in-game stats. The currency is used to purchase crates which contain cosmetic items for character or weapon customization.

Right now, PUBG is one of the most played battle royal game in the world with over 1.5M CCU and a direct concurrent of Fortnite.

<sup>5</sup> <http://playbattlegrounds.com/overview.pu>

<sup>6</sup> [https://en.wikipedia.org/wiki/PlayerUnknown%27s\\_Battlegrounds](https://en.wikipedia.org/wiki/PlayerUnknown%27s_Battlegrounds)

### Fortnite Battle Royale



Figure 8 - In-game screenshot from Fortnite battle royale

Developer: Epic Games, People Can Fly

Platform: PC, PlayStation 4, Xbox One, Mobile

Release: July 25, 2017 (Paid-for early access)

Description:

Fortnite Battle Royale is a free-to-play multiplayer online game in which up to one hundred players fights in a battle royale game mode. The goal is to be the last player (or team, if playing in small squads) alive by killing or avoiding other players.<sup>7</sup>

Parachuting in a shrink-over-time map, players must look for items which are randomly distributed in the map. Players can also loot defeated enemies for equipment. Random supply drops will occur during a match, providing random weapons and items.

Fortnite Battle Royale's primary distinction from other battle royale games is the building system. Nearly all objects in the environment can be broken down into basic materials (wood, stone, and metal), which can then be used to build fortification and objects to help traverse the map, protect the player from gunfire, or slow down progression of other players.

"V-Bucks" is the game's internal currency. Can be bought through micro-transactions and can be used to buy cosmetic improvements to the player or accelerate the rate at which a player increases their Tier within the game's "seasons".

Now, Fortnite is the most played battle royal game in the world. On February it broke the record of the most concurrent active players previously held by Dota2, bringing it to over 3M CCU. This result has been achieved thanks to the building system and a fresh graphic style.<sup>8</sup>

<sup>7</sup> [https://en.wikipedia.org/wiki/Fortnite\\_Battle\\_Royale](https://en.wikipedia.org/wiki/Fortnite_Battle_Royale)

<sup>8</sup> <https://www.epicgames.com/fortnite/en-US/news/postmortem-of-service-outage-at-3-4m-ccu>

### Radical Heights



Figure 9 - Promo image of Radical Heights

Developer: Boss Key Productions

Platform: PC

Release: April 10, 2018 (Early access) (In development)

Description:

Radical Heights is a multiplayer online battle arena shooter in which players fight to remain the last one in a 80's themed action game show. The goals of each match are to remain the last one and to accumulate more cash. The match begins with players in freefall over a map arena that uses a GRID Closure System to reduce the dimension of the safe area over time to force players into tight and tighter engagements. If players are skilled enough, they'll be a part of the Shootout Showcase. When all the GRID squares close except for the final one, a gigantic truss lowers from the top of the dome, the lights dim, and a spotlight is cast on the final contestants.<sup>9</sup>

Radical Heights introduces a lot of creative and iconic gadgets and a BMX bike as in-game vehicle (available for all the players).

There is a ranking system that is based on how much cash players have. Cash can be gained in game and is carried over the matches to let the player increase it and buy cosmetic items from the main menu.

<sup>9</sup> [http://radical-heights.wikia.com/wiki/Radical\\_Heights](http://radical-heights.wikia.com/wiki/Radical_Heights)

## Overwatch



Figure 10 - In-game screenshot from Overwatch

Developer: Blizzard Entertainment

Platform: PC, Xbox One, PS4

Release: May 24, 2016

Description:

Overwatch is a team-based multiplayer online FPS in which two opposing teams of six players each fight on a map to reach their own goal and defeat the enemy squad. Overwatch provides multiple game modes such as payload, capture the flag or control point with different maps for each mode.<sup>10</sup>

At the start of a match, players select one character, known in-game as "hero", each with a unique style of play, whose roles are divided into four general categories: Offense, Defense, Tank, and Support. Matches are very fast, and all the heroes' abilities have low cooldowns so the game it's very fast-paced.

Players gain cosmetic rewards that do not affect gameplay, such as character skins and victory poses, as they play the game. These cosmetic items can be found in loot crates that can be obtained by purchasing them or levelling up.

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<sup>10</sup> [https://en.wikipedia.org/wiki/Overwatch\\_\(video\\_game\)](https://en.wikipedia.org/wiki/Overwatch_(video_game))

## Features comparison overview

Features	PUBG	Fortnite Royal	Battle	Radical Heights	Overwatch	Time Stealers
<b>Genre; Gameplay mode</b>	Battle royale	Battle royale	Battle royale	Team based FPS	Action-Stealth; Last man standing	
<b>Player interaction pattern (#players; type)</b>	Up to 100; Multilateral competition	Up to 100; Multilateral competition	Up to 100; Multilateral competition	12; Team competition	4-6; Multilateral competition	
<b>Match duration</b>	20' avg	20' avg	Not enough information	15' avg; both matches 25' avg	10' avg (to test with playtest)	
<b>World</b>	Shrinking over-time arena	Shrinking over-time arena	Reducing over-time arena	Different maps	Fixed-size arena (multiple arena in the game)	
<b>Graphic Style</b>	Realistic	Stylized	Stylized	Stylized	Low Poly	
<b>Camera</b>	First and Third	Third	Third	First	Third	
<b>Characters' Abilities</b>	No	No	No	Yes (unique for every character)	Yes (some equals for all; some specials but usable by everyone, these are powered up if used by the "owner", see section )	
<b>AI</b>	Bot?	No	No	No	Yes (in-game animal related special abilities that use AI algorithms; in game fauna)	
<b>Customizable clothing/weapons</b>	Yes	Yes	Yes	Yes	Yes	
<b>In-game currency</b>	Yes	Yes	Yes	Yes	Yes	

## **Features comparison analysis**

Like the top performers above:

- "Time Stealers" shares the main feature deriving from the movie "The Hunger Games", i.e. a closed arena with a Last Man Standing mode in which players strive to remain the last one
- an in-game currency that can be spent on cosmetic items

Unlike the top performers above:

- isn't a battle royale because it doesn't include a survival component given by the research and craft of items, weapons or armors.
- "Time Stealers" is a multiplayer action stealth game with a last man standing gameplay mode to enhance "The Hunger Games" experience.
- players health goes down from the start of the game, so the average matches duration is lower than the one of the top performers.
- This characteristic lets the mid-core player enjoy smaller sessions of play with less frustration given by an early death. This also makes the player a resource itself.
- it does not have the high number of players of the top competitors because it's not a battle royale
- "Time Stealers" has a reduced number of player per match to intensify the stealth component.
- there is some artificial life inside the arena contextualized with its setting that is controlled by AI algorithms
- players have stealth-related abilities to enhance the stealth component as well as special abilities that may comprehend artificial life whose behavior is controlled by AI algorithms. This feature reminds to the Overwatch's one although special abilities, as explained in the "Characters descriptions and special abilities" subsection can be used by anyone (with a weaker effect).

"Time Stealers" wants to introduce itself as a different multiplayer online arena among a lot of top seller games based on the well-known battle royal mechanics that had a huge spread in recent years. It wants to give players some new, different experiences from the typical "equip yourself and shoot", enhancing the reasoning and stealth component of "The Hunger Games" while not losing in action.

## **Business model**

"Time Stealers" business model is based upon an in-game currency called "Time" which is expressed in seconds. Players can use their "Time" to buy in the in-game shop new cosmetic items such as skins, etc. Through microtransactions players can buy "Time bundles" which gives the players predefined amounts of "Time". (See "Shop" section)

For further information about in-game payments see the Technical Design Document .

## **Legal Analysis**

"Time Stealers" is a new IP. Although the setting can be referenced to "The Hunger Games" movie series, and the multiple battle royal games based on it, it's original if considered along with the game mechanics of the game.

Every digital content from 3D models to soundtrack and sound effects will be designed and created by the development team which includes a 2D/3D artist (and graphic designer) and a sound designer to not fall into copyright violations. Some assets might be purchased from the Unity Asset Store and in that case, they can be freely used in a game for commercial use such as "Time Stealers".

# Gameplay

## Overview

The free-for-all deathmatches are played by 4/6 players who have the same role and interact in a multilateral competition pattern. They fight to remain the last one alive attacking with stealth moves the opponents, making ambushes and interacting with the environment.

As explained below, when a player dies starts playing as one of the wild animals in the map.

As described in the Technical Design Document the player must log-in to Steam to play the game and then starts the application from the Steam Client or a shortcut.

## Gameplay description

When a player decides to play, it starts the matchmaking waiting to find a server. Once it finds it and all the players are connected they have 60 seconds to select their character and then they're brought into the arena. (See "Game characters" section) (See "Interfaces" section)

As specified in the "Game characters" section , each character has its own totem and an animal spirit with a special ability associated with it. (See "Maps (Arena)" section, for further information). That means that in the match there will be available the special abilities of all the characters selected by the players.

The player controls the character through a third person perspective camera positioned slightly behind and above the player to give it enough information about the surroundings and let it make better strategic moves.

## Match start

Each player spawns upon a specific platform with a fixed amount of time (equal for everyone) and the same abilities. The time steal attack is initially blocked. At the start of the game players have no equipment and are facing each other, separated by translucent barriers dividing the arena in six slices.

After the introduction by the commentator (See "NPCs" section), a countdown that lasts 15 seconds starts and the match begins. From the start of the match, the time of every player starts going down by one second each second. Every player sees others remaining time in a scoreboard put in the dome of the arena and hears the voice of the commentator who evidences events that are occurring in the match. Also

Before the countdown finishes, the players should go to their totem to activate the time steal attack. This is notified by the commentator and by a signal in the mini-map.

When the countdown lasts the barriers vanish, the commentator announces that an initial set of tool crates is spawned in the map. A set consists in 4 crates (less than players in the arena) and each of them is generated randomly in one of the spawning point of the map.

Both totem and tool crates position are highlighted in the mini-map.

After the activation of the time steal at the totem, each player should reach a crate, to get some initial equipment. During the match, more tool crates will be spawned. (See "Game Objects" section)



Figure 11 - Reference image for the overall look of the forest

## **During the match**

Each player decides how to use its time, tools and abilities to catch the other players to steal time from them gaining an advantage. Indeed, if no one does something everybody will eventually lose.

To steal time from the others, the player can:

- use tools acquired at the start of the game and/or found in the arena in random locations such as a trap that steals a fixed amount of time and stun the player that activates it (See "Tools" section)
- attack the enemy with the time steal
- use a special ability (See "Characters descriptions and special abilities" subsection)

The player can use a shield to gain protection from incoming damage. (See "Tools" subsection)

Players make sounds when moving without crouching or being invisible while tools, such as the trap mentioned above, make sounds upon activation. The player uses these sounds to identify the opponents in the arena and strategically act to create ambushes or sneaky attacks.

Players can hide in the environment to escape from the enemies. Players can also use interactable objects present in the environment to set traps, make ambushes or deal damage to the enemies.

There is one flying courier that spawns every 120 seconds who carries a token and follows a random path that ends at the map center. If the courier gets to its destination, it stays there for n seconds and then flies away. The first time the courier spawns is when all the players spawn.

A player can attack the courier that will drop the token. After a lock time of the dropped token, the player can take it interacting with it for some seconds. For the time the player carries it, its normal abilities and tools are locked.

Players can steal the token:

- from the courier while it's carrying it
- from another player hitting it with the time steal attack

The player must bring the token to one of the totems in the arena; it doesn't matter which one. The special ability of the character the activated totem belongs to, becomes available to whom has used the token. If it's the totem of the player who has activated it, the effect will be powered up. (See "Game Objects" section, for the complete behavior description of the token/totem)

The courier does not respawn until there's still a token in the map.

During the match a player can pick up all the tools dropped by a dead player along with a medal. (See "Interactable objects" subsection, for further information)

In the arena there are wild animals that can be attacked to gain a small amount of time. (For more information about wild animals, see "Interactable objects" subsection)

The gameplay should be very fast-paced due to the constant passage of time and the emphasis posed on very fast abilities.

## **At player's death**

When a player dies, drops all its tools and a medal. The latter is used by the rewarding system explained in the following subsection.

If it wants, it can control one of the wild animals that are wandering in the map instead of just have to spectate someone still alive. (See "Interactable objects" section)

This player-controlled animal has no in-game effects and if it's attacked the player must switch to another one because it will disappear.

## **Match ending**

The match ends when one player remains the last one in the arena because all the others are dead due to the end of their time.

## **On players disconnection**

If a player decides to leave 5 matches in a one-month window it will receive a penalty that doesn't let him play for 30 minutes after every successive abandoned match.

When a player leaves a match or disconnects due to internet connection problems, its avatar dies and drops a medal. The time of the disconnected player is equally divided between the remaining players.

If a player decides to leave after he has died, it won't get any consequences and will still get its reward.

## Levelling system

The levelling system is based on the experience gained by the player at the end of each match and depends on:

- the lifespan which indicates for how long a player has played in the match (from the start to its death) expressed in seconds. This is an indirect measure of how well the player has played from a stealth point of view.  
For each seconds of the lifespan, the player gets 2 XPs. This value has been decided because a player should play on average for 5 minutes in a match.
- the number of medals picked-up by one player  
Each medal has a value of 100 XPs. The number of medals is an indirect measure of how many opponents a player may have killed. Because of that should be fairly rewarded by a not so low but not so high amount of seconds.
- the number of couriers the player has intercepted during the match  
Each courier intercepted has a value of 300 XPs. On average, 4 to 5 couriers are spawned in a single match. Because of that and due to the importance of catching a courier, this action is well rewarded.

The experience given to the player is equal to the sum of the above elements multiplied by the correspondent XP multiplier.

The experience gained at the end of the match is used to level-up the player; it gains one level every 10000 XPs gained. Every time a player levels up may receive a random item (See "Cosmetic items" section). Based on the final ranking, i.e. the sequence of players ordered by their moment of death, every player has a chance to receive a cosmetic item.

In the table below are listed the positions in the match ranking with the associated item drop probabilities.

Ranking position	Chance to receiving an item at the match ending (%)
1	100
2	75
3	50
4	25
5	15
6	10

Cosmetic items of different rarity can be received with different probabilities. More common items are more likely to be received by the player while more rare items don't. (For further information see section "Cosmetic items")

Furthermore, the higher a player's level is, the higher the chance is of getting a rarer item.

Every 10 levels, the player is rewarded with a new portrait.



Figure 12 - Reference image for in-game portraits ordered by increasing importance from left to right, from top to bottom

## Rewarding system

The rewarding system is strictly related to the in-game currency.

At the end of every match players are rewarded with seconds of "Time" (see "Business model" section) based on their performance in the match. To give the player a reward, the following elements are used:

- the remaining time at the end of the match expressed in seconds; this has an impact on the winner because is the only one with some time left.
- the stolen time from the opponents during the match expressed in seconds  
The stolen time is one of the most important components of the reward because reflects how well the player has played.

These elements have been chosen accordingly with the game story. (See "Story" section)

The reward is a sum of the above elements:

$$\text{Total "Time" gained by the player} = \text{remaining time} + \text{stolen time}$$

Players keep the "Time" from previous matches and can use it to make purchases in the in-game shop. (See the "Shop" section)

## Achievements

"Time Stealers" provides also a list of achievements to reward the player upon completion of specific actions. Achievements are automatically unlocked when the player completes the actions specified by them.

Here is a list of achievement that will be included at the release of the game. Further achievements will be introduced over time.

Category	Achievement	Description
Remaining time	Time keeper	Win a match with your remaining time greater or equal to 10 minutes
	You know how to manage time!	Win a match with your remaining time lower or equal to 30 seconds
Time steal	Time leech	Steal more than 2 minutes from a single opponent in a 30 seconds window
	You're on fire!	Steal some time from more than 3 players in a 1-minute window
	True aim	Steal the maximum amount of time for 5 times during a single match
Tools	Like in Lara games	Trap 5 or more players in a spike trap during a single match
	Timing	Avoid the damage of an attack activating the shield 1 second before the attack hit you
Interactables	Too cruel	Absorb time from more than 5 animals in a single match
	Master of tower defense	Activate more than 10 turrets in a single match
	Fast as light	Be the first to activate the time steal attack at the totem
	Do you want some a snack with the tea?	Be the last to activate the time steal attack at the totem
SAs	Totem polymorphism	Use three or more non-powered-up SAs in a single match
	Feeling your totem	Use two or more powered-up SAs in a single match
Rikkukun SA	True fox spirit	Reach a player with a single use of Rikkukun SA
River SA	True wolf spirit	Reach a player with a single use of River SA
Suzy SA	True bunny spirit	Deals damage to 1 or more player with a single use of Suzy SA
Cyborg SA	True metal spirit	Make another player attack Cyborg clone with a single use of Cyborg SA
Raven SA	True raven spirit	Deals damage to 1 or more players with a single use of Raven SA
Jack SA	True panda spirit	Hit 3 or more players with a single use of Panda SA during a single match

SA stands for Special Ability

## Gameplay flowcharts

In the following flowcharts, red rounded rectangles indicate a point of start of another flowchart that has been separated for a better comprehension. Between round brackets in the END state may be specified the state of the flowchart from which the flow is arrived and indicates in which state the flow returns.

Gameplay flowchart

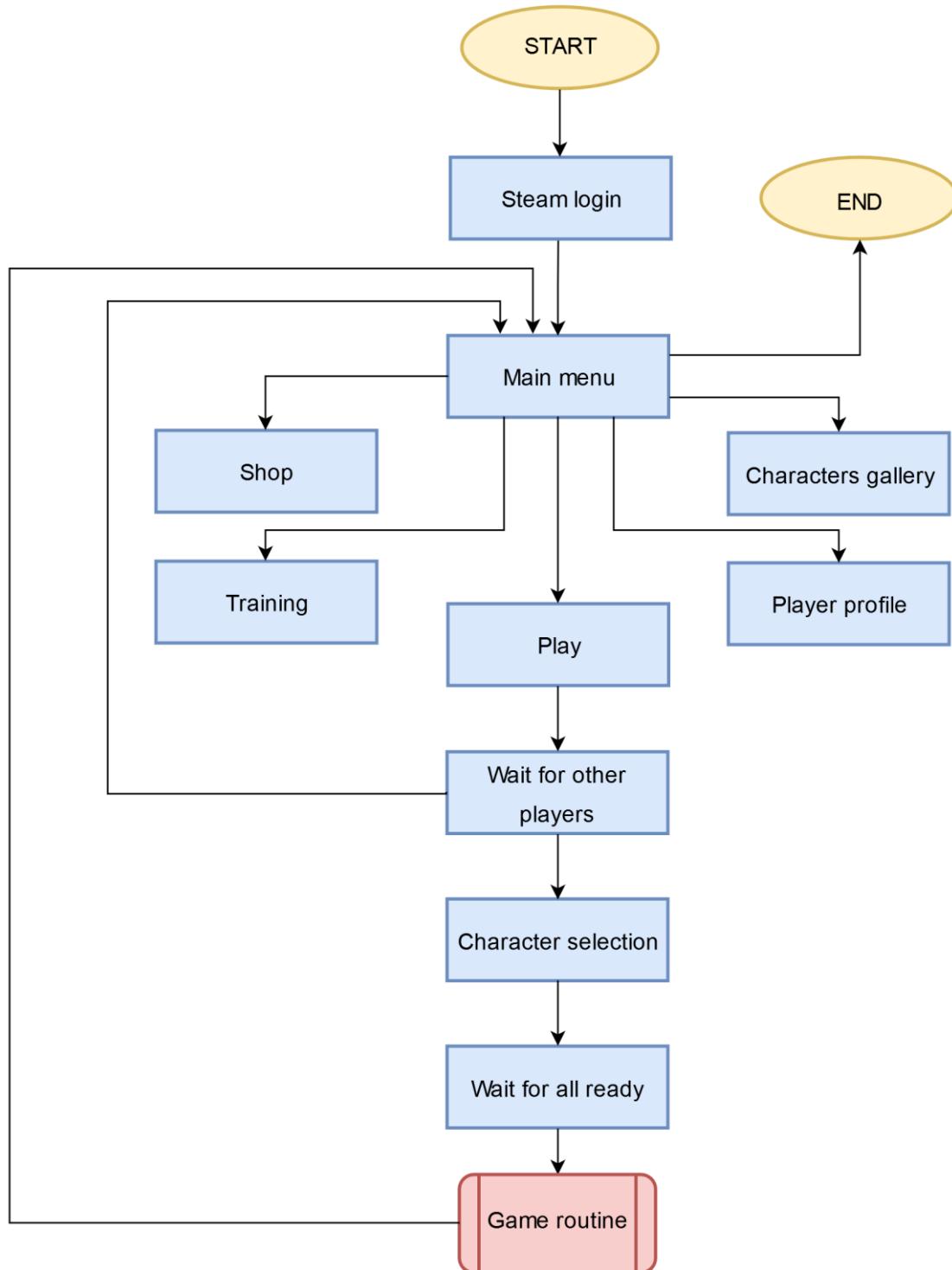


Figure 13 - Flowchart of the gameplay

### Game routine flowchart

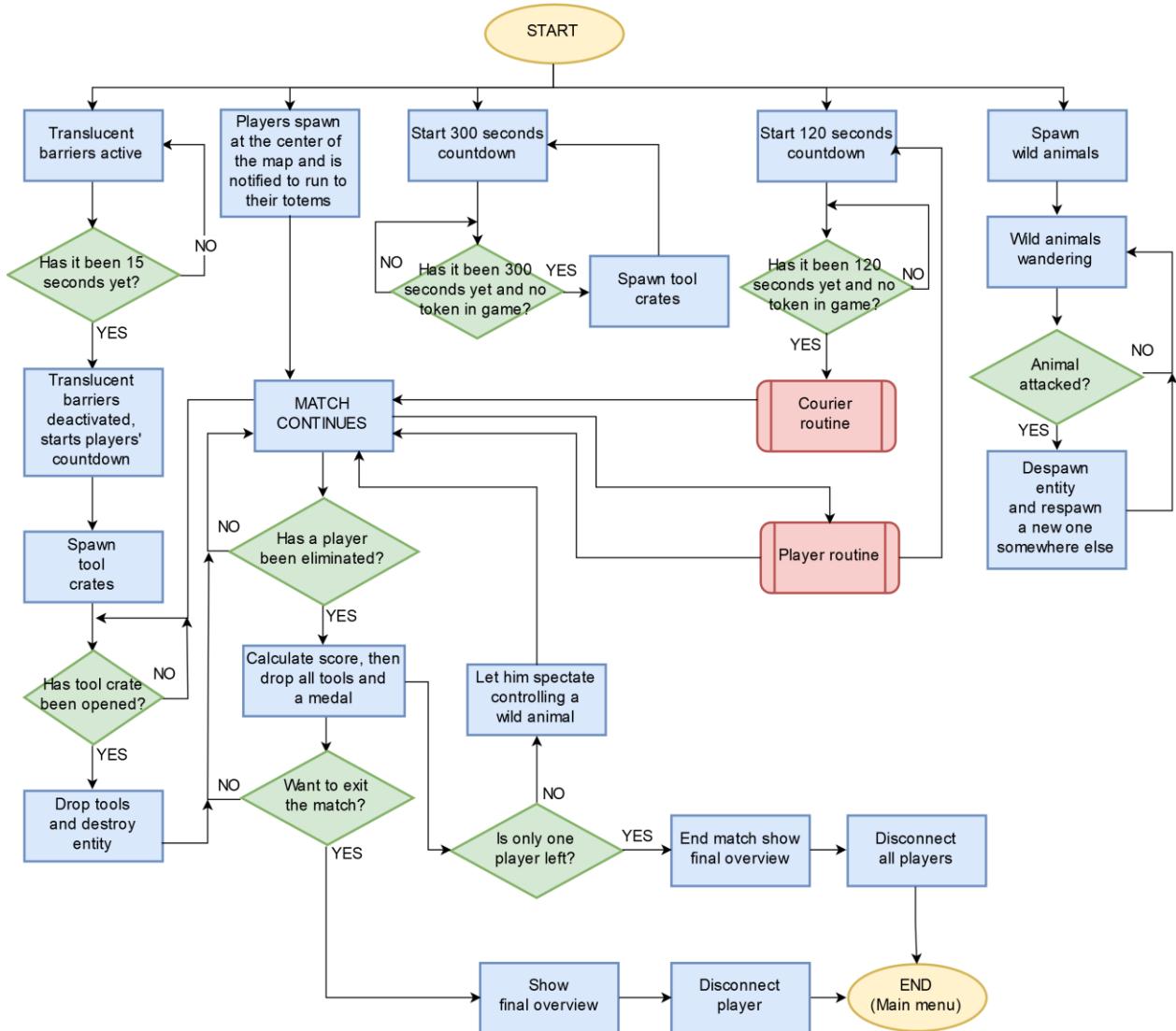


Figure 14 - Flowchart of a match

### Courier Routine Flowchart

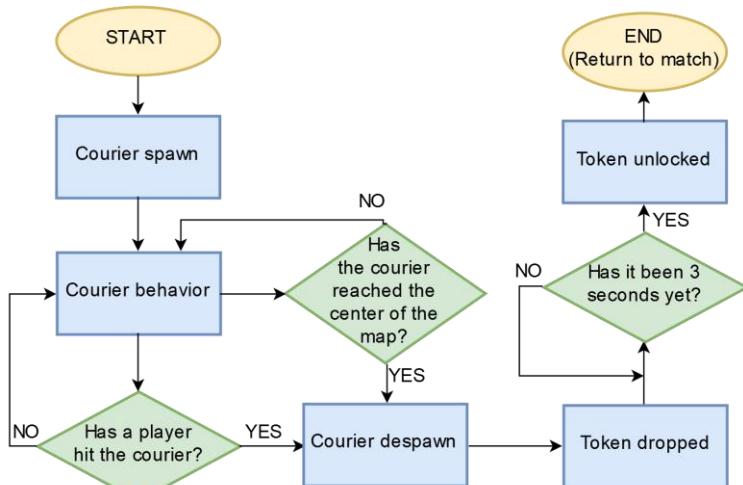


Figure 15 - Flowchart of the courier routine and interaction with player

Player Routine Flowchart

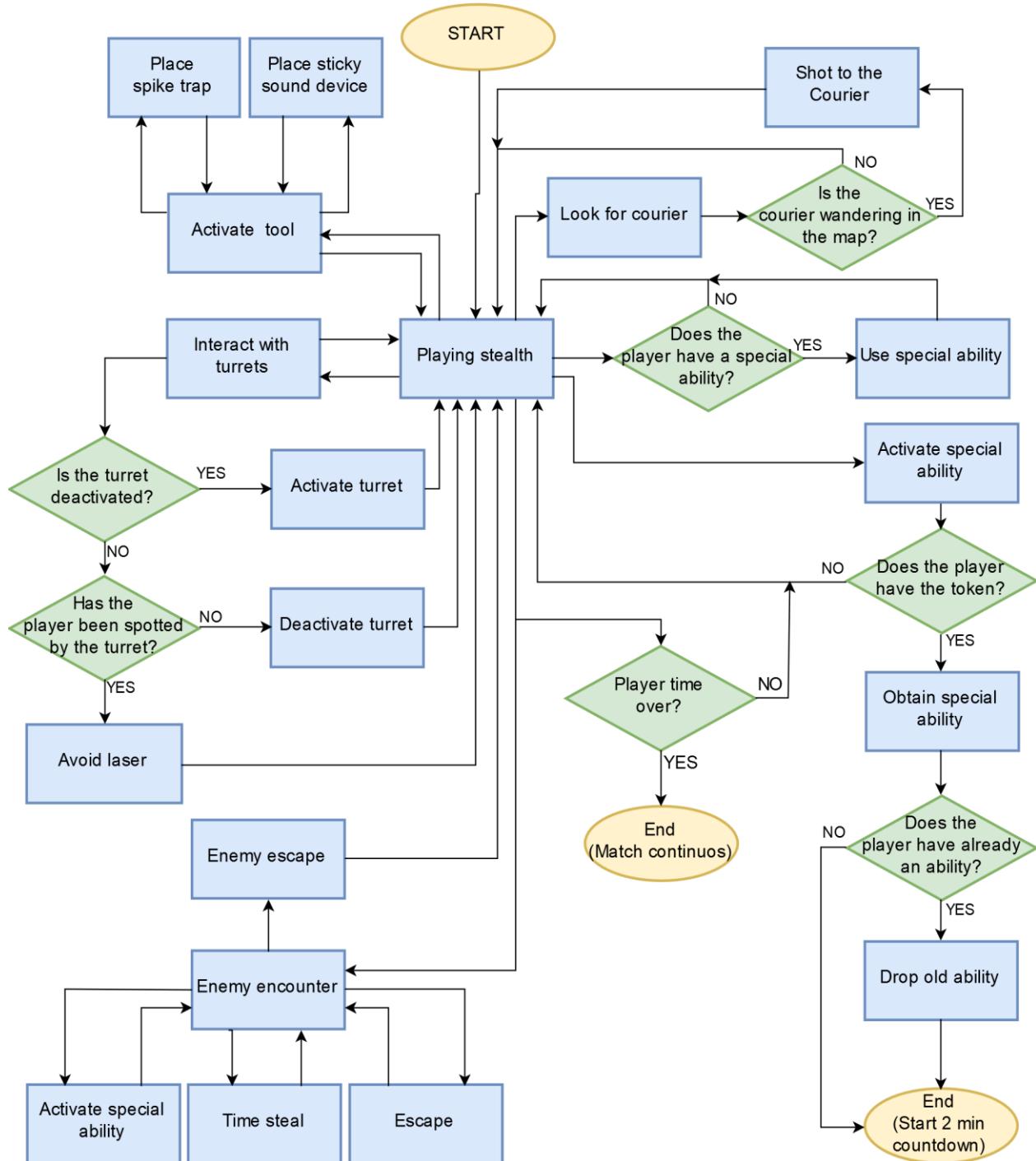


Figure 16 - Flowchart of the player in a match

## **Modes and other features**

The only mode presents in the game is a last man standing, i.e. a deathmatch (free for all) in which there isn't respawn and wins the last one remaining alive, so the player must consider its remaining time and the others' one to not finish it.

The game provides a training mode in which the player is alone in a simple arena where it can try out the controls, one specific character and its abilities.

The game can be extended to include other popular gameplay modes such as team-based payload, control points, etc.

After the game has reached a consistent number of players, a competitive mode will be added with a connected seasonal ranking system.

## Controls

The game will be playable with Mouse + Keyboard and Gamepad.

Each control is also shown under the correspondent HUD's element. (See "HUD" subsection)

Command		MOUSE + KEYBOARD		GAMEPAD
		Control 1	Control 2	
Movement	Up	W	UP arrow	L-Stick Up
	Down	S	Down arrow	L-Stick Down
	Right	D	Right arrow	L-Stick Right
	Left	A	Left arrow	L-Stick Left
	Sneak/Crouch	Ctrl left		B
	Jump	Space		A
Abilities	Dash	SHIFT		L2
	Invisibility	E		L1
	Special ability	Q		Y
Tools	Open wheel	Mouse CENTRAL		R-Stick Click
	Use selected	C		Left arrow
Actions	Attack	Mouse R + L		R1
	Aim	Mouse R		R2
	Interact/Stop interaction	F		X
Camera	Movement	Mouse		R-Stick

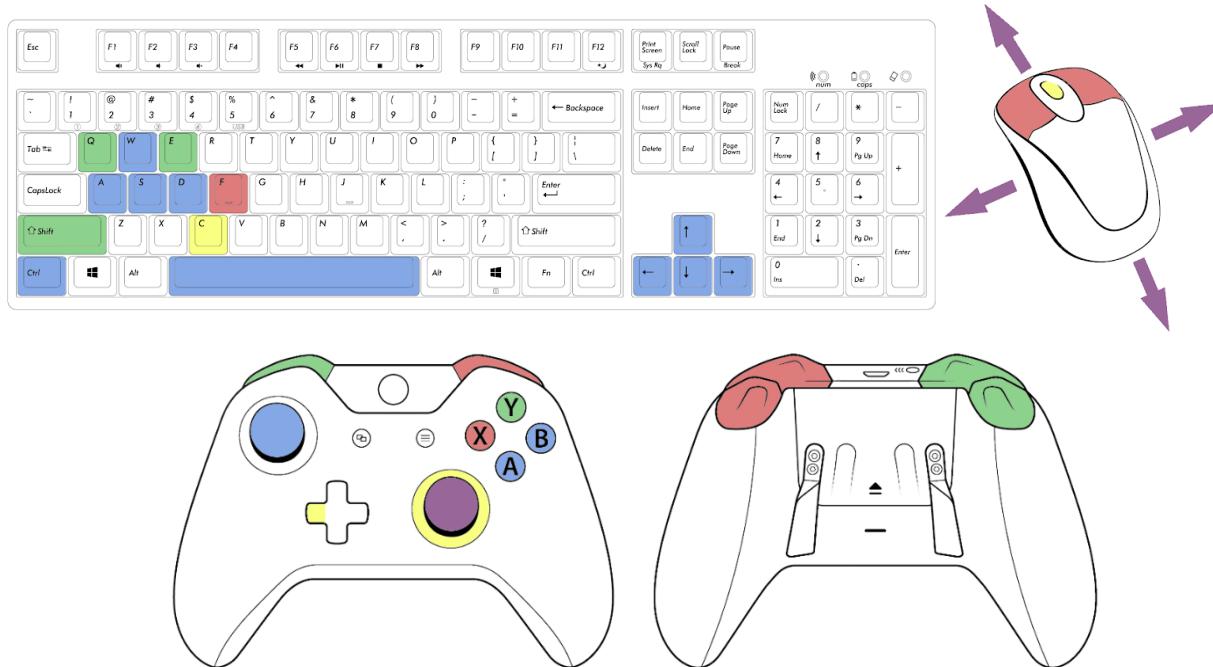


Figure 17 - Controls schemas for keyboard + mouse and gamepad

# Rules

## Game

For detailed information about the map, see "The Game World (Map)" section .

- 4/6 players
- Player's life is measured in seconds by a timer
- The timer of each player is visible to everybody else in the match
- Every player has the same amount of time at the start of the match
- The time goes down by one each second
- When time finishes, the player dies
- Players can't exit from the arena
- Dead players remain in game controlling a wild animal present in the arena

## Players

Players can move and interact through the input devices as defined in the "Controls" section .

For detailed information about the playable game characters, see "Game characters" section .

- Each player spawns in a different player spawning point facing the center of the map
- Each player has one specific totem in the map linked to its characteristic ability
- Players can attack if they're aiming
- Each player's attack charges an "overheat" bar; when it reaches its max then a cooldown starts
- Players can't attack if they are in cooldown
- Players can hurt enemies, fauna, some interactable objects and some animals created by special abilities by attacking them
- A stunned player can't use any abilities, nor move or attack
- An invulnerable player cannot be stunned or damaged
- Players can use an ability if is not in cooldown
- Players can interact with interactable objects in the environment

## Abilities

A complete description of the characters' abilities is given in the "Characters abilities" subsection .

Any specific rule of a character's abilities that is not given in the section mentioned above, is listed below.

The abilities of a player have a cooldown expressed in seconds that starts after an ability is used. (See section "Character abilities" )

### Invisibility

- If a player is invisible, it makes no sounds
- If a player is invisible and takes damage, it becomes visible
- If a player is invisible and attacks, uses an item or uses another ability, it becomes visible

### Dash

- Dash can't be used to overstep obstacles
- Dash makes the player move even if it stands still
- Dash makes the player steal time from the players it passes through

### Special ability

- Enabled special abilities have no expiration time
- If a new special ability is activated, the old one is replaced
- The activated special ability is powered up if it's the one of the player's character
- Suzy: The player can't exit from the arena
- Suzy: The player can't jump out if there's an environmental element over it
- Jack: The player can't overstep obstacles
- Jack: The player can't hit multiple times the same enemy
- Rysel: Using the powered-up ability, the player is in a stunned status
- Cyborg: The time at which the player can switch is time-constrained

## **Objects**

A complete description of in-game objects' effects is given in the "Game Objects" section .

Any specific rules of a game object that is not given in the section mentioned above, is listed below.

### Spike Trap

- Is triggered by invisible players, revealing them
- Is triggered by the courier
- Once is triggered, cannot be destroyed

### Shield

- The shield protects for only one instance of damage
- Upon activation, starts instantly to protect the player

### Turret

- Does not deals damage to invisible players

### Token

- The carrier has its normal abilities and tools disabled
- Cannot be picked up if it's locked

### Wild animals

- The player cannot be damaged by the wild animals

# *Interfaces*

# **Interfaces outline**

The following schema shows how all the interfaces in the game are connected to one another.

With white solid rectangles and capitalized titles are indicated the interfaces present in the game.

Yellow rectangles indicate elements in the interface that can be clicked and lead to other interfaces. Simple text fields indicate elements in the interface that don't lead to other interfaces but can be clicked to open a new tab in the same interface.

Dashed rectangles indicate external services or gameplay related window.

Bi-directional arrows indicate that the player can pass from one interface to another using buttons present on them. Mono-directional arrows indicate that the player, after it is arrived in a new interface cannot go to the previous one until the event associated with that interface ends. For example, from the character selection interface the player can't go back to the find matchmaking screen.

Dashed arrows indicate that from one screen/interface the transition to the destination interface is made after the end of the associated event.

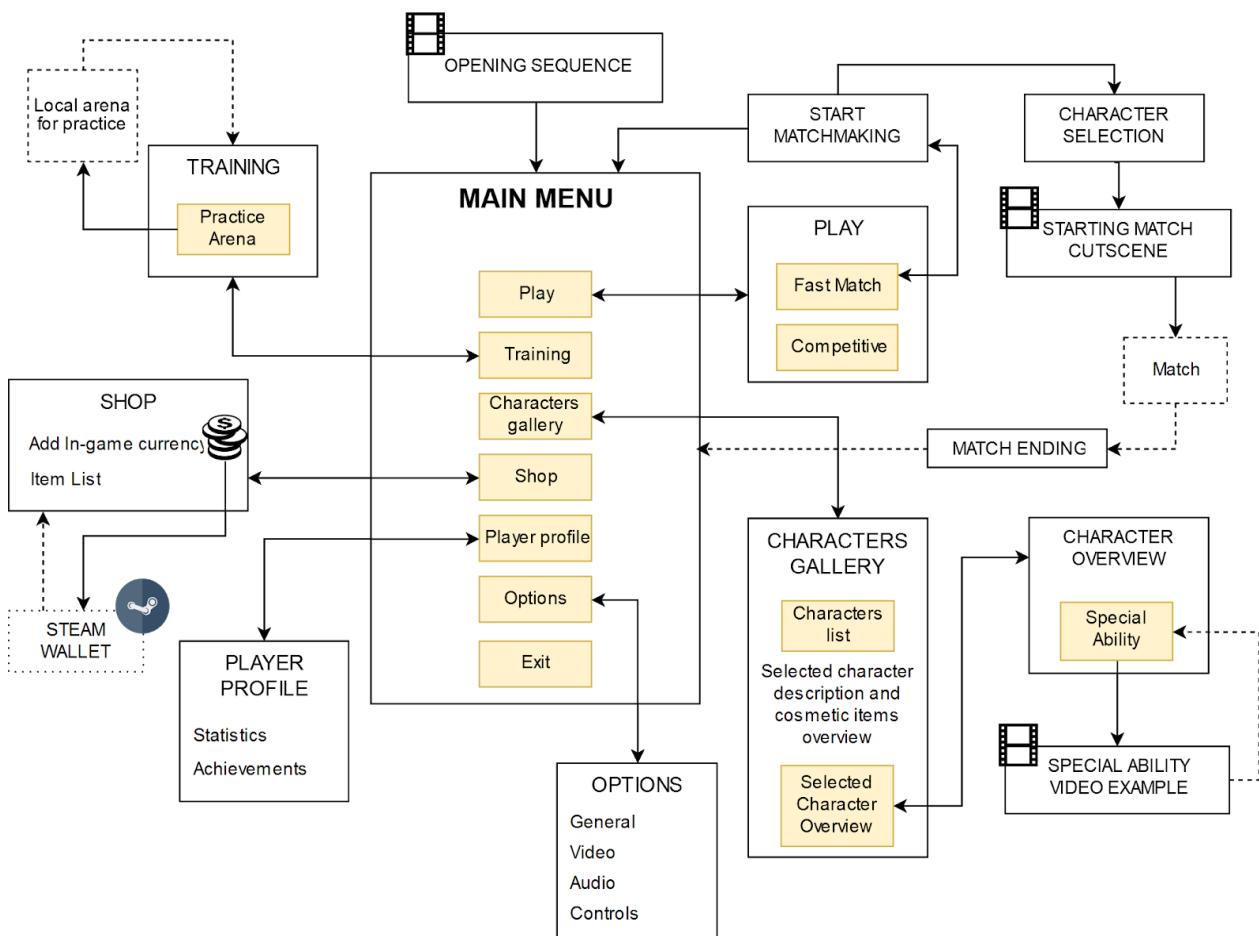


Figure 18 - Interfaces outline

## **Interfaces style**

All the interfaces are designed to be very neat to well fit with the overall low poly style. There aren't bright colors, and everything plays around the contrast between black and neon colors.

## **Interfaces legend**

Here, there is a legend of the elements present in the interfaces schemas given in the following section.



Button



"Time" currency counter



Clickable tab



Placeholder for player's character



Text panel



Placeholder for player's



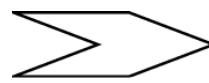
Background



Placeholder for game characters



Button to scroll character's lists



Text box with text that moves from left to right

## Interfaces subdivision

In the main screen menu there's a list of clickable buttons that lead to the other screens. An info panel that shows the player icon, it's level and a counter which specifies the number of "Time" in seconds the player has gained. At the bottom of the screen, there a television news-like info panel that shows updates, commentator's quotes and useful information about "Time Stealers". On the background there's the map in which the players can play that is rotating to show to the player it's overall structure and indirectly make him remember it.

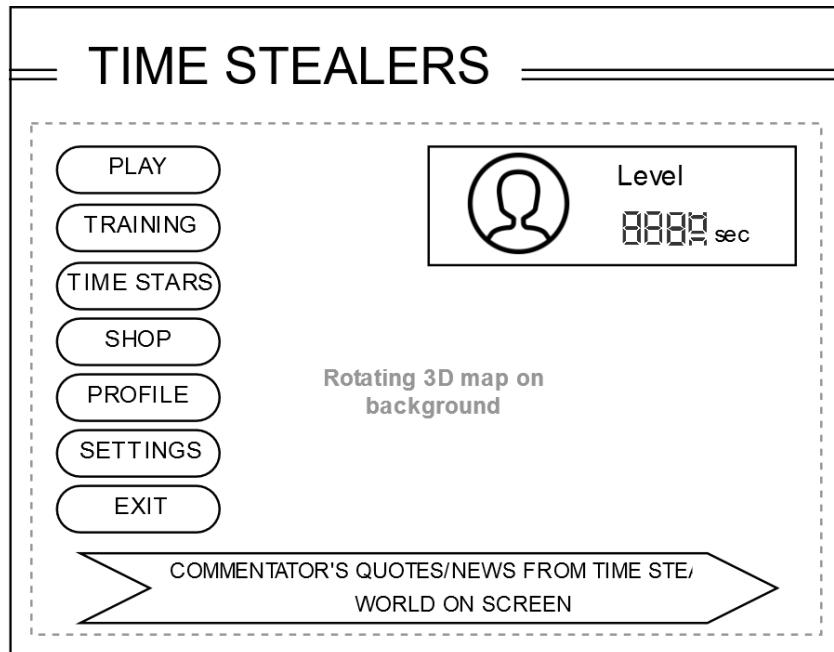


Figure 19 - Interface schema of the main menu screen

The play screen shows the playable game modes. On the background there's the same map shows in the main menu but zoomed-in to show a specific section of it.

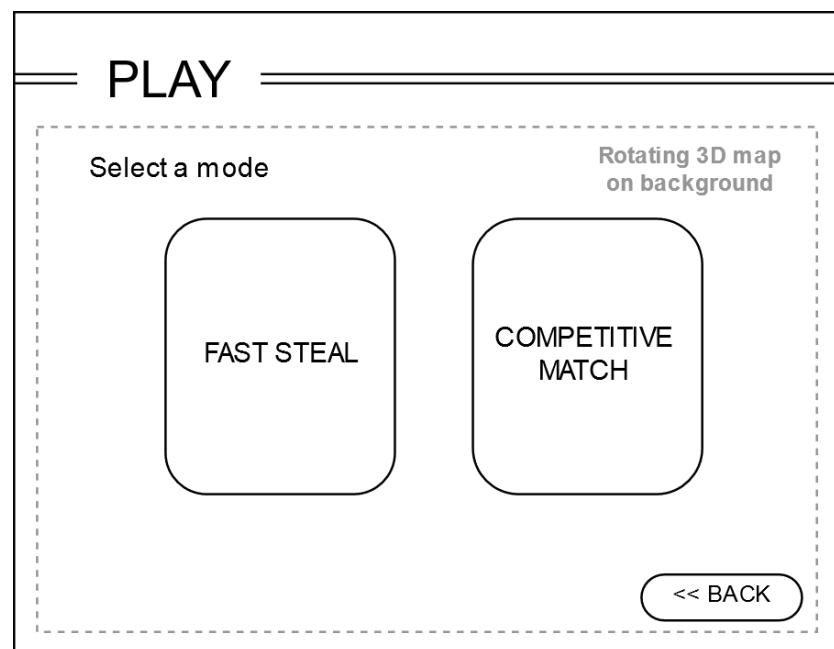


Figure 20 - Interface schema of the play screen

In the character selection screen there is a panel which shows all the players connected to play the match. On the right there's a scrollable list of the game's characters from which the players can select the character which will use. On the top-right corner there's an info panel that shows the player icon, it's level and a counter which specifies the number of "Time" in seconds the player has gained. In the center of the screen, the game's character selected by the player is shown, as well as a brief description of its special ability if powered up.

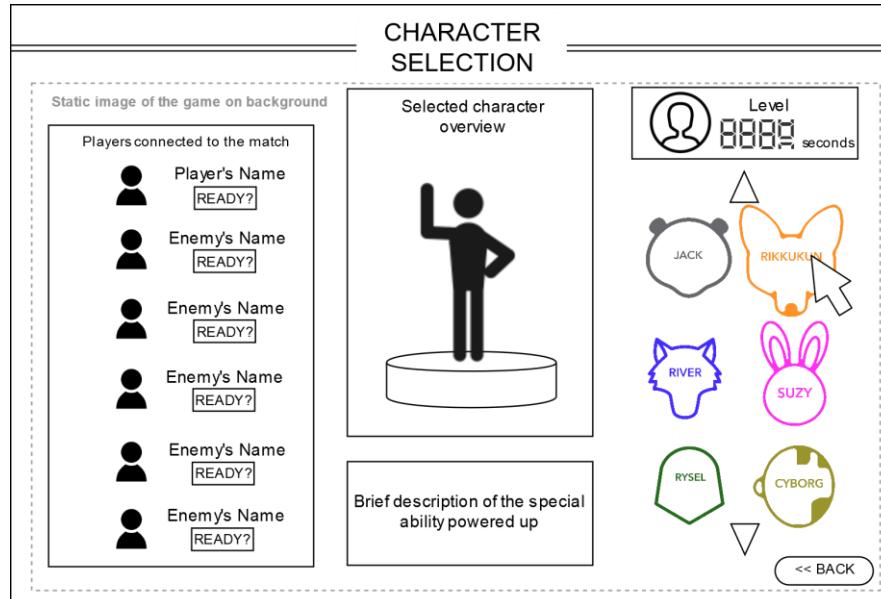


Figure 21 - Interface schema of the character selection screen

In the match ending screen is shown the final rank of the players at the end of the match and a recap of the "Time" and experience gained by the player.

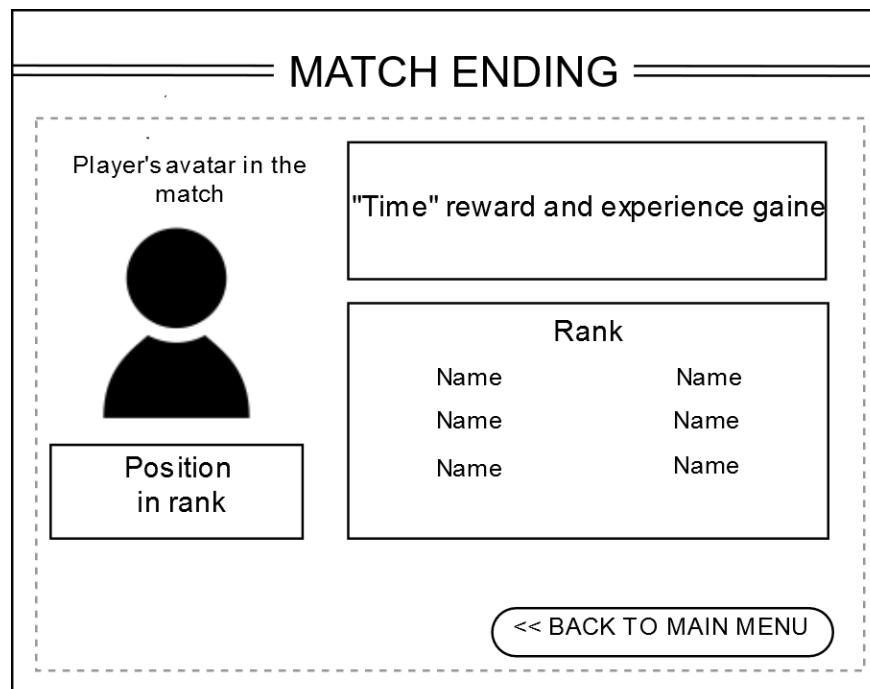


Figure 22 - Interface schema of the end of the match

In the characters gallery there's a scrollable list with all the game's characters at the bottom. On the left there a panel with different tabs each one of which opens a list of the cosmetic items available in the game for the selected category. The player can then select one of the items to see it on the model shown at the center of the screen. On the top-right corner there's an info panel that shows the player icon, it's level and a counter which specifies the number of "Time" in seconds the player has gained. On the left there's an info panel with a description of the selected game's character. Under the info panel there's a button which leads to the character's totem ability overview screen

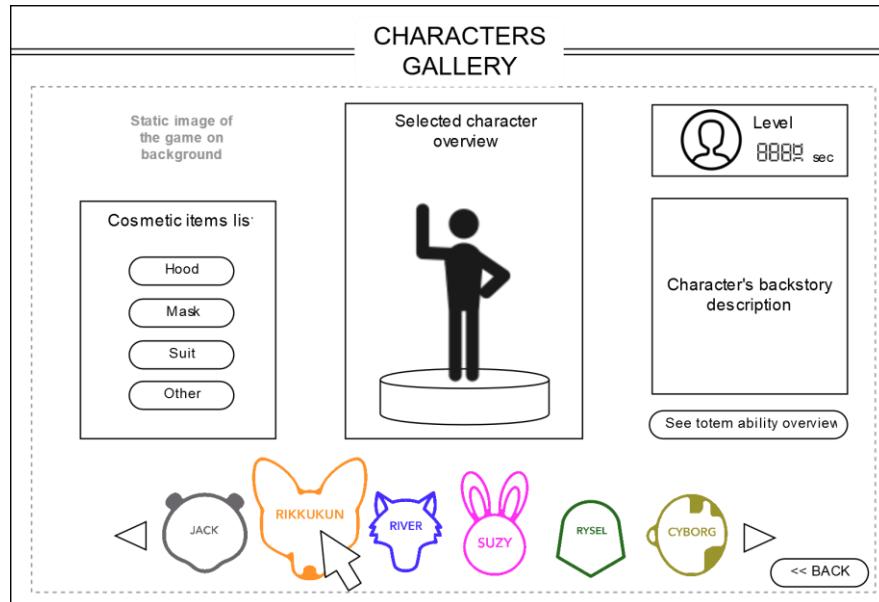


Figure 23 - Interface schema of the game's character gallery screen

This interface shows the totem ability both normal and powered up of the selected character in the game's characters gallery. Clicking on the two buttons on the right, shows an example of the selected ability.

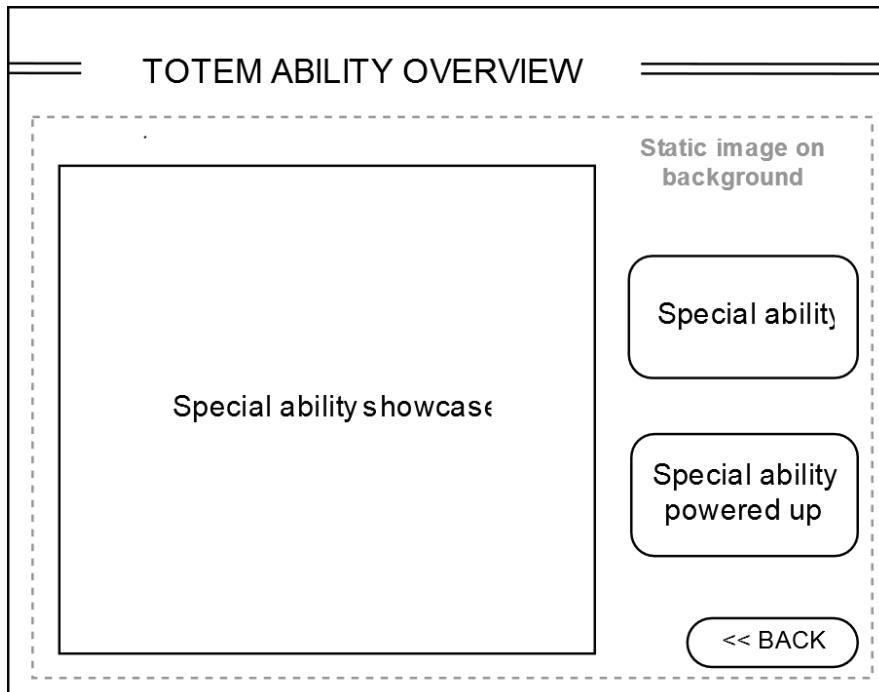


Figure 24 - Interface schema of the character's ability overview

The shop screen shows the list of available items to purchase subdivided by category on a panel in the left side. Selecting a category, the player can then see the item worn by the character the item belongs to in the center of the screen. On the right side there's an info panel that shows the player's icon and the total amount of "Time" owned by the player. On the right side there's also a button to buy more "Time".

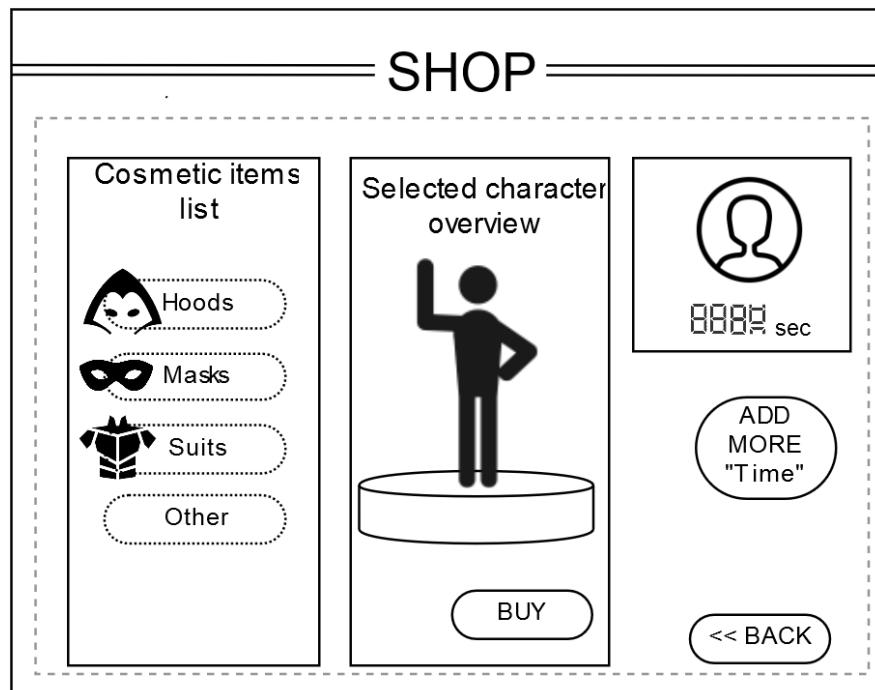


Figure 25 - Interface schema of the shop screen

In the player profile screen there's an info panel that shows the player's icon, its level and the "Time" it owns. There's a list of tabs which can be clicked to show more information about them.

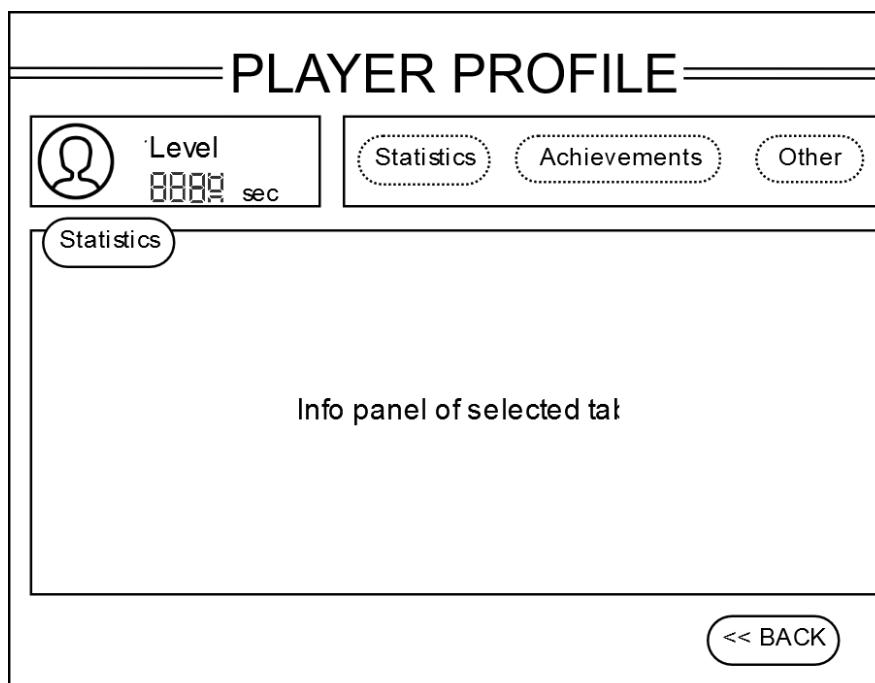


Figure 26 - Interface schema of the player profile schema

The training screen shows the playable game modes available for training. On the background there's the same map shown in the main menu but zoomed-in to show a specific section of it.

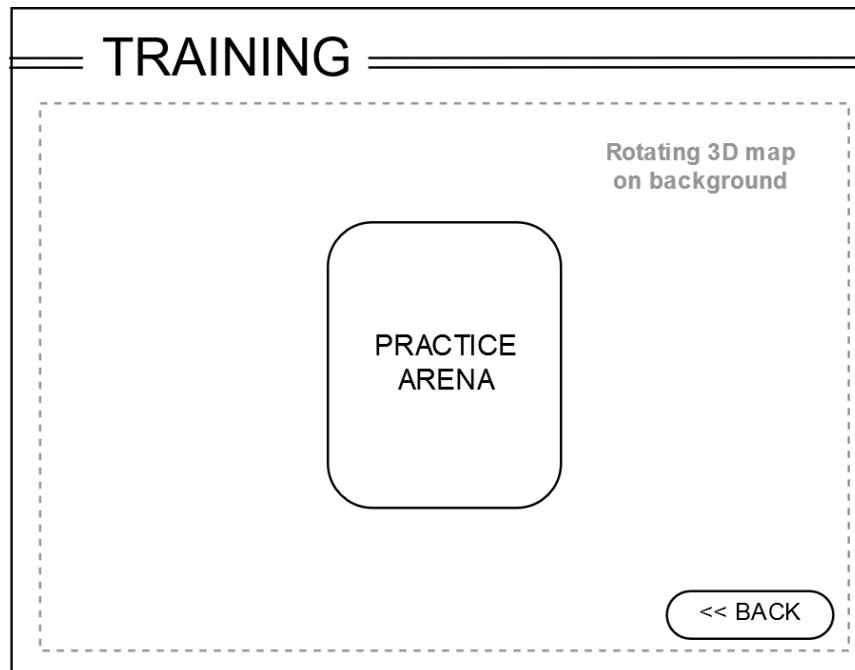


Figure 27 - Interface schema of the training screen

In the options screen there's a list of tabs that can be clicked to show in the panel below the options regarding the selected category.

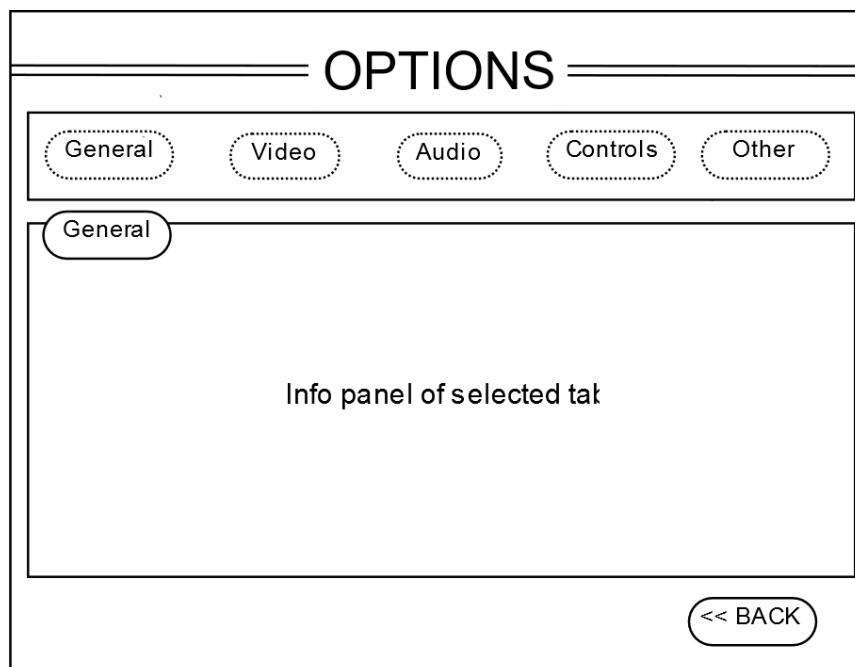


Figure 28 - Interface schema of the Options screen

## HUD

The player can retrieve all the information about its status from the elements of the HUD. There are two HUDs in "Time Stealers" from which the player can get different information.

All the information about the player are always visible to the player from the main HUD's elements.

The information about the all the players in the match such as their remaining time are shown on 4 small and 4 big basketball stadium-like scoreboards positioned at the center of the arena. To see these information, all the players must look up at the scoreboards. These info panels are visible from every point of the arena if not covered by trees. This choice has been made to let the players stay focused on what's going on in the match and use the scoreboard only to retrieve useful information when needed.



Figure 29 - Reference image for the scoreboard overlay

To help the player during the game, the controls associated to the tools/abilities shown in the HUD are present below the corresponding HUD element.

For information about the character statistics see the "Game Characters" section .

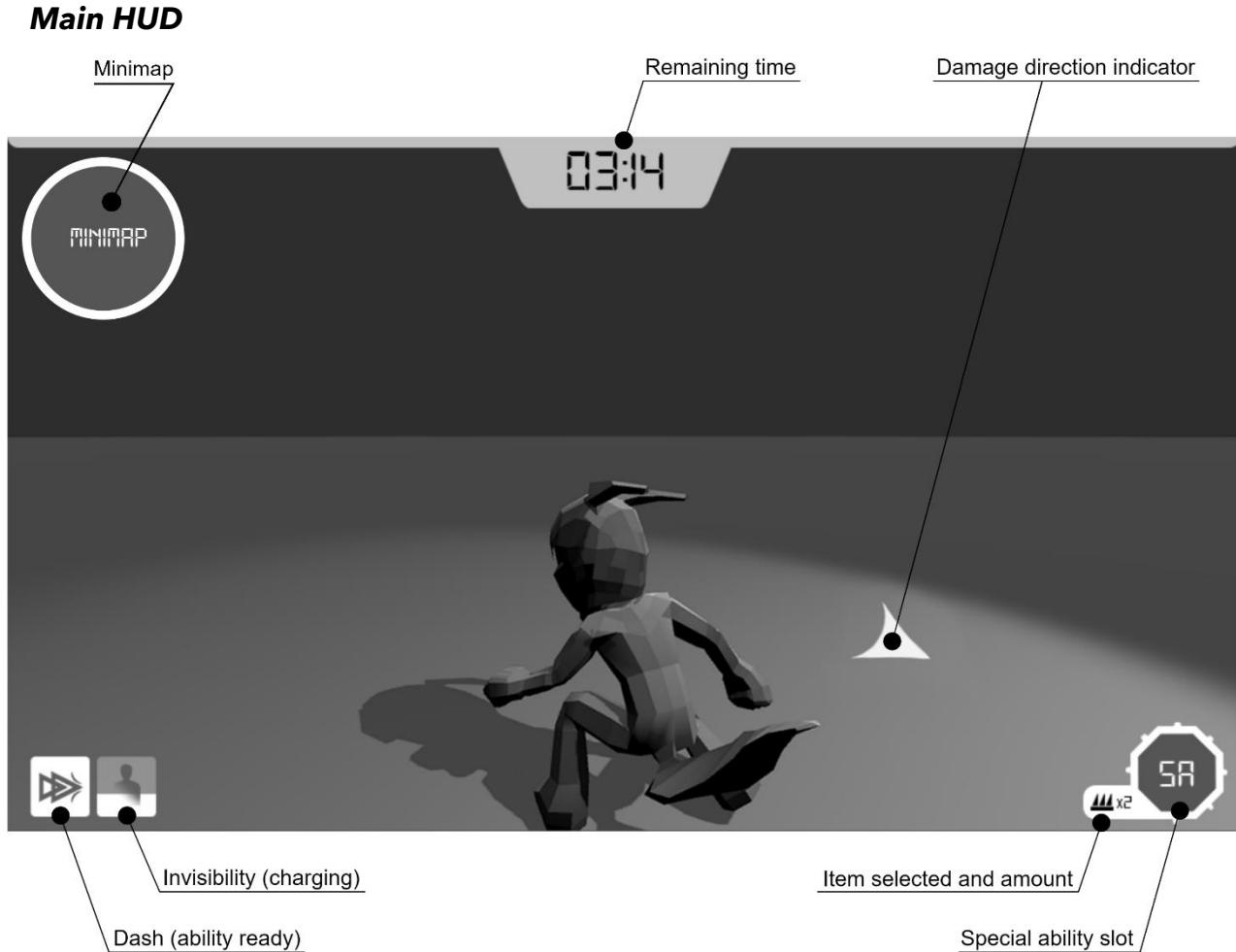
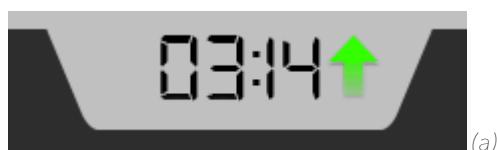


Figure 30 - Concept image for the main HUD

The elements present in the main HUD are:

- Remaining time: this is the time left to the player to live. It's represented by typical digital clock numbers and is expressed in mm:ss. When the remaining time passes some predefined threshold, the commentator notifies to the player its condition. (See "Commentator" subsection)  
When the player is stealing time from an enemy a green upward directed arrow will show up near the timer to indicate the player that its remaining time is increasing.



(a)

When an enemy is stealing time from the player, a red downward directed arrow will show up near the timer to indicate the player that its remaining time is decreasing.



(b)

Figure 31 – Concept image for the time gained-lost notification

- The direction of the damage if someone is damaging the player. This indicator points in the direction of the incoming damage. (e.g. if the damage comes from behind the player, the indicator will point downward)
- Abilities that are shown in the bottom-left corner. Due to the not so high number of normal abilities they are shown in boxes with exemplifying illustration on them. If the ability is available, then the box will be full. If the ability is on cooldown the boxes have a filling animation which is played until the box is full.
- A mini-map that highlights totem, tool crates position and everything that is relevant for the player a part of the opponents' position.



Figure 32 - Reference image for the mini-map

- In the bottom-right corner there's one HUD element that shows the currently selected tool and its quantity. This tool is one of the available for the player that are shown in its inventory. In the same element is also shown the special ability slot. When the player activates one totem, the slot is filled with the special ability icon corresponding to the animal on the activated totem. This will have a glowing effect if the special ability is powered up.

All the tools that are found in the arena are put in an inventory that the player can open using the input device. Opening the inventory makes appear, in overlay, a tools wheel showing all the tools available to the player. The player can choose one of the item moving the mouse over it.

Here is a reference image of a tools wheel like the one that the game will have.



Figure 33 - Reference image for the tool wheel

### **Token HUD**

The following scene represents the HUD when the player has the token.

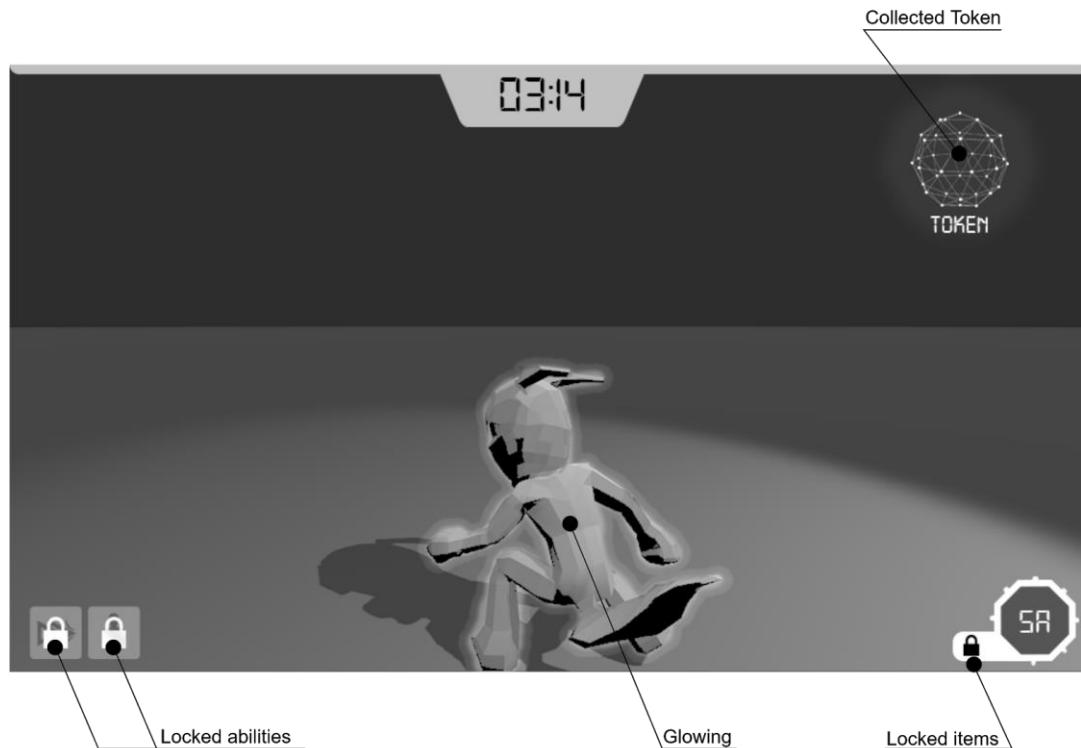


Figure 34 - Concept image for the HUD when the player has the token

- A glowing effect over the player and wireframe sphere that appears in the top-right corner indicate that the player has a token.
- On every ability and tool HUD element a lock shows up to indicate that all the abilities and tools cannot be used.

### Aim HUD

As explained in the "Characters' attack methods" subsection to attack the player must aim. The following scene shows the elements that are introduced when the player aims.

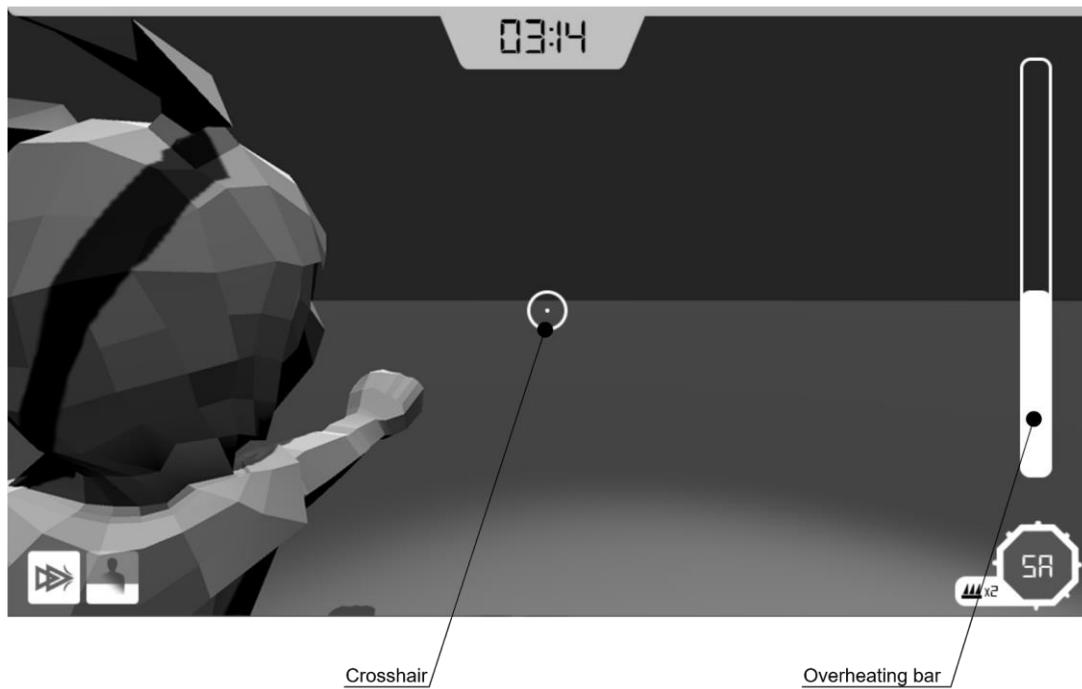


Figure 35 - Concept image of the HUD while aiming

- A crosshair shows up to help the player aim.
- An overheat bar shows up. The bar charges in a discrete way as explained in the section mentioned above.

## Game characters

All the characters present in the game have the same abilities, the same statistics and one specific animal totem with a special ability linked to it.

That special ability is not owned by the player controlling the character and can be used by everyone activating the totem corresponding to that player. However, if a player activates its own totem, the effect of the ability is powered up.

All the special abilities should enrich the core game mechanics and be helpful to a player to obtain one or more of its three main objectives:

- keep its own time
- individuate other players
- steal time from other players

See "Totem special abilities" section for the description of all the special abilities linked to every animal present in the game.

See "Time Stars (PCs)" section for the description of all the characters in the game and the animal totem linked to them.

Players can customize characters with cosmetic items purchasable from the in-game shop that will not affect the gameplay. (See "Shop" section for further information)

During the game's lifetime, more player characters with peculiar animal/special ability will be added, as well as many cosmetic items.

## Statistics

All the characters statistics are given in the table below.

Category	Property	Value (unit of measure)
Basic	Lifetime	600s
	Mass	65 Kg
	Walk Speed	5 m/s

## Attack methods

The character attacks in the game are:

- Time Steal

After a charge time, a beam is fired from the player's hand in the aiming direction. If it hits someone it steals time from them. If it hits an object that can be deactivated, it deactivates it (e.g. turrets). The more the player charges it, the longer it goes and the more damage it does. After 5 seconds the beam is automatically fired.

There's an "overheat" mechanism that prevent the player to abuse of the attack. Each time the player attacks, an "overheat" bar is charged for an amount of time equal to the charge time (one-click shot is equal to charge the time steal for 1 second). If the bar reaches its maximum value, i.e. the player has consecutively shot for a total time greater than the time to overheat, the player must wait an amount of time (equals to the time to overheat) before using the time steal again. The overheat bar goes down by one second each second.

This mechanic has been introduced to avoid long non-stealth interaction sessions between players.

Ability	Charge time (s)	Damage min-max (s)	Range min-max (m)	Other
Time steal	1-5	5-25	1-5	Time to overheat: 8s

## Abilities

Abilities can be used by the player to perform actions or obtain temporary bonuses that would not be normally possible. Every player has the same abilities. These have a duration, cooldown, range of effect, and other properties which are all specified in the following table. The cost is intended in seconds, i.e. the player loses life upon activating an ability or using a tool.

A table with all the abilities' properties is given below the following list.

There are two basic abilities:

- Dash

Rapid movement in the direction the player is facing. The player steals time from the first player it hits during the movement.

- Invisibility

The character becomes invisible for some time. For the whole duration the character moves faster and makes no sounds.

Ability	Cooldown (s)	Duration (s)	Other
Dash	15	0	Damage: 30s Distance: 10m
Invisibility	45	10	Speed Multiplier: 2

Legend: - (Instant duration; on key pressing)

## Totem special abilities

For each animal totem is given a complete description of the special ability linked to the given animal and a description of the AI behavior if any.

### Fox Totem

Fox totem is considered a teacher that provides guidance on swiftly finding the way around obstacles. Following the fox totem wisdom, you may be called to use or develop quick thinking and adaptability. This powerful animal is a great guide when you are facing tricky situations.

Special ability: Fox guidance (Individuate and restore time)

Normal effect	Powered up effect	Other
<p>Spawn one fox near every player and follows it. Each fox starts to make very loud noises. When a player finds an enemy or after the end of the ability, all the foxes disappear. The foxes cannot be damaged.</p>	<p>Normal effect + All the foxes slow down the players they're following. When a player reaches an enemy, the fox jumps into the owner and gives him time. The foxes cannot be damaged.</p>	<p><b>Normal</b> Event duration: 60s Restored time: 60s</p> <p><b>Powered up</b> Event duration: 60s Speed penalty: 0.5 Restored time: 90s</p>

All the values in the table are the first one that need to be tested with the first playtest session.

Foxes' AI:

Every fox that is spawned stays around a player playing some jumping animation until it moves. The fox always tries to stay close to the player. When the player exits from a radius centered on the fox and defined by a maximum distance, the fox starts follow him. During the whole behavior the fox constantly makes a very loud noise hearable from all over the map. When the caster reaches one player followed by a fox: if the ability is not powered up, the fox disappears; if the ability is powered up, the fox jumps toward the caster healing him by a "restored time" value. If the ability ends due to the "event duration" time, the fox disappears.



Figure 36 - Image of the fox that is used in the game

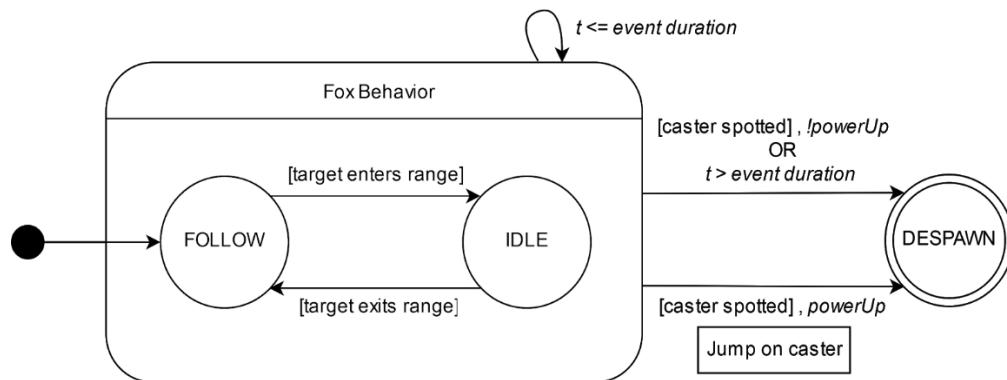


Figure 37 - FSM of the fox AI

## Bunny Totem

The bunny spirit guide is associated with fear because of the rabbit's timid nature, but also with fertility and creativity. spirit of the rabbit encourages the player to hide underground, avoiding enemies and ambush them.

Special ability: Sound of the Underground (Movement and steal time)

Normal effect	Powered up effect	Other
<p>The player can dig a hole (place an exit point) in the ground. When it decides to use it, the player can go underground wherever it wants and exit from the hole it has dig. The exit hole disappears upon exiting from it.</p> <p>The player steals time from the players it hits on jumping out from the exit hole.</p>	<p>The player can go underground whenever it wants and can move freely in the x/z axis until the ability lasts. At the end of the ability or when the player decides it, it jumps out of the ground.</p> <p>The player steals time from the players it hits on jumping out from the exit hole.</p>	<p><b>Normal</b> Event duration: 90s Damage: 30s</p> <p><b>Powered up</b> Event duration: 120s Damage: 60s</p>

All the values in the table are the first one that need to be tested with special abilities playtest session.

## Panda Totem

Panda totem inspires tranquil strength and determination. Because of his very emotional side, if not controlled, the strength given by this totem can destroy everything.

Special ability: Panda Assault (Movement and steal time)

Normal effect	Powered up effect	Other
<p>The player becomes a ball and starts rolling around the map dealing damage to the players it hits.</p>	<p>The player is invulnerable while in the ball form.</p>	<p><b>Normal</b> Event duration: 10s Damage: 20s Panda ball speed bonus: 3</p> <p><b>Powered up</b> Event duration: 20s Damage: 30s</p>

All the values in the table are the first one that need to be tested with special abilities playtest session.

## Wolf Totem

Wolf totem brings intuition and strong instinct, suggesting to the players ways to find the other contenders and attack them to survive in the arena.

Special ability: Wolf instinct (Individuate and steal)

Normal effect	Powered up effect	Other
<p>A wolf is spawned near the caster. It will chase the closest player identified at spawning and damage it upon arrival in a small radius from it, disappearing.</p> <p>The wolf can be attacked and killed.</p>	<p>Spawns three/five animals instead of one that, upon arrival, attack the target damaging it. Each wolf follows one target.</p> <p>The wolf can be attacked and killed.</p>	<p><b>Normal</b> Wolves speed: 10 m/s Chase time: 20s Search time: 3s #Attack to die: 1</p> <p><b>Powered up</b> Damage: 15s</p>

All the values in the table are the first one that need to be tested with special abilities playtest session.

Wolves' AI:

When a wolf is spawned, it starts chasing the closest player. After "chase time" seconds it stops and play some animation to indicate that it is looking for a new track to follow. After "search time" it starts to chase again the previously identified target. When the wolf arrives to the target it jumps toward it attacking it, dealing damage. The wolf can be killed if the target manages to shoot and hit it. If the ability ends due to the "event duration" time, the wolf disappears.



Figure 38 - Image of the fox that is used in the game

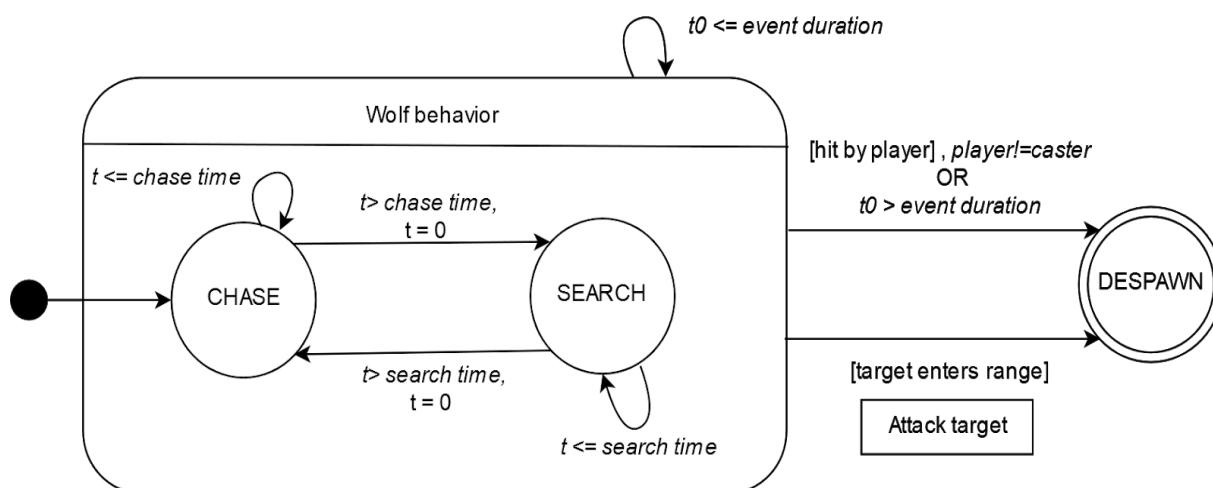


Figure 39 - FSM of the wolves AIs

## Raven Totem

Raven totem increases power of sight giving more knowledge to the players that invoke it

Special ability: Face the raven (Individuate and steal)

Normal effect	Powered up effect	Other
<p>A raven is created upon the player. It starts flying over the arena. When the raven finds the player with the most time, he swoops toward it and deals damage stealing time from it.</p> <p>The raven can be attacked and killed.</p>	<p>The player can control the casted raven to deal damage in an area upon impact.</p>	<p><b>Normal</b> Individuation time: 5s Damage: 30s</p> <p><b>Powered up</b> Duration: 20s #Attack to die: 1</p>

All the values in the table are the first one that need to be tested with special abilities playtest session.

Raven's AI:

The Raven is spawned upon the player. It then takes off and, reached a fixed height starts flying over the arena. After "individuation time" seconds, it identifies its target which is the player with the most time and starts swooping toward it. The raven starts making loud noises while chasing its target. Once reached the raven attacks the target, dealing damage and disappearing. The raven can be killed if the target manages to shoot and hit it.

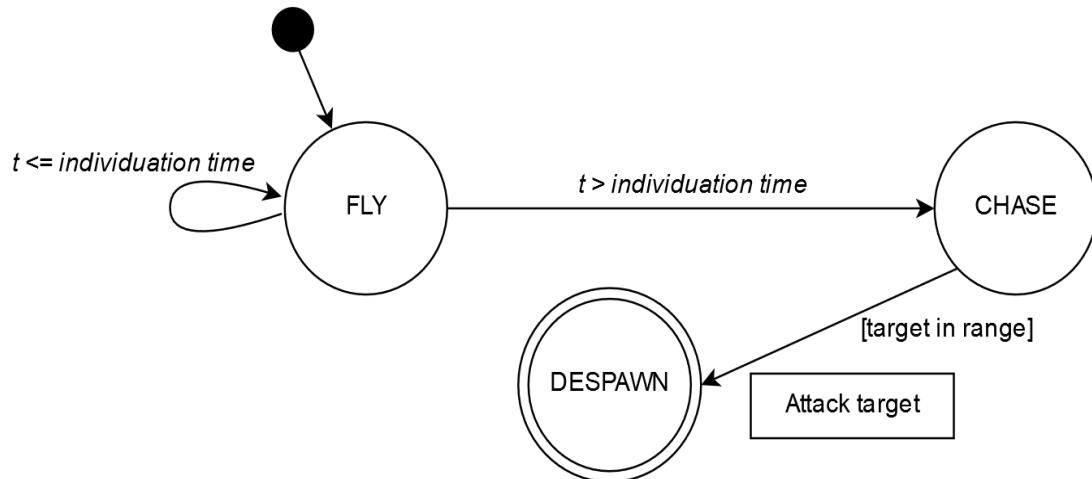


Figure 40 - FSM of the raven AI

## Cyborg Totem

This totem can join the animal ones because the Time Stealers game system was hacked. This totem is for the ones who don't believe in animal spirits and want to count only on themselves.

Special ability: Doppelganger (Disguise and steal)

Normal effect	Powered up effect	Other
Make one AI controlled clone of yourself that starts wandering around inside a circular area with a fixed maximum radius of distance centered on the caster. During the creation of the clone, the player becomes invisible. If the clone is attacked, it reverses the damage and disappear.	The caster can switch, once every "Switch interval" seconds, its position with the clone's one until the end of the ability.	<b>Normal</b> Event duration: 60s Max distance from player: 20m  <b>Powered up</b> Switch interval: 20s

All the values in the table are the first one that need to be tested with special abilities playtest session.

Clone's AI:

The behavior of a clone should be like the player's one. The clone tries to stay always as close as possible to a player. The clone wanders inside a circular area defined by a maximum distance radius centered on the clone. If the player stands still, the clone wanders around him. If the clone goes near a cover, i.e. a cover enters in the clone's Cone of Vision (CoV), the clone tries to hide, crouching. The clone can't attack but, if it's attacked by another player, it reverses the damage taken to the attacker and then disappears. If the ability ends due to the "event duration" time, the clone disappears.

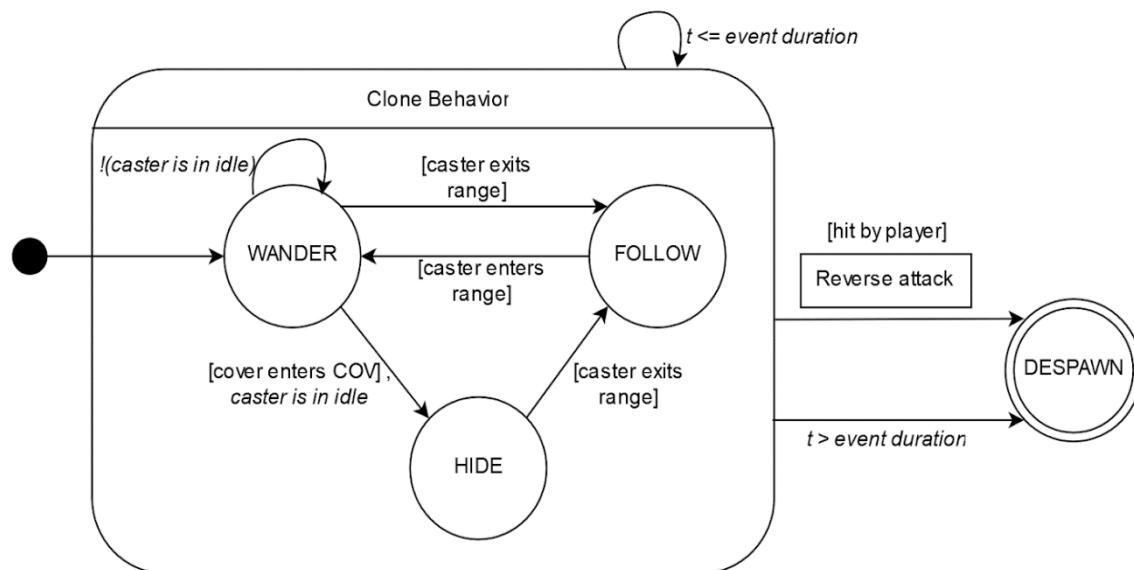


Figure 41 - FSM of the clone AI

## Game objects

### Tools

The in-game tools are a very effective way to deal damage or make ambushes to the enemies. In-game tools are one of the features that will be exploited to enrich the gameplay throughout the game's lifetime, i.e. a lot of tools will be released during the above period. The damage and the cost are intended in seconds, i.e. the player loses life upon activating an ability or using a tool.

A table with all the in-game tools' properties is given below the following list.

The in-game tools are:

- Spike trap

Place a spike trap on the ground in front of the player. The spike trap is activated if another player passes over it, stunning the player who has triggered it for a period and stealing some time. Players can destroy a spike trap using the time steal attack taking the time used by the other player to activate it.

- Shield

The shield can be used to stop the passing of time for 10 seconds. While the shield is activated, the player is invulnerable to the first instance of damage it receives. If the shield absorbs any damage, it disappears.

- Sticky sound device

The stick sound device can be thrown by the player and remains attached to the first thing it hits. It produces a walking sound.

Can be used to induce other player to come to a specific place, making great ambushes.

- Laser rope

This tool comes with two devices. The player can position them on environmental elements to create a laser between them that is visible only by whom is near it. If the player passes through it, takes damage. The tool can be deactivated using the time steal attack on one of the two devices.

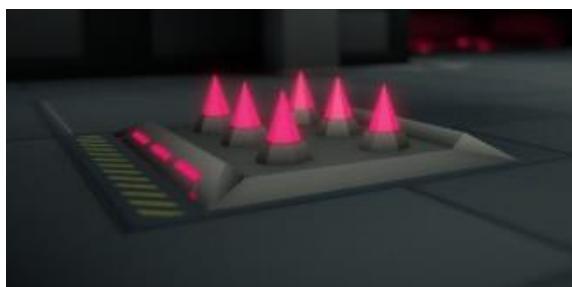


Figure 42 - Image of the spike trap that is used in the game



Figure 43 - Image of the shield that is used in the game

### **Tools properties overview**

Tool	Cost (s)	Damage (s)	Range of effect (m)	Other
Spike trap	15	10	5m	Stun duration: 5s #Attack to destruction: 1
Shield	0	-	Self	Duration: 10s
Sticky sound device	10	0	250m	Duration: 15s
Laser rope	20	30	-	Max distance: 10m Duration: 100s

Legend: - (Instant duration; no damage;)

## Interactable objects

In the environment are present elements that the player can exploit to achieve its goal. The player can interact with these interactable objects based on their function. During the game's lifetime, more interactable objects will be added to enrich the gameplay, offering new way to the player to interact with the arena.

A table with all the interactable objects' properties is given below the following list.

The interactable objects are:

- Turrets

Turrets are positioned on environmental elements (such as trees) and can be activated by players using some of their time. Once a turret is activated it hits the first player that stays in its range for some seconds, stealing time from it and giving it to the one that has activated the turret. After the turret shoots, it deactivates itself. Active turrets are colored by the signature color of the player who's activating it. Players can deactivate an active turret using the time steal attack taking the time used by the other player to activate it.



Figure 44 - Image of the turret that is used in the game

Turrets' AI:

Upon activation, the turret start watching the surroundings. If a player enters in its attack range, the turret makes a sounds and start aiming at the target. After a "alert duration" time, the turret shoots at the target. Even if it misses the shot, the turret deactivates itself. If the target exits the alert range before the turret alert timer finishes, the turret restarts watching the surroundings. If the turret is hit by a player, is not destroyed but deactivates itself.

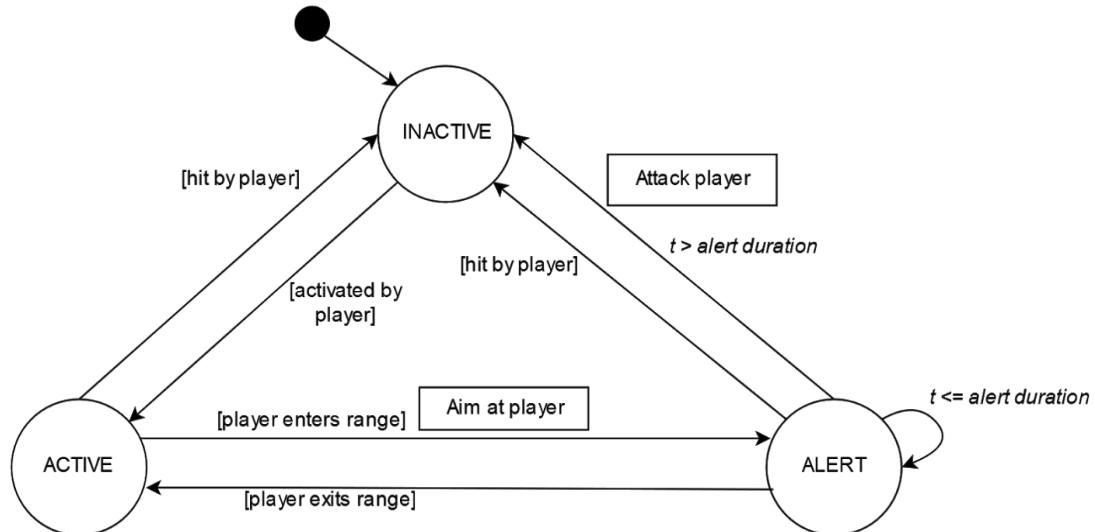


Figure 45 - FSM of the turret AI

- Token

The token is a lightning sphere made of bits that can be used to activate a totem in the map and it's spawned along with the courier. (See "Gameplay description" section and "Courier" section for more details) The token is dropped when the carrier is damaged. If the carrier uses a special ability, the token is not dropped. If the token is dropped by the carrier then it is locked from picking it up for some seconds. The token has a pick-up time before it can be picked up. After the token is unlocked, the player must interact with it, channeling for the pick-up time. The token disables the carrier's normal abilities and tools. After the activation of the totem, the token disappears.

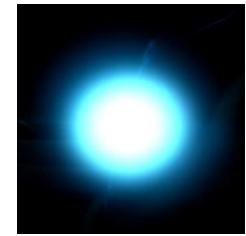


Figure 46 - Reference image for the token

- Totem

Totems are pillars present in the map associated to players. Each pillar is characterized by an animal spirit which is the one of the player the totem belongs to. Players can interact with any totem in the map, activating it using the token and gaining a special ability. (See "Game characters" section) If the totem belongs to the player who's activating it, the special ability is powered up.



Figure 47 - Concept image of the totem

Reference images will be inserted here before the final version of the document.

- Courier

The courier is a flying robot which spawns from a randomly chosen courier spawning point in the map. (See "Maps (Arena)" section) The courier carries the token described above. For sometimes it wanders in the map, then it goes to its center and, after some time, flies away with the token. If the courier senses that there's a player (via sound or vision) near it, it stops its behavior and goes straight to the center of the map, avoiding the player. If the courier is hit by a player, drops the token and flies away. How the player can interact with the token it is carrying, is explained in the token section above. A new courier doesn't spawn if there's still a token in the map.



Figure 48 - Image of the courier that is used in game

Courier's AI:

On spawning, the courier starts wandering for a "wander time duration". During this time, it randomly selects a destination in the graph composed by the allowed roads in the map (See "Maps (Arena)" section). If it reaches its destination and the wander time it's not elapsed, it chooses a new destination. When the "wander time duration" elapses, the courier heads to the map center. If a player makes some noises while in the courier's listening range or enters in its CoV (Cone of Vision), then the courier heads at a higher speed to the map center. If the courier is attacked it drops the token and flies away.

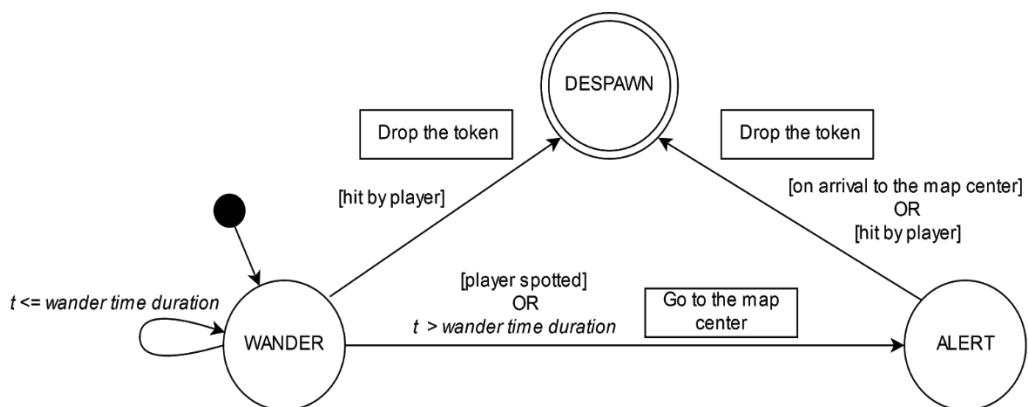


Figure 49 - FSM of the courier AI

- Tool crate

The game objects described in the "Tools" subsection above, can be found in the map inside tool crates.

- Tool crates are spawned in 12 tool crate spawning points spread on the map (See "Maps (Arena)" section)

Tool crates are spawned in tool crate spawning points at specific moments:

- At the start of the match:
  - 4 tool crates are spawned symmetrically to the player's totem to induce the players to meet each other.
- Every 4 minutes
  - 4 tool crates are spawned randomly on the map spawning points
  - If  $n$  crates weren't opened, after 4 minutes there will be  $n + 4$  tool crates on the map
  - In the same sector can be spawned only 1 tool crate. This choice has been made to not make available too many crates at the same time, making them a more valuable resource.

All the spawning times will be added prior the final document version

Interaction with a crate:

- To open a crate the player must interact with it.
- Tools will be arranged around the crate that will disappear.

Each tool crate contains a set of 3 tools randomly generated following the constraints in the following table

Tool	Max #tooltype in a crate (Upper bound)	Probability
Spike traps	3	0,3
Shield	2	0,3
Sticky sound device	1	0,2
Laser rope	1	0,2

Combinations of tools findable in the crates will be given in a table prior the final document version



Figure 50 - Reference image of a tool crate

- Wild animals

Inside the map there are 5/6 virtual wild animals wandering around. These are present to enhance the immersion of the player in the natural environment in which the arena is set.

The player can clearly distinguish the wild animals from the ones casted by a special ability because the former does not have lighting stripes over their bodies.

The number of wild animals inside the arena is set in advance and are spawned after the initial countdown. The animals wander around. If a wild animal senses that there's a player (via sound or vision) near it, it stops its behavior and starts to flee from the spotted player. When the spotted player is far enough the animal starts with its wandering behavior. If the player attacks successfully the wild animal, it disappears giving the player some seconds. After a "respawn delay" elapses, the wild animal spawns again in the arena.



Figure 51 - Image of the wild animals that are used in the game

Wild animals' AI:

On spawning, the wild animal starts wandering around the map. If a player makes some noises while in the courier's listening range or enters in its CoV (Cone of Vision), then the courier starts moving in the opposite direction of the spotted player until the distance between the two is greater than the safe range. If the wild animal is attacked it disappears.

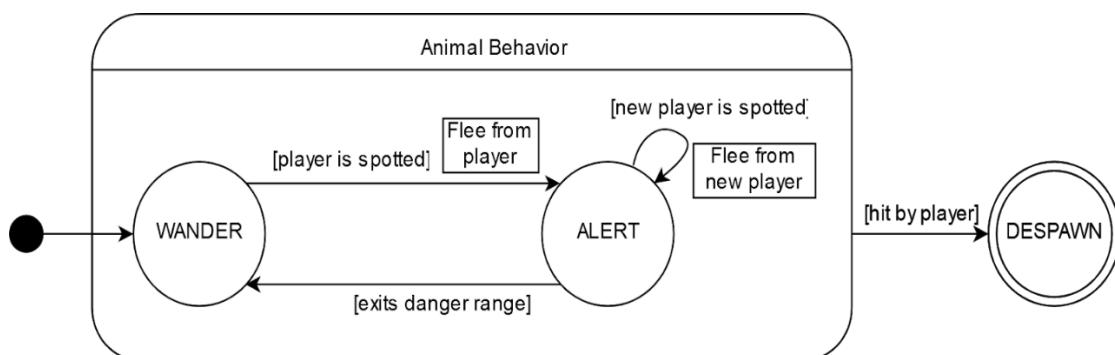


Figure 52 - FSM of the wild animals' AI

- Medal

The medal is an item that is dropped from a player upon its death and can be picked up from another player interacting with it. The medal does not have any in-game effect, but when it's picked up, it's directly represented on the scoreboard in the dome near the player who took it. The medal is used by the rewarding system at the end of the match. (See "Rewarding system" section)

### **Interactable objects properties overview**

Interactable object	Properties
Turret	Alert duration: 1s #Attack to deactivation: 1 Active duration: 60s
Token	Lock time: 3s Pick-up time: 1.5s
Totem	Pick-up time: Lock time from drop:
Courier	Wander time: 40s Listening range: 10m Angle of vision: 60° Speed: 5m/s Alert speed multiplier: 3 #Attack to steal token: 1 Time of despawn at center: 10s
Tool crate	#Tool crates spawned each wave: 4 Spawning times: Start of the game; Every 240 seconds
Wild animal	Restored time: 10s Listening range: 20m Angle of vision: 45° Safe range: 100m Respawn delay: 20s #Attack to despawn: 1

## Shop

In the game there's a shop where the player can buy cosmetic items using the in-game currency "Time". These don't have any gameplay-related effects.

"Time" can be obtained:

- at the end of a match when, accordingly to the game setting, players receive seconds of "Time" (see the "Rewarding System" section) in reward of playing the sport.
- buying a "Time bundle" which gives the player an amount of "Time"

In the shop are listed all the cosmetic items available in the game excluding seasonal-locked items. Items have a price which differs from item to item by remain standardized between items of the same rarity. (Further details in the section below)



Figure 53 - Reference image of an in-game shop (in "Time Stealers" payments with real money are used only to buy bundles)

"Time bundles" are pre-defined amounts of "Time" which can be bought at different prices in the in-game shop. These are at the basis of the "Time Stealers" business model and the player should be induced to buy them to get the cosmetic items it prefers.



Figure 54 - Reference image of an example of bundles sold in an in-game shop

## **Cosmetic items**

Cosmetic items are not gameplay-related items which can be used by the player to characterize the avatars. These are new armors, masks, hoods, voice lines, sprays, etc.

Cosmetic items are subdivided into five rarity classes and each one of these have a different price range and chance of drop at the end of a match based on the level of the player. (See "Levelling system" section)

The rarity classes are (in ascending order of rarity):

- Common
- Uncommon
- Rare
- Epic
- Legendary

As already said in the "Levelling System" section, the chance of getting a rare item gets bigger as the player gains levels.

## **Story**

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Thanks to international efforts the Earth is still a green planet, in a world where natural places and advanced technology live together in harmony. The technological progress in the medical area has made human's lifespan very high, so, to avoid the problem of overpopulation, the government established to set at 125 the quantity of years that a human can live. At birth, each baby must be undergoing a special procedure, to link the heart and a device that control the amount of time remained to live. For this reason, time has become the only valuable currency and who can gain more of it can live longer.

Since time has always been a resource restricted to the richest class, an old lord with over 500 years created "Time Stealers", a VR Sport that let everyone to participate to earn fame and win more time as a price (or lost it in case of failure) while entertaining viewers. After 200 years the game became the most played in the world and gamers started to play hoping to become the best players collecting time and gain the fame. They compete against each other as virtual avatars in a battle that takes place in a physical forest arena that combines natural and technological elements. As the old lord believes in the shamanic culture of totemism he wanted to recreate a game where players enter in contact with their totem-spirits to reach the victory with their help. For this reason, players wear in-game an animal suit that resembles their spirit-totem. Through the decades six contenders have gained the fame and got the honor to become the avatars associated to specific animal totems in the forest, as they have become the best player mastering a specific totem-spirit

Today, gamers are trying to reach the glory of the six "Time Stars" in front of thousands people. Every new player of Time Stealers enters in the forest taking the look of one of the six "time stars" who are associated to a totem-spirit.

Despite being a successful game that gives everybody a chance to gain time, around this game a heavy bet system has been created among the richest class.

## Time Stars (PCs)

In this section are described all the characters, known as "Time Stars", that will be included in the first release of the game. Each one of the "Time Stars" is linked to an animal totem. (For further information about special abilities, see section "Totem special abilities")

### Design

The game will initially have six "Time Stars" who share the same base model (which slightly differ from male to female). To add characterization to the base model, every "Time Star" wears a hood and a mask that represents their animal spirit.

"Time Stars" are the players who stood out from the mass and became the best "Time Stealers" players in the world with a specific animal. "Time Stars" are different for background, attitude, personality and look. (See "Time Stars" section, for further information about the "Time Stars")

The player plays as a "Time Stealer" player who wants to become the next "Time Star" and decides to use a specific animal which characterize the in-game avatar with the aspect of the corresponding "Time Star".

The style of the 3D model of the avatar remembers the cartoon graphic style, like Jak and Daxter and Fortnite's ones, with small bodies, big heads and youngster look that well fits within an overall low poly style of the game. The avatars and not the "Time Stars" described below will be the ones modeled and represented in the game. Because the game revolves around stealth mechanics, the avatars resemble thieves and each one of them wears an original jumpsuit, with a hood and a mask that change shapes depending on the animal totem associated to the selected avatar. The jumpsuit, the mask and the hood will be the main objects that the player will personalize in the game.



Figure 55 – (a) Reference image of the avatar's skeleton proportions; (b) Reference image of the avatar's proportions and graphic style from Jak and Daxter; (c) Reference image of the jumpsuit from Metroid; (d) Reference image of the jumpsuit and the hood from Fortnite

## Description

### Rikkukun, The influencer

City of origin: Milan, Italy

Age: 21

Animal totem: Fox

Rikkukun is the nickname of Ricky, a famous influencer owner of a gaming channel named as him, that is well known all around the world. He is addicted to the Japanese culture, especially to video games and manga. Because he was spending a lot of time playing video games and making videos, he decided to use his abilities to compete in "Time Stealers", to get back all the time that he's lost. His skills made him one of the six best "Time Stealers" players in the world.

Reason to play: Gain time to play more.



Figure 56 - (a) Avatar in the prototype; (b) Reference image of the avatar's concept; (c) Reference of the avatar cartoon style and proportions

## Quotes

Event	Accent	Quote	Talking to	Hearable
Trailer	Confident	"So, you say my time is over? Mm. We'll see"	Audience	Audience
Select Char.	Confident	"Of course, you chose me"	Player	Player
Special Ability	Trusting	"Dear Mr. Totem don't let me down!"	Players	All
SA-Power up	Proud	"The ghost fox guides me"	Players	All
Winning	Confident	"And that's the way I do it! If you liked, subscribe!"	Audience	Audience
Defeat	Imploring	"Five more minutes, please!"	Himself	Himself
Rob someone	Confident	"This time will cover for my ad revenue!"	Hit player	Hit player
Get robbed	Angry	"You can't make fun of me! I have a reputation"	Attacker	Attacker
Imprecation	Angry	"watashi no baka! " (the stupid is on me, it's my stupid action)	Himself	Himself
Success	Happy	"Bimyou!" (Niente male!)	Himself	All

## Suzy, The poser

City of origin: Seoul, Korea

Age: 26

Suzy (Sue-ji) is an ex-member of the Korean girl group "Unleash Cleopatra". At the age of 25 she was rejected by her label that replaced her with a hologram. As the Korean music industry took all the earnings of her career she was left with no time. Knowing so, the old lord contacted her and explained her the "Time Stealers" project suggesting becoming a gamer. Her presence could have been a great way to catch the attention of the media and people around the world. She became a gamer and a fanatic of any kind of gadgets of the games world, posting loads of photos with them on social networks. With the favors of the old man she soon became one of the top six gamers who still compete in the arena of "Time Stealers".

Animal totem: Bunny.

Suzy embraces bunny's personality because of her lacking skills in game. She prefers to hide underground to avoid enemies and ambush them.

Reason to play: Take back time robbed by the Korean music industry.



(b)



(c)

Figure 57 – (a) Avatar in the prototype; (b) Reference image of the avatar concept; (c) Reference of the avatar cartoon style and proportions

### Quotes

Event	Accent	Quote	Talking to	Hearable by
Select Char.	Confident	"Are you ready to go onstage?"	Player	Player
Special Ability	Intimidating	"Pump up the volume! I'm coming with a BANG"	Players	All
SA-Power up	Intimidating	" Su-ji is coming from the underground"	Players	All
Winning	Confident	"I'm the actual super star here! Who wants an autograph?"	Audience	Audience
Defeat	Afraid	"They said they would've let me win!" + Crying	Herself	Herself
Rob someone	Make a fool of the player	"I think you've underestimated me" + Laugh	Hit player	Hit player
Get robbed	Act like a victim	"How can you be so cruel to me?!"	Attacker	Attacker
Imprecation	Severe	"Jinch'a? "(it means "Really?")	Herself	Herself
Success	Serious	Daebak!! (WOW! WOAH! That's Cool! EPIC)	Herself	All

## Jack, The pattern recognizer

Age: 19

City of origin: Paris, French

For Jack, Math is the only thing that matters in life. And pandas too, of course. He is a calculator and all his decisions are taken after having studied a math model. In a world where meritocracy seems to be vanished, he decided to enter "Time Stealers" to gain more time for doing what he loves, find a model for everything and cuddle lots of pandas. You can bet he has already understood the patterns in the game and has become one of the six best "Time Stealers" players!

Animal totem: Panda

As a calculator Jack has learned to master his strengths and use them all the way to the victory. Despite he doesn't reflect this totem's personality, the love of Jack for Pandas makes them his guides.

Reason to play: Gain time to know it all



(a)



(b)



(c)

Figure 58 - (a) Avatar in the prototype; (b) Reference image of the avatar concept; (c) Reference of the avatar cartoon style and proportions

Quotes

Event	Accent	Quote	Talking to	Hearable by
Select Char.	Confident	"100% sure we're going to win!"	Player	Player
Special Ability	Serious	"I'm gonna teach you how to battle!"	Players	All
SA-Power up	Excited for Panda	"Panda's coming! Watch out!"	Players	All
Winning	Advising moment	"A war must be fought with the head, not with the heart "	Audience	Audience
Defeat	Consideration	"Something went wrong! I should recheck my estimation"	Himself	Himself
Time s	Confident	"I think you're in trouble "	Hit player	Hit player
Time stolen	Irritated	"Nobody can overpower my genius"	Attacker	Attacker
Imprecation	Severe	What's wrong with me?	Himself	Himself
Success	Serious	"I'm the one who makes the rules here"	Himself	All

## River, The psychologist

Age: 38

City of origin: Denver, Colorado (U.S)

River is a mum who has studied psychology and later became a gamer. Tired of hearing that videogames are not educational stuff for kids, she has started researching the psychological sight of games. Considered things in which only men are good at, she decided to apply at "Time Stealers" proving she is one of the best gamer in the world, even if she is a mum. At the same time, she has been able to provide more time for her sons. Despite being the most loved mum in the world, she is a badass competing as one of the six best players of "Time Stealers".

Animal totem: Wolf

River is a mum and identifies herself in the animal spirit of a wolf, who brings her intuition and strong instinct, like a mum with her sons.

Reason to play: Gain time for her sons.



(a)



(b)



(c)

Figure 59 – (a) Avatar in the prototype; (b) Reference image of the avatar concept; (c) Reference of the avatar cartoon style and proportions

Quotes

Event	Accent	Quote	Talking to	Hearable by
Select Char.	Confident	"Let's show to this kids who is the Alpha"	Player	Player
Special Ability	Intimidating	"You ain't see nothing yet"	Players	All
SA-Power up	Intimidating	"This wolf's gonna hunt you down"	Players	All
Winning	Confident	"My children come first. Anyone who tries to get in my way will be crushed."	Audience	Audience
Defeat	Afraid	"I need to improve my skills, for my kids!"	Herself	Herself
Rob someone	Make a fool	"Are you sure this game is for you? "	Hit player	Hit player
Get robbed	Intimidating	"Never get on my bad side"	Attacker	Attacker
Imprecation	Severe with himself	"I can do better... "	Herself	Herself
Success	Serious	"Taste my claws"	Herself	All

## Rysel, The hacker

Age: 19

City of origin: Cairo, Egypt

Rysel is a young Computer Science student born in Egypt but grown in London. He spends his nights studying the world network system trying to infiltrate and hacker it, just for fun, listening to electronic and techno music from the 80's. For this reason, he usually sleeps in the morning and misses the lessons. As soon he found "Time Stealers", he applied to it attracted by its servers and the possibility to find a way to avoid finishing his studies, that are a waste of time. This "good" motivation became an unstoppable force that made him one of the six best "Time Stealers" players in the world!

Animal totem: Raven

Raven totem helps Rysel to be a good debater and to avoid obstacles with his charisma and intelligence. He is very attracted by mystery and murderers, so he often infiltrates inside the scary Tower of London and spends many nights hacking network systems.

Reason to play: Gain time to chill and hack systems



(a)



(b)



(c)

Figure 60 - (a) Avatar in the prototype; (b) Reference image of the avatar concept; (c) Reference of the avatar cartoon style and proportions

## Quotes

Event	Accent	Quote	Talking to	Hearable
Trailer	Confident	"So, you say my time is over? Mm. We'll see"	Player	Player
Select Char.	Confident	"Hack the system and focus on victory"	Player	Player
Special Ability	Confident	"Let's see what happens!"	Players	All
SA-Power up	Intimidating	"Your worst nightmare is falling from the sky"	Players	All
Winning	Serious	"Even the strongest have a weak spot, you just have to find it."	Audience	Audience
Defeat	Afraid	"I have to spend more sleepless nights until I achieve this!"	Himself	Himself
Rob someone	Comforting	"You've had the worst of luck meeting my gaze"	Hit player	Hit player
Get robbed	Intimidating	"Bloody hell! I won't forget this!"	Attacker	Attacker
Imprecation	Severe	"Damn!"	Himself	Himself
Success	Confident	"Hmmm... not bad."	Himself	All

## Cyborg, The cheater

Age: Unknown

City of origin: Berlin, Germany

Cyborg is an enemy of the government who had tried to give back time at the poor classes. He remained heavily wounded in the conflicts with the police and because of that, he had to cut off several parts of his body and has become a Cyborg. He has spent lot of time at the hospital and started to play videogames with the aim of helping his recovery. As he'd become a professional gamer and medical treatments were expensive in terms of time, he decided to apply at "Time Stealers" tournament. As a Cyborg, he could not join the competition, so, he hacked the game introducing himself as animal totem. For this reason, there is a non-animal totem. This allowed him to join "Time Stealers" and become one of its six best players in the world. He is still secretly planning his revenge against the government.

Animal totem: Unknown

Cyborg with the help of Rysel hacked the system introducing a non-animal totem, just because he wants to play Time Stealers in his own way.

Reason to play: Gain time to overthrow the government

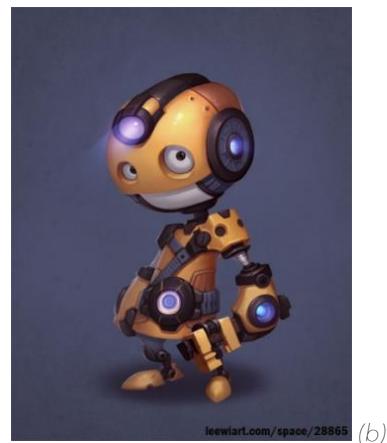


Figure 61 - (a) Avatar in the prototype; (b) Reference image of the avatar concept; (c) Reference of the avatar cartoon style and proportions

Quotes

Event	Accent	Quote	Talking to	Hearable by
Select Char.	Determined	"Let's go and subvert this game"	Player	Player
SA	Ready to battle	"The power's in my hands! Get ready! "	Players	All
SA-Power up	Determined	"I don't need any pets to win this game!!"	Players	All
Winning	Serious	"My revolution has just begun"	Audience	Audience
Defeat	Afraid	"You fool! You'll regret supporting this government!"	Himself	Himself
Rob someone	Comforting the opponent	"Nothing personal! I'm playing against someone above you"	Hit player	Hit player
Get robbed	Complimenting	"You have some skill then"	Attacker	Attacker
Imprecation	Severe	"I have to try harder than this"	Himself	Himself
Success	Surprised	"I still got some juice"	Himself	All

## NPCs

### The Creator

Description:

The creator is an old lord who has invented the "Time Stealers" competition with the goal of giving more living time to everyone in the world. The creator has lived more than 500 years and, in a world where nature and technology perfectly cohabit, he is still one of the few humans that practice the ancient shaman cultures of North America. He believes in totemism, a culture based on the relationship between a human and an animal (called totem) that has the role to guide him and protect him. For this reason, he has built a competition in which players steal time to each other in an arena, joined by animal totems that help them to locate, attack and disguise the other players.



Figure 62 - Reference image of the creator

### Commentator

Description:

It's the host of the "Time Stealers" competition. He comments the matches inside a big stadium where the players join the virtual reality matches. Players hear in-game his voice distorted by the virtual reality. His cynic comments on players misfortunes help the audience to follow with more interest the stealth competition. His personality resembles delusions of grandeur and a bit schizophrenic typical of a drugs addict subject. At the same time his charisma gets all the attentions and sometimes becomes the main attraction of the match.



Figure 63 - Reference image of the commentator

References:

Caesar Flickerman - Hunger games <https://www.youtube.com/watch?v=alx9cn9-Dfs>

Caesar Flickerman - Hunger games: Catching fire <https://www.youtube.com/watch?v=CT2u13pWzdo>

Sprint Vector host introducing the match <https://www.youtube.com/watch?v=X22qJmqVE6w>

Willy Wonka quirky phrases <https://www.youtube.com/watch?v=WtRwBzBFSmA>

### **Commentator's Quotes**

#### **Main menu**

Event	Accent	Quote (Quotes in the same cell are alternatives)	Talking to	Hearable by
Introduction	Encouraging	"Time is of the essence! C'mon, jump into the arena!"	Players	Players
	Advising	"There's no point in wasting time, ever!"	Players	Players

#### **Start of the match**

Commentator announces heroes entrance, gives some tips and kicks off the match

Event	Accent	Quote	Talking to	Hearable by
Start of the match	Welcoming	"Ladies and gentlemen welcome to "Time Stealers". Let's hear it for our 15-minutes heroes. They could be their last ones!"	Audience	All
		"You have to get your glove to shoot! Pay homage to your totem guide!"	Player	Player
	Empowering	1) "Don't waste your time! Steal it" 2) "Fight for your Time!"	Players	All
			Players	All
	Serious	"The time of your death has now been synchronized. Three. Two. One. It's Time to Run"	Players	All

## Map events

Event	Accent	Quote	Talking to	Hearable by
Loot crates spawn (First time)	Informing	"Some tools have appeared in the arena!"	Players	Players
Loot crates spawn	Informing	"Here come new crates! Out of your hidey-holes, little mice!"	Players	Players
	Informing	"It's tool generation time!"		
Spawn Courier (First time)	Informing	"A courier has entered the arena! Steal its treasure!"	Players	All
Spawn Courier	Provocative	"Let's see how much time you'll lose catching the courier!"	Players	All
	Informing	"Who's gonna take the next token?"		
Courier has reached the map center	Irritated	"Do you expect the courier to run in front of you? He's waiting at the center of the arena"	Players	All

## Player events

Courier has been hit by a player	Informing	"Courier down!"	Players	All
Try to shoot without the glove		"Do you even listen when I talk?? You can't shoot! Run to your totem to take your glove!"	Player	Player
Gained the Token	Excited	"The token is in your hands! Quick, now, to the Totem!"  "The token's yours now. Watch your back!"	Players	All
Token robbed	Surprised/Excited	1) "What an incredible turn of events ! The token has just been stolen!"  2) "Another theft! I hope someone will get payback for it!"	Players	All
Excited				
Gained big amount of time	Excited	"Outstanding! That was a big theft!"	Affected player	Affected Player, Audience
Loss of a big amount of time	Sarcastic	1) "Did your mum really bet time on you?! Ouch, I hope she hasn't passed away!"	Affected player	Affected Player, Audience
	Provocative	2) "Such a newbie! Even your Totem won't trust you anymore!"		
Falling in a spike trap	Laughing at the player	1) "Did Mama never tell you to watch your step?"  2) "Like a rat in a trap!"	Affected player	Affected Player, Audience
Falling in a Laser rope	Laughing at the player	"Did Mama never tell you to watch your step?"	Affected player	Affected Player, Audience
Deactivating a turret	Wondering	"You know your thing! Or was it just luck?"	Affected player	Affected Player, Audience
Weapon in overheat, Player trying to shoot	Wanting to use puns	"Hey, give your toy a break! I wouldn't suggest toying too much with it"	Affected player	Affected Player, Audience
Player running out of time (increase anxiety)	Sadistic	1) "Tick-Tock. Tick-Tock. I suggest you check out how much you still have until your death"  2) "Welcome to your last-minute warning!"	Affected player	Affected Player, Audience
	Sadistic			
Player's death	Sarcastic	1) "Somebody left the arena! Let's hope they saved some time for the next battle! Or let's hope not!"  2) "Ouch! Seems like it's game over for somebody!"	Audience	All
	Pretend to be sorry			
Player's death	Informing	1) "Time's up!" 2) "You are out of time!"	Player	Player
Proclaim winner	Involving the audience	"And we have a winner! Congratulations! Your death is somewhat further away!"	Affected player	All
	Involving the audience	"And we have a winner! Just make good use of the time you've looted!"		

## Ability Quotes

Event	Accent	Quote	Talking to	Hearable by
Spawn an annoying fox next to the player	Cute/Sarcastic	"Such a cute fox! It will follow you everywhere. Lovely, isn't it?"	Players	Player affected
Spawn a wolf	Making a dark voice	"Little red riding hoods watch out! Here comes the big bad wolf!"	Player	All but the ability owner
Escape in a hole	Insulting	"That coward has escaped into the hole!"	Players	All
Create a clone	Irritated	"Stop using the Cyborg Totem! That's not even an animal!"	Players	All
	Excited			
Trigger Raven	Evoking	"Big Raven is watching you"	Players	All but the ability owner
Panda rolling	Aggressive/Excited	"Someone's coming like a wrecking ball! Destroy them!"	Player	All
Trigger ability	Informing	"Seems like a Totem just woke up"	Affected player	AI

## Maps (Arena)

The map is a hexagonal arena on a not too steep slope with fixed boundaries from which the player can't escape.

The environment in which the arena at the launch of the game is set is a forest. This is one of the game's elements that will be exploited to enrich the experience of the players and extend the game's life. The graphic style of all the elements in the arena is a low poly one as the overall style of the game. Each map must be designed to provide players with coverages to enhance the stealth component.

Every map has the same structure and differs only on the natural environment in which it is set as well as the disposal of the environmental elements in it. All the environmental elements cannot be damaged, but the player can always jump on them if they're small enough.

At the center of an arena there's a flat which lacks coverage and is lower than the rest of the area and a scoreboard that shows the left to each player.

The recurrent elements in the arena are:

- one pillar at the center of the map (landmark)
- four/six player spawning platforms symmetrically positioned near the central pillar
- four/six totem connected to the animal spirit of a character near the border of the arena, in front of each player spawning point
- twelve tool spawning points distributed in the map
- twelve courier spawning points

There are visible roads in every map to induce the player to follow them instead of walking across the arena all the time, giving the opportunity to better place traps or make ambushes. The graph created by these roads is used by the courier during its wandering phase. (See "Interactable objects" subsection)

At the center of the arena there is a Basketball scoreboard.

To improve the immersion of the player a transitional wireframe effects will be played sometimes over the objects in the arena to remind the player that it's playing in a virtual reality sport.

### Map measurements

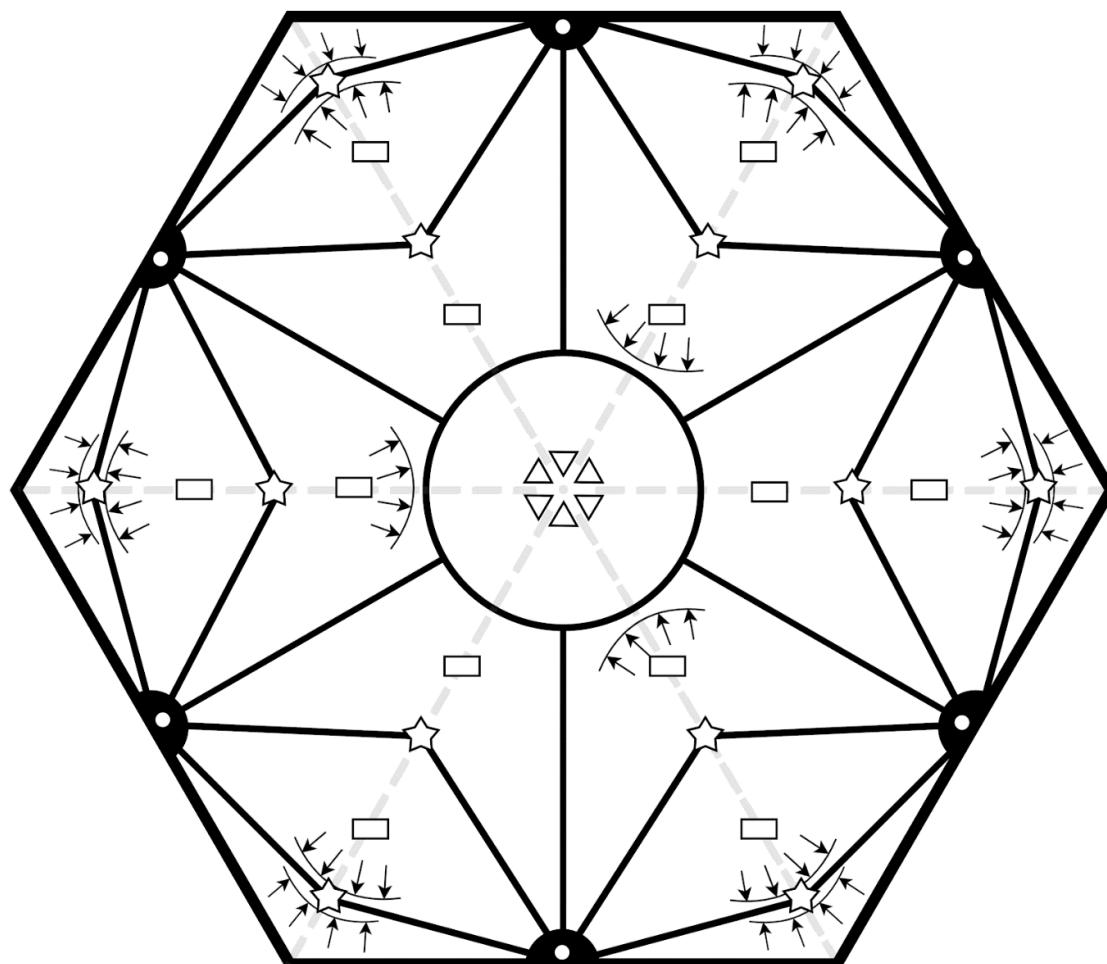
Property	Measure
Side dimension	200m
Steep	5%
Dome radius	200m

## Forest Arena

This arena is set in a forest. All over the map there are trees and other typical forest elements that will be described in the following section.

The visible roads mentioned above in the forest arena are dirt roads that start from every totem and finish at the center of the arena or meet other dirt roads coming from other totems.

The following schema represents the structure of this arena.



Forest arena schema

Legend:

- Player spawning point
- Loot crates spawning point
- Courier spawning point
- Totem
- Cliff

Dirt roads are represented by black segments connecting all the major point of interests.

## Ambient mood

The overall look of the map should be dark and gloomy. To give that feel, in the arena there aren't lights except for the ones coming from the dome, the neon posed on the trees trunks and the particle effects of the totems and the central pillar.



Figure 64 - Reference image for the overall ambient mood

## Forest elements

- Trees (Height: 3m; Trunk Width: 1,5m/3m)

They're the main coverage resource in the arena. In the map are present different varieties of trees to have different trunks. The player cannot jump on them. Trees are also the main source of light because most of them will have neon lights on the trunk.

- Rocks (H-W-D: 0,2m/2m - 0,2m/2m - 0,2m/2m)

Are very important for coverage too. They're of different types but usually small to let the player use them to have a better view of the surroundings.

- Grass
- Logs (H-W-D: 0,2m/1m - 1m/4m - 0,2m/1m)

There are two types of logs: one with a recess on a side to let the player hide in it; one hollow inside and small to let the player jump over it.

- Cliff rocks (Height: 3m)

Cliff can be used to have a better vision of what there is below them. Are positioned in the map to create narrow passages in which ambushes and traps can be easily made.

## Seaside Arena (Expansion)

This arena is set in a futuristic military beach. Players can use palms and rocks to hide from the opponents. Players can be spotted by a light house. Whale spirit as a new totem will be released with this map. If the player activates the whale special ability next to water, spawns a whale that eats the player and take it to the other side of the beach.



(a) Reference image for the seaside arena



(b) Ambient mood of the map



(c) Reference image of the lighthouse



(d) Reference image of the whale avatar's concept

Figure 65 a,b,c,d - References for seaside map

## Metropolis Arena (Expansion)

This map is set in a metropolis. The environment is lighted by night illumination (streetlights, neon etc.) and Player can use the back streets of the block to hide from others and from police cars. Mouse totem is available with this map. The player who activates the totem becomes smaller and faster and take for a while and pass through small shortcuts.



(a) Reference image of the Metropolis Arena



(b) Reference image of the mouse avatar's concept

Figure 66 a, b - References for metropolis map

# Media List

## Interface assets

All the interfaces defined in the "Interfaces" section must be created.

All the HUD elements defined in the "HUD" subsection must be created.

## Maps

All the maps defined in the "Maps (Arena)" section must be created.

This comprehends the 3D model of the map from a structural point of view (ground, floor, cliff rocks, etc.) and, also, of the dome.



Figure 67 - Reference image of the dome

## Environmental elements

For the forest map the following elements, as described in the "Forest Arena" subsection, need to be created.



Figure 68 - Reference images for the arena elements

## Game Characters

3D models for all the PCs must be created by the 3D artist. (See "Time Stars" section for a complete list)

PCs models must have:

- a low-poly style
- no 3D modelled face. The face will be given as a texture.
- a tight jumpsuit
- gloves of the same jumpsuit style. The right glove used to attack must have a lighted sign representing the sport logo.



Figure 69 - Reference images for the gloves

- shoes of the same jumpsuit style but separated from it



Figure 70 - Reference image for the boot

For every PCs, a personalized hood must be created. These must provide a direct information to the player about which animal is linked to every character.



Figure 71 - Reference images for the hoods

On the back of each jumpsuit there's the "Time Stealers" logo which must be lightened up with the color of each game character.

All the PCs' 3D models must be rigged to create animations over them.

In the game there will be only one NPC that won't be modelled because his presence it's perceived only through his voice. (See "NPCs" section)

Because each character is associated with an animal the models for every needed animal must be created. Wolves and foxes models have been purchased on the Unity Asset Store.

### **Game characters animations**

For all the normal abilities and special abilities see "Characters abilities" subsection and "Characters descriptions and special abilities" subsection .

The 2D/3D modeler must create the following animations:

- Walk
- Run
- Crouch (idle and walking)
- Jump
- Charging the attack (idle and walking)
- Attack (idle and walking)
- Time steal attack animation (beam shot)
- Place something on ground
- Throw
- Pick up from ground
- Use of every normal ability
- Dying
- Suzy's special ability: jump inside the ground
- Jack's special ability: become a giant ball, return in normal form
- Rysel's special ability: control the raven

### **Game objects**

Some of the game objects defined in the "Game Objects" section must be created.

For the tools game objects are needed the models of:

- Sticky sound device
- Laser rope

The model for the spike trap has been purchased on the Unity Asset Store. For the shield see "Particle effects" subsection below.

For the interactable objects are need the models of:

- Totem
- Tool crate
- Medal

The model for the courier and the wild animals have been purchased on the Unity Asset Store (they include animations). For the token see "Particle effects" subsection below.

For a reference image see the section mentioned above.

### **Game objects animations**

The 2D/3D modeler must create the following animations:

- Tool crate opening

## **Particle effects**

The 2D/3D modeler must create the following particle effects for the game characters:

- glowing aura (when the player takes the token)
- time stealer attack
- dash

The 2D/3D modeler must create the following particle effects for the game objects:

- shining effect of the medal
- particle effects of the tool crates while opening
- effects related to the shield. The shield is not modeled. It's a sphere that surrounds the player.
- effects related to the token. The token is not modeled. It's a glowing sphere of bits.
- totem and central pillar effects

For a reference image of the game objects see the "Game Objects" section .

For a reference image of the game objects see the "Game Characters" section .

## **Music**

The audio designer/composer must create the following music:

- Main menu music

Due to the game setting, the main menu music should recall at the player mind the idea of playing in a world-wide e-sport.

- In-game music

The in-game music has two main purposes: enhance the player experience and hint to the player condition while it's playing. It should give the player at the same time a sense of mystery/tension/anxiety typical of stealth games and action vibes. It must be synchronized with the passing of seconds, i.e. 60 bpm, to induce in the player a correspondence between the passing of time and the music. Because all the in-game moments are not the same, the in-game music should be developed over multiple layers keeping in mind that there will be two main type of situation: static/explorative; dynamic/action.

## **Sound effects**

The audio designer/composer must create the following sound effects for the game characters:

- walking sound (on leaves in the forest case)
- running sound (on leaves in the forest case)
- time steal attack sound
- dash
- ability usage
- special ability usage
- animal noises the special abilities are linked to

The audio designer/composer must create the following sound effects for the game objects:

- spike trap activation
- spike trap destruction
- shield activation
- shield destruction
- laser rope activation
- turret activation
- turret shot
- turret deactivation
- totem activation
- tool crate opening
- wild animals' movement noises

### **Voice lines**

All the commentator voice lines described in the "Commentator Quotes" subsection must be recorded.

All the characters voice lines described in the "Time Stars" section must be recorded.

# Prototype

## Gameplay

Everything described in the "Gameplay" section is implemented.

## Interface assets

Among the interfaces described in the "Interfaces" section these are the ones present in the prototype and for which the assets have been produced:

- Main menu (The only available buttons are "Play" and "Exit")
- Play screen (The only available buttons are "Fast match" and "Back")
- Character selection screen
- All the HUDs described in the "HUD" subsection have been created except the tool wheel

## Maps

In the prototype there's only the forest arena. The other maps that are briefly described in the "Map" section are only examples of possible extensions.

## Environmental elements

All the environmental elements for the arena present in the prototype described in the "Forest Arena" section have been created and included in the prototype with an exception of the grass and rock cliffs.

## Game Characters

All the game characters described in the "Game characters" section (their model, attack method, abilities, special abilities, etc.) have been created and included in the prototype.

All the animals needed by the characters' special abilities have been included in the prototype.

## Animations

Almost all the animations listed in the "Media List" section have been included. Animations have been made using Mixamo.

## Tools

All the tools described in the "Game objects" section have been included in the prototype with an exception of the sticky sound device and the laser rope.

## Music

The main menu music and the in-game music described in the "Media List" section have been created and included in the prototype.

## Sound effects

All the sounds effects for the elements included in the prototype and listed in the "Media List" section have been produced and included in the prototype.

## Particle effects

Almost all the particle effects for the elements included in the prototype and listed in the "Media List" section have been produced and included in the prototype.

### **Voice lines**

All the commentator voice lines described in the "Media List" section have been recorded and included in the prototype.

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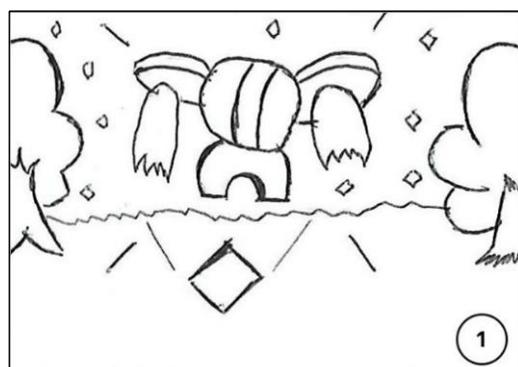
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## Appendix A - Storyboard

We used a storyboard to explain how it works the process of activate and use a special ability. (See "Gameplay" section for further information)

TITLE: Activate/Use a special ability



Description:

The courier's spawn somewhere on the map is announced by the commentator

Dialogues:

Commentator: "A courier has entered the arena!  
Steal its treasure!"

Gameplay: --



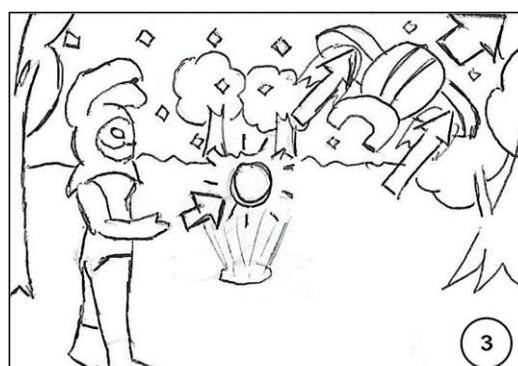
Description:

Suzy (the avatar with the bunny hood) is the first player to find the Courier and shoot it with the Time Stealer glove.

Dialogues:

Commentator: "courier down!"

Gameplay: Aim and shoot with Time Stealer.



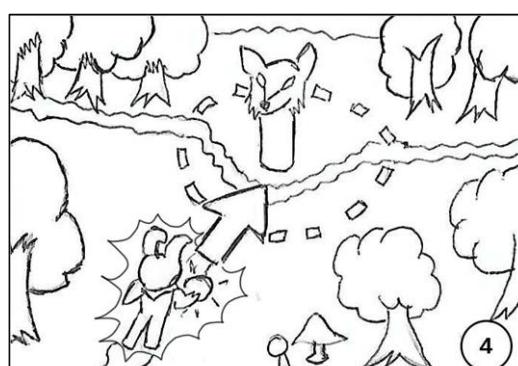
Description:

The courier leaves the token suspended on air and flies away. Suzy takes the token.

Dialogues:

Commentator: "The token is in your hands! Quick, now, to the Totem!"

Gameplay: Interact with the token.



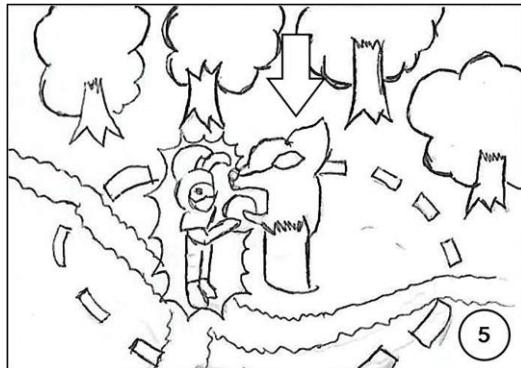
Description:

Suzy's suit becomes flashy because she owns the token. Suzy chooses to go at "wolf totem" because she wants to activate one of the special abilities.

Dialogues: --

"

Gameplay: All Suzy abilities are deactivated.



Description:

Entering in totem area, the head of the wolf goes down and this allows Suzy to put the token in its mouth! After that Suzy's abilities are available again and her suit returns to its normal form.

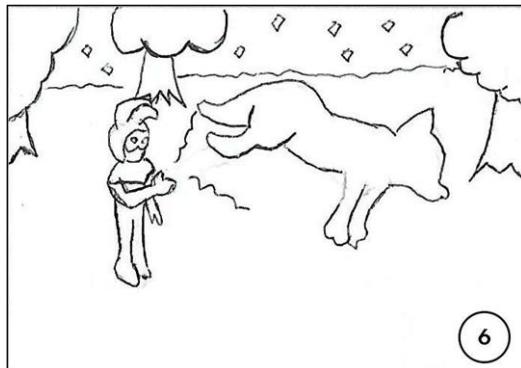
Dialogues:

Suzy: "Daebak!!" ("That's cool!").

Commentator: "Seems like a Totem just woke up".

"

Gameplay: Interact with "wolf totem" to activate a special ability.



Description:

When she wants, Suzy activates "Wolf instinct", the special ability of "wolf totem" in its normal form (power up form is only available for River, the character associated to the "wolf totem").

Dialogues:

Suzy: "Pump up the volume! I'm coming with a BANG".

Gameplay: Use special ability.

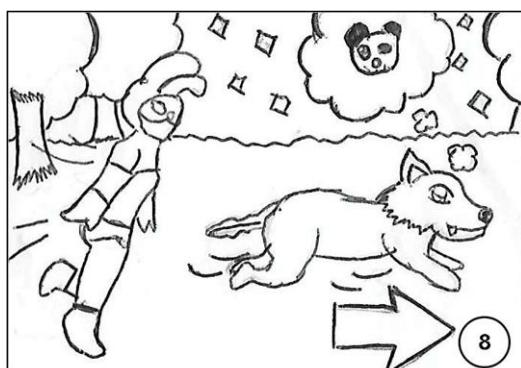


Description:

A wolf spawns next to Suzy and starts to search for the closest opponent on the map.

Dialogues: --

Gameplay: --



Description:

The wolf follows the traces of Jack (the character with the panda hood) and Suzy chases it.

Dialogues:

Commentator: "Little red riding hoods, watch out! Here comes the big bad wolf!"

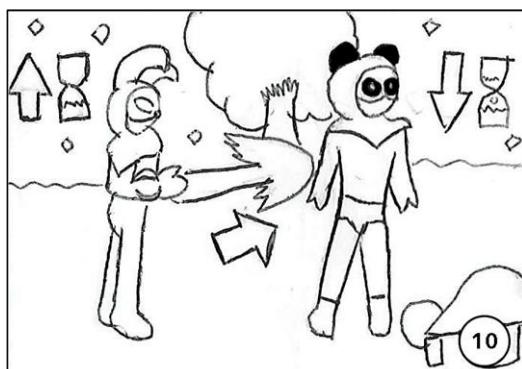
Gameplay: --



Description:  
Before despawning, the wolf finds Jack and steals him seconds of time.

Dialogues: --

Gameplay: --



Description:  
Thanks to the wolf special ability, Suzy finds Jack and steals his time.

Dialogues:

Jack: "Nobody can overpower my genius!"

Gameplay:  
Aim and shoot with Time Stealer.