



Game Design Document

developed by



SPACE
MUFFIN

Index

Space Muffin Team	3
1 Design History	4
2 Vision Statement	5
2.1 Game Logline	5
2.2 Gameplay Synopsis	5
2.3 Elevator Pitch	5
3 Audience, Platform and Marketing	5
3.1 Target Audience	5
3.1.1 Psychographic Taxonomy	5
3.1.2 Demographic Taxonomy	6
3.1.3 Personas	7
3.2 Platform	11
3.3 System Requirements	12
3.4 Top Performers	15
3.5 Feature comparison	17
3.5.1 Feature Analysis of the Market	20
3.5.2 Unique Selling Points	20
3.6 Business Model	21
3.6.1 Economic Analysis of the Market	21
3.6.2 Resulting Business Model	22
3.6.3 Possible Game Expansions	23
4 Legal Analysis	24
5 Gameplay	24
5.1 Overview	24
5.2 Gameplay Description	24
5.3 Controls	25
5.3.1 Interfaces	25
5.3.2 Interfaces in Game	30
5.3.3 Camera	32

5.4 Rules and Procedures	33
5.4.1 Rules	33
5.4.2 Objects Description	33
5.5 Modes and Other Features	35
5.5.1 Spawning Items and Enemies	35
5.5.2 Winning Conditions	35
5.6 Levels	35
5.6.1 Level Design	35
5.7 Flowchart	37
6 Game Characters	41
6.1 Characters Design	41
6.1.1 Visual Inspirations	41
6.1.2 Concept Art	42
6.1.3 Final Art	43
6.2 Character Types	44
6.2.1 PCs	44
6.2.2 NPCs	45
7 Story	50
7.1 Synopsis	50
7.2 Complete Story	50
7.3 Narrative Devices	50
8 The Game World	51
8.1 Visual Direction	51
8.1.1 Visual Inspirations	51
8.1.2 Concept Art	52
8.1.3 Final Art	52
8.1.4 Further Considerations about Accessibility	52
8.2 Audio Direction	53
9 Media List	53
10 Prototype	55

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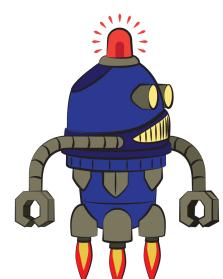
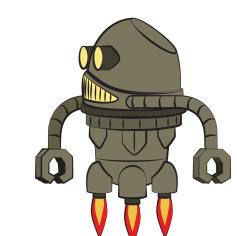
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1 Design History

10/04/2017 - Version 1.0

- First draft of the document
- First draft of the story and the narrative context
- Definition of player type through Bartle's taxonomy
- First description of the chosen platform
- First description of NPCs and their behaviour
- First definition of gameplay in terms of controls, rules, procedures, modes, winning conditions
- First example of interface mockups
- First visual and audio directions

10/05/2017 - Version 1.1

- Definition of top performers and detailed feature comparison
- Identification of personas to define better the target audience
- Consideration of visual constraints linked to problems of accessibility
- Description of gameplay improved and flowcharts/interface mockups added
- Definition of spawning of enemies and items
- Definition of a business model with the related analysis of the market
- Definition of the minimum system requirements according to the platform distribution

14/06/2017 - Version 2.0

- Definition of our Unique Selling Points after the feature comparison with other video games
- Description of the characters design and the game world, both related to the respectively visual inspirations, concept art and final art
- Detailed description of NPCs' behaviour
- Definition of the media list with all the assets made for the final demo
- Description of the developed prototype added in a specific chapter

2 Vision Statement

2.1 Game Logline

Defy gravity, steal treasures and become the richest space rogue in the galaxy!

2.2 Gameplay Synopsis

Gravity Groove is a 2D action game for mobile phones, playable both in single-player and multiplayer mode (2-4 players). Each player controls his/her character in the outer space where he/she can move among asteroids and wrecks; each walkable object has its own gravity, so every time the player bumps into one of them he/she will be attracted by it. Coins and powerups are scattered also in the space: each player can collect them moving through the environment. Player can steal coins from the others shooting missiles: when a player is hit by a missile he/she drops coins that can be stolen from the other players.

The main goal of each player is to reach the highest amount of coins before the time of a match is up.

2.3 Elevator Pitch

Gravity Groove is a mobile 2D PvP Super Mario Galaxy with missiles and jazz.

3 Audience, Platform and Marketing

3.1 Target Audience

In order to identify correctly our target audience, we gathered and formalized as much relevant data as possible about our future players. In order to do so, we provide both a psychographic taxonomy and a demographic one, using Bartle's taxonomy for the former and an extensive demographic study involving personas for the latter.

3.1.1 Psychographic Taxonomy

We use the Bartle's taxonomy in order to describe our target audience, matching it with the following types of players.

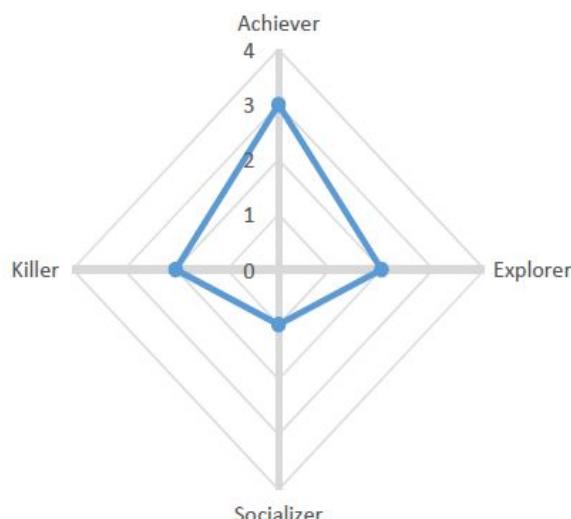


Fig.1 - Psychographic taxonomy with Bartle's types

- 3/4 Achiever: our game is mostly point based, which is directly appreciated by achiever players. Any player has a constant visual feedback on how much he has gathered and how well is placed in the current game ranking. Gathering collectables is a core mechanic that is usually perceived as pleasant by the achiever player; also the visualization of a final leaderboard and the possibility to exchange the coins collected in game with cosmetic items in the shop are an added value in a game playable by this kind of players.
- 2/4 Killer: even if the shooting isn't our core mechanic, players' aggressive interaction is encouraged by multiple game design choices. First of all, the resources are scarce and players will often find themselves to fight for them; once they are all collected, players' only choice to increase their score will be to fight adversaries and steal points from them. Many power-ups are used to give a temporary advantage over other players; this will make a single player temporary overpowered. This will produce an adrenaline rush in the killer player that is strictly linked to his/her point increase, resulting in an enjoyable experience and a tangible gameplay reward.
- 2/4 Explorer: the explorer player loves to discover new places and move through the environment. Even if our game is arena based, the explorer player will find himself/herself rewarded thanks to the extensive use of dense level design. As a matter of fact, even if the space is limited, he/she will have to explore the space in a creative way, creating each time his own path among game planets and platforms and visiting the same places from a different perspective.
- 1/4 Socializer: player social interaction is strongly limited by the mobile platform. As a matter of fact, friendships created on these platform are less important than the ones created in other gaming environment such as MMORPGS. We still try to encourage the growth of a lightweight community by small tricks used in other mobile games. We try to emulate Hearthstone's social interaction model; Hearthstone provides a perfect example of how friendship can be stimulated, offering bonuses and quests only solvable playing with a friend, and each time a match with a stranger is finished, it is possible to add him to the friend list.

3.1.2 Demographic Taxonomy

In the following bulleted we clarify which demographic characteristics we emphasized more than others and why we have knowingly neglected some of them. All the gathered data helped us to forge our personas, which will represent the embodiment of our target audience, of which we wanted to preserve the essence while trying to avoid as much as possible any kind of stereotype.

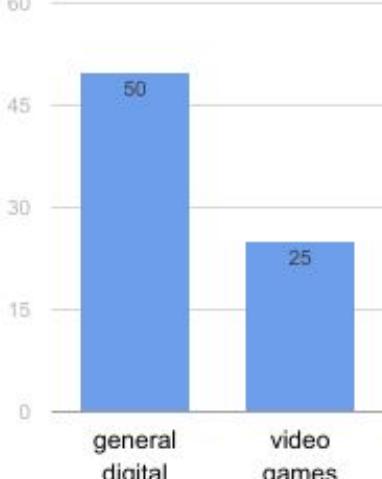
- We restricted the core of our target audience to the players who are teenagers (13-17), young adults (18-24), and people in their twenties and thirties (25-35). Players behind the teen age could be interested in our game too since it does not require complex reasoning, but it is also known that kids tend to attach to a single genre during those years. Nevertheless, given our cartoon aesthetic choices, there is a possibility that they will be attracted by our game.

- Teenagers, who are starting to develop their personal taste, can find our visual choice much more intriguing. Analyzing the context where our gameplay takes place, we do believe that this game can be a powerful way to socialize and play together in school. Given the little time required for a match, it's perfect to make new friends and play together during the breaks from the lessons (or maybe, even during them while sneaking smartphones underneath their desks!).
- Young adults and people beyond that age, whose taste has become well defined, can choose our game as a good way to relax during small breaks. As a strong point for the aforementioned age ranges, our match length and chosen platform makes our game perfect for commuters. While this situation applies to teenagers too, these two age ranges can spend more money and we expect that they will provide a higher revenue.
- While we do target mostly casual gamers, even hardcore ones might appreciate a lightweight game sometimes, especially when they are tired or they have limited time. As a matter of fact, context and psychological status can change quite heavily player choices. We do believe that our game would be the perfect choice in many context situations of different nature: some concrete example will be given in our personas' descriptions.
- There are currently no evident reasons that could hinder our game communication with other environmental contexts and cultures than western countries, but given our current limited resources and not so precise knowledge of other cultures, we do focus on the western countries. This provides a safest approach for the game launch; nevertheless in the future we do not see any particular reason that could limit our market to other countries, given the time and the resources to deeply study and analyze their cultures.
- Given the analysis of the market in most of the western countries, we do believe that gender will not represent a strong target audience bias and we hereby decide not to take account of that for the aforementioned reasons.

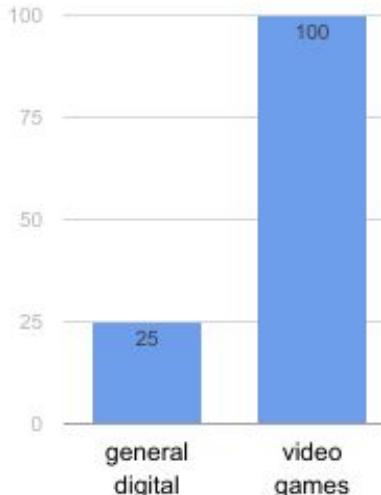
3.1.3 Personas

Psychographic and demographic taxonomy both helped us in order to produce the following personas.

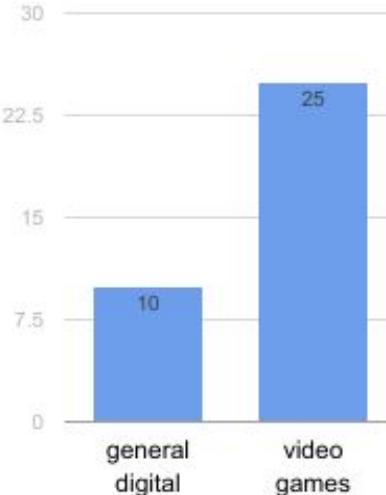
Victor

	Goal Victor wants an easy mobile game to play while commuting to have fun and relieve his work stress.	Tech knowledge  <table border="1"> <thead> <tr> <th>Category</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>general digital</td> <td>50</td> </tr> <tr> <td>video games</td> <td>25</td> </tr> </tbody> </table>	Category	Value	general digital	50	video games	25
Category	Value							
general digital	50							
video games	25							
Quick facts <ul style="list-style-type: none"> location: London (UK) occupation: Junior Bank Manager age: 28 	Expertise Victor knows a decent amount about games and has a good general digital knowledge.							
<p>Backstory</p> <p>Victor used to play lots of video games when he was still a kid; he remembers clearly the day his parents bought him a Gameboy and how he used to play with his friends using the game link. He dropped his hobbies in order to study harder since high school because he wanted to be the first of his class and make his parents proud.</p> <p>He enrolled in Economics at University in order to get a solid job and a high income to provide for his family.</p> <p>He likes to have all the latest technologies at his disposal and he always has a very powerful ultrabook and a high end smartphone, even though he doesn't understand very much all the tech specifications; those devices are more a status symbol than anything to him.</p> <p>While commuting everyday, he used his smartphones for checking emails and be even more productive when, one day, he opened the Google Play store and downloaded some games, discovering his old passion for videogames. Among them, Gravity Groove drew his attention and he's enjoying playing it on the train to work.</p>								

Francesco

	Goal Francesco wants an easy mobile game to play with his friends during school breaks and lazy afternoons.	Tech knowledge						
Quick facts <ul style="list-style-type: none"> location: Rome (IT) occupation: high school student age: 16 	Expertise Francesco is an avid video game player but hasn't a good general digital knowledge.	 <table border="1"> <thead> <tr> <th>Category</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>general digital</td> <td>25</td> </tr> <tr> <td>video games</td> <td>100</td> </tr> </tbody> </table>	Category	Value	general digital	25	video games	100
Category	Value							
general digital	25							
video games	100							
Backstory <i>Marco's father is a Japanese ambassador that every four years must change country and bring his family with him. His mother is Italian so he has enough Italian language skills to follow the lectures and communicate with others; nevertheless, he is quite an introvert and he had quite some troubles to find new friends. He loves playing video games, especially single player ones and has an extensive knowledge about them.</i> <i>He has a blog where he writes all his reviews about the game he plays and he reads all news sites and magazines about video games. He quite likes many indie games and thinks that many of them have interesting core mechanics never seen in AAA titles.</i> <i>One day he saw the guy who usually sits next to playing Gravity Groove while waiting for the teacher to come. He asked about it, downloaded it and started to play right away.</i>								

Mark

	Goal Mark wants something to play before going to bed or while he is in the bathroom to unwind.	Tech knowledge						
Quick facts <ul style="list-style-type: none"> • location: New York (USA) • occupation: Woodworker • age: 35 	Expertise Mark has a really low general digital knowledge and a small video game knowledge.	 <table border="1"> <thead> <tr> <th>Category</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>general digital</td> <td>10</td> </tr> <tr> <td>video games</td> <td>25</td> </tr> </tbody> </table>	Category	Value	general digital	10	video games	25
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general digital	10							
video games	25							

Backstory

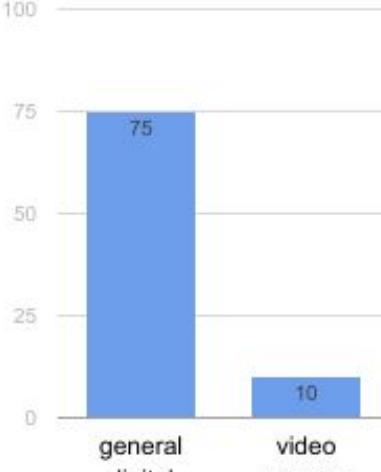
Mark used to play some videogames when he was younger and he is now a father of a family.

He didn't want to go to school or university because he is a very practical person who doesn't like to spend time on books. As a matter of fact, he managed to turn his hobby, which is woodworking, into a solid profession that can provide for his family. He's not into technology and he tries to stay away from computers: he likes to write everything on paper and he's the kind of person who always forgets his phone somewhere.

His wife was tired of his old phone and bought a smartphone for him as a present. At first, he didn't use it apart from phone calls, but one day he felt curious and tried the Google Play store looking for games. He remembered how much fun he had playing in the arcades and how he spent all his money with them.

Now he is always busy between work and family; he tries to use every little time frame to play videogames and he loves mobile gaming while being in the bathroom or before going to bed.

Shooting missiles in the space while being a space rogue helps him to escape from reality once in awhile.

Kaylee								
	Goal Kaylee wants something to play that is easy enough to play with captivating and inspiring visuals that make the game feel unique.	Tech knowledge						
Quick facts <ul style="list-style-type: none"> location: Paris (FR) occupation: University art student age: 22 	Expertise Kaylee has a really good general digital knowledge and a very small video game knowledge.	 <table border="1"> <thead> <tr> <th>Category</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>general digital</td> <td>75</td> </tr> <tr> <td>video games</td> <td>10</td> </tr> </tbody> </table>	Category	Value	general digital	75	video games	10
Category	Value							
general digital	75							
video games	10							
Backstory								
<p><i>Kaylee is a young American girl who moved to France to pursue her biggest dream, being a painter. She saved money while working as a waitress for several years while studying french and now she has just moved to Paris.</i></p> <p><i>Since she is always trying to find new ways to inspire her works, he decided to give video games a try. Since she already had a smartphone, he searched the Play store for something eye-catching that was different from the others.</i></p> <p><i>She is very skilled with computer software, especially with Adobe suite and all the programs needed to create digital art but she doesn't understand anything about hardware.</i></p> <p><i>Captivated by the style, she found controls and game mechanics too strange for her, but after some games she managed to become a really good player.</i></p> <p><i>Between her painting sessions she now plays Gravity Groove quite often.</i></p> <p><i>She is now thinking to make her next university project about arts in mobile videogames, where usability and synthesis is absolutely necessary to deliver a pleasant experience for the players.</i></p>								

3.2 Platform

Gravity Groove is designed to run on mobile phones; this choice matches correctly with the target of users considered, that is casual gamers. The reasons of our choice are firstly based on the accessibility of the product: everyone has a smartphone nowadays and can easily make use of a game; mobile games are also playable outside, without the limits of PC and console games, entertaining the player anywhere. The timer will influence the pace of the single match, limiting the duration of the gameplay: each level is designed to be played in few minutes in which the player faces other players online.

We have also considered the necessity to make controls as simple as possible, using the gestures of the smartphone as input devices or to give tactile feedback, or limiting the information on the display and simplify the UI.

3.3 System Requirements

Gravity Groove is designed to run both on Android and iOS devices. The minimum system requirements for Android and iOS platform are defined according to the mobile market and the version of the game-engine used during the development of the game (Unity 5.6.0f).

- **Android:** looking at the Dashboard page on Android official site¹, we find which devices are currently active in Android and Google Play; the following schema shows the current situation, with the number of devices running a given version of the Android platform:

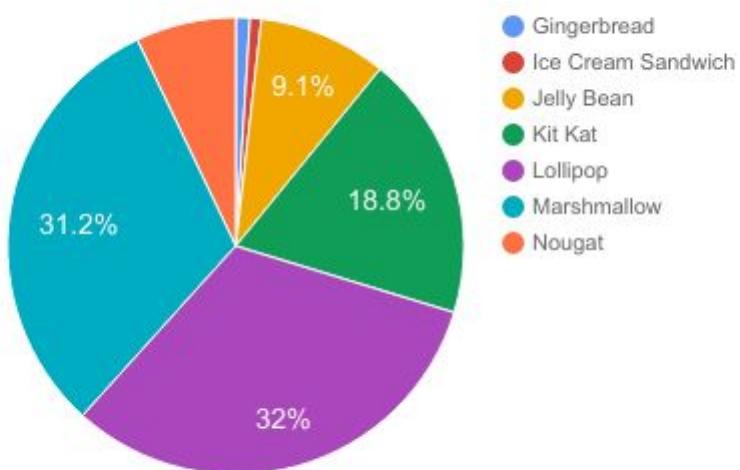


Fig.2 - Android versions distribution, Data updated on May 02, 2017

Version	Codename	API	Distribution
2.3.3 - 2.3.7	Gingerbread	10	1.0%
4.0.3 - 4.0.4	Ice Cream Sandwich	15	0.8%
4.1.x / 4.2.x / 4.3	Jelly Bean	16 / 17 / 18	9.1%
4.4	Kit Kat	19	18.8%
5.0 / 5.1	Lollipop	21 / 22	32%
6.0	Marshmallow	23	31.2%
7.0 / 7.1	Nougat	24 / 25	7.1%

¹ developer.android.com (Android Dashboard: goo.gl/0mB5jQ)

- iOS: the independent iOS developer David Smith shows on his personal page² how quickly users are adopting new version of iOS; the following schemas show respectively the number of all platform devices, only iPhone and only iPad running a given version of the iOS platform:

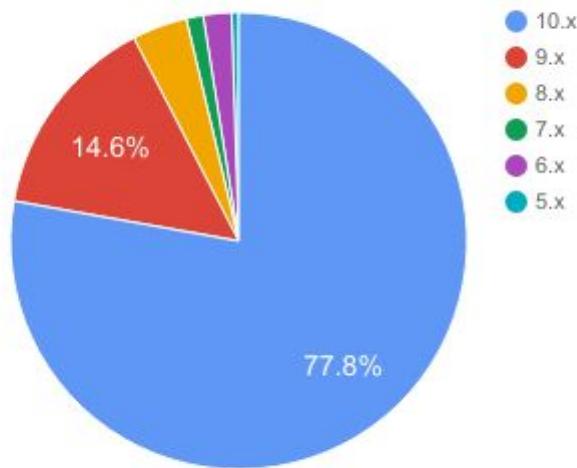


Fig.3 - All platform devices, data updated on May 09, 2017

Version	Distribution
10.x	77.8%
9.x	14.6%
8.x	3.9%
7.x	1.2%
6.x	2.0%
5.x	0.5%

² david-smith.org (iOS version stats: goo.gl/YmeRfI)

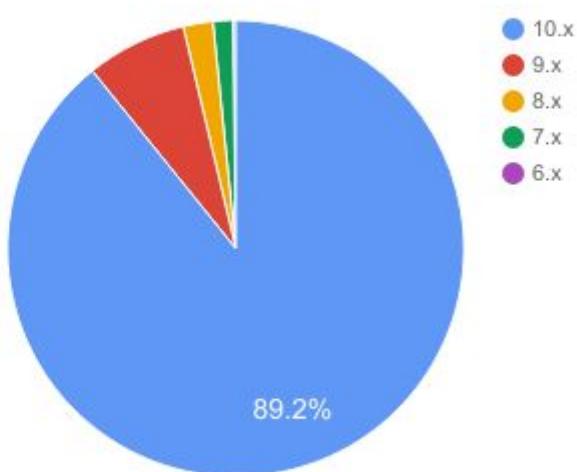


Fig.4 - iPhone only, data updated on May 09, 2017

Version	Distribution
10.x	89.2%
9.x	7.1%
8.x	2.1%
7.x	1.4%
6.x	0.2%

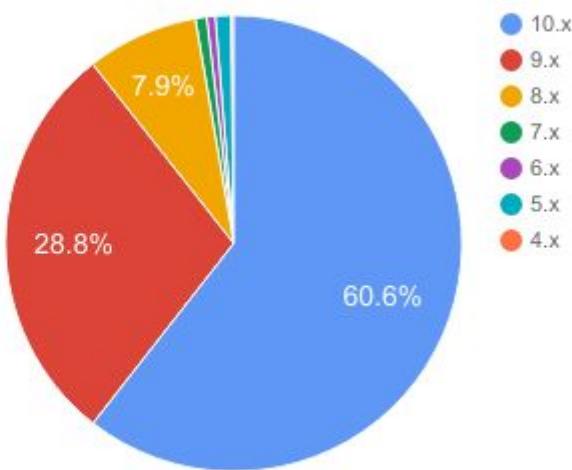


Fig.5 - iPad only, data updated on May 09, 2017

Version	Distribution
10.x	60.6%
9.x	28.8%
8.x	7.9%
7.x	0.8%
6.x	0.6%
5.x	1.1%
4.x	0.2%

According to the version distribution of both of the platforms, we have decided to develop the product for Android 4.1 Jelly Bean and iOS 7.x and upper versions of both platforms to ensure that is possible to play on as many devices as possible, covering for the biggest market share.

3.4 Top Performers

Jetpack Joyride, *Super Mario Run* and *Cordy 2* are three relevant games of the current mobile games market that have sold a reasonable amount of units to be considered as the main games in our top performers list; the first one is classified as endless runner while the last two as platformer, each with its own features, described in the following tables.

Gravity Groove can be classified also as platformer, even if its peculiarity is to give a new meaning to the gravity, making it the real core-mechanic of the game. The absence of many relevant games with this characteristic gives us the opportunity to introduce a different product on the mobile game market.

Jetpack Joyride



Developer: Halfbrick Studios
 Platform: iOS, Android, Windows Phone 8, Playstation 4, Windows 8
 Publication: September 2011
 Theme: Fantasy
 Game mode: Single-player
 Genre: Side-scrolling, Endless runner
 Downloads: 100.000.000 - 500.000.000 units
[Download it on Play Store: goo.gl/zh96z3](http://goo.gl/zh96z3)

Jetpack Joyride is the first game in the list of the top performers compared with our game on the mobile games market.

Description

In *Jetpack Joyride*, the player is the salesman Barry Steakfries; one day he finds one of the top secret laboratories of Legitimate Research and sees the Machinegun jetpack inside. Thinking of using the jetpack to do good, Barry enters the laboratory and steals the experimental jetpack.
 The gameplay is very simple: when the player presses on the touchscreen, the jetpack fires and Barry rises; vice-versa the jetpack turns off and Barry falls. The main goal of the player is to travel as far as possible, collecting coins and avoiding laser and enemies.

Super Mario Run



Developer: Nintendo Co., Ltd.
 Platform: iOS, Android
 Publication: March 2017
 Theme: Fantasy
 Game mode: Single-player, Multi-player online
 Genre: Platformer, Auto-runner
 Downloads: 10.000.000 - 50.000.000 units
[Download it on Play Store: goo.gl/2wYZIC](http://goo.gl/2wYZIC)

Super Mario Run is the second game in the list of the top performers compared with our game on the mobile games market.

Description

In *Super Mario Run*, Mario automatically runs from the left to the right of the screen and the player must control him tapping on the touch screen: when he taps on the screen Mario jumps and can reach higher walkable platforms, avoid obstacles and collect coins and other awards, before the time is up. The player can set the power of a single jump depending on the pressure of the tap: the longer he/she presses the screen, the higher Mario jumps.
 In addition to the main game mode, there is the "Toad Rally" mode where the player can challenge other players to pass levels.

Cordy 2



Developer: SilverTree Media

Platform: iOS, Android

Publication: January 2015

Theme: Sci-Fi

Game mode: Single-player

Genre: Platformer

Downloads: 1.000.000 - 5.000.000 units

Download it on Play Store: goo.gl/udWttM

Cordy 2 is the third game in the list of the top performers compared with our game on the mobile games market.

Description

In *Cordy 2*, the player is a little robot moving in a hi-tech world where the electricity has been stolen by bad robots; the goal is to give back the electricity to each level, facing enemies and traps. The player moves the robot pressing buttons placed on the lower left of the screen and uses the power-ups pressing the button on the right. The electricity is the core feature and influences the gameplay dynamics; if the player is near a portal or hook, he can use the power of electricity using the wall socket that the robot drags: he will be able to jump on walls, swing, teleport in different places of the screen. Each level is also full of secrets and hidden areas, giving the player a higher challenge to complete it.

3.5 Feature comparison

Navigating in the environment using our physics rules can be quite problematic for the player. That is the reason why a good control mechanic must be implemented in order to avoid frustration. When the gravity of the character is different from the standard one (gravity pointing down), game input must be dealt in a very careful way. The following games are not in the same market of our game (*Super Mario Galaxy*, *Airscape: The Fall of Gravity*) or have too few units of download (*They Need to Be Fed 2*, *VVVVVV*) to be considered as top performers; by the way, each of them uses the gravity as core mechanic, and for this reason are listed for our feature comparison.

Super Mario Galaxy



Developer: Nintendo Co., Ltd.

Platform: Nintendo Wii

Publication: November 2007

Theme: Fantasy

Game mode: Single-player, Multi-player

Genre: Platformer, Action-adventure

Description

Super Mario Galaxy is a 3D platform game, set in the outer space, in which the player controls Mario and has to collect hidden stars among the levels, moving through the space; each object on the screen (planets, asteroids,...) has its own gravity, making it the most important feature that influence the gameplay dynamics.

Airscape: The Fall of Gravity



Developer: Cross-Product
 Platform: Windows, macOS X, Linux
 Publication: August 2015
 Theme: Fantasy
 Game mode: Single-player
 Genre: Platformer

Description

Airscape: The Fall of Gravity is a 2D action platformer, set in a strange and dangerous world, in which the player controls a little octopus who has to save his family, avoiding traps and enemies spread through the levels. The player can jump on platforms being attracted by their own gravity, meanwhile the screen rotates depending on his position; this rotation make the gameplay harder, challenging the player during the whole play session.

They Need to Be Fed 2



Developer: Bit Ate Bit
 Platform: iOS, Android
 Publication: May 2013
 Theme: Fantasy
 Game mode: Single-player
 Genre: Arcade, Platformer

Description

They Need to Be Fed 2 is a 2D platformer, set in a world in a slick visual style, in which the player has to pass each stage walking and jumping on the objects spread in the environment. Each object has its own gravity and the player can move 360° around them. There is an epic mode in addition to the classic one in which the player must complete each level in a single run avoiding the death.

VVVVVV



Developer: Terry Cavanagh
 Platform: Windows, macOS, Linux, iOS, Android, Nintendo 3DS, Playstation 4
 Publication: January 2010
 Theme: Fantasy
 Game mode: Single-player
 Genre: Action, Platformer

Description

VVVVVV is a 2D action platformer, set in an environment inspired by 8-bit retro games, in which the player controls Captain Viridian, the captain of a spaceship trapped in an alternative dimension. After a dimensional interference he becomes separated from the rest of his crew; his goal is to meet again his companions and find the solution for the dimensional interference.

The peculiarity of this game is that the player can't jump: he can only reverse the gravity to move through the environment meanwhile enemies, spikes and other traps are trying to stop him.

Analyzing games with a similar gravity feature, different approaches emerged:

1. Making the relative controls always match absolute controls. This means that a player presses the right button, regardless of character orientation it will go towards the right part of the screen. This is often achieved by making the camera rotate with the character and makes the controls way easier to manage for the player. This approach had been used in Super Mario Galaxy and proved to work particularly well. Unfortunately, this approach did not work as well in other games, such as Airscape: The Fall of Gravity. In this game the camera follows the character in every rotation but, since 360 rotation is quite frequent in the gameplay, it induces nausea to the player. The controls work nicely in Super Mario Galaxy since there is never a complete turn of the camera or it simply doesn't happen often.
2. When gravity can be only inverted upside-down, the controls can be simply coded to be absolute and not relative to the character without moving the camera. This approach is used successfully in some games such as VVVVVV, but it doesn't suit our game since we do require a 360 gravity.
3. Making the character go clockwise or counter clockwise instead of giving it absolute direction. This approach worked particularly well on a mobile game named They Need to Be Fed 2. This control handling proved to be quite fitting both for the mobile interface and eliminates the problems related to players' nausea since the camera is never rotating.

The following table shows the comparison of the features previously described for each game.

Title	<i>Gravity Groove</i>	<i>Super Mario Galaxy</i>	<i>Airscape: The Fall of Gravity</i>	<i>They Need to Be Fed 2</i>	<i>VVVVVV</i>
Genre	Action, Platformer	Action - adventure, Platformer	Platformer	Arcade, Platformer	Action, Platformer
Graphics	2D	3D	2D	2D	2D
Number of players	1-4	1-2	1	1	1
Camera	Follows the player without rotation	Rotates with the player	Rotates with the player	Follows the player without rotation	Follows the player without rotation
Controls	Absolute (clockwise / counterclockwise)	Relative to the character	Absolute (specific direction)	Absolute (clockwise / counterclockwise)	Absolute (specific direction)
Gravity	Each platform has its own gravity	Each platform has its own gravity	Each platform has its own gravity	Each platform has its own gravity	Absolute up or absolute down

3.5.1 Feature Analysis of the Market

We now focus on the features offered by other games on the market on two axis we have chosen because of their importance according to our study.

On the Y axis we evaluate how much a given game is based on multiplayer or single player and on the X axis we evaluate a given game's pace.

With the following graph, we show how there are no games that on mobile offer both a multiplayer and fast paced experience; our goal is to fill that market hole with our game.

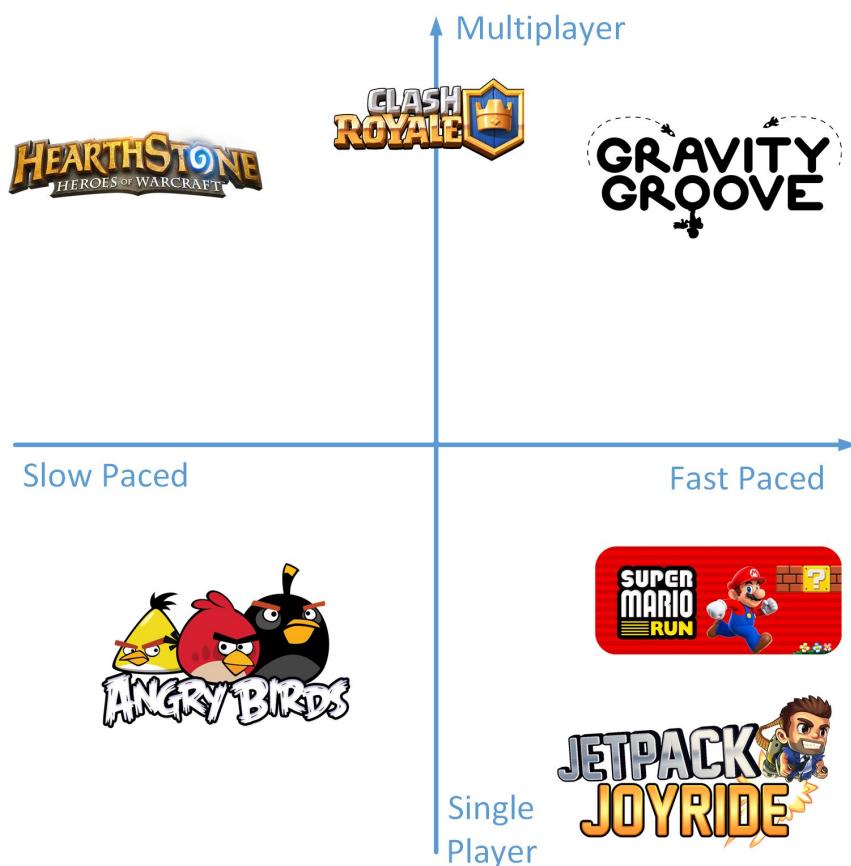


Fig.6 - Other games on the market

3.5.2 Unique Selling Points

Given the previous feature comparison and competitive analysis of the market, we now formalize unique selling points for our game. The following points are the one we think are more important than others and can be proficiently used in any kind of pitch to present this game. Even if there is no strict rule to the number of USPs that a game should have, we identified three of them.

With less USPs, the game might not really stand out from the competition while with too many USPs we couldn't be able to spend enough time to polish all of them properly. These are the reasons why we opted to focus on the following USPs.

Unique Selling Point	Description
Real-time PvP on mobile	<p>Anyone can play with the minimum possible amount of taps: open the app, tap on play casual and you're playing right away with people all over the world. The market offers many mobile games that are online or real-time, but very few of them offer both features at the same time.</p> <p>One of the reasons is technical: lag is incredibly difficult to handle, especially on mobile network. Reducing lag as much as possible is one of the most challenging tasks that our team is facing and we are confident to bring positive results applying state of the art lag-reducing techniques.</p>
Creative movement in the space	<p>Our core mechanic is resource collection; while it is an incredibly simple and wide-known one, our creative movement introduces an innovative twist that is rarely seen in other games. Exploration and creative movement makes environment navigation a challenge that is both fun and rewarding.</p>
Original shooting mechanic	<p>Shooting can be seen in lots of games, but we do believe to offer a special balance of aiming and mindless bullet spamming. Players can produce creative effects with a single tap since each missile gravitates around planets. As a result, this mechanic is easy to learn and difficult to master.</p>

3.6 Business Model

3.6.1 Economic Analysis of the Market

The games that are currently the most economically successful on mobile devices use a free-to-pay business model with in-app purchases³. As a matter of fact, most of the people who game on mobile platforms (this is especially true for Android) do not want to pay for a product and mostly download free games. As a case study we can consider Super Mario Run as something that diverged from the aforementioned business strategy and did not meet Nintendo's economic expectations; despite having overall good reviews from critics, the business model wasn't right for the market, as can be read on *Forbes* and *Phone Arena* web sites⁴. First of all, as mentioned before, very few people are willing to pay 10 euros for a mobile game, despite the quality of it. Secondly, once the game has been paid, it won't generate any income from players once they bought it.

As said in one of the articles cited: “[...]The game provides a free demo that lets you replay the first three levels as much as you like. The full game can be access for a one-time fee of \$9.99. Do you see where the problem is already? [...]”.

³ thinkgaming.com (Top Grossing all devices - games: goo.gl/kgFTdP)

⁴ www.forbes.com (Was Super Mario Run a success or a failure? : goo.gl/KK90I3)

www.phonearena.com (Why Super Mario Run was a flop and we should've seen it coming: goo.gl/PhpA6Y)

As a matter of fact, most successful mobile games are free and provide a constant cashflow using diversified income strategies combined such as in-app purchases and advertising. Citing to Frank Gibeau, Executive Vice President of EA Mobile: “*Offering mobile games for free allows us to reach the largest audience possible and give players the chance to try out games risk-free*”. If some part of the audience appreciated a particular free game, it will generate more revenue overtime paying for extra features or a premium game experience with more services.

3.6.2 Resulting Business Model

With the aforementioned case study and analysis of the market in mind, we can now provide a clearer business plan; our game uses a free-to-pay model with in-app purchases. Players can download our game for free on Google Play and Apple Store and their payment information will be handled outside our application (see details in chapter [13.2 Revenue Estimation](#) of the Technical Design Document).

The main sources of revenue are the following:

- Advertisement: after downloading the game, the player can play right away both in online and offline mode without limitations, but at the end of each match will see an advertisement and therefore generate income.
- In-game Shop: after each game, the player can display how many coins he/she has collected during gameplay. Those coins are actually added to his/her wallet and can be used in the in-game shop for cosmetic items, new game modes and new arenas, emulating the approach used successfully by other top performers. Farming all the gold necessary to buy those items can require a considering amount of time; therefore we offer the possibility to buy in-game coins with real money.
- Ad-free upgrade: instead of making two different game builds for premium user, we offer the possibility to players who want to get rid of the advertisements to buy an upgrade in the game shop for real money only at the price of 2.99 euros. This price is similar to other games on the Google Play store who offer the same kind of upgrade from free-version to ad-free version as shown in the following chart.

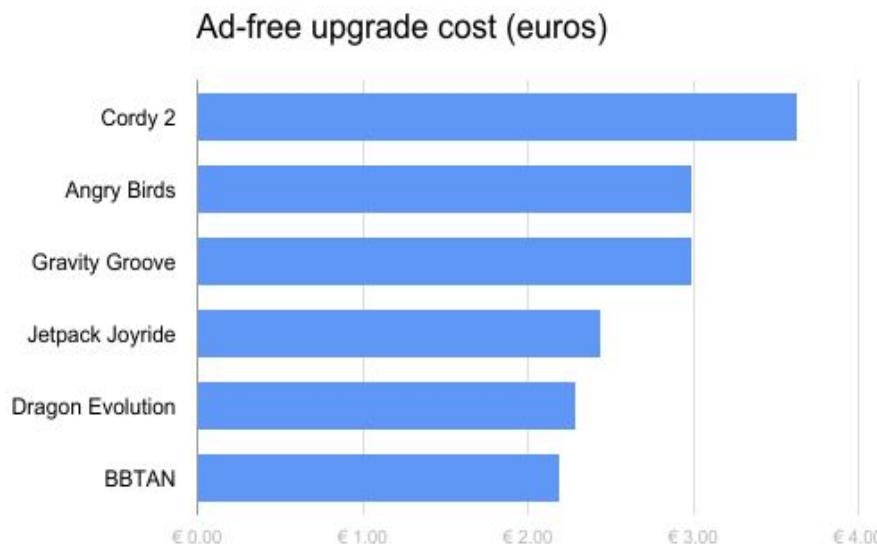


Fig.7 - Ad-free upgrade cost in other games

The following table summarizes our goals and how we plan to achieve them.

Business goal	How we plan to achieve it
Generate income from both casual and hardcore players.	<p>Game shop coins can be obtained by playing or using real money. Cashflows can be divided in two main categories:</p> <ul style="list-style-type: none"> • Ad money: income from free/casual players. • Coin purchases / premium upgrade: income from more committed players.
Gaining interested players' fidelity.	<p>Providing a buyable game upgrade in the shop where it is possible to remove in-game ad at the end of each match. Adding updates with new items and game modes with updates. Discounts are given for long-time players.</p>
Promotion of our game within social networks.	<p>Very clear UI button to induce player to promote our game on social networks and like our Facebook page. Doing so will provide in-game bonuses such as coins and cosmetics.</p>

3.6.3 Possible Game Expansions

Given the nature of mobile games, players need frequent updates and new contents in order to keep playing and paying. That is the reason why our in-game shop should not be cosmetics only. As a matter of fact, we plan to release paid expansions with different arenas, NPCs and game modes. Once released, an expansion has a limited amount of

free runs for that mode; we want customers to be able to try the new expansion for free before actually buying it with actual money. This approach has the advantage to fit every personal playstyle: if someone likes the game but doesn't like a particular game mode after trying it, he/she is completely free not to buy it.

Here is a small list of possible new game modes after release:

- Time attack: players do not need to collect coins, there are only missiles and targets to hit. The player who hits most targets wins.
- Kill'em all cooperative mode: infinite numbers of NPCs that needs to be killed with the help of a friend to increase score; point results are put in public leaderboards.

4 Legal Analysis

PEGI 7: no bad language, violence in a not realistic context, online gameplay.

Licenses of Unity and softwares are regularly paid.

Free assets taken from Unity Asset Store during the prototyping; original visual and audio assets made for the final prototype.

5 Gameplay

5.1 Overview

You are a space rogue roaming the solar system in search of fame and treasures, venturing in floating relicts where no one else dares to enter. The cosmic void will not be your only enemy, your run for space-gold will be full of obstacles: changing gravity fields, mad robots, mysterious alien technologies and of course other gold-hungry rogues!

To defeat your adversaries you must be smarter and faster of them and quickly grab your space coins!

5.2 Gameplay Description

The game has only one goal: collect as much coins as you can before the time is up.

There are two ways of collecting coins:

1. Walk over it, some coins will spawn it the map
2. Hit an enemy with a missile, he/she will drop some of its coins that will be there to be stolen. The amount of coins dropped is obtained with the following formula we tuned with several playtests:

$$\begin{aligned}
 \text{number of dropped coins} &= \text{Random}[2-5] + \\
 &\quad \text{total number of players in the match} - \\
 &\quad \text{hit player ranking}
 \end{aligned}$$

Player will be able to move across the map running around platforms and jumping from one to another; moving around as fast as possible to reach coins is a key feature in the gameplay. The gameplay will have a fast flow, hard but not impossible to master; the duration of a match must be calculated after an accurate playtest for each arena, with the upper limit of 3-4 minutes.

The experience of floating in the space will be given by the nature of the map, moving around won't be that easy as the players will often be moving upside down, making it harder to control their own characters and jumps will make the character leap in open space. The game leaves room as well to a more strategic approach with the introduction of missiles, AI-NPCs and power-ups which spawn in recurrent places and have fixed behaviours adding a more predictable pattern in the evolution of the match. Player will be rewarded for being faster and smarter than other at moving around and using power-ups, as the main challenge of the game is to decide quickly what is the best action to do.

5.3 Controls

Players has two kind of horizontal movement, one being clockwise and the other counterclockwise to the normal of the ground they are on. The ground won't always be flat but it will assume different shapes like globes or rectangles, each of these walkables objects has its own gravity field and the players will be able to walk all around it.

The player can escape the gravity field of an object and land on a new one tapping on the jump button.

If the player has collected a missile, he/she will be able to tap on the missile button to shoot.

5.3.1 Interfaces

The game is for mobile platforms so we need to make controls as simple as possible to guarantee the usability of devices: for this reason we minimized the number of buttons on the interface.

The ingame inputs are four, displayed at the bottom of the screen: two buttons for the movement (clockwise and counterclockwise), one for the jump and one for use missiles; there is also a setting button that, when tapped, will show the settings window with the quit button to leave the game.

The following schema shows the representation of the interface.

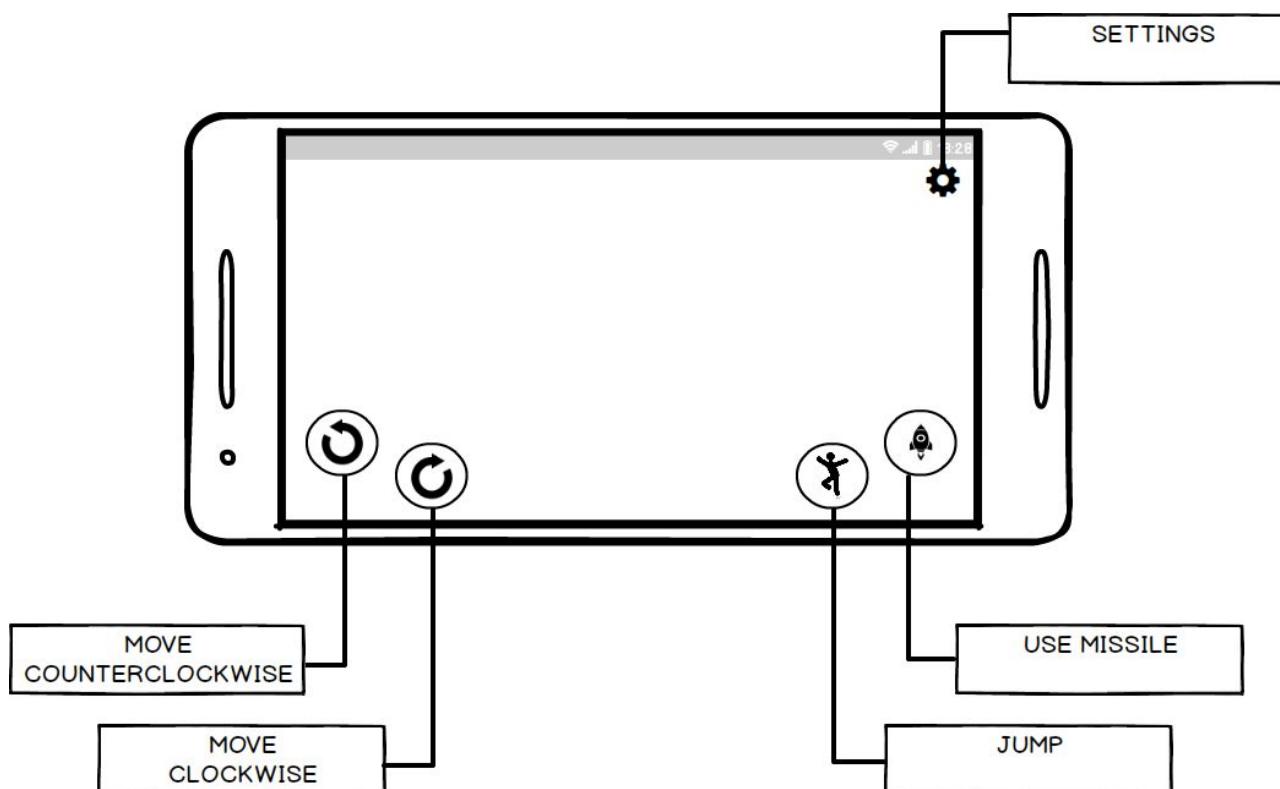


Fig.8 - Example of ingame UI

- Main screen mockup

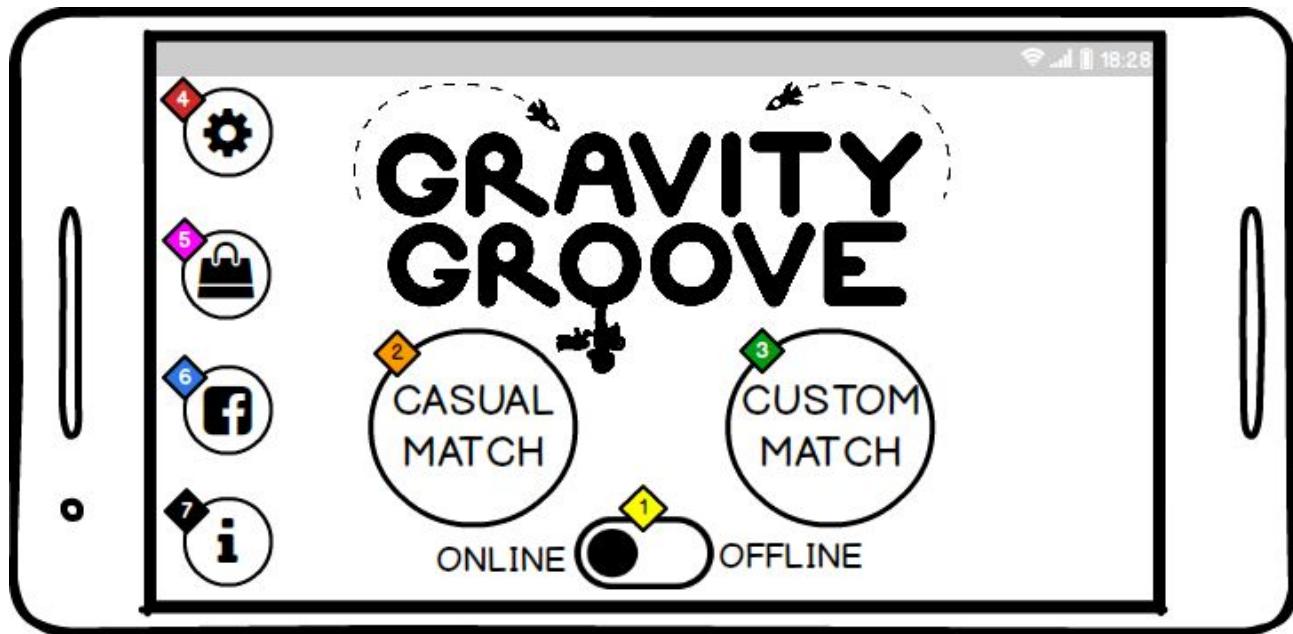


Fig.9 - Main Screen

	ONLINE/OFFLINE (Toggle)	This toggle allows the player to choose if play online, facing other players, or offline, facing bots.
	CASUAL MATCH (Button)	This button allows the player to connect to a match as soon as possible; if the player doesn't join a match by 30 seconds, or if there aren't opponents to play with, then a message of error will appear on the screen and the player will have to look for another match.
	CUSTOM MATCH (Button)	This button allows the player to create a custom match: he/she will be able to choose a map and host a new match with other selected players; the opponents will be friends, bots or other casual players not included in the personal friend list.
	SETTINGS (Button)	This buttons allows the player to visualize the setting screen: he/she will be able to modify the volume of the sound and music, or optimise the game according to the device, or quit the game.
	SHOP (Button)	This button allows the player to enter the shop and buy cosmetics items to customize the character; if the player gives like to the official Facebook page using the respectively button in the shop he/she will be rewarded with an amount of coins.
	FACEBOOK (Button)	This button allows the player to reach the official Facebook page of <i>Gravity Groove</i> , keep up to date by the team of developers in order to promote the game.
	CREDITS (Button)	This button allows the player to read the credits related to the developing team.

At the end of each chosen match, a scoring screen will appear showing the ranking of the players; once closed, the player will be able to come back to the main menu choosing whether to start a new match or leave the game.

If a player disconnects during a match, he/she has 30 seconds to try to reconnect to the same match, meanwhile a NPC temporarily substitutes him/her. If the player doesn't reconnect in time, he/she will lose the match meanwhile the AI will definitely substitute him/her; vice-versa, he/she will come back to the match and the AI will leave the control to the player once again.

- Settings, Shop and Facebook mockups

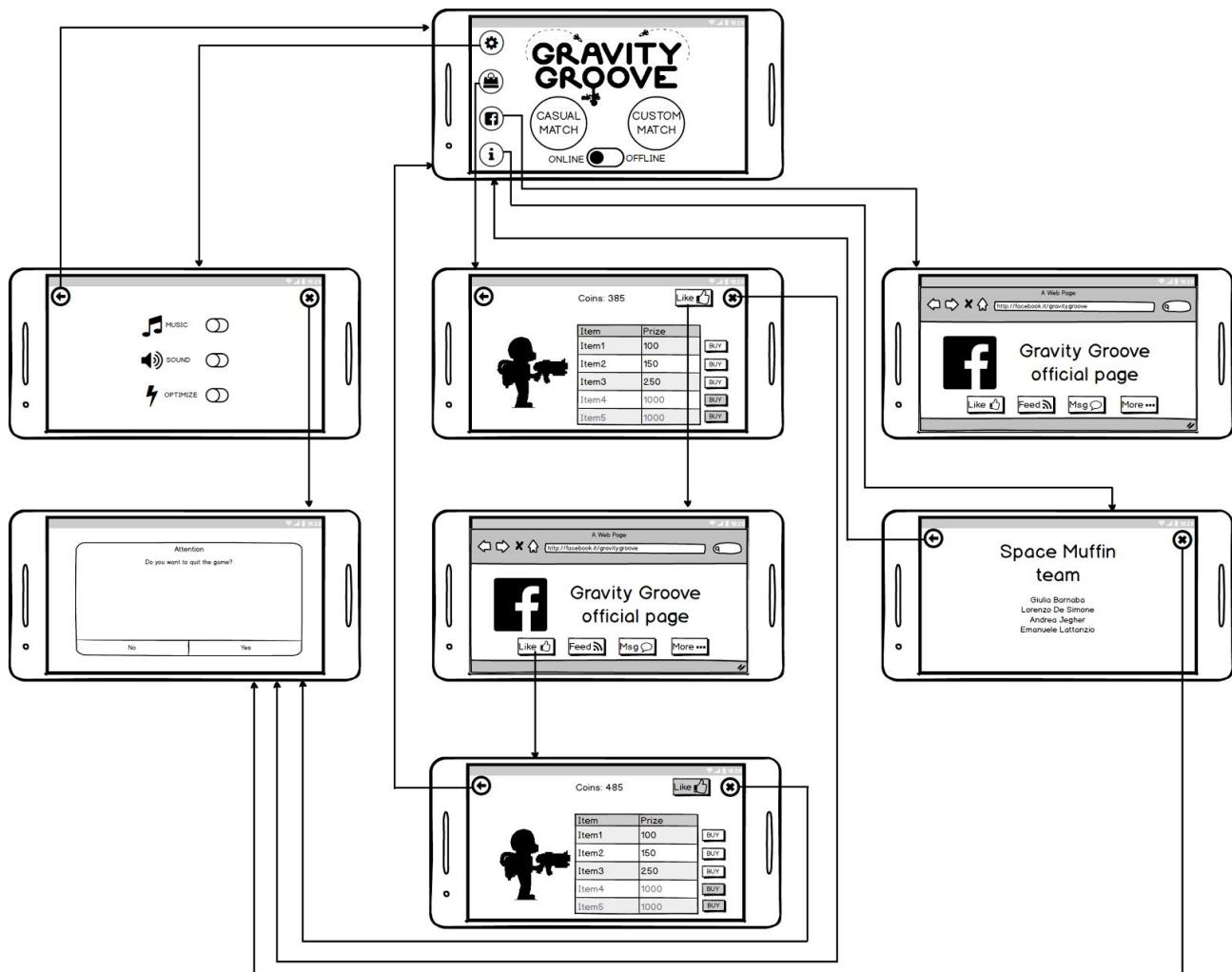


Fig.10 - Settings, Shop and Facebook Screens

- Casual Match mockups

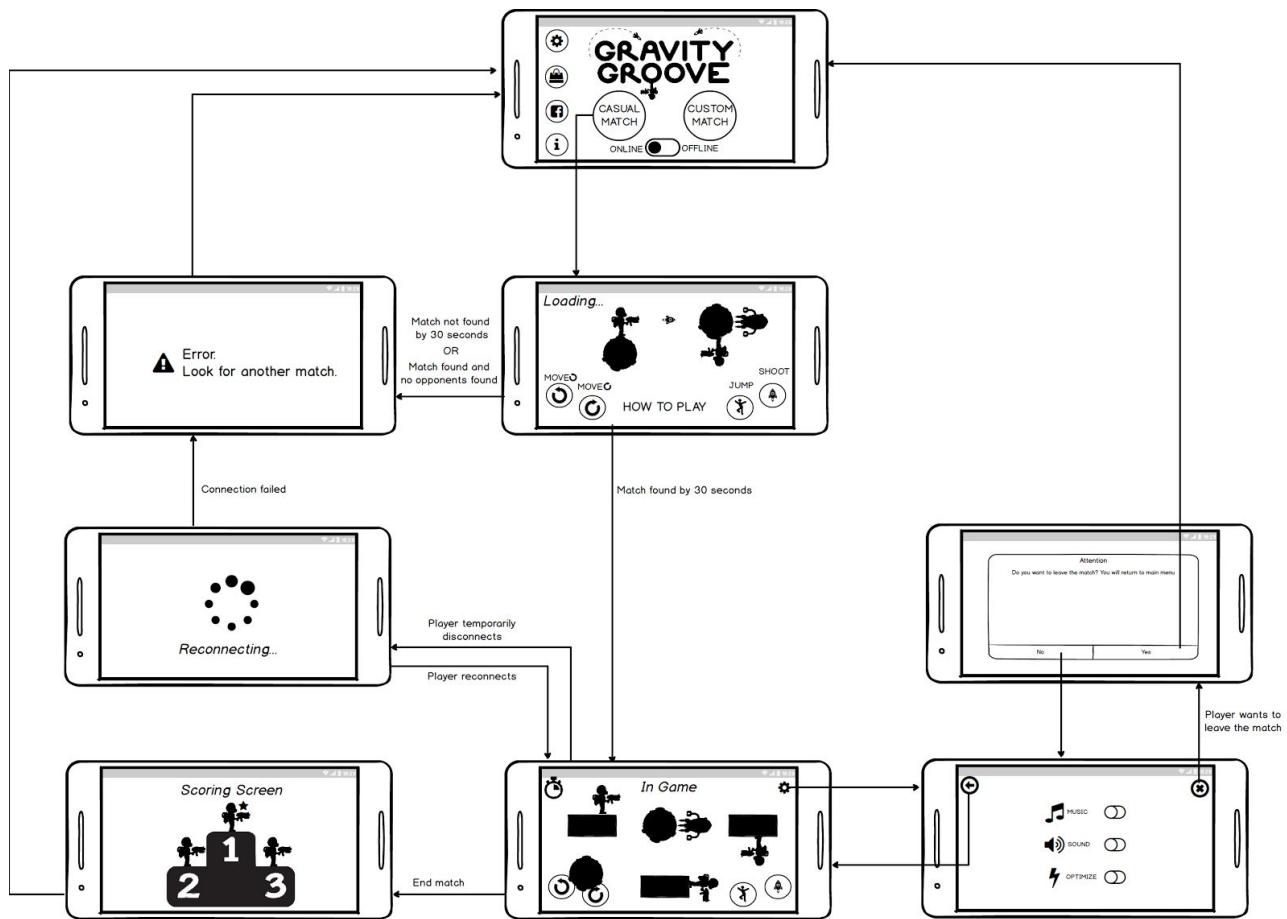


Fig.11 - Player chooses to play a Casual Match Online

- Custom Match mockups

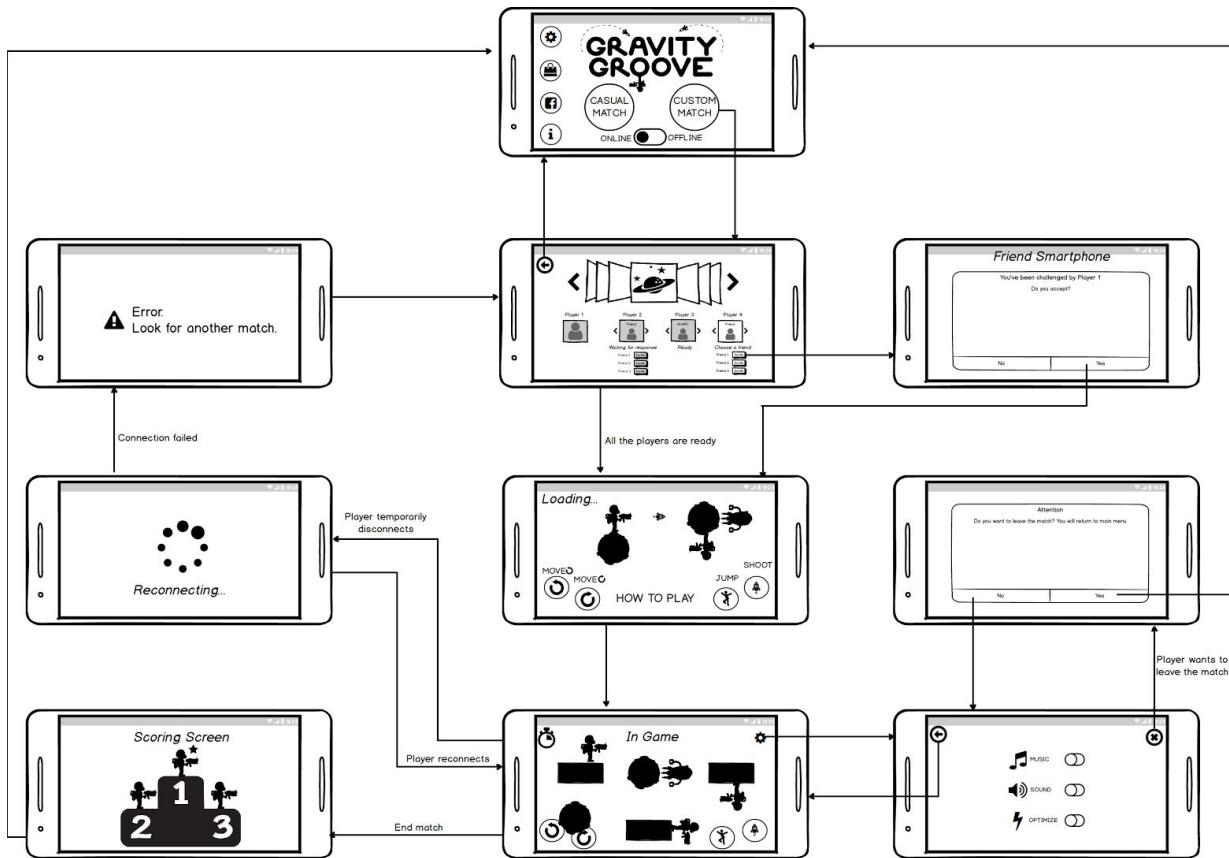


Fig.12 - Player chooses to play a Custom Match Online

5.3.2 Interfaces in Game

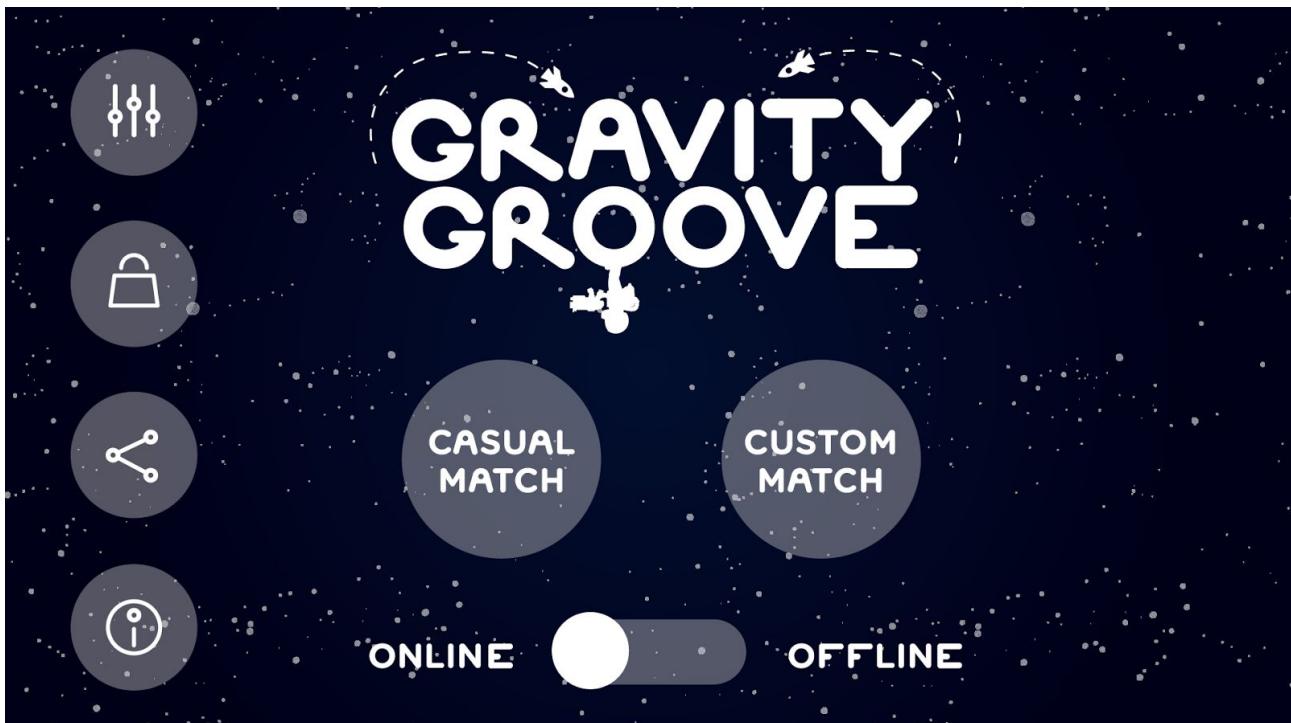


Fig.13 - Main Screen

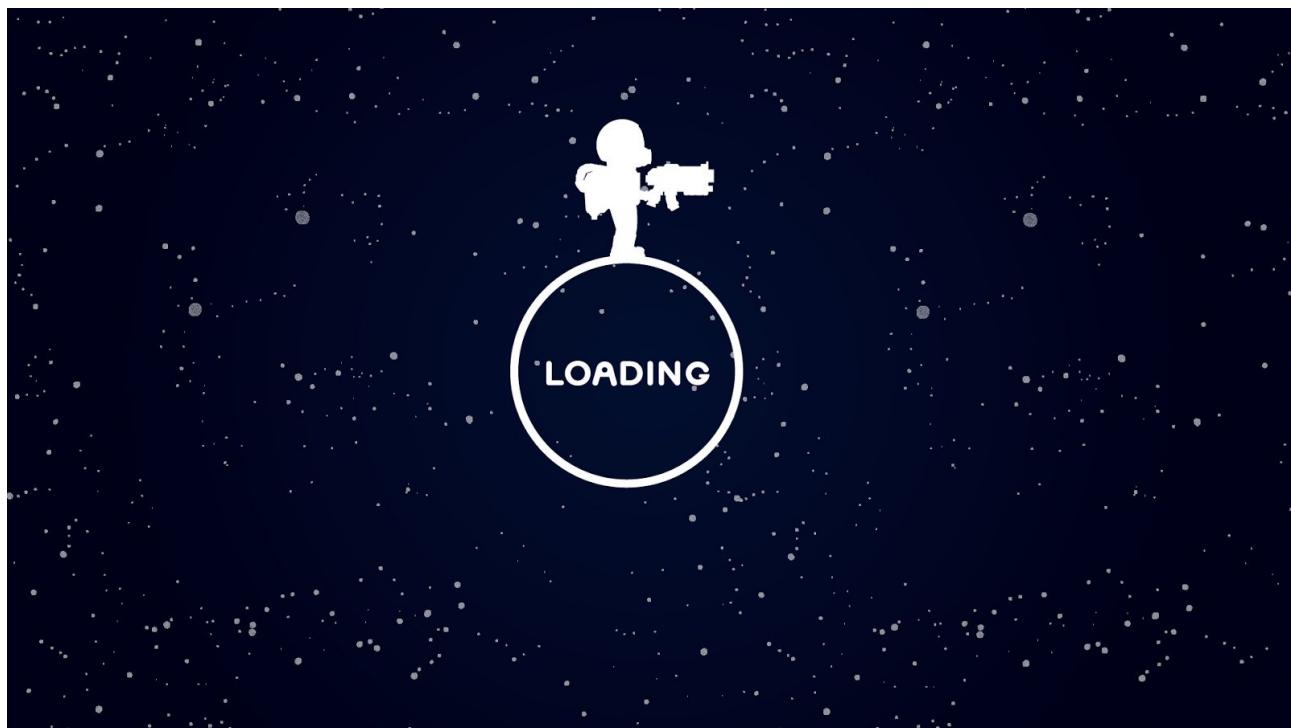


Fig.14 - Loading Screen

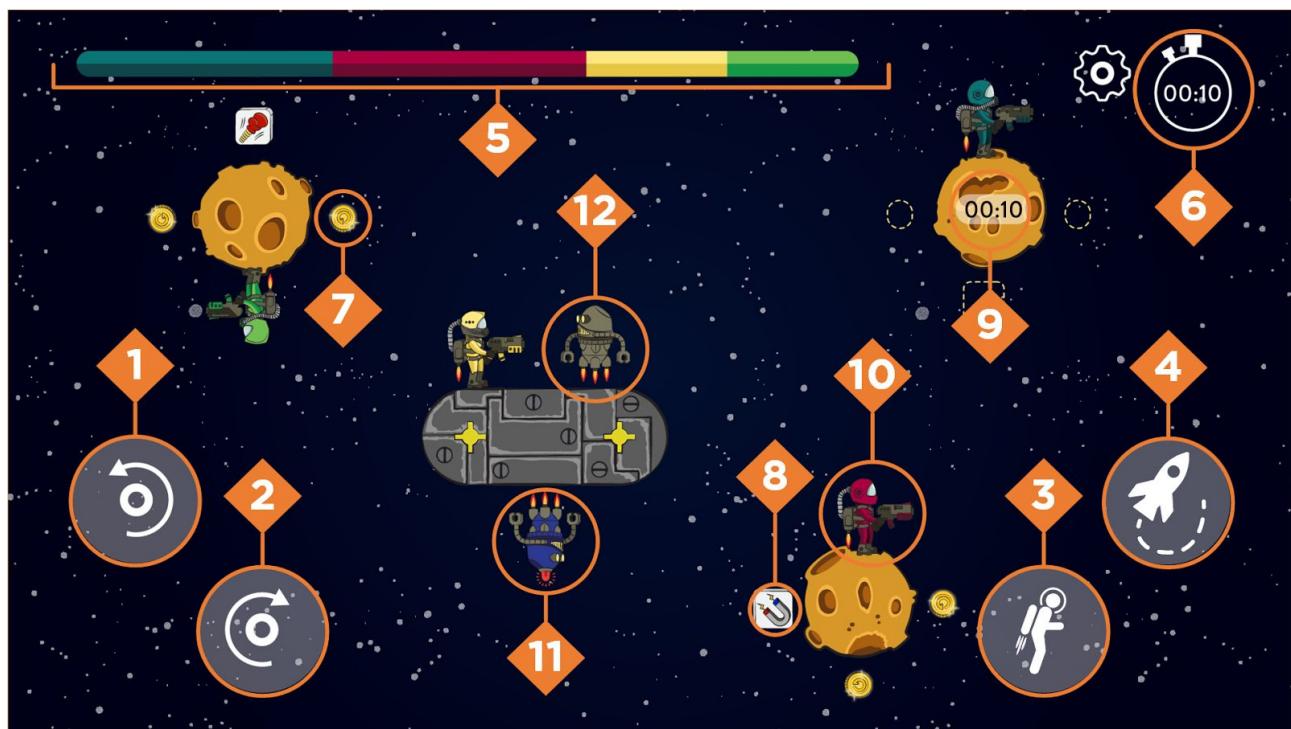


Fig.15 - Gameplay Screen

Interface Elements		
1	COUNTER-CLOCKWISE BUTTON	Moves the character counterclockwise.
2	CLOCKWISE BUTTON	Moves the character clockwise.
3	JUMP BUTTON	Make the character jump.
4	MISSILE BUTTON	Shoots a missile if player has one.
5	POINTS BAR	Shows an indication of the current game ranking. The bigger the coloured segment, the higher the corresponding player is in the ranking.
6	CLOCK	Shows how much time is left.
Collectable Items		
7	COIN	When collected by a character it increments its score.
8	POWER-UP	When collected by a character it gives him special abilities (such as a missile).
In-game indicators		
9	PLATFORM TIMER	Shows a countdown value that indicates when the platform is going to spawn new resources.
Characters		
10	PLAYER	The character controlled by a player.
11	NPCs	Enemy NPCs that will attack players with different behaviours (see details in chapter 6.2.2 NPCs).
12		

5.3.3 Camera

The camera follows the player on the X and Y axes, with a small delay with interpolation, in order to make the transition look smooth. The player is always centered in the screen, to help the players focusing on their character's position.

5.4 Rules and Procedures

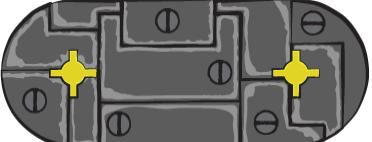
5.4.1 Rules

Here is a formal definition of gameplay rules for our game:

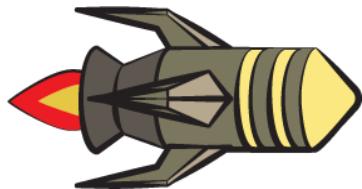
1. The game is designed for 2-4 players, with at least one being a human player. Each player simply decides to play tapping a button and, when loading is finished, starts to play right away.
2. The game consists of one round of 2-4 minutes, depending on the arena.
3. Players can move in the arena using the on-screen buttons.
4. Players can shoot only if they have previously collected a missile.
5. Players can jump only if they are currently touching the ground.
6. Players cannot move while in air.
7. Players cannot move for 2 seconds when they are hit and they drop coins around them.
8. Players cannot lose coins if they currently have none.
9. Players can collect coins walking over them to increase their score.
10. Players can collect missiles and power-ups walking over them to obtain bonuses.
11. Platforms spawns items when theirs timer reaches 0. There is a possibility that they will spawn NPCs too.
12. The game is over when the time is up.

5.4.2 Objects Description

The main in-game objects are listed and described as follows.

Platform	
 	<p>This is the literal ground of the game, it won't be flat and rectangular like in most of Platform games but instead they will be of various shapes: spheres, boxes, rectangles. In the map there will be more than one platform, and each of them will have its own gravity field so the players will be able to walk around it. Platforms may have spawning points from which enemies, coins or power ups randomly appear (see details in chapter 5.5.1 Spawning items and enemies).</p>
Coins	
	<p>These are the resources of the game; the player will need to collect them to increase his/her score by the time is up. They will spawn in the game map or will be dropped by adversaries after being hit. It is also the resource to buy cosmetic items for the character in the shop.</p>

Missile



When the player collects a missile he/she will be able to store it and then to shoot it. When the player shoots a missile, this one will be attracted by the gravity of the planet from which it has been fired; if a missile hits a player, he/she will be forced to drop some of his/her coins and to stay still for a certain period of time. After the player shoots a missile, he/she has to collect another one to be able to shoot the opponents again. The player can store only one missile at time.

Magnet



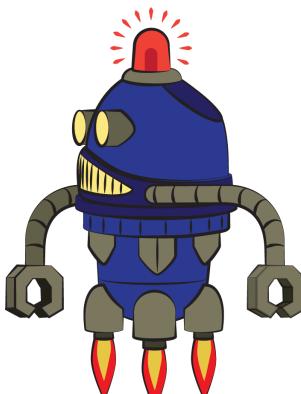
This is the first power-up of the game. After the player picks this power-up he/she will be able to attract further coins without the need to get close to them. This ability is active just for a limited period of time; after that, the player will turn to his/her normal state.

Knuckleduster



This is the second power-up of the game. After the player picks this power-up he/she will be able to punch and stun an opponent just by physical contact; this one will drop his/her coins giving the player the possibility to steal them. This ability is active just for a limited period of time; after that, the player will turn to his/her normal state.

AI-NPC



The game will feature also some AI controlled enemies (see details in chapter [6.2.2 NPCs](#)).

5.5 Modes and Other Features

The game provides both an offline and a multiplayer online modality: the first one allows the player to play the game only versus NPCs, the second one versus other players included in the friend list or not or NPCs too. In both of modalities, the player can choose to create and host a custom match, choosing the map and the opponents to face, or to join a casual match with random map and opponents (see details in chapter [5.3.1 Interfaces](#)).

For each match in each modality, the minimum number of players is one (versus AI bots) and the maximum is four.

5.5.1 Spawning Items and Enemies

Coins, power-ups and enemies randomly spawn on the planets in the environment. Each planet has a timer that notifies the imminent spawn of something: when the time is up an item spawn.

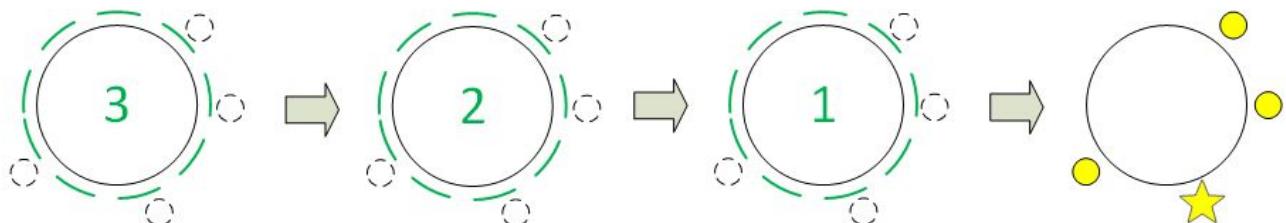


Fig. 16 - How the planet appears when coins and power-ups are spawning

5.5.2 Winning Conditions

The winning condition is simple: the one who reaches the best score by the time is up wins. The match duration should be small in order to have a pick and play experience allowing the player to replay the many times he wants without consuming too much time.

5.6 Levels

5.6.1 Level Design

Maps will be randomly selected for each game from a pre constructed set, their level design will allow to keep a fast paced game flow, rewarding constant movements and quick actions. The maps will be small enough for player to interact with each other, but also large enough so that it will never be too much crowded.

In the following image there is an example of a very simple map that shows how is important to make sure that each platform is a node in a graph that is a connected component; in other words, each planet must be reachable in order to create meaningful levels.

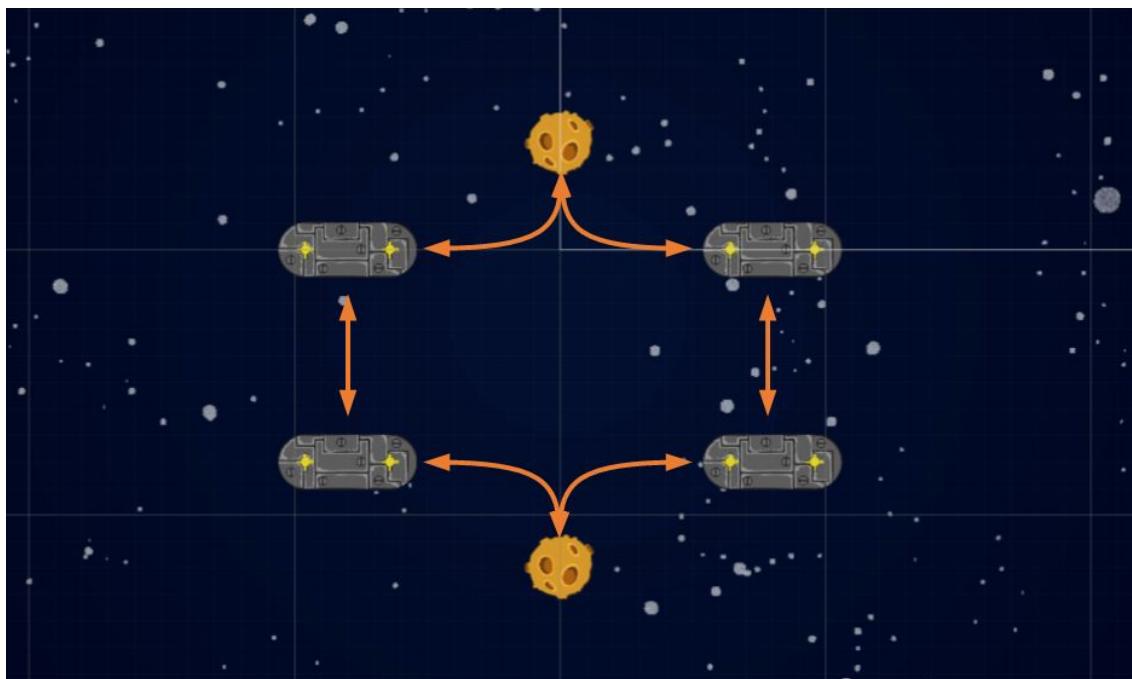


Fig. 17 - Simple map graph example

In order to find the right proportion for mobile devices, we used physical prototyping. Thanks to that, we realized that fitting the entire playable level in the screen would be impossible and that is the reason why we decided to center the camera on the player as previously specified.



Fig. 18 - Physical prototyping

5.7 Flowchart

- General Flow

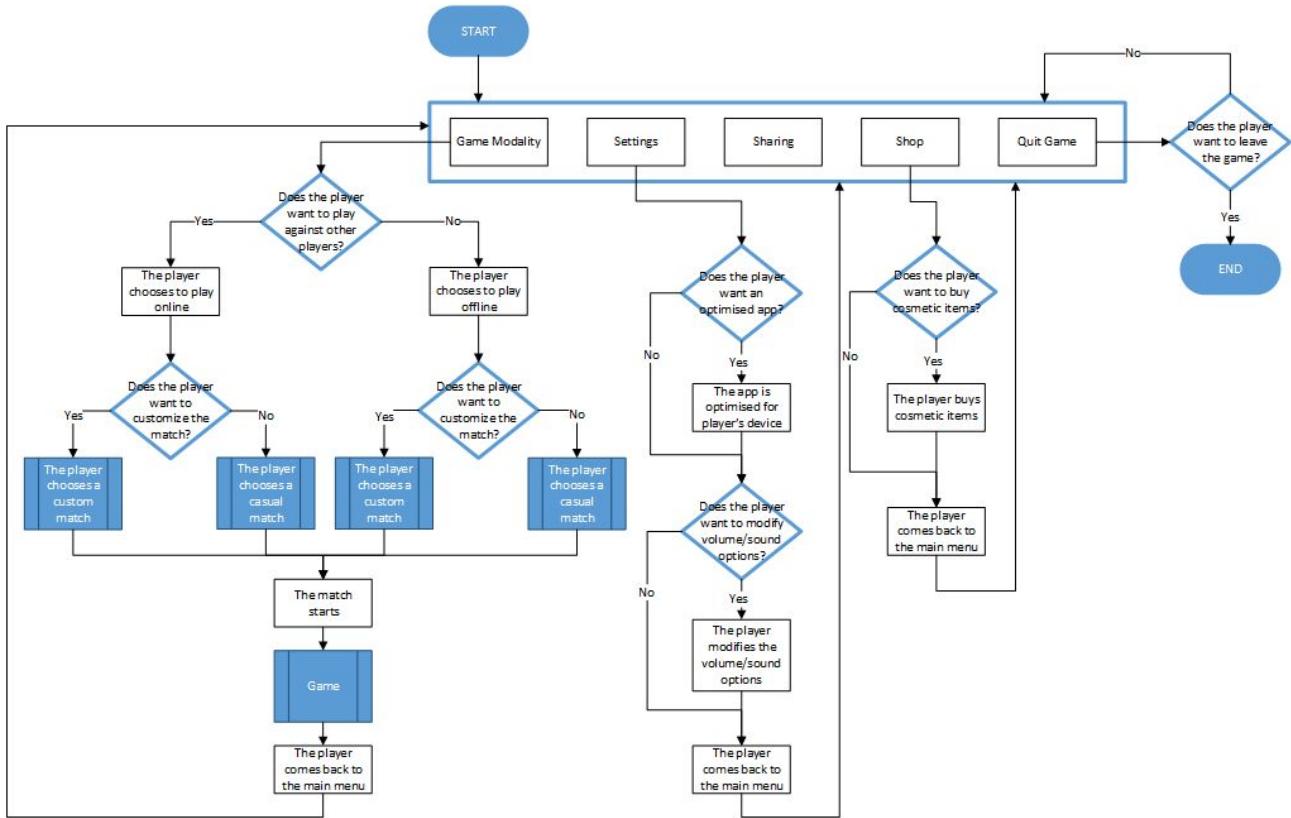


Fig.19 - Description of the general flow

- Casual Match

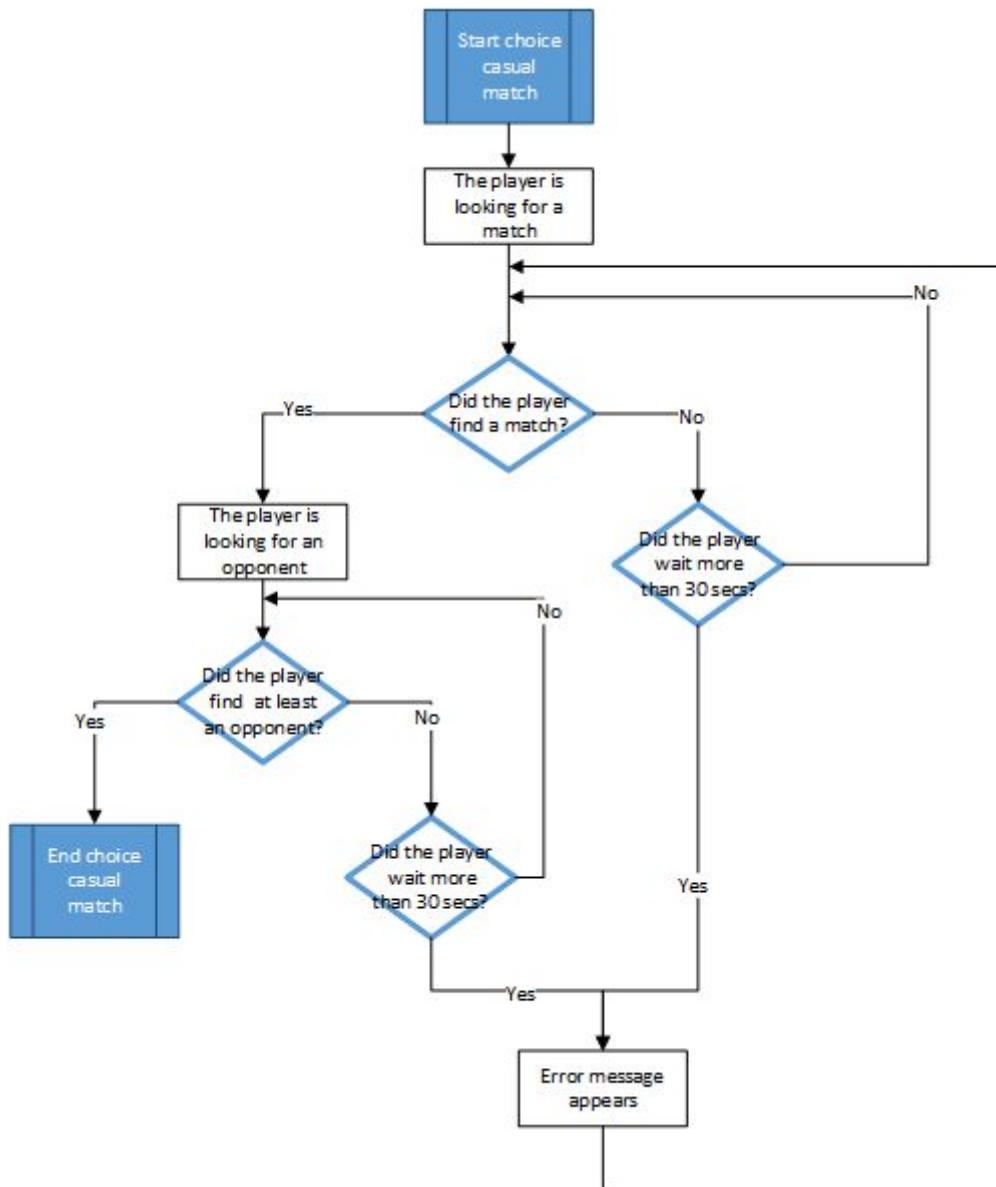


Fig.20 - Description of the flow when the player chooses to join a casual match

- Custom Match

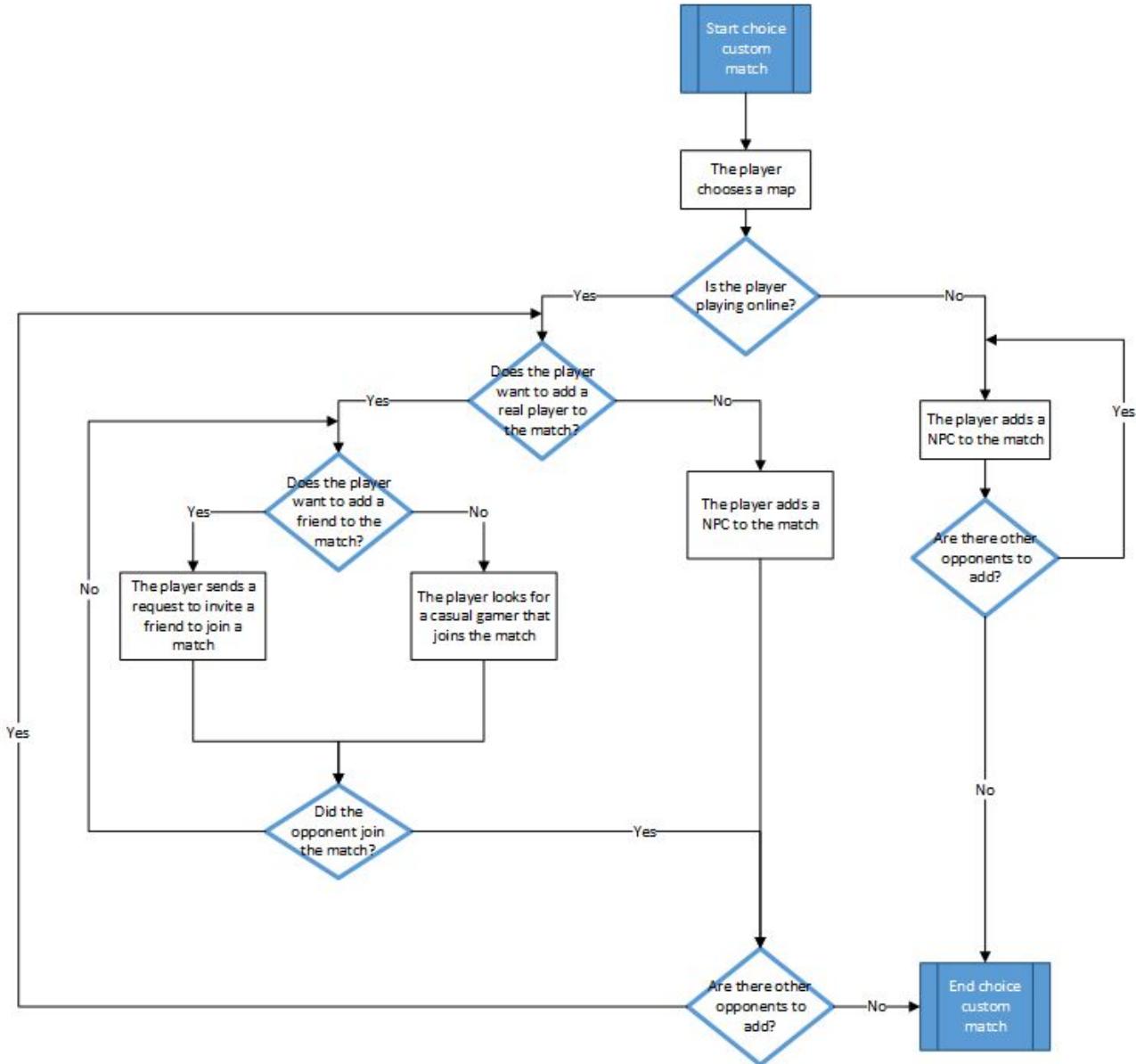


Fig.21 - Description of the flow when the player chooses to host a custom match

- **Gameplay**

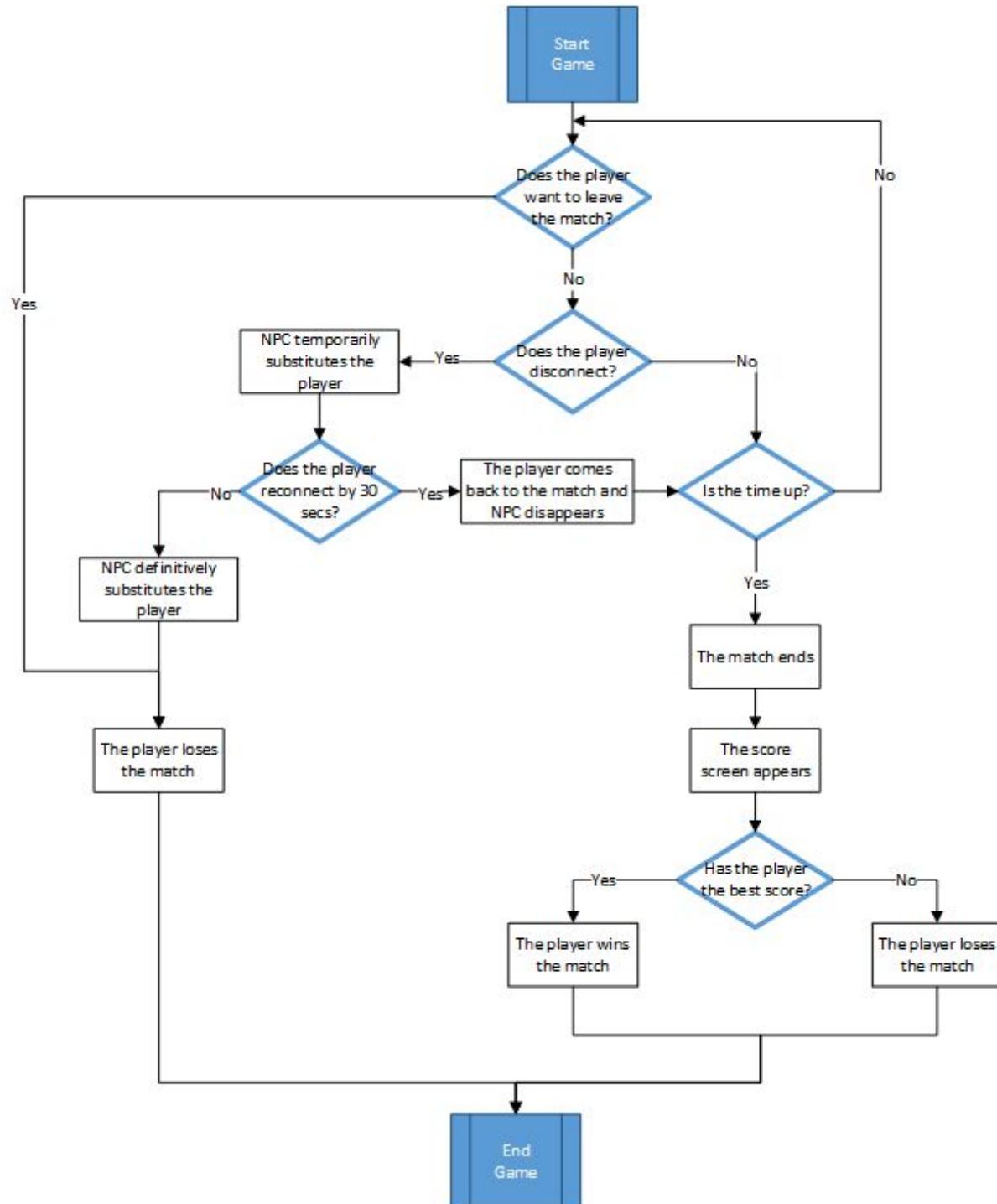


Fig.22 - Description of the flow during the game

6 Game Characters

6.1 Characters Design

6.1.1 Visual Inspirations

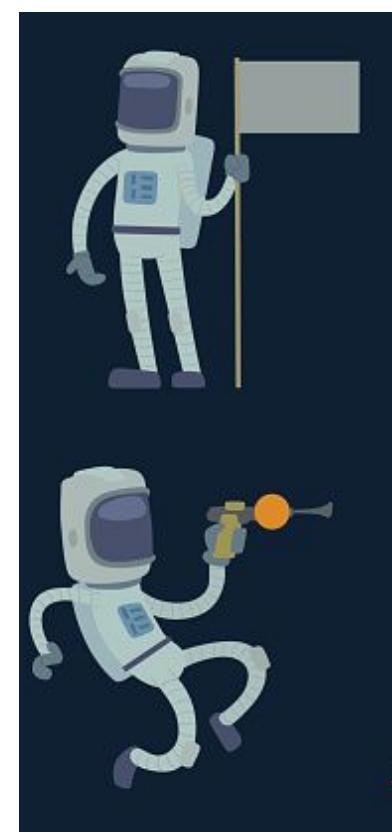
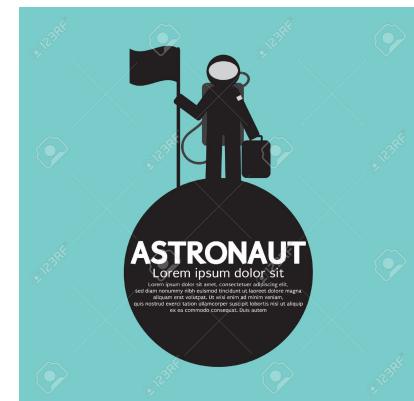
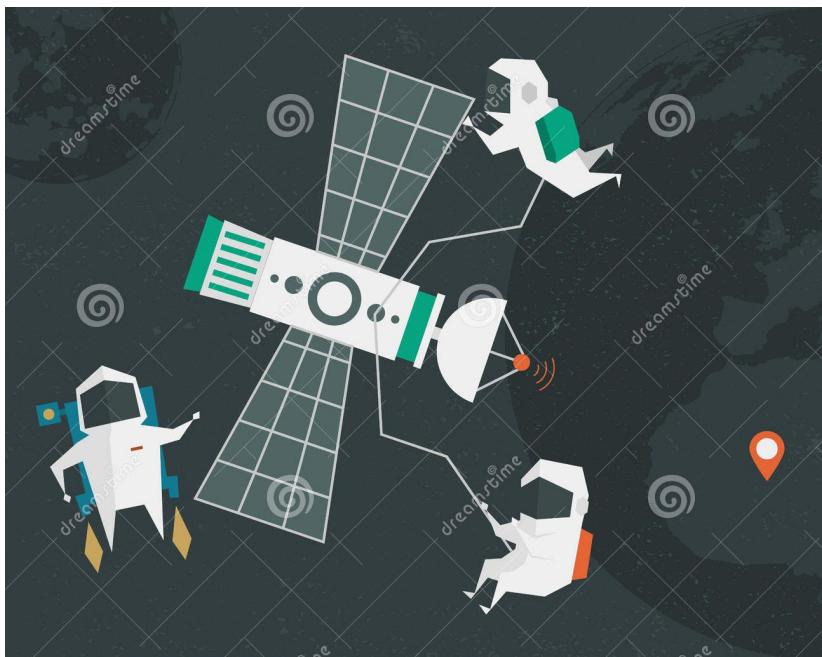


Fig.23 -Visual Inspirations for character design

6.1.2 Concept Art

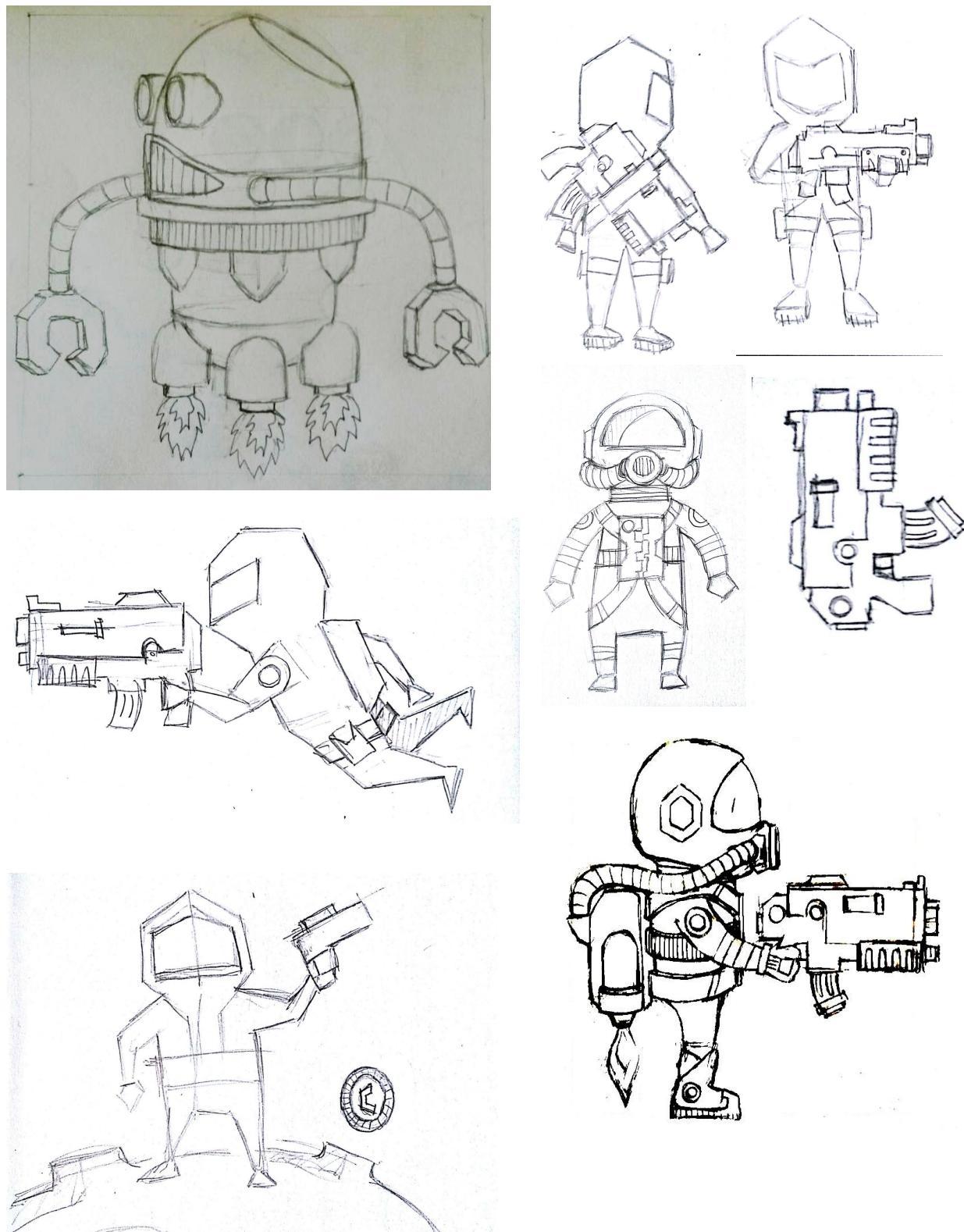


Fig.24 -Concept art for character design

6.1.3 Final Art



Fig.25 -Final character art

6.2 Character Types

6.2.1 PCs

Playable character - Space Rogue



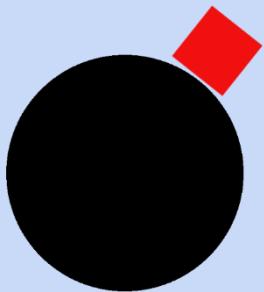
Behaviour

Each character appears like a space rogue, armed with a rifle; the four characters have the same stats and each player differs from each other only by the colour of the spacesuit.

Player's input is directly plugged into their movement behaviour.

6.2.2 NPCs

Patroller Bot



The Patroller Bot main task is to patrol the planet, keeping the space rogues from stealing the coins.

Behaviour

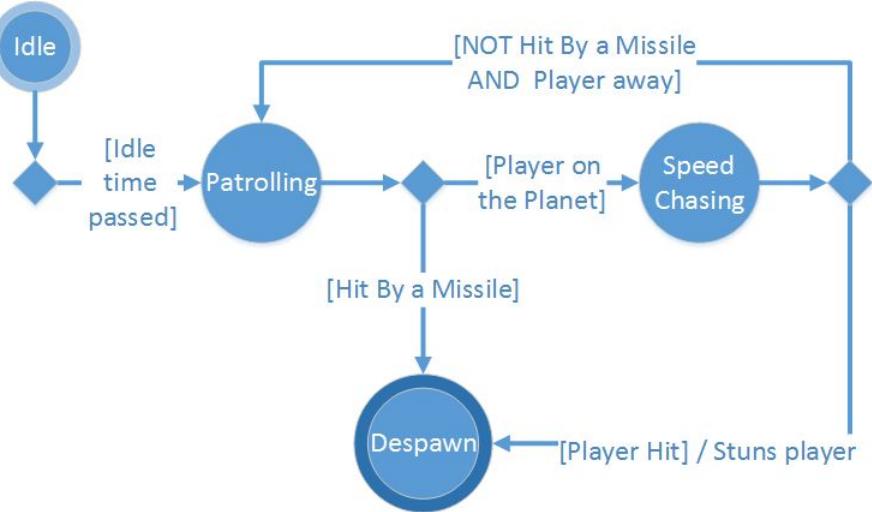
The bot turns around the planet with a constant speed; when a player lands on the planet, it starts to chase him/her and its speed increases.

If it bumps into the player, then it stuns him/her: the player drops coins and is unable to move until the time of stun has ended; after the bot attacks, it dies.

If the player leaves the planet before the bot reaches him/her, than the bot turns to patrol the planet as usual, with its constant speed.

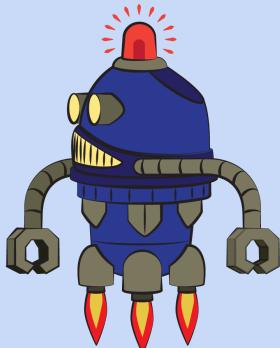
The player can also target the bot with a missile: if the missile hits the bot, this one dies despawning.

Finite State Machine



- **Idle:** state when the bot spawns, does nothing and is harmless.
- **Patrolling:** state when the bot walks around the planet slowly.
- **Speed Chasing:** state when a player lands on its planet and starts spinning around fast.
- **Despawn:** state when the bot has hit the player or has been hit by a missile and despawns permanently.

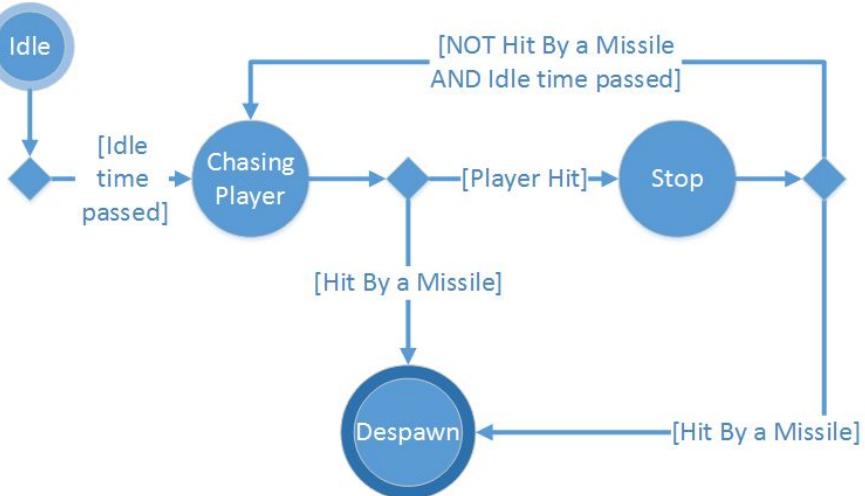
Policeman Bot



Behaviour

The Policeman Bot is always looking for some space rogues to hit. It patrols jumping from one planet to another hoping to find scoundrels to punish.

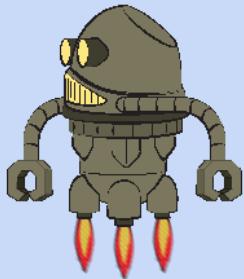
It moves and jumps like a player between planets. Its main focus is reach the player with the highest amount of coins in order to hit it. In order to do so, it chooses carefully the next planet in its path. When a player is hit, he/she drops coins as if it were it by a missile and the bot stands still for some time. The bot dies when is hit by a player missile.



Finite State Machine

- **Idle:** state when the bot spawns, does nothing and is harmless.
- **Chasing player:** state when the bot tries to reach the player with the highest point score.
- **Stop:** state when the bot just hit a player and stops for some seconds.
- **Despawn:** state when the bot just got hit by a missile and it despawns.

Gold Magnet Bot



Behaviour

The Gold Magnet Bot is a bot that flies around planets and attracts coins from the ground.

Once spawned, it looks for the player with the lowest score. It decides reactively the best path to reach him/her and moves following it.

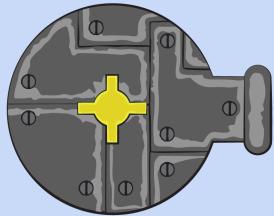
All the collectable coins in its area are drawn and stolen by it. When killed, it spawns all the coins collected so far that can be gathered by the players who pass by.



Finite State Machine

- **Idle:** state when the bot spawns, does nothing and is harmless.
- **Collecting coins:** state when the bot tries to collect coins while going near the player with the lowest score.
- **Stop:** state when the bot just hit a player and stops for some seconds.
- **Despawn:** state when the bot just got hit by a missile and it despawns. Before despawning, all coins collected by the agent so far are dropped.

Missile Turret

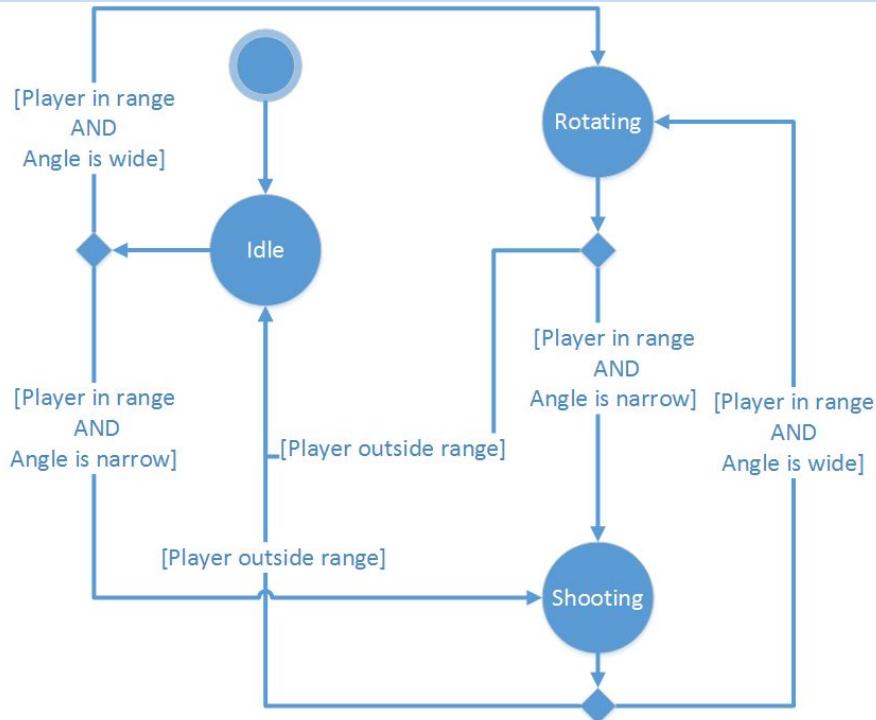


A missile turret that is crafted and designed to shoot to space rogues who dare to steal riches in the space.

Behaviour

The missile turret is floating in a fixed point in the air and when a player is in its range, it rotates towards him/her and it shoots a missile to hit him/her.

Finite State Machine



- **Idle:** state when turret waits still for some players to walk in its shooting range.
- **Rotating:** state when the turret finds a player within its shooting range and rotate towards him/her.
- **Shooting:** state when the turret shoots missiles towards a player that is within its shooting range and the angle is narrow.

Rogue Like Bot

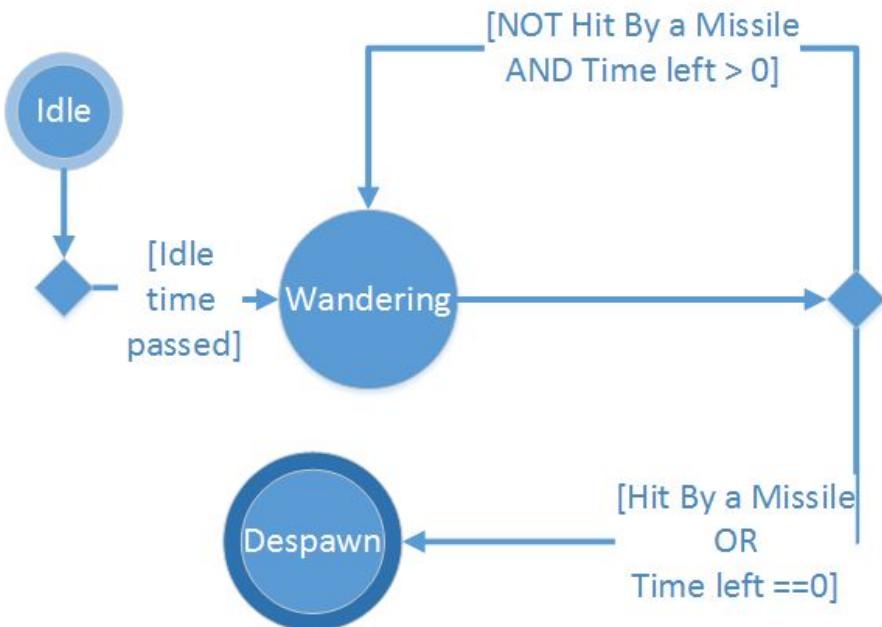


Behaviour

Little damaged robot that tries to be like a rogue without success: it moves around the environment like a player but a system failure forced it to donate all its coins to the other. It is pacific anyway and doesn't interact with the players.

It moves around the planet emulating the behaviour of the player: it moves freely in the environment and each x seconds it stops and drops coins in random points of the map, following always a different path. It is completely harmless therefore it can't damage the player. If not hit by a missile after its lifetime, it despawns on its own.

Finite State Machine



- **Idle:** state when the bot spawns, does nothing and is harmless.
- **Wandering:** state when the bot chooses a planet randomly and drops coins from time to time.
- **Despawn:** state when the bot just got hit by a missile or its lifetime has passed to despawn permanently.

7 Story

7.1 Synopsis

Year 3042. Solar System.

Mankind has evolved so much that interstellar travel is something people do on daily basis, therefore planets beyond the solar system are being continuously discovered and intergalactic trade routes are now heavily used.

7.2 Complete Story

The entire Solar System as we know has completely changed.

New cultures, races and wonders are being constantly discovered. Every planet of the solar system has been terraformed and is co-inhabited by humans and other civilized races.

Our players cover the role of space rogues who fight each other to obtain the riches.

A space rogue's life is both a charming and daring one. More often than not they are in trouble with the intergalactic law as they don't hesitate to accept life-risking jobs in seek for glory and treasures.

7.3 Narrative Devices

- Space rogues are depicted as “lovable rogues”⁵. This serves the purpose of making the player enter the magic circle in an easier way, do all the evil deeds that space rogues do, without feeling guilty. Music and soundtracks will help reaching the goal of showing the space rogue's character in a positive way.
- The gravity mechanic helps the immersion of the player since formal and dramatic elements fit each other perfectly.
- All enemies have a coherent visual embodiment that helps the player understanding them without having to read anything. As a matter of fact, their behaviour is always explainable just by looking at them. For example, it is perfectly normal that robots might not be as smart as humans, therefore their imperfect movement and planning routines not only are perceived as coherent but help the narration during gameplay.

⁵ tv tropes.org (Periodic Table of Storytelling - Lovable Rogue: goo.gl/J9umuy)

8 The Game World

8.1 Visual Direction

8.1.1 Visual Inspirations

Our game is mobile and easily accessible: that is the reason why we wanted our levels to be aesthetically pleasing while having simple shapes and avoid too many details; the following cartoon style fitted our need perfectly therefore our artist based her works ad communication design work with an extensive style research of which some examples can be seen below.

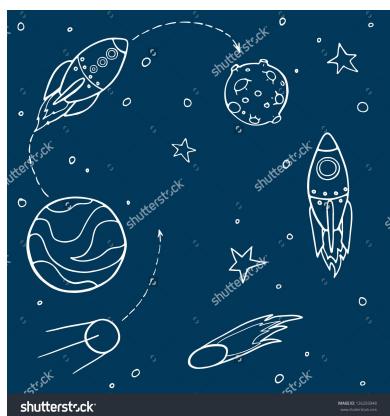


Fig.26 -Visual Inspirations for the game world

8.1.2 Concept Art

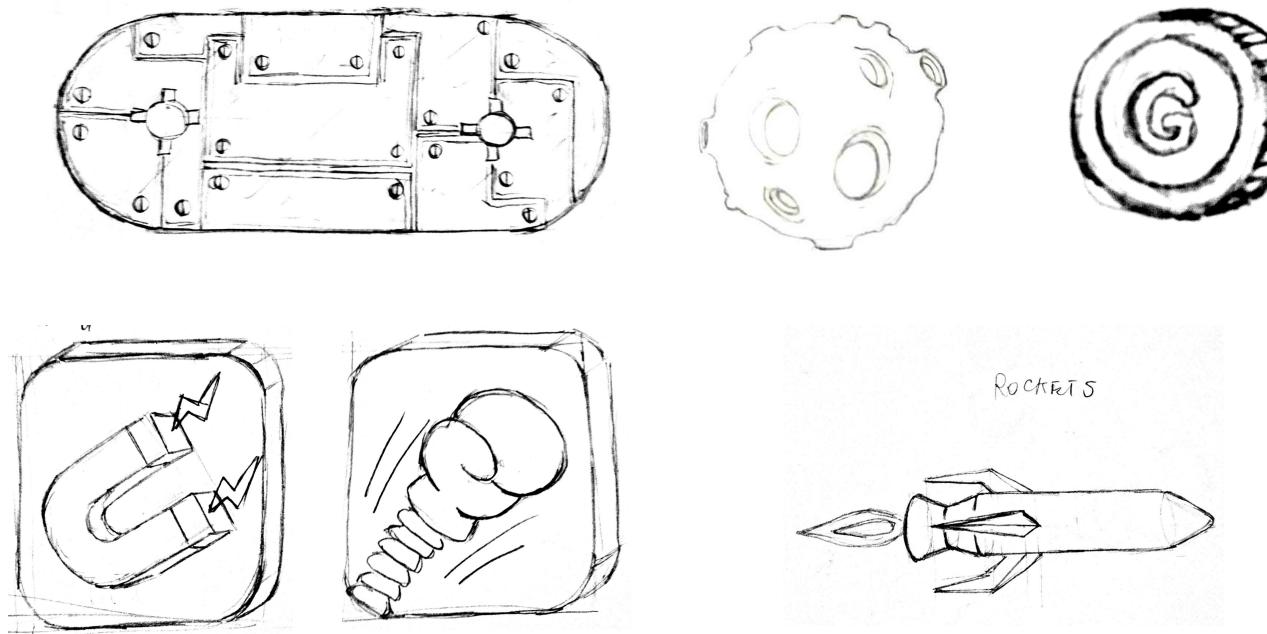


Fig.27 -Concept art for the game world

8.1.3 Final Art

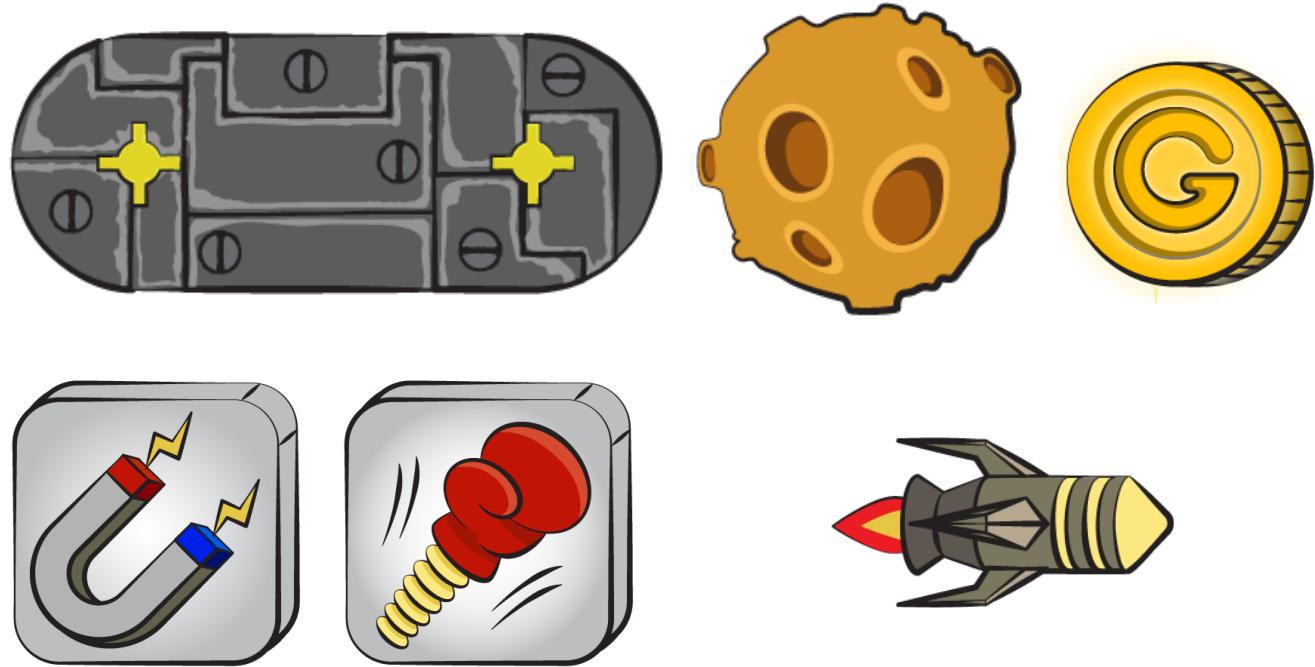


Fig.28 -Final art for the game world

8.1.4 Further Considerations about Accessibility

We also need to provide for any problems concerning the accessibility; for example the presence of flat and bright colours can make the playability more difficult for players affected by daltonism. For this reason all the definitive choices about the visual

direction for the final product will be made according to the standards of usability to avoid this problems, increasing the contrast, using pairs of complementary colours, combining patterns and textures to the usage of colours, including iconography as a form of supplementary conveyance.

8.2 Audio Direction

The game's lightweight mood should be enforced by sounds and soundtracks. Here are some audio references for a typical soundtrack:

- Cowboy Bebop OST - *Tank!* (goo.gl/36VPBH)
- Lupin III Theme '80 (car chase)- *The Castle of Cagliostro* (goo.gl/CY9Ugp)
- Lupin III - *First Contact Opening* (goo.gl/QS73do)

This kind of music has proven to fit particularly well chasing scenes in movies and cartoons; it helps the dynamism of the game while keeping a lightweight atmosphere. As said in the narrative devices chapter, our players are “lovable rogues”; the music should help players to see characters in a positive light, even if they are basically space rascals and scoundrels.

9 Media List

Here a list of all the media that have been created during the prototyping phase for the presentation of the final demo: interfaces, environments, characters, animation, music and sound effects.

- Graphics
 - Mockups used during the prototyping phase
 - Interface.png
 - Main menu.png
 - Casual match online.png
 - Custom match online.png
 - Settings shop and facebook.png
 - Icons and elements used for the interfaces in game
 - Main menu
 - Lgo-tot.png
 - BG.png
 - casual match.png
 - custom match.png
 - credits.png
 - settings.png
 - share.png
 - shop.png
 - toggle2.png
 - toggle3.png
 - Gameplay
 - Tasto1.png
 - Tasto2.png
 - Tasto3.png

- Tasto4.png
- TimerNoTime.png
- Assets for the environment in game
 - Coin-02.png
 - Rocket_compresso.png
 - Upgrade-rocket.png
 - Piattaforma-metallica.png
 - Asteroide1-senza-timer.png
 - base-timer.png
 - BG.png
- Assets for characters
 - PCs
 - blue.png
 - red.png
 - green.png
 - yellow.png
 - NPCs
 - Nemico-robot_poliziotto01.png
 - Nemico-robot02.png
 - Cannone.png
- Assets for animations
 - PCs
 - walking
 - Camminata-BLU_spritesheet.png
 - Camminata-FUXIA_spritesheet.png
 - Camminata-VERDE_spritesheet.png
 - Camminata-GIALLO_spritesheet.png
 - jumping
 - Salto-jetpack-BLU_spritesheet.png
 - Salto-jetpack-FUXIA_spritesheet.png
 - Salto-jetpack-VERDE_spritesheet.png
 - Salto-jetpack-GIALLO_spritesheet.png
 - NPCs
 - Nemico-robot_poliziotto01_spritesheet.png
 - Nemico-robot02_spritesheet.png
 - Cannone_spritesheet.png
- Music
 - menu music.mp3
 - gameplay music.mp3
- Sound effects
 - missile shoot.mp3
 - jump.mp3
 - coin collect.mp3
- Video made for the presentation of the final demo

- trailer.mp4
- video gameplay.mp4

10 Prototype

Not all the elements described in this document will be implemented for the final digital prototype.

Both the casual match online and offline modality are implemented: this version of the prototype will show the players how to play versus other casual opponents in the same map, without the possibility to customize the match. The match implemented can be played up to a maximum of 4 players.

The player will be able to collect coins spread in the level proposed, and to use the missiles to stun and rob them (see how to use missiles in chapter [5.4 Rules and procedures](#)); by the way, he/she will not be able to use power-ups because they are not included in this version of the prototype.

The NPCs the player will be able to find in the prototype level are the Policeman bot, the Gold Magnet bot and the missile turret (see details of these bots in chapter [6.2.2 NPCs](#)). The shop, sharing and option buttons in the main menu are disabled and don't allow the player to access to the relative shop, sharing and option screens.