



# Synth & **SINNERS**



**GAME DESIGN DOCUMENT**  
ONLINE GAME DESIGN 2020/2021



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The **purpose** of this document is to give information about the whole structure of the game, describing the soul and the essence of it and the feelings that the game should transmit to the players.

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## DESIGN HISTORY

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WHO	WHEN	WHAT
Edoardo Carrer	01/04/2021	Document created
Daniele Croci	01/04/2021	Added gameplay overview, description, controls, scoring and game modes
Edoardo Carrer	01/04/2021	Added first draft of Target Audience
Daniele Croci	02/04/2021	Modified game description, added game resources
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Daniele Croci	30/04/2021	Minor changes in Resources
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Daniele Croci	06/05/2021	Added prototype map
Susanna Brambilla	06/05/2021	Added video in Media List

Susanna Brambilla	07/05/2021	Added Storyboard with description
Daniele Croci	09/05/2021	Modified Police AI, added Storyboard dialogue
Daniele Croci	10/05/2021	Modified Backstory and Storyboard
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Daniele Croci	01/06/2021	Modified Resources and Prototype
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Susanna Brambilla	04/06/2021	General revision
Daniele Croci	06/06/2021	Modified prototype map

## Table of contents

<b>1. VISION STATEMENT.....</b>	<b>7</b>
1.1. Game logline.....	7
1.2. Gameplay Synopsis .....	7
<b>2. AUDIENCE, PLATFORM &amp; MARKETING.....</b>	<b>9</b>
2.1. Target Audience .....	9
2.2. Bartle's taxonomy.....	9
2.3. Age.....	9
2.4. Gender.....	10
2.5. Platform .....	10
2.6. System requirements .....	11
2.7. Top performers.....	11
2.7.1. Forza Horizon 4.....	11
2.7.2. Rocket League .....	12
2.7.3. Need for speed Heat .....	13
2.8. Feature comparison.....	13
2.9. Personas.....	15
2.10. Business model .....	17
<b>3. LEGAL ANALYSIS.....</b>	<b>18</b>
<b>4. GAMEPLAY.....</b>	<b>18</b>
4.1. Overview.....	18
4.2. Gameplay description .....	18
4.3. Game modes .....	18
4.4. Controls .....	20
4.5. Interfaces.....	21
4.6. Resources .....	25
4.7. Flowchart.....	28
<b>5. GAME CHARACTERS .....</b>	<b>29</b>
5.1. Player .....	29
5.2. Civilian (NPC) .....	32
5.3. Police (NPC).....	33
5.4. Synthia (NPC) .....	35
<b>6. STORY.....</b>	<b>36</b>
6.1. Backstory.....	36
6.2. Storyboard .....	36
<b>7. THE GAME WORLD.....</b>	<b>38</b>
7.1. The Tutorial Level .....	39
7.2. The City Centre .....	39

7.3. The Beach .....	41
7.4. The Outskirts .....	42
7.5. The Desert.....	43
7.6. Tracks.....	45
7.7. Level Design Guidelines .....	46
<b>8. MEDIA LIST .....</b>	<b>47</b>
8.1. Interface.....	47
8.1.1. Menu.....	47
8.1.2. HUD.....	47
8.1.3. Video.....	47
8.2. Models and material/textures .....	48
8.2.1. Characters.....	48
8.2.2. Props .....	50
8.3. Effects.....	52
8.4. Maps.....	52
8.5. Music and sounds.....	53
8.5.1. Music .....	53
8.5.2. Sounds .....	53
8.5.3. Voice .....	53
<b>9. PROTOTYPE .....</b>	<b>54</b>

## 1. VISION STATEMENT

Synth & Sinners is an **arcade urban driving game**, in which teams challenge each other or the police to increase their reputation. The game is set in a futuristic **synthwave** world, where people constantly wear VR headsets to escape from an unpleasant reality. The atmosphere created by the **visual** and the **music** is the crucial element of the game experience.

There are different challenge modes, all based on **collaboration** within a team compounded by three members. Destroying rivals' cars, doing actions like drifting and stunting, or winning matches allow the player to earn points and coins needed to unlock new car models and customization elements. Points are multiplied if the actions are made in a collaborative way. For these reasons, cooperation and coordination are essential, so the players belonging to the same team must **cooperate communicating** via voice chat to win matches and gain reputation.

### 1.1. Game logline

*Run away, compete, and stand out with your crew for your style, in a world where the line between reality and the virtual world has never been so thin.*

### 1.2. Gameplay Synopsis

After choosing and personalizing the car, the player enters a central hub, represented by the open map of the city, named Synth City, where he can freely roam. Here he can choose the soundtrack, gain reputation points or train alone or with his friends from his team.

The game is multiplayer, and a match starts when at least a team of three players is created. Each match is short and simple, and the player can choose between different challenge modes and, depending on the choice, it is possible to have one team of players facing the AI or two teams of players challenging each other. In the Police Chase mode, the team must elude the police with two players protecting the team leader. In the Race Duel one member of the team must reach the end of the path before any member of the rivals' team. In the Carrier Duel, instead, a team must protect the team leader while the other team must destroy him before the end of the track.

The game is extremely collaborative: teamwork is necessary between the members of the team, who must help each other against rivals. A high level of communication within a team during matches is therefore a fundamental aspect of the game, hence the presence of a voice chat. At the end of the match, reputation points and synth-coins are assigned to each player depending on the result of the battle.

There are four different areas in the city: the city centre with high futuristic buildings, the outskirts near the city, a desert with mountains and rocks and the beach with long tracks and palms.

The game has a low-poly graphic, and all the different settings have a futuristic synthwave atmosphere that represents the reality as seen through characters' headshots VR. Neon lights, gridline, '80 sport cars and wireframe artifacts are keywords to describe the visual aspects of the game world. Both with the cooperative approach to racing, the synthwave style of the visuals and the music is the core element of the player experience since the game is mainly intended for the lovers of this artistic genre.

Winning matches and performing in-game actions, the player gains reputation points, which increase the level, and synth-coins, in order to unlock new car models and customization elements like paintings, different wheels or different lighting to personalize cars. This feature helps to emphasize the synthwave look of the game.

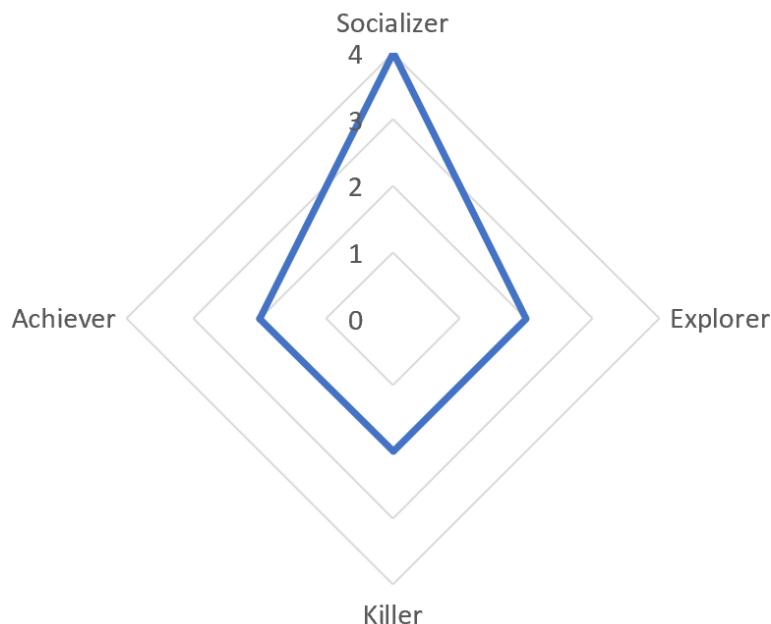


## 2. AUDIENCE, PLATFORM & MARKETING

### 2.1. Target Audience

The game is designed to be appealing regardless of age or gender, for all people who appreciate synthwave/vaporwave and want to immerse themselves in a simple, intuitive game that allows them to interact with people who have the same passion. We think that our game is the most suitable for the **casual gamer** that wants to play something fast and immediate with a definite style.

### 2.2. Bartle's taxonomy



The entire game is designed to be compelling for the **socializer** type of player, who wants to play more for interacting with other players than for the game mechanics themselves, and we thought that the union of simple mechanics and precise imagery is the perfect mix for those players, but not having a guild system could be a lack for these players. According to recent studies, 39% of players define themselves as socializers. (4 out to 5)

The design of each level will be designed to emphasize cooperation, for example by giving higher "scores" to actions that require coordination and cooperation. With this in mind, we thought that creating an overworld where you can move freely enjoying the aesthetics of the city with your friends and where also sharing the music is essential.

This overworld can also fit with **explorers** who want to drive inside Synth City while enjoying the aesthetic of it, despite it isn't interactable or with particular secrets to discover. (2 out to 5)

We think a **killer** can look at the competitive modes and find a challenge that will satisfy him, as well as feed his hunger for superiority, with also some spectacular cars crashes, despite it isn't the focus of the game. (2 out to 5)

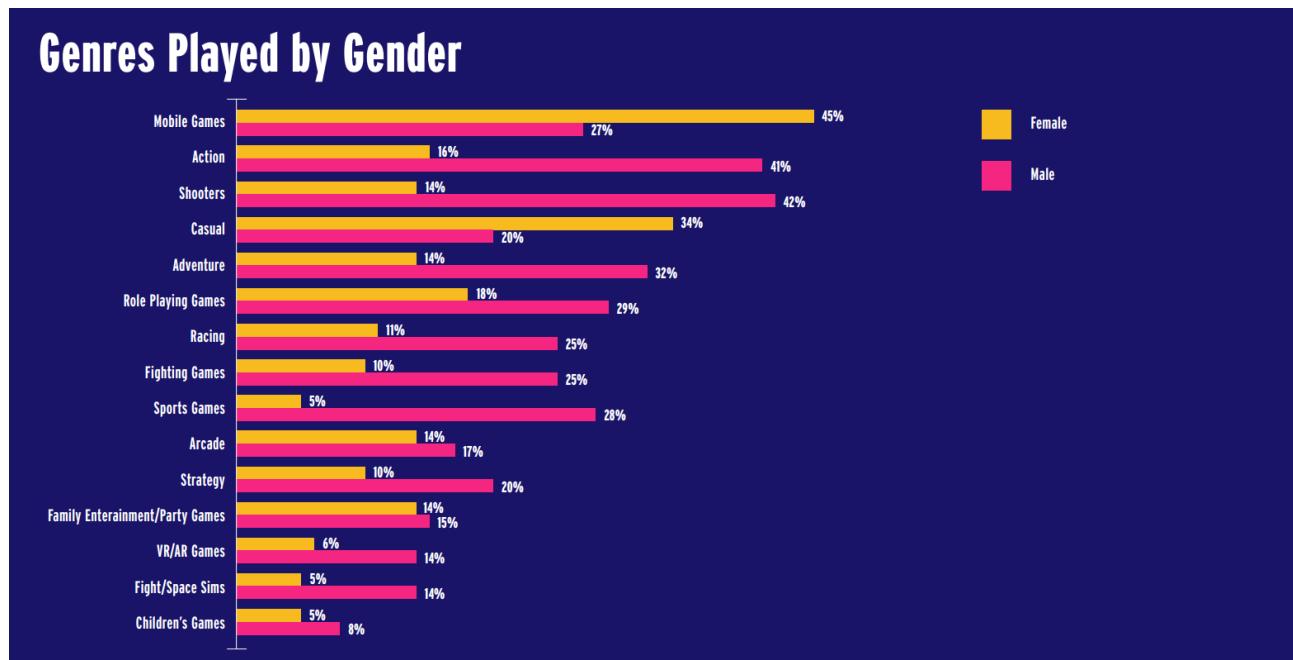
For **achievers**, it can be compelling to try to unlock all the different types of cars and skins as well as trying to score high points in all the different types of challenge. (2 out to 5)

### 2.3. Age

Even though the game is not designed for an exact age target, it is possible to make some considerations regarding the vaporwave movement. The vaporwave was born around 2010 from the sense of nostalgia felt by young adults of that technological imagery of the early 80's composed of analog mixed with fantasies of a near digital future. The imagery certainly takes a lot from cyberpunk also regarding the social situation. So, if we can consider the **Young Adult** (18-24) and the **Twenties & Thirties** (25-35) as the main target, the vaporwave/cyberpunk imaginary is also catching the **new generations** thanks to this juxtaposition of what for them is now part of

normality as VR and AR and what is instead now "prehistory" of technology as cassettes and cable connections that creates this oxymoron of a futuristic past.

## 2.4. Gender



This chart, from [gamesIndustry.biz](#), shows in 2020 how casual games are played by 54% of players, 34% women and 20% men, and racing games by 36% of which 11% women and 25% men, we expect that the racing part may be more attractive, but since we also believe that as far as the current vaporwave is concerned there is no gender gap, we can then estimate a 60% men and 40% women players, i.e. a fairly **homogeneous community** of players.

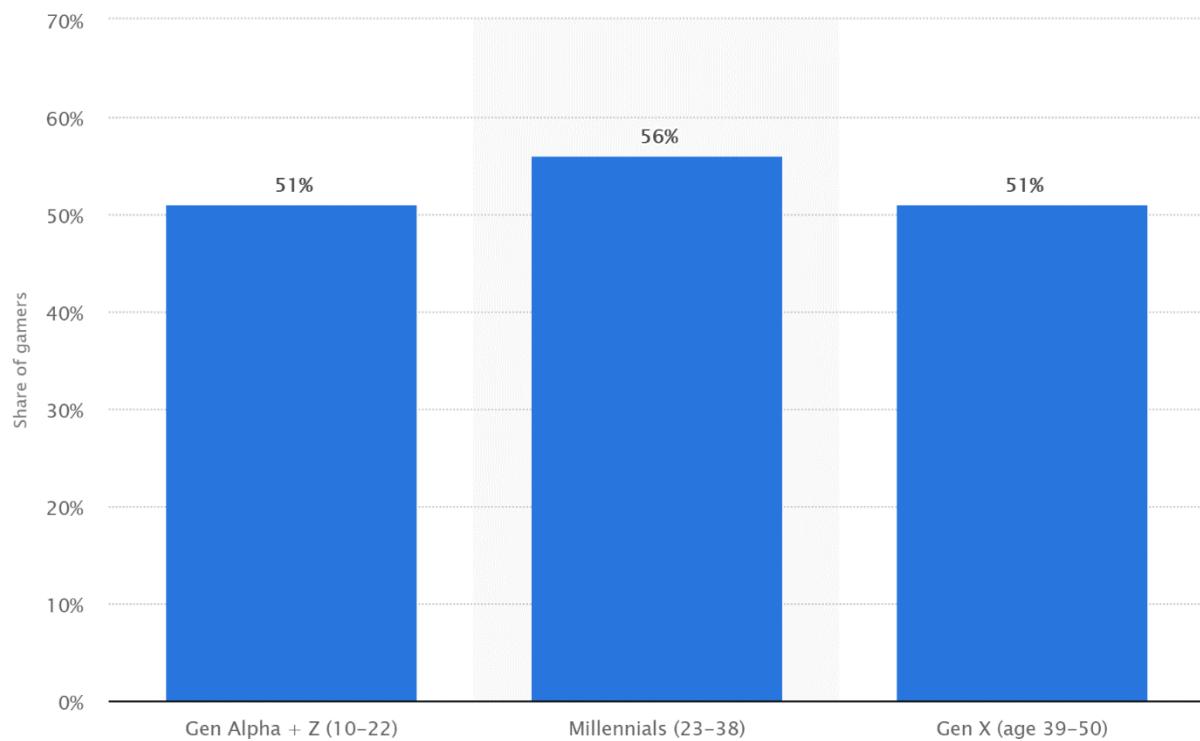
## 2.5. Platform

We decided that the PC is the best solution for our game for many reasons.

Most people own a PC and the following graph, from [statista.com](#), shows that over 50% of gamers between 10 to 50 years old play with a PC.

Secondly, being the game distinctly cooperative we think the communication on vocal chat is more comfortable from a PC instead of other solutions.

Since we expect a community equally divided between men and women, the PC is the right gaming platform because compared to consoles it does not present a heavy gender difference (42% of PC/laptop players in the U.S. in 2020 are women according to the site).



## 2.6. System requirements

The system minimum requirements must be low because we want to make sure that the game can work even on PCs particularly dated or not performing, as it is likely to have a casual player (More details on system requirements section 4.2 on the GTD).

## 2.7. Top performers

### 2.7.1. Forza Horizon 4



**Release date:** 28/09/2018

**Development Team:** Playground Games

Forza Horizon 4 is an open world racing game, which focuses more on the concept of the caravan and exploration in teams rather than realistic driving simulation. The player is a driver participating in the Horizon festival in England that must become famous racing in the different events. The huge open world leads players to explore the map and reach the areas where there are the most classic races or team vs team modes, but also single player challenges of various types such as stuntman and TopGear missions that increase the variety of gameplay. The game also excels when it comes to the reward system, from destroying road signs, to doing drifts or huge jumps, anything continually gives you points and leads you to keep driving with the feeling that you are always doing something amazing. The game with more than 450 car models leads the player to try to own as many cars as possible.

### 2.7.2. Rocket League



**Release date:** 07/07/2015

**Development Team:** Psyonix Studios

Rocket League is a soccer and racing game with a futuristic aesthetic that manages to mix these two genres in a masterful way, where cooperation with teammates becomes essential to win games and this has led to a great competitive community. Other strengths are the opportunity to play in solo or in a team of up to 4 players allowing groups of friends to choose the mode based on how many they are, and the rapid way to play, in 10 minutes from the opening it is possible to start and finish a match allowing people with less time to play.

### 2.7.3. Need for speed Heat



**Release date:** 08/09/2019

**Development Team:** Ghost Game

NFS Heat is the latest game of the famous racing game franchise, the general structure remains faithful to its predecessors, with a vast open world set in a revisit of Miami where the single player story has a relevant importance, as a newcomer of Palm Beach the player has to gain money and reputation for his new crew. The characteristic point of NFS Heat is the division into day and night missions, where in the first case you can participate in legal events to earn money, while at night you can take part in illegal street races to earn reputation, with obviously the police who will try in every way to interfere to capture us. The driving style remains very arcade and also with a good customization system and car upgrades take the player in the loop, race, take money & reputation, modify the car and go to other races.

## 2.8. Feature comparison

The features that characterize Synth & Sinners is to be a racing game with a **strong emphasis on the aesthetic**. A common point with Forza Horizon is the cooperative approach to race, the free roaming, and the rewarding systems, with NFS Heat the arcade-like driving style. Instead with Rocket League is the need to communicate with the teammates to get the best results, and the structure of the quick matches.

Synth & Sinners deviates from the other game for the **style and the relevance of the music** inside the game, when a player is inside our game world can feel exactly those vibes that led him to choose our game, because Synth & Sinners wants to be a meeting point for players who share the passion for this type of aesthetics.

Title	Synth & Sinners	Forza Horizon 4	Rocket League	NFS Heat
<b>Genre</b>	Racing game	Racing game	Football game/ Racing game	Racing game
<b>Platform</b>	PC	PC/Playstation/ Xbox	PC/Playstation/ Xbox/ Nintendo Switch	PC/Playstation/ Xbox
<b>Number of Players</b>	3-6	1-12	1-8	1-8(in a crew) 1-16(online server)
<b>Bartle player's type</b>	Socializer	Socializer/ Achiever/ Explorer	Socializer/ Achiever	Achiever/Explorer
<b>Single player mode</b>	No	Yes	No	Yes
<b>Controls</b>	Keyboard / Gamepad	Gamepad / Mouse & Keyboard / Steering Wheel	Gamepad / Mouse & Keyboard	Gamepad / Mouse & Keyboard / Steering Wheel
<b>Leaderboards</b>	No	For every events	Different leaderboard based on the number of players in the team (1-5)	No
<b>Shop/Purchase</b>	Yes	Yes	Yes	Yes
<b>Setting</b>	Futuristic '80s (Synthwave)	Realistic (England)	Futuristic arenas	Realistic (Miami)
<b>Free Roaming</b>	Yes	Yes	No	Yes

## 2.9. Personas

<p><b>Francesco</b></p> <p>"I wish I could find some online racing games with synthwave aesthetics to play in the little time I have."</p>	
<p><b>Age:</b> 31</p> <p><b>Location:</b> Rome, Italy</p> <p><b>Occupation:</b> Bank Officer</p> <p><b>Video Games Knowledge:</b> 3/5, play online games since childhood, but now he has not much time for playing</p>	
<p><b>Goal:</b></p> <p>Play something undemanding with quick online matches after work, better if it is in a synthwave world.</p>	
<p><b>Background:</b></p> <p>Francesco has always played online games with friends, often racing games, but over the years the time is less and less and therefore he prefers games in which a game session can be short. Since he was a child, he has been fond of 80's science fiction, and he has been also a player of the board game Cyberpunk.</p>	
<p><b>Favorite Games:</b></p> <p>Rocket League, Forza Horizon, Call of Duty Warzone</p>	

<p><b>Kate</b></p> <p>"I love synthwave but I get bored playing alone all the time!"</p>	
<p><b>Age:</b> 19</p> <p><b>Location:</b> Sydney, Australia</p> <p><b>Occupation:</b> Art Student</p> <p><b>Video Games Knowledge:</b> 2/5, has recently discovered video games</p>	
<p><b>Goal:</b></p> <p>Play something that allows her to play in synthwave environments with a cooperative multiplayer approach.</p>	
<p><b>Background:</b></p> <p>Kate is a young art student who is passionate about the synthwave aesthetic, she loves listening to vaporwave/synthwave music and she shares her passion on Instagram and Reddit. In recent years she also got passionate about video games that recall those atmospheres, although she is tired of the classic single player and would like to find something that allows her to play in her favorite setting with friends.</p>	
<p><b>Favorite Games:</b></p> <p>Cyberpunk2077, FarCry3 Blood Dragon</p>	

<p><b>Mark</b></p> <p>"My sons really love video games and I want to have fun playing together"</p> <p><b>Age:</b> 44</p> <p><b>Location:</b> Sacramento, USA</p> <p><b>Occupation:</b> Bus driver</p> <p><b>Video Games Knowledge:</b> 1/5, has played some video game during his childhood</p>	
<p><b>Goal:</b></p> <p>Find a simple video game to play with his sons, better if it includes atmosphere from the 80s.</p>	
<p><b>Background:</b></p> <p>Mark is a bus driver that wishes to spend more time with his two sons while it is not working. He is a real fan of the 80s, the period when he was child, and his two sons, one fifteen years old and the other thirteen years old, spend a lot of time in video games, so the best way to play all together is to find a video game not too complex with some reminds of the 80s.</p>	
<p><b>Favorite Games:</b></p> <p>Tetris, Outrun</p>	

## 2.10. Business model

Synth & Sinners will only be released digitally on **Steam**, at 9.99 € since it is the most used online store and counts to 120 million active users per month in 2020 (details on TDD).

Given the importance of aesthetics, we thought that in addition to the four explorable areas at the beginning, other areas will be released later, at 4,99 € each, so that old players will have something new to play and new players will have an even larger game world.

Since we are targeting players who love synthwave and vaporwave, we think that selling ad-hoc car's skins, and the offline music tracks at 0,99 € in-game can be a good source of income.

We have estimated that in order to recoup our production costs, produce expansions and make a fair profit margin we will need to reach the quota of 50.000 units sold 6 months after launch.

### 3. LEGAL ANALYSIS

Synth & Sinners is a **new IP free from copyright**.

All the digital contents are created by the development team or purchased from the Unity Asset Store, except for the music that was commissioned to an external artist.

We expected that Synth & Sinners is a PEGI 12 or lower, due to the fact is a driving game and the only violence is about cars demolition, there are some vulgar expressions only on the tutorial, and there's not sex reference.

### 4. GAMEPLAY

#### 4.1. Overview

In Synth & Sinners, players form **teams** of three players in order to face other teams or the police in different race modes to earn synth-coins and reputation. **Coordination** is the key to win the challenges.

Players can also roam freely in the entire city, alone or with their team, in order to explore the city, perform actions to earn reputation points or make practice on the different challenge tracks.

Players can choose between **several types of cars**, each one with different statistics. Cars can also be **personalized** by changing the painting, the wheels and the led color. Car models and customization items are unlocked increasing the player's reputation levels and they can be purchased using synth-coins.

#### 4.2. Gameplay description

The main gameplay mechanic is **driving**, since all the actions performed in game by players are made using cars. The driving base is a simplification of the real driving system: all the cars have the same traction type and no gear system. The acceleration starts at maximum value when the car is stationary and decreases continuously to zero when the car reaches his maximum speed value.

Cars can turn using traditional **steering**, with a turn radius that can vary for each car, or, if it has enough speed, the player can use **drifting**. With drifting, the car changes its turn radius based on how much the player steers without losing speed, but it's more difficult to control.

The player can use **nos** to boost its speed and acceleration for a limited amount of time, based on the nos capacity. The nos can be replenished making actions during the play or gathering nos collectibles during the challenges.

During races, the player can **hit other cars**, rivals' cars, police cars or civilian cars, in order to destroy them. The damage inflicted depends on the different speed of the two cars involved and it's increased if the player inflicting the damage is using the nos or if two players of the same team hit a car in a **synchronized way**. If the player hits a car frontally the player also receives damage, unless he hits using nos. If two rival players make a head-on crush while both are using nos, both players receive damage. If the player, after a jump, lands on another car, the other car is automatically destroyed.

Players can also perform **acrobatics** during a jump to obtain more reputation points, rotating the car while it is in air. Each complete rotation is considered as an acrobatic. The player must be careful during landing, if the car lands laterally or upside-down, the car is destroyed.

When a car is destroyed or it exits from the track, it will **respawn** in the nearest position on the track after a brief period of time.

Each day the player receives a **daily mission**, which if completed rewards the player with synth-coins.

#### 4.3. Game modes

##### First start

At the first start of the game, the player chooses his nickname, which must be unique, and then he starts the tutorial. The tutorial consists of a brief explanation and trial of all the gameplay mechanics, explained by an AI called Synthia, which also gives some information about the game world. After the tutorial, the player enters the garage.

## Garage

The garage is the place where players can select which car to use, personalize it, and buy new car models and cosmetic objects, like painting, wheels and leds. From the second time the player enters the game on, this is the place where he starts. When the player has chosen its car, it enters the overworld. From the overworld the player can return anytime in the garage through the main menu.

## Overworld

The overworld consists of the entire map of the game that can be freely explored, with a day/night cycle. In the overworld the player can be alone or with his team, if it has formed one. Here players are indestructible and no police will attack the players. Players can execute actions that give reputation points, make practice on the different challenge tracks and freely listen to the soundtrack. The tracks to practice can be selected in the map, which shows a stylized version of the entire game world, then it will be highlighted in the minimap present on the screen.

## Challenges

To participate in the challenges, the player must form a team with two other players. The players can add randomly the other members with the matchmaking system or they can be manually invited using their nicknames, then they choose a crew name. In the challenge menu players can choose which modality to play. All challenge modalities focus on cooperation, and they are more difficult to complete if the team members don't collaborate. Here are listed the different challenge modalities players can play:

- Police Chase: one member of the team is the carrier, and the others are the guard. The carrier has his health increased and guards must protect him from the police until he reaches the finishing line.
- Race Duel: two teams compete to reach the finish line while the police are chasing them. It's enough that only one member of the team reaches the end to win.
- Carrier Duel: as the Police Chase, but here one team must protect the carriage until he reaches the finishing line, while another team of players must destroy the carriage before the end.

If the modality is against another team, the game will select another team using the matchmaking system. When all players are ready, they vote in which track they want to play, and they enter in the most upvoted. In case of a tie, the track will be selected randomly between the most upvoted ones. In the challenge, players have limited health and they can be destroyed, they can't move away from the track and, in case a player disconnects, that player is removed from the challenge and will receive no rewards, while the rest of the team will continue to play. In case the disconnected player was the carrier, the challenge is ended, and the disconnected player's team will automatically lose the match. When all the players of a team disconnect, the other team will automatically win.

When a challenge ends, each team receives a score based on their results. The score is calculated in the following way:

$$\text{Score} = (\text{victory} * 1000) + (1000 - 2 * \text{race time in seconds}) + (50 * \text{cars destroyed}) + (50 * \text{acrobatics made}) + (50 * \text{cooperative actions made})$$

The best score for each challenge in each track is saved in the profile section.

## Daily Missions

Each day, a daily mission is given to the player randomly among those available. The daily missions are completed by performing actions in both overworld and challenges and they reward the player with synth-coins. If, at the start of a day, the mission of the previous day is not completed, it will be overwritten by the new one.

This is the list of the available daily missions:

Mission	Reward
run for 25 km	50
run for 50 km	100

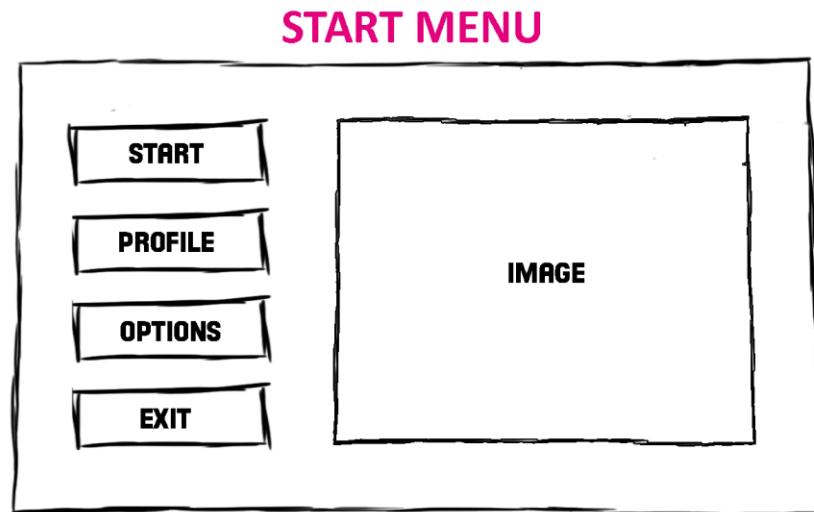
make 10 acrobatics in air	50
make 20 acrobatics in air	100
drift for a total of 2 km	50
drift for a total of 4 km	100
destroy 15 rival or police cars	50
destroy 30 rival or police car	100
partecipate in 3 challenges	50
partecipate in 5 challenges	100
win 2 challenges	50
win 3 challenges	100

#### 4.4. Controls

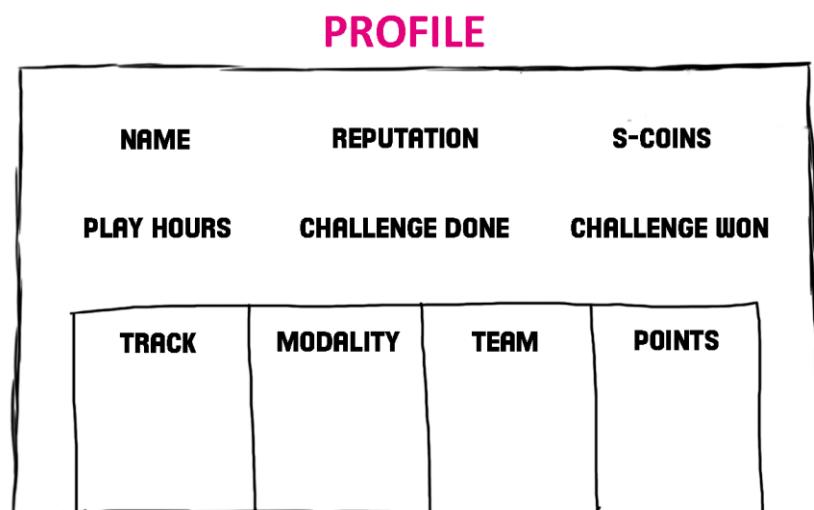
Player can control his vehicle using a keyboard or a gamepad (the following table considers the Xbox's button schema).

Command	Keyboard	Gamepad
Accelerate	W/Up arrow	RT
Brake/Go in reverse	S/Down arrow	LT
Turn right	D/Right arrow	Left stick (rightward)
Turn left	A/Left arrow	Left stick (leftward)
Drift	Spacebar	X
Activate nos	Shift	A
Look back	C	Dpad down
Pitch upward (in air)	S/Down arrow	Left stick (downward)
Pitch downward (in air)	W/Up arrow	Left stick (upward)
Yaw rightward (in air)	D/Right arrow	Left stick (rightward)
Yaw leftward (in air)	A/Left arrow	Left stick (leftward)
Open start menu	Esc	Back
Open main menu	Tab	Start
Open map (only in overworld)	M	Y
Change song (only in overworld)	1/2	Dpad left/Dpad right

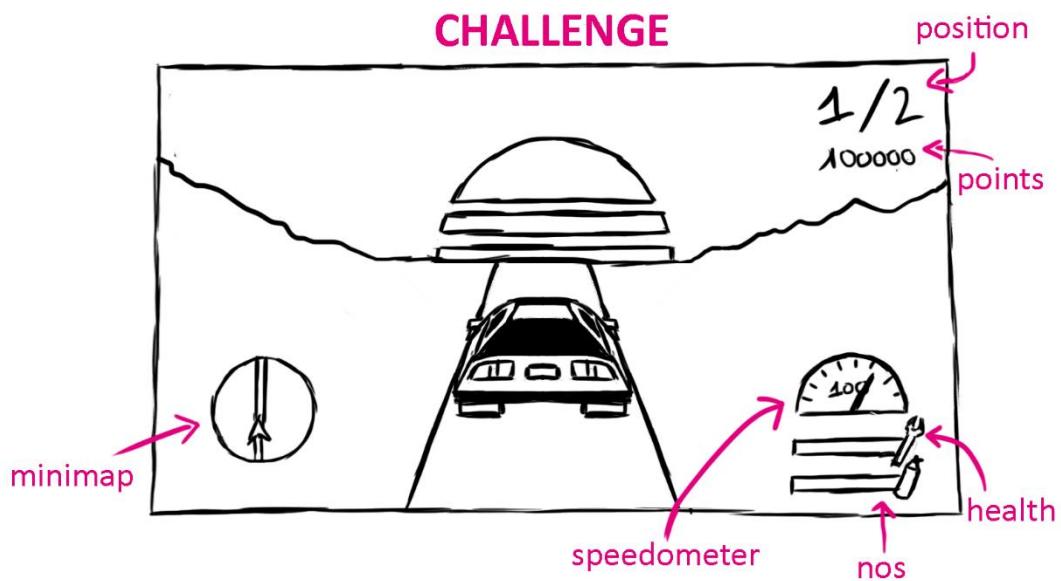
## 4.5. Interfaces



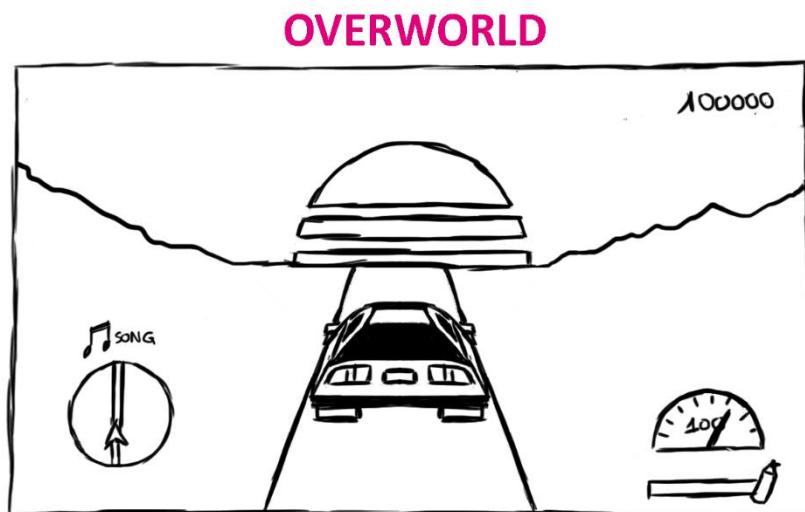
Start menu: the menu present when the player launches the game, here he can start to play, access the profile, options, or exit from the game.



Profile menu: here the player can see his statistics and the best results on each track and modality played.

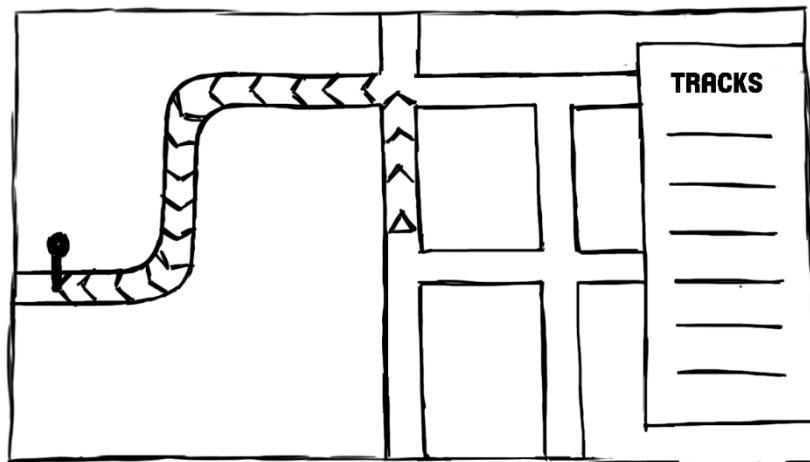


Challenge interface: the interface visible during challenges. In the lower left corner, there is the minimap, which shows the path of the track and the other cars near the player. In the lower right corner there is the speedometer, the health bar and the nos bar. In the upper right corner, there is the position in the race and the points obtained during the challenge.



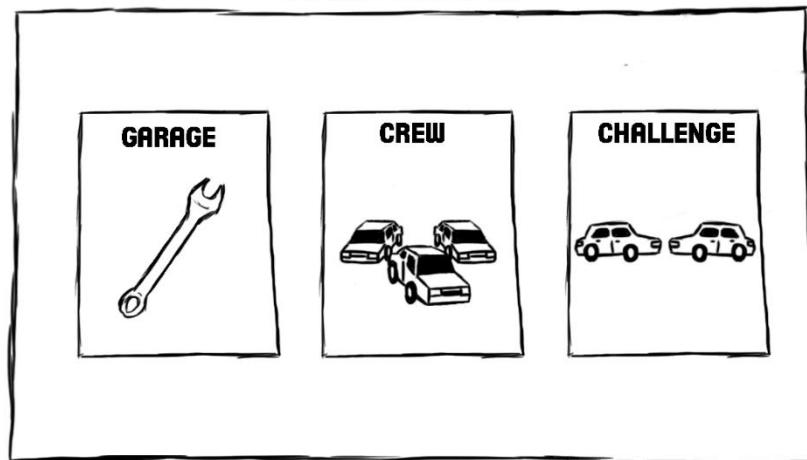
Overworld interface: like the challenge interface, but without position and health bar and with the song currently playing above the minimap in the lower left corner. Here the points in the upper right corner show the total amount of reputation points.

## MAP

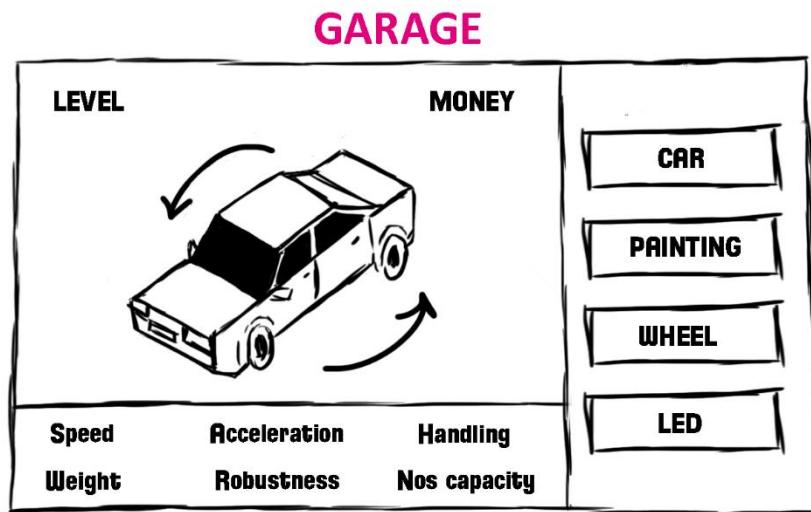


Map interface: interface of the map accessible in the overworld. Here the player can see the entire map and his position, select a specific location to see the route to reach it and select a specific track to see it highlighted in the map. The highlighted routes are visible also in the minimap.

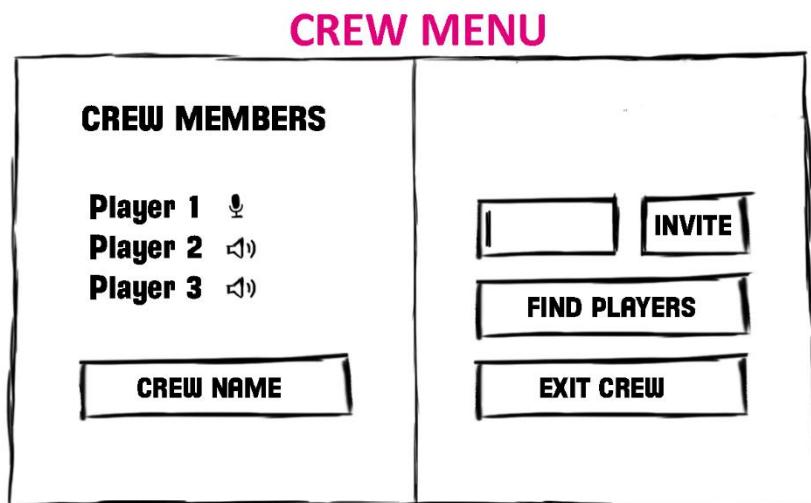
## MAIN MENU



Main menu: menu reachable in the overworld. It leads to the garage, the crew menu and the challenge menu.

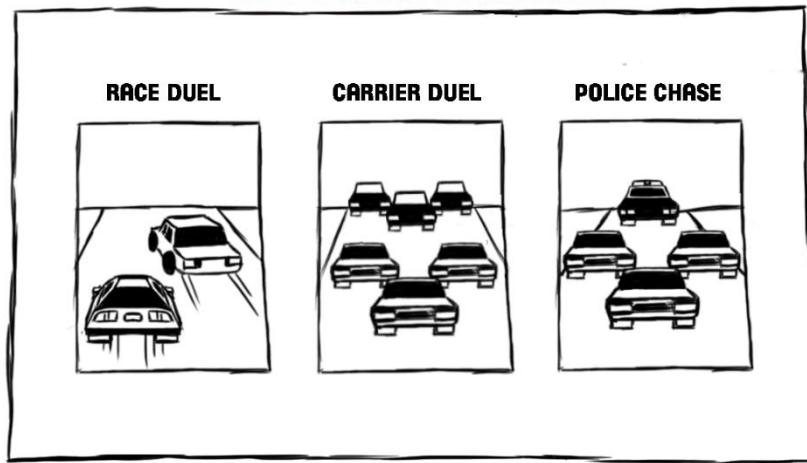


Garage: here the player can manage his cars, choosing which one to use and changing its painting, wheels and led color. The player can also buy new cars, paintings, wheels and led colors previously unlocked using synth-coins.



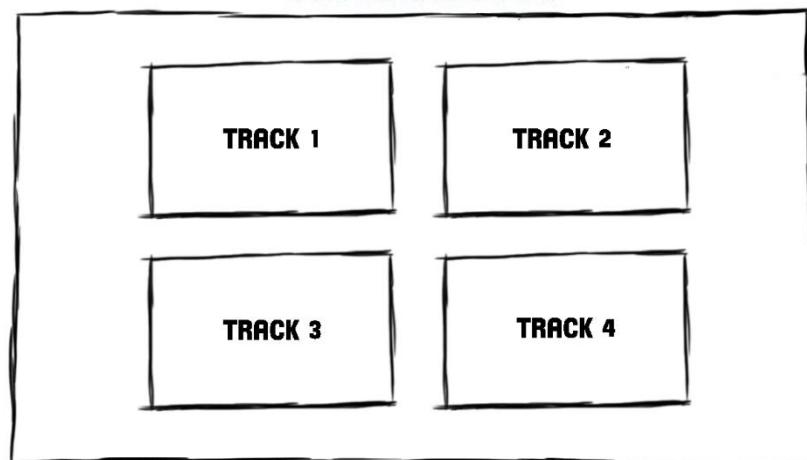
Crew menu: Here the player can form a team with other two players, finding them with the matchmaking system or inviting them using their nickname. When a team is formed, the player can set a crew name. He can also mute his microphone or change the volume of his comrades.

## CHALLENGE MENU



Challenge menu: here the player can choose which challenge modality to play. If Race Duel or Carrier Duel is selected, the matchmaking system will find another team to play against

## TRACK MENU



Track Menu: here the players can vote in which track they want to play. The most voted track will be selected. In case of a tie, the track will be selected randomly among the most voted.

## 4.6. Resources

Reputation points:

They work as experience points. If the player obtains enough points, his reputation level increases, up to a maximum level of 30. After each level the player will unlock new cars or new customization objects to buy in the store.

Here is the list of levels and the reputation points needed to reach it:

Level	Reputation Points	Level	Reputation Points
1	0	16	3600
2	200	17	3900
3	400	18	4200
4	600	19	4500
5	800	20	4900
6	1000	21	5300
7	1250	22	5700
8	1500	23	6100
9	1750	24	6500
10	2000	25	7000
11	2250	26	7500
12	2500	27	8000
13	2750	28	8500
14	3000	29	9000
15	3300	30	10000

Almost each action made in-game gives reputation points, in both overworld and challenges. Some actions give double points if performed in a cooperative way. Realizing different actions in a short amount of time will activate a multiplier that increases the number of reputation points earned; it ends if the player doesn't perform action for a determined period of time.

Here is the list of action that give reputation points:

Action	Double if cooperative	Reputation Points
win a challenge	✗	200
destroy rival player's car	✓	25
destroy police car	✓	15
drift	✗	5 * drift seconds
make acrobatics	✓	10
destroy props	✗	5

**Synth-coins:**

They are the in-game currency. They can be earned by doing challenges or completing daily missions. In the challenges, the number of synth-coin earned depends on the team score obtained at the end of the challenge. It is calculated in the following way:

$$\text{Synth-Coin} = \text{points}/10$$

Synth-coins can be used in the shop in the garage to buy new cars and customization items.

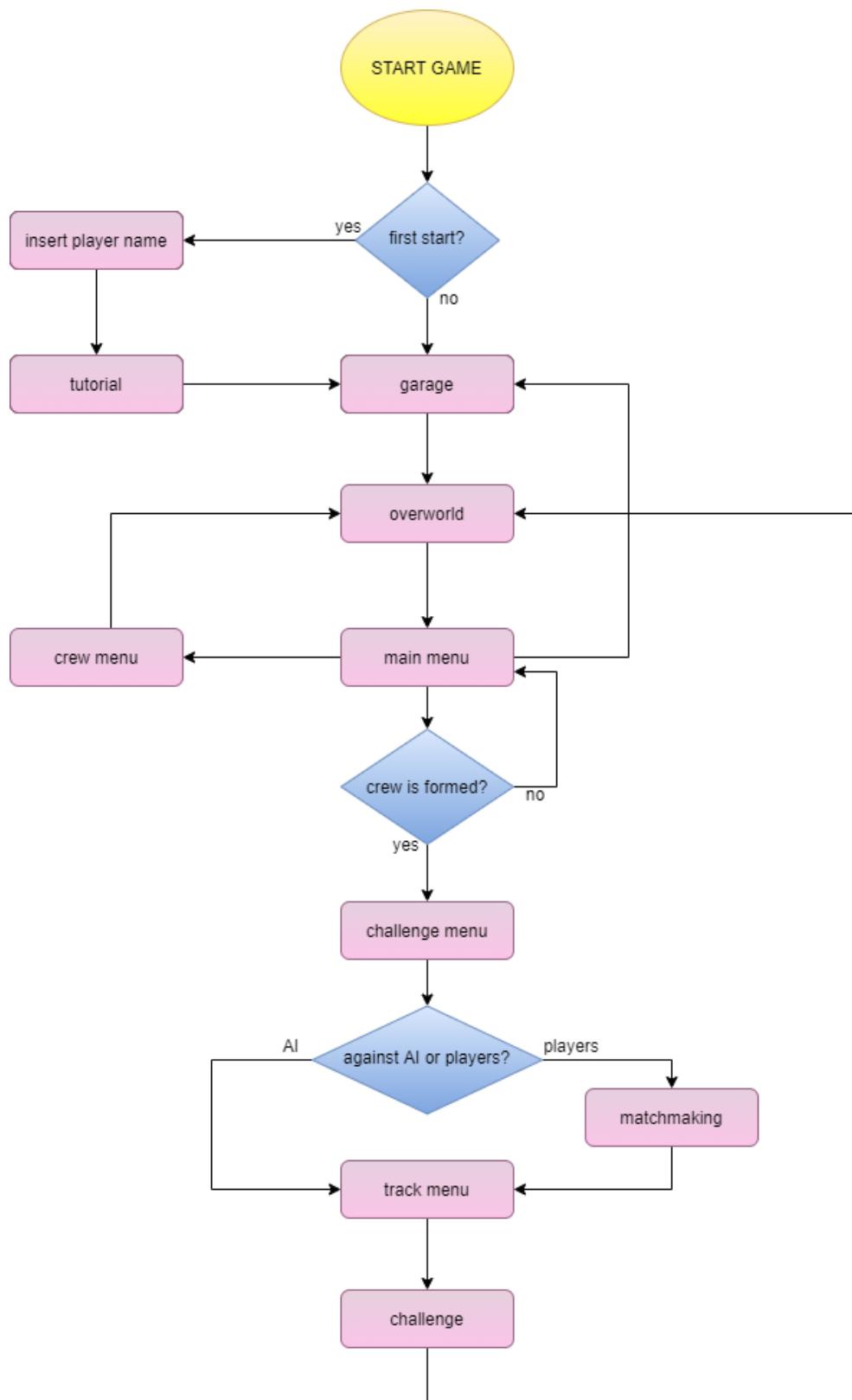
**Health:**

Each car has its own health value, and it is present only during challenges. It is decreased when the player crashes against an obstacle or is hit by a rival car. When the player's health reaches zero, the car is destroyed and he respawns in the location where it has been destroyed, losing some seconds. Health can be recovered gathering health collectibles scattered in the track.

**Nos:**

Nos is the amount of turbo each car can use, and its maximum value depends on the car type. The nos value decreases using turbo and it can be replenished gathering nos collectibles scattered in the track or performing actions that give reputation points, that are destroy another car, drift, make acrobatics or destroy props.

## 4.7. Flowchart



## 5. GAME CHARACTERS

### 5.1. Player

The player's character is the car he is driving. There are 14 playable cars, they differ in terms of appearance and attributes. Each attribute defines a specific characteristic of the car and goes from 1 to 9. Here the list of attributes:

- speed: define the maximum speed the car can reach.
- acceleration: define how fast the car can reach maximum speed.
- handling: define how sharply the car can turn.
- weight: define how heavy the car is. heavier is the car, less the car is shifted after an impact and more damage can be dealt.
- robustness: define how much health the car has.
- nos capacity: define how long the nos can be used before it runs out.

Name	Speed	Acceleration	Handling	Weight	Robustness	Nos capacity	Unlock at level	Cost
midnight	5	5	5	5	5	5	1	0
dawn	2	8	7	2	3	4	1	0
dusk	7	3	3	7	6	4	1	0
mullet	2	8	7	2	3	8	3	200
arcade	6	4	6	4	6	4	6	300
cloud	1	9	9	1	5	5	9	400
ray	8	2	3	5	4	8	12	500
runner	3	7	6	5	5	4	15	600
cobra	6	3	4	9	2	6	18	700
vapour	5	4	4	4	4	9	22	1000
trecwave	4	7	7	4	3	5	26	1400
diaboro	6	6	3	4	5	6	30	1800
fallen	8	1	1	8	5	7	34	2200
hyper	9	1	2	7	7	4	39	2800

The player has three different ways to personalize his car: painting, wheels and leds. They change only the car appearance, without modifying the car attributes.

The painting modifies the color of the car body:

name	unlock at level	cost
yellow	1	0
cyan	1	0
magenta	1	0
black	2	100
white	2	100
pink	4	100
metallic steel	8	500
metallic blue	10	500
metallic purple	13	500
metallic orange	16	500
stripes black	19	800
stripes yellow	22	800
sunset	25	1500
wireframe	26	1800
galaxy	28	2000
gold	30	3000

Wheels modify aspect and color of the car wheels:

name	unlock at level	cost
steel	1	0
steel 2	1	0
black	6	400
yellow	11	500
blue	14	600
pink	17	700
sun	20	800

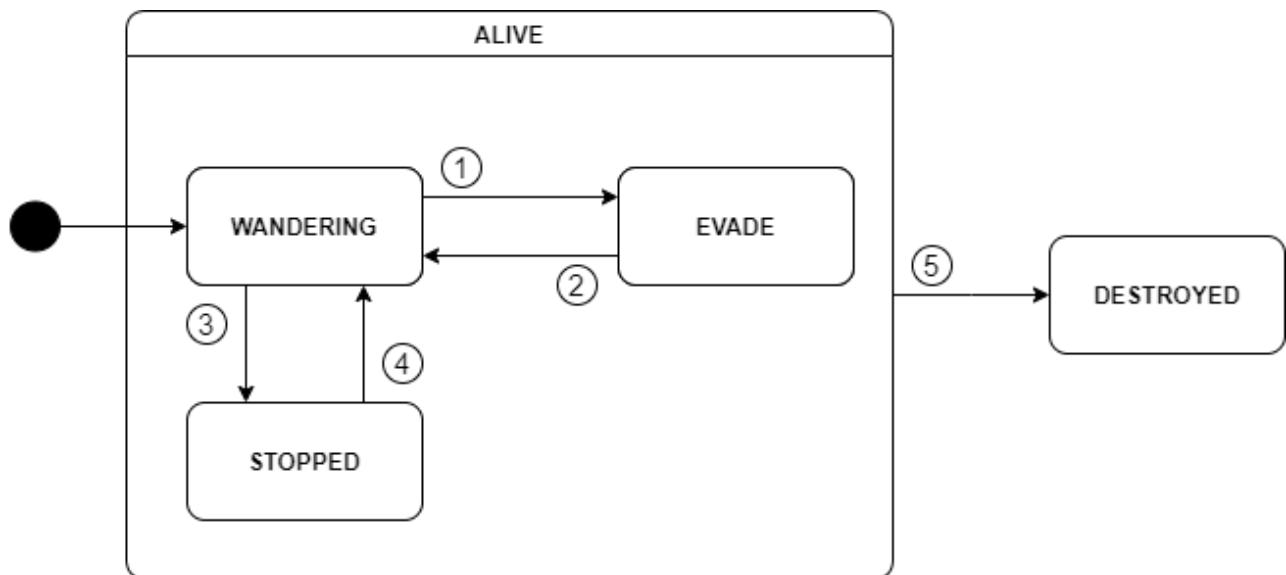
thorn	23	1000
wireframe	27	1500
gold	30	2000

Leds change the color of the light applied under the car:

name	unlock at level	cost
none	1	0
white	5	200
blue	5	200
red	5	200
purple	5	200
pink	5	200
yellow	5	200
cyan	5	200

## 5.2. Civilian (NPC)

Civilian cars wander occasionally in the streets, in both overworld and challenge tracks. They try to evade players' cars if they see one player is going towards them. They have little health, and a single crush is enough to destroy them.



- ① A player is coming frontally towards the civilian
- ② No player is coming frontally towards the civilian
- ③ the civilian is in proximity of a red semaphore OR there is another civilian Stopped in front of the civilian
- ④ No red semaphore are in proximity of the civilian AND there are no other civilian car Stopped in front of the civilian
- ⑤ Civilian health is  $\leq 0$

### 5.3. Police (NPC)

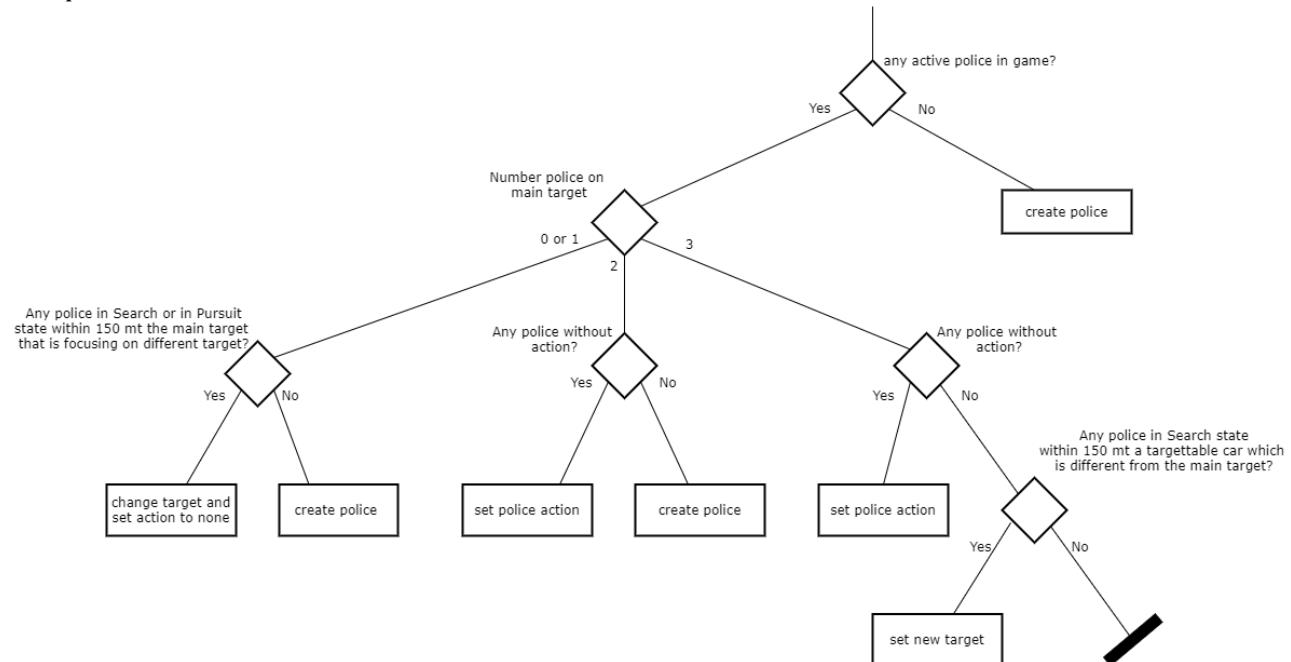
Police cars chase the players during Police Chase and Race Duel challenges. In Police Chase, the police cars try to destroy the carrier, while in Race Duel the police cars focus on the players in the higher position.

Police have different methods to interfere with players: they can actively chase the players, trying to destroy players' cars hitting them, or they can make roadblocks with stationary cars.

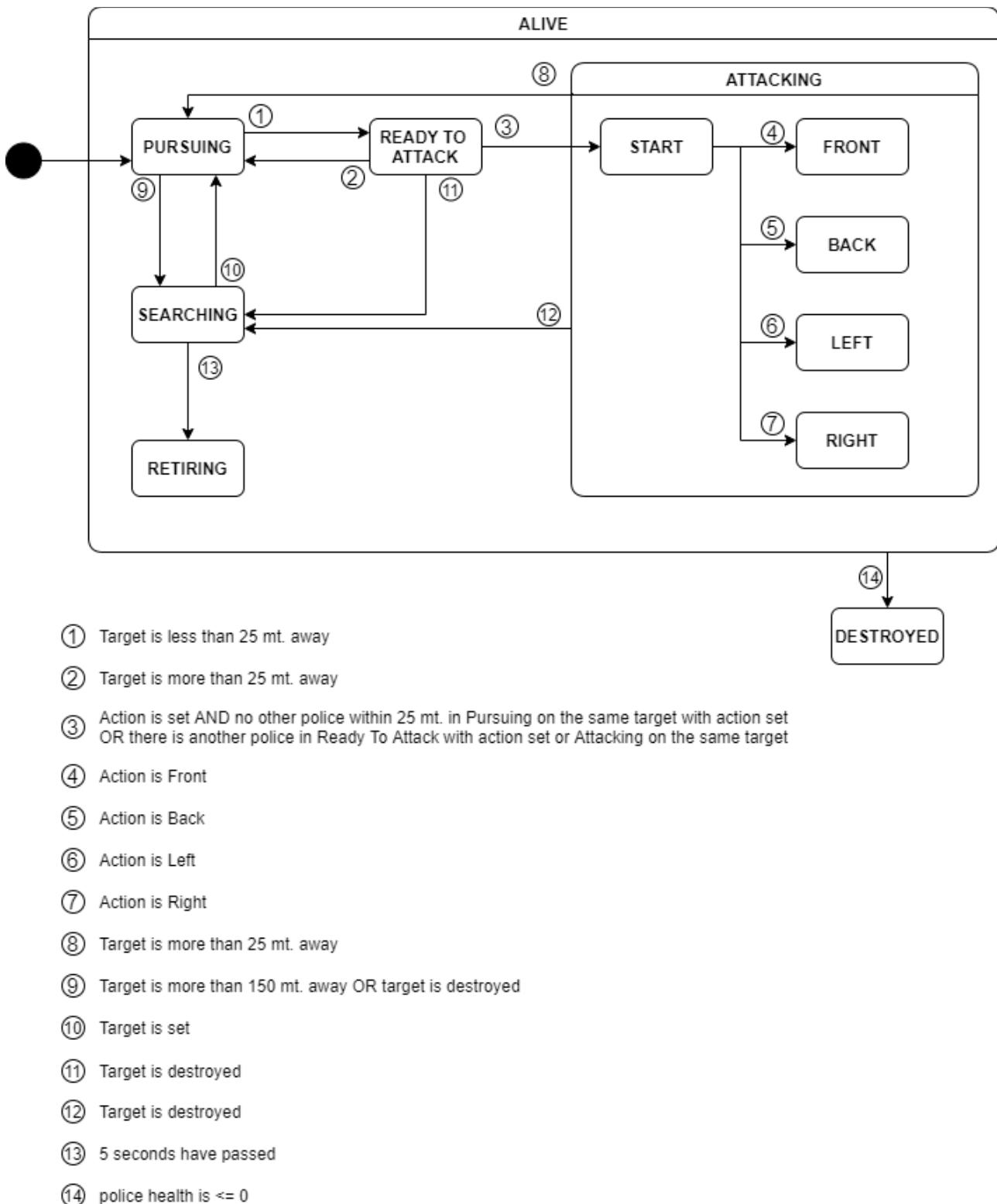
#### AI

The Police AI is composed of two levels: an upper level representing the group, which decides when and where spawn police cars, who they must pursue and which attack they must perform, and a lower level representing the single police car, which takes care of the chasing, how to attack and when to retire. The roadblocks are instead added in random places at the start of the race.

Group Level:



Single Car Level:



In Pursuing, the police car tries to get closer until it is less than 25 meters away from the target.

In Ready To Attack, the police car keeps the distance from the target, waiting to attack.

In Attacking, the police car tries to hit the target with the action decided by the upper level AI:

- In Front, the police car places itself in front of the target, blocking his way.
- In Back, the police car hit the target from behind.

- In Left, the police car hit the target from the left side.
- In Right, the police car hit the target from the right side.

When it exits from this state, the action is set to none.

In Searching, the police car loses the target and follow the track searching another car to pursue.

In Retiring, the police car stops moving, waiting to find a place out of the players' view and then despawn.

In Destroyed, the police car stops moving and despawns when it's out of the players' view. They stop to avoid disturbing other police car in movement.

## 5.4. Synthia (NPC)

Synthia is an artificial intelligence that lives in the virtual reality that gangs use. She resembles a girl, but with a digitalized purple/blue body, with some parts in wireframe, backcombed hair and a viewer that covers her eyes, like those used to access in virtual reality.

She acts as a guide in this world, and, at the first start of the game, she explains how this digital world works and what is happening in the real world. She brings the player in a completely virtual level that acts as a tutorial, and she lets the player try all the mechanics present in the game, while she explains the narrative background.

## 6. STORY

Synth & Sinners wants to be an immediate game that allows casual players to get right into the action, so there is only a backstory that contextualizes the setting and the visual style of the game.

### 6.1. Backstory

Year 2080, wars and pollution have led to a global crisis, upsetting everybody's life. The Earth is now an arid place, where resources are in short supply and governments fall like dead leaves. People are grouped in big cities, now governed by the few rich people that control everything, while common people survive on what they find. In this world, many people live like criminals and street gangs continue to be born, facing each other for supremacy or against the police, which try to suppress them with an iron hand. Gang members, tired of this disastrous life, started to use virtual reality to see the world as they would like, referring to a distant and idealized past. Now this reality is where they truly live, they forget how it's named the city where they are, now they call it Synth City.

The player is a newcomer to this reality and, as a new member of a gang, he must earn a reputation and Synth-coins, the cryptocurrency used in Synth City, to make his way in this underworld.

### 6.2. Storyboard

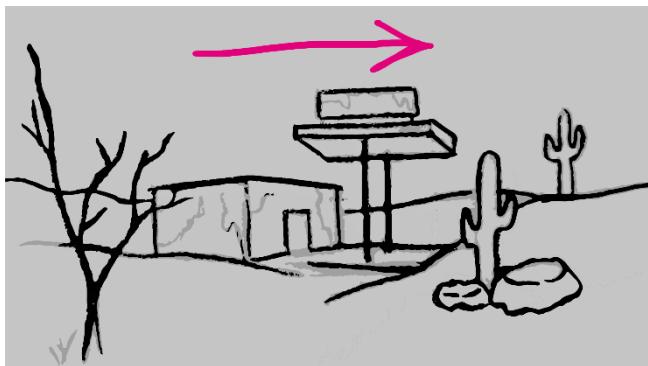
The backstory is narrated by Synthia, which introduces the player to the context in which the game takes place and is represented with a cinematic intro at the beginning of the tutorial level.

This storyboard represents the cinematic, which will be composed by a set of still images in drawn style with slow camera movements.



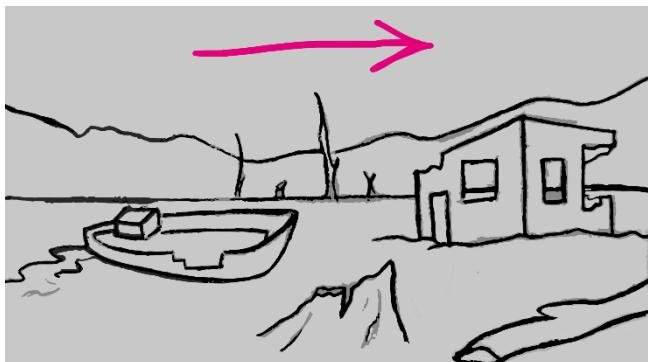
View of the real destroyed world.

*S: It's the year 2080, wars and pollution has led to a global crisis, upsetting everybody's life.*



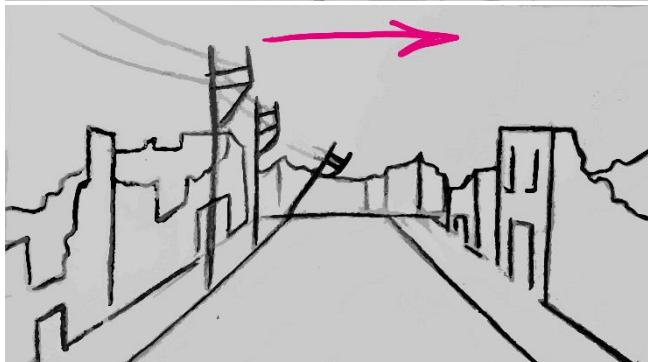
Panning shot of the real destroyed desert.

*S: The Earth is now an arid place, where resources are in short supply and governments fall like dead leaves.*



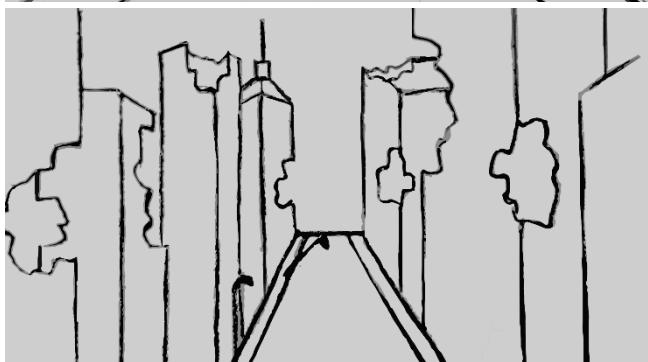
Panning shot of the real destroyed beach.

*S: People are grouped in big cities, now governed by the few rich people that control everything, while common people survive on what they find.*



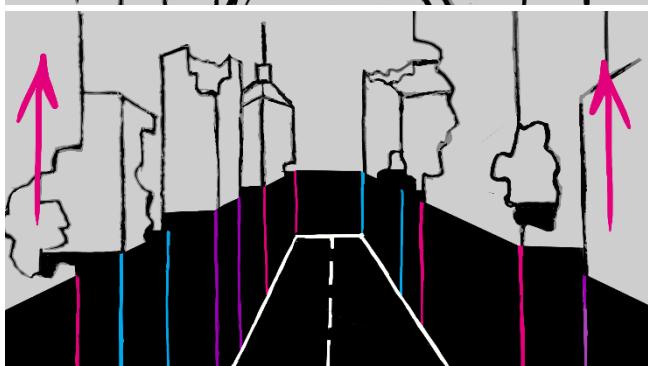
Panning shot of the real destroyed outskirts.

*S: In this world, many people live like criminals and street gangs continue to be born, facing each other for supremacy or against the police, which try to suppress them with an iron hand.*



View of the real destroyed city.

*S: Gangs members, tired of this disastrous life, started to use the virtual reality to see the world as they would like, referring to a distant and idealized past.*



Generation of the virtual world over the real destroyed world, after wearing the VR headset.

*S: Now this reality is where they truly live, they forget how it's named the city where they are, now they call it*



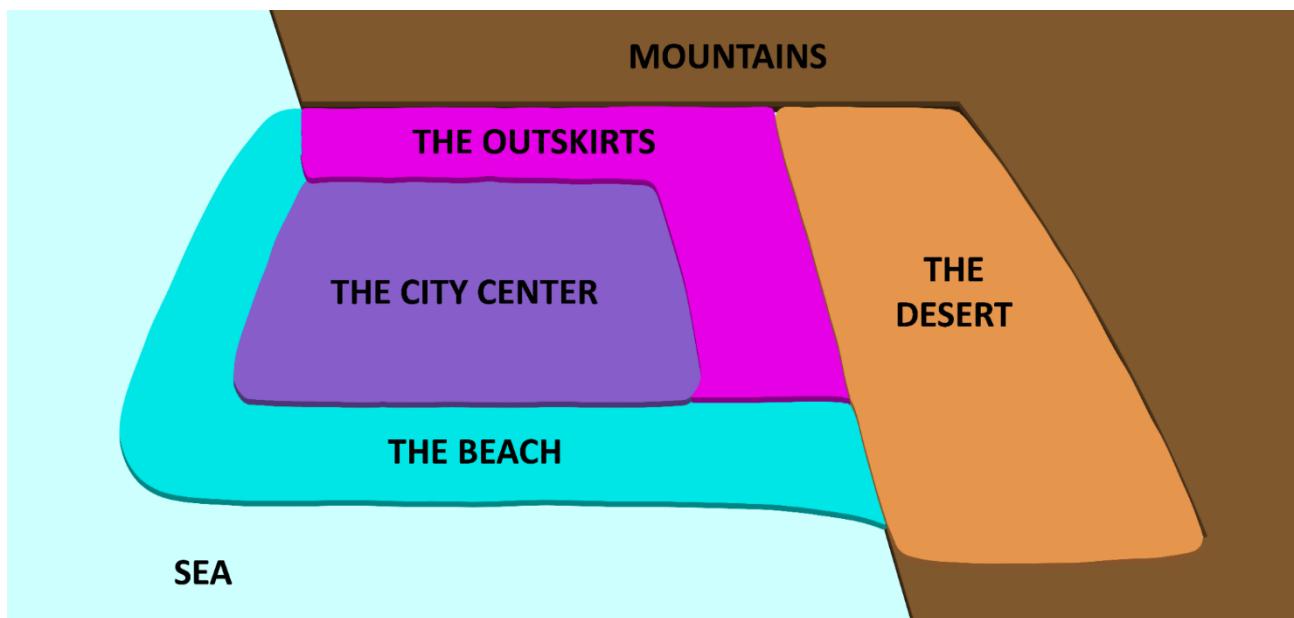
View of Synth-City.

S: *Synth City*.

## 7. THE GAME WORLD

The game is set in a city of our world, in the year 2080. The world is wasted by the crisis and people prefer to live seeing reality through their VR headsets. For this reason, Synth City is a unique synthwave megalopolis where every area has been given a new digital life. In addition, we have the tutorial level at the beginning of the game, which is a totally digital world.

Synth City has four different areas, where also the challenges take place. Each area has its own specific setting, but all of them are deeply connected by the same synthwave style and atmosphere. Each of the areas is then characterized by a main color whose shades distinguish the particular aspects of its environment from the others.



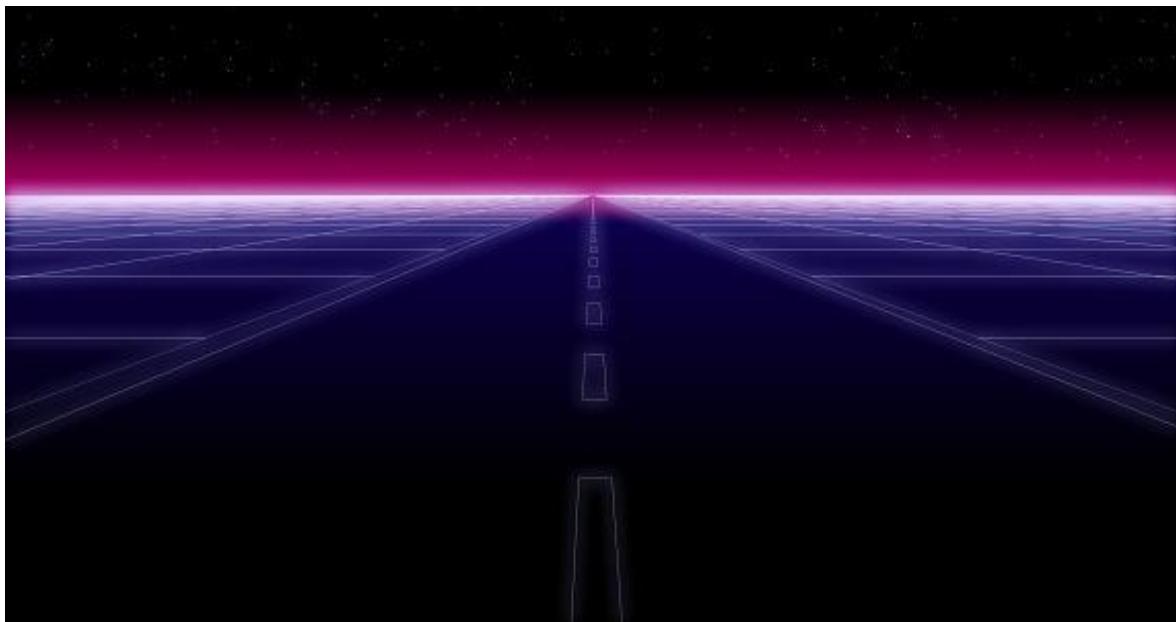
General structure of Synth City, in which each area is represented with its characteristic color.

Assets present in all areas:

- road signs
- streetlights
- civilian cars
- illuminated signs

## 7.1. The Tutorial Level

This level is set in a completely digital place which is thought to introduce the player in the story and to teach him the controls of the vehicle. In this level there is only a long track with few curves and no environmental assets are present.



## 7.2. The City Centre

Main palette:



Right at the center of Synth City, surrounded by the Beach and the Outskirt, and not far away from the Desert we can find the City Center. Here most of the buildings and movement are concentrated and the traffic is significant.

This zone is full of neon lights and it is characterized by very huge skyscrapers, wide streets and many crossroads. Here racers must be careful with the traffic while they are racing or trying to evade the police.

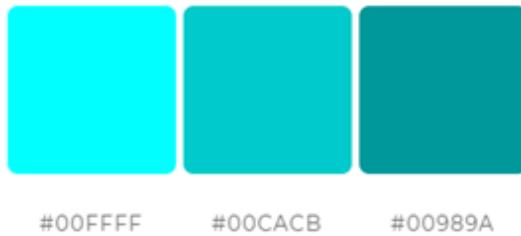
Main assets:

- houses
- skyscrapers
- gas station



## 7.3. The Beach

Main palette:



Between the City Center and the sea, bordering the Desert and the Outskirt, we can find the beautiful Beach. Here we have all the things typical of the sea environment: wide stretches of sand, several palms along the road, and the long lighthouse.

Here we have a long road that crosses the entire area, with the beach on one side and the houses on the other, where cars can take breathtaking races at sunset and get ready to run away from the police among the narrow streets between the houses.

Main assets:

- beach umbrellas
- palms
- boats
- lighthouse
- houses
- bridge





## 7.4. The Outskirts

Main palette:



Just near the City Center, we can find the Outskirts. In this place people are completely left on their own, and crime is even greater than anywhere else in Synth City, in fact, many gang members came from this zone. Here the buildings were built without any organization, leading to a very intricate road network.

Main assets:

- houses
- gas station
- motel
- scrap



## 7.5. The Desert

Main palette:



#FF7409

#D55100

#AC2E00

The Desert is a huge desertic area surrounded by the mountains. As in every desert, this place is characterized by cactus and large empty places, but sometimes you can find a motel or a gas station, or some outcast living in some shacks between the scraps.

The Desert is the best setting for stunts and racing among the dunes and the rocks, gangs use this area for night races where to show off their skills.

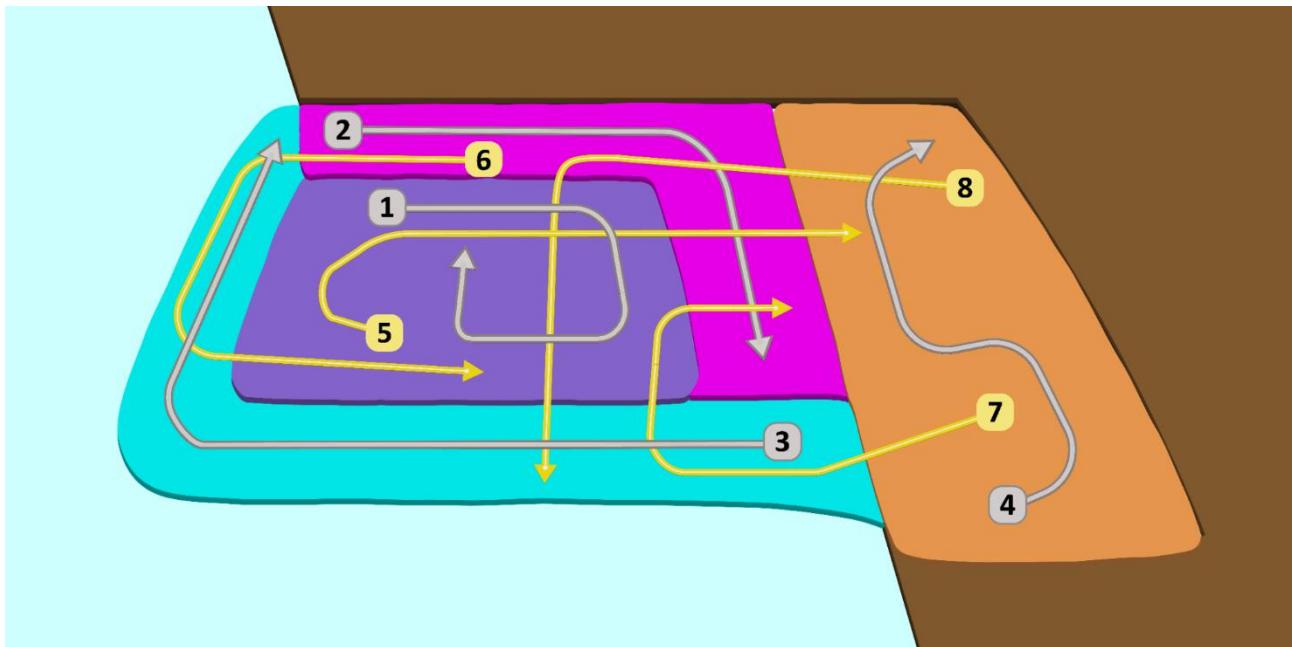
Main assets:

- motel
- gas station
- cactus
- rocks
- shacks
- scrap



## 7.6. Tracks

Tracks are predefined routes of the overworld map, they can develop on a single area or cross multiple areas. Each track can be played with any challenge modality, and they have a fixed time setting.



1. City Rebels
  - Time: day.
  - Description: track that travels across the city centre, making a spiral starting from the external northwest area and running anti-clockwise, ending in the middle.
2. Suburban
  - time: sunrise.
  - Description: track that runs across the entire city outskirts, from northwest to southeast.
3. Sunset Beach
  - Time: sunset.
  - Description: track that runs along the seaside from southeast to northwest, alternating long straight with sharp curves between the houses overlooking the beach.
4. Night Desert
  - Time: night.
  - Description: track located in the middle of the desert that goes from south to north. The track has many hairpin bends to drift and jump to make acrobatics.
5. Escape from Synth City
  - Time: night.
  - Description: track that circle around the city centre and then goes towards the city border, crossing the outskirts and ending in the desert.
6. Morning Shore
  - Time: sunrise.
  - Description: track that starts from the northern area of the outskirts, directed toward the sea. Then it crosses the west shore and returns in the southernmost part of the city centre.
7. Raid from Afar
  - Time: sunset.
  - Description: track that crosses circularly all the four areas of the city, starting from the desert, in order it passes through the beach, the centre and ends in the outskirts.
8. Looking for the Sea
  - Time: day.

- Description: track that starts from the northeast area of the desert, near the mountains, and runs toward west across the north area of the map. Then, in the centre of the north outskirts, it turns to the south, crossing the city centre and reaching the sea.

## 7.7. Level Design Guidelines

The map and the tracks should be built following these guidelines:

- The overworld, even if it is divided in areas, is a single map, there is no loading when the player changes the area.
- The areas are deeply connected, there are many routes that allow the player to change areas.
- Each area has its own type of streets:
  - In the city centre, streets are wide and structured as a grid, with some minor shortcuts between the buildings.
  - In the beach, there is a wide and long street that runs across the entire area, dividing the beach and the houses, while between the houses, the streets are mainly narrow with wide curves.
  - In the outskirts, streets have a very irregular structure, and they vary a lot in size and shape.
  - In the desert, there are some paved roads that cross the area, while most of the roads are dirt roads used by the gangs for races.
- Tracks should be long enough to be completed in 3-5 minutes.
- Tracks can overlap for short parts.
- Tracks must have at least 5 places where police can make roadblocks.
- Tracks should alternate turns and straights, the ratio between them may vary by area.
- Tracks must have some turns to drift.
- Tracks must have some ramps scattered in the straights to make jumps and acrobatics.
- Life and nos collectibles are scattered in the entire track.
- Tracks can have short forks and alternative routes, but either the multiple roads have the same travel time, or the shortest one is more difficult to perform.

An example of a map with track can be seen in the Prototype chapter, where Beach Track is shown.

## 8. MEDIA LIST

In the following sections are listed all the media that are in the prototype and immediately after the list of media necessary for the final version of the game.

### 8.1. Interface

#### 8.1.1. Menu

*In the prototype:*

- Title screen
- 2x menu background images
- Image for garage in menu
- Image for crew in menu
- Image for challenge in menu
- Image for Police Chase mode
- Icon for NOS
- Icon for health

*In the final game:*

- Icon for music
- Icons for speech
- Icon for synth-coins
- Image for Carrier Duel mode
- Image for Race Duel mode
- Image for Cynthia character

#### 8.1.2. HUD

*In the prototype:*

- Health bar
- Turbo bar
- Minimap
- Speedometer
- Position of the player in the map icon

*In the final game:*

- Enemy pointer icon

#### 8.1.3. Video

*In the final game* there will be a cinematic to introduce the game's backstory. The video will be shown at the beginning of the tutorial level and will need 6x images (for a reference see the [Storyboard](#) section):

- image of the real destroyed world
- 4x image of the destroyed area of the city
- image of destroyed skyscrapers
- image of skyscrapers digitally rebuild

## 8.2. Models and material/textures

All the models have low-poly graphics and synthwave style.

### 8.2.1. Characters

The characters are all customizable.

*In the prototype:*

- 4x different car models
- Police car
- 4x different materials for car painting
- 4x different materials for wheel color
- Police car texture

*In the final game:*

- 10x car models
- Civilian car
- 12x different materials for car painting
- 6X different materials for wheel color
- 7X different materials for car neon

The following reference images are examples of playable cars.





The following reference images show the NPCs: the civilian car and the police car.



### 8.2.2. Props

All the props have a synthwave style with a single texture/material for each element. In the final game different kinds of props reflecting the setting of each area must be created. Some of them can be found everywhere in the map, since the four different areas composing it are distinct but connected.

*In the prototype:*

- 2x types of skyscraper
- 2x types of building
- Palm
- Beach umbrella
- Boats
- Lighthouse
- Ramps
- NOS item
- Health item
- Street barriers

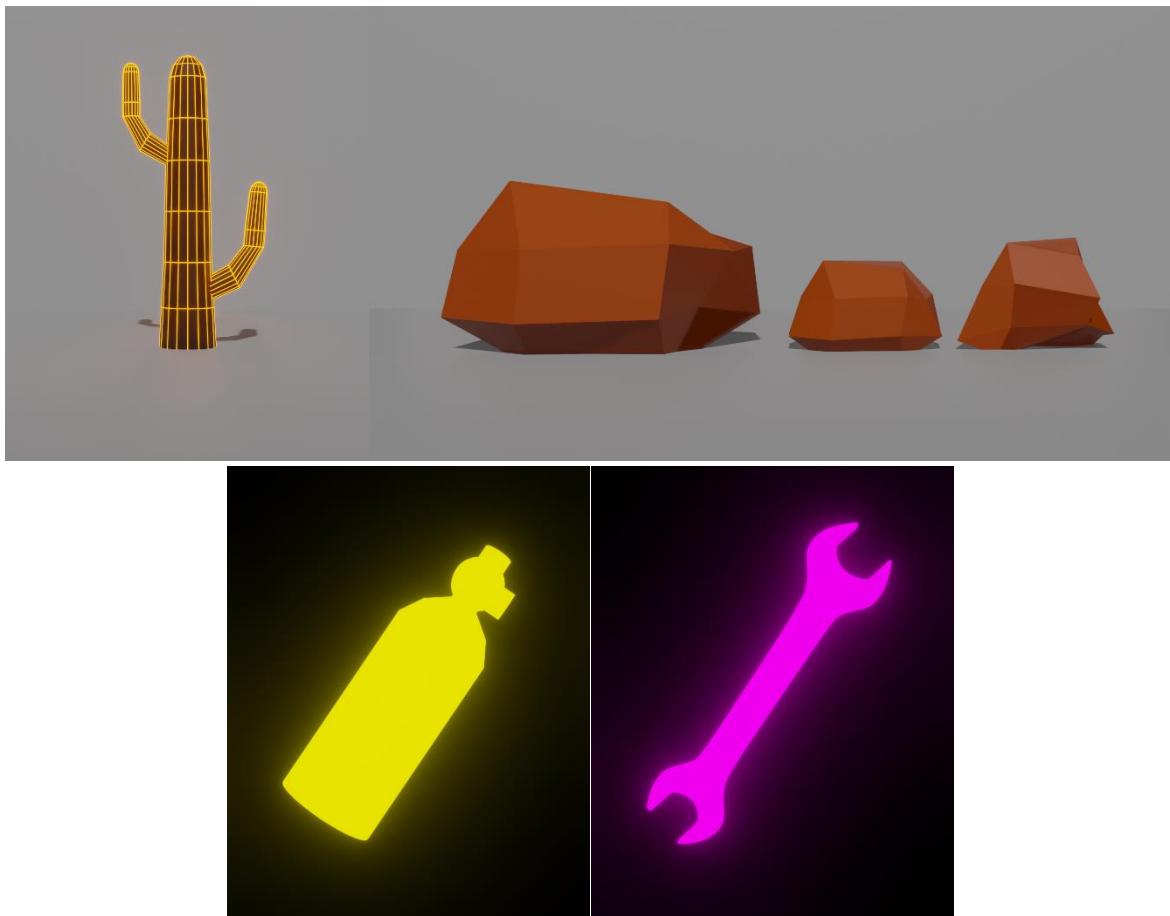
*In the final game:*

- 4x types of skyscraper
- 4x types of building
- 2x types of shack

- 3x types of cactus
- 4x types of rock
- 3x types of palm
- Tunnel
- Bridge
- Gas station
- Motel
- Scrap
- Road signs
- Streetlights

The following reference images are examples of props for the artist.





### 8.3. Effects

*In the prototype:*

- Particle effect of smoke when a car is destroyed

*In final game:*

- Nos effect
- Emission effect for lights

### 8.4. Maps

*In the prototype:*

The map of the beach area.

*In the final game:*

World map with different kinds of environment: the city centre, the outskirts, the desert and the sea.

The map of tutorial level.

## 8.5. Music and sounds

### 8.5.1. Music

*In the prototype:*

- Main menu song
- In-game song

*In the final game:*

- 8 songs, one for each track
- Cinematic intro song

### 8.5.2. Sounds

List of necessary sounds in matches:

- Engine
- Drift
- Brake
- Health and turbo collection
- Activate nos
- Collision with cars
- Collision with obstacles
- Sound for a cooperating action
- Sound of a car destruction
- Police siren
- Win/lose sound

Sounds for menu:

- Menu option selection sound
- Match found

### 8.5.3. Voice

Audio of Synthia voice must be recorded for the Tutorial level:

- Synthia narrating the backstory
- Synthia teaching car commands

## 9. PROTOTYPE

In the game prototype we implemented the following elements:

- The login and registration with a nickname
- The garage and the ability to choose between four playable car models and different customization elements: four car paintings and four car wheels
- The ability to add another player to your team by inserting his nickname
- Cars movement
- Police AI
- Police Chase mode
- The Sunset Beach track with some assets belonging to the area (see in [Media List](#) section for more details about assets)

In the next page is shown the level design of the Sunset Beach track.

