

MPULSE

High Concept Design Document

TEAM A
G.L.A.N.K.
STUDIOS

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1 Game Design

mPULSE is a futuristic racing game where racers are rewarded for going fast and staying fast. Take advantage of different power ups to help you stay ahead in the race or eliminate the competition. Race against 7 other racers who want to win just as much as you on a variety of challenging tracks. Take on the single player mode to unlock new vehicles, maps and upgrades or play against your friends for a chance to be number one.

Slam: Use your momentum and high speed to slam other opponents into walls and obstacles to damage their vehicle, gain points and get ahead in the race! Be wary though, other opponents might slam you too if you are not careful!

Dodge: Dodge obstacles and enemy vehicles at high speeds while racing through futuristic environments. Take advantage of your vehicles drifting and quick maneuvering abilities to outpace your opponents and quickly make your way to first place!

Strategize: Use defensive and offensive items that are found around the track to help win the race. You will be able to shoot rockets at other vehicles as well as deploy shields and barriers to defend from attackers.

Customize: Gain points by winning races and destroying opponents which can be used to upgrade your vehicle. The more upgrades you get, the faster, stronger and nimbler you can become! Get all the upgrades to be the ultimate racer!

1.1 – Game Analysis

mPULSE is a racing combat game inspired by Wipeout, Star Wars Episode 1 Racer and Mario Kart.

1.2 – Game Concept

mPULSE focuses on racing around futuristic tracks where your goal is to beat the other players by going the fastest and using the environment and items to come in first place. It is based on dodging obstacles and trying to maintain a high rate of speed and momentum while using items placed around the track to get into and stay in first place. There will be two modes of play available, Single player and Multiplayer Split Screen. The Single Player mode will allow one player to race against AI drivers. The Multiplayer Split Screen mode will allow multiple players to race against each other.

1.3 – Game Goals

- Players can expect high speed racing in a race track filled with obstacles to dodge and power ups to grab to help them reach first place.
- The experience given by this game is based on high speed racing mechanics, split second decisions and interacting with opponents by shunting or using weapons.
- The mechanics of the game are more unrealistic and similar to a cart racing game instead of a racing simulator. The game will have a low barrier of entry but complete mastery of the mechanics will take a long time, even more so when playing against other players.
- The speed players experience will be facilitated by very fast cars, items that the player can pick up off the map as well as upgrades the players can purchase outside the race.
- Items will be placed along the racetrack and help the player get ahead in the race. The player won't know what item they will get, which adds a bit of anticipation and competition as players compete for items.
- upgrades will be available outside the races which the player can purchase with points earned through each race. These will give the player an advantage in upcoming races.
- Multiplayer play will be possible with multiple controllers, This will add element of competition as players try get ahead of one another.
- Single player play will consist of a player playing against multiple AI opponents who will be challenging but still be fun to race against.
- The User Interface will be minimalist in design to allow the player to be immersed in the race, but still convey all the vital information the players need.

1.4 - What mPULSE is and isn't

1.4.1 - mPULSE is:

High octane racing - Players get to experience nonstop fast paced action as they race around futuristic race tracks at breakneck speeds. Using strategically placed item boosts on the map, players can reach great speeds to outpace their rivals.

Combat - Shunt your opponents away if they're getting too close and make them crash against a wall. Grab different power-ups to give yourself more of an edge. Use attack power-ups like missiles to help clear the road of competition, defensive power-ups to protect yourself or cause some chaos to racers behind you by placing a wall in front of them. Take advantage of it all to take the top spot.

Customizable Vehicles - The more races the player finishes and enemies they destroy, the more points the player will earn which can be spent in the store for vehicle upgrades that persist in between races. These upgrades can be used to increase the amount of damage the player can take as well as how fast and maneuverable the player will be.

Multiplayer - Not only do players get to race against AI controlled cars, they can race with their friends and see who the best driver is. This intense competition lends to the fact that the gameplay mechanics are not easy to master but are not too hard for anyone to play.

1.4.2 - mPULSE isn't:

Open world - mPULSE is all about fast paced action with no down time. Players won't have to spend 20 minutes searching the world to find something to do.

Realistic - Unlike some driving games where you are chained to real world physics, skidding into walls when you take turns too fast. mPULSE is all about having fun and allowing you to go very fast but still be in control of your car to a much higher degree than would be possible in other realistic driving games. It also has futuristic items and abilities that may not be realistic, but are very fun.

Battle arena combat - Just driving around an arena and shooting people is not what mPULSE is about. The player's main objective is to go fast, race and come in first place while fighting other racers to for first place.

Heavily Story based - Although there are some story elements, mPULSE focuses more on the gameplay of getting into a race, going fast and staying alive.

Mission based - mPULSE has no missions to complete or quests to finish. Your only goal is to finish the race in first place as fast as you can while dodging obstacles as blasting your opponents.

1.5 - Game Genre

mPULSE is a third person combat racing game featuring player vs. player combat, high speeds and quick reactions. It will be developed on the PC with support for the keyboard and Xbox 360 controllers. mPULSE will also have single player and multiplayer modes.

1.6 - Target Market

Anyone who loves to go as fast as possible and feel the rush as they leave their opponents in the dust!

1.7 - Competitive Analysis

Other video games in the same genre of mPULSE that would compete against it are Wipeout and Mario Kart. What mPULSE does different is giving the player the ability to upgrade their vehicle outside of races and having this persist into multiple races.

Some challenges that mPULSE faces in the competitive market are that it might not seem different enough than other games. We can address this by advertising the ability to upgrade player's vehicles as well as emphasizing on the quick paced action players will face. More specifically dodging obstacles on the map as well as opponent placed ones as well.

1.8 - Gameplay Direction

Gameplay in mPULSE focuses on racing faster than your opponents or reducing them the scrap metal in order to pass them on the track. Players need to use a combination of agility, speed and items in order to be the best. mPULSE is a racing game that incorporates high speeds and tactics.

The content in mPULSE is based on the game rules and track features. Fun is derived from player's vehicles and their interaction with the environment and other drivers. There are hidden surprises on each track though.

Gameplay is based on a few rules: Stay ahead of your opponents, strategically dodge and place obstacles on the racetrack but above all else go as fast as you can and stay ahead of everyone else!

2 Proposed Features

Circuit Racing: The map(s) are designed to facilitate high speed racing with emphasis on agility and quick thinking. Your enemies will be racing against you trying to shunt you into walls at high speeds.

Interactive Environment: The map will have destructible obstacles that you can crash through or blast with items. You can shunt opponents into the obstacles at the last moment adding tension as enemies close in on you.

Vehicle Destruction: Vehicles can only take a certain amount of damage before being destroyed! This adds a reward for deftly maneuvering your vehicle. Don't worry too much, you have enough life so that you can make mistakes and not lose all your momentum.

Items: Placed on the track are different items that can be used offensively, defensively or as utilities. This adds an interesting dynamic to the game play as players can counter offensive items with defensive items or use offensive items to avoid hitting obstacles by blasting them. Utility items only affect you and can be used to restore damage that has occurred to you vehicle, gain or lose mass as well as boost your car.

Progression: Winning or even just playing games will earn you points based on how well you do in the race. Destroying other players or beneficial obstacles will also award points to the player which will allow them to purchase upgrades. These upgrades will allow the player to survive longer, race faster and win more! This will also give the player a sense of ownership over their vehicle as well as allowing the game to be more accessible if they are having trouble initially playing the game.

Play with your friends or by yourself: Players will have the option to play versus enemy AI or with their friends.

3 GAME DESIGN ELEMENTS AND TERMINOLOGY

3.1 - Game Story

It was the year 2255 AD; the discovery of ORA streams in the Recar System allowed Professor S. Benson to finally achieve the previously theoretical ORA reaction. With his special team C.L.A.N.K., they invented the first ORA Drive engine, and produced the first High-Speed ORA Drive race cars.

With the new ORA Drives, racers began to emerge from all over the galaxy; training and competing for a chance to be the champion in Recar's mPULSE prix.

3.2 - Design Terminology

Race: A race is a series of laps around a track against a set of opponents.

Track: A track is the world that contains terrain, obstacles and power-ups

Item: An item is a type of pick-up that a player can temporarily obtain to gain some sort of benefit within a race in an attempt to gain an advantage over opponents. These items can have an offensive, defensive or utilization effect.

Obstacle: An obstacle is a destructible object that players will have to navigate around. Hitting an object will slightly slow down and damage the vehicle based to the impact force.

Upgrade: An upgrade is a persistent improvement to your vehicle. This can vary from simply modifying the stats (speed) or by adding a new component (strafe) to the vehicle.

Vehicle Damage: When a player collides with an obstacle, terrain or opponent, they will sustain damage to their vehicle. This damage will not affect game play until it surpasses a certain threshold, after which the vehicle would explode and the player would be returned to the track in a proper orientation, but with little to no velocity.

Steel Obs: The currency collected during races that you can spend on upgrades to your vehicle in between races. It can be earned through finishing races, and accomplishing small achievements during the race such as not colliding with any obstacles for an extended period of time. For the economically curious, 1 steel ob is worth roughly 12.6 million Canadian dollars. Inflation... It'll getcha.

3.3 - Game Information

3.3.1 Power Ups

Tracking Missile - This offensive weapon tracks opponents and damages them as well as reducing their speed.

Mini Gun - This offensive weapon shoots rapid projectiles that do little damage but add up over time.

Anti-Friction Field - This offensive weapon places a field on the track that reduces the force of friction, which results in the victim losing control.

Shield/Repair - This defensive item repairs some of the damage that has been done to your vehicle so that making another mistake or two won't be fatal.

Wall - This utility item places a wall obstacle behind your vehicle. It can be strategically placed to make it exceptionally difficult for opponents to avoid.

Item Switcher - This utility item sends out a pulse that steals a power up from the first opponent it hits.

Boost - This utility item give the player an on demand speed boost to use whenever desired. which can help catch up to a difficult opponent or put you further in the lead.

Condenser - This utility item allows a player to instantly increase their mass for a short period of time. This can be useful for ramming opponents off of the track or smashing straight through obstacles without losing much momentum.

3.3.2 Upgrades

Strafe Thrusters - This upgrade gives the player rockets on the sides of their vehicle which helps to dodge obstacles by giving quick lateral bursts of speed.

Impulse Battery - This upgrade allows the player to store their momentum and use it at a later time. By activating this the first time, the vehicle's speed is instantly reduced, which can help navigate corners or sections of the track with a large number of obstacles. A second activation will then restore the same amount of speed that was stored previously.



Chassis Upgrade - This upgrade increases the durability of the player's vehicle. This allows them to take more hits from weapons as well as collide with more obstacles before exploding.

Engine Upgrade - This upgrade gives the player's vehicle a small, but constant acceleration increase. This will help players have a quicker start and recover from collisions easier.

3.3.3 AI Types

There will be a few different types of AI personalities to race against. Some of the personalities that may be included are:

Aggressive - This AI personality will try to ram into the player every opportunity that it gets. Knocking you into obstacles or off the edge of the track, its strategy is to remove to competition to win.

Greedy - This AI personality is very item driven. It will leave the optimal path in order to pick up items that provide it advantages. It will use weapons when it gets them, but is not as intent on destroying it's opponents as the aggressive personality.

Passive - This AI personality does not try to affect other racers, it's strategy is to just take the optimal path around the track and not worry about opponents or power-ups.

3.3.4 Game Rules

- mPULSE uses standard racing rules. Players will race a series of laps around a track and the winner will be the person who finishes all the laps first.
- Each vehicle will have a set amount of health which can be affected by items and obstacles placed on the racetrack as well as physical contact with other racers.
- If a vehicle's health gets to zero then the vehicle is destroyed and reset onto the middle of the track with their speed set to zero.
- If a vehicle hits an obstacle but does not die, then the vehicle will lose some velocity and health but continue in the same direction.
- If a vehicle hits a feature of the terrain damage incurred will be a function of the angle and the speed at which the player impacts. Straight on impacts will cause more damage while glancing impacts will cause less. Similarly, Low speed impacts cause less damage and high speed impacts will cause more damage.
- Items will be placed on the map to help mitigate or apply damage to other players. Items will also allow you to restore your health or increase velocity..
- When players hit certain obstacles or destroy other vehicles, then will gain "steel obs" as currency they can use later to buy upgrades for their vehicles.
- Upgrades will be buyable outside of races and applied to vehicles for a further advantage. These will allow for changes to handling, Damage and health of vehicles.

3.3.5 Menu System

Single Player: This is where players can race against computer AI in order to obtain Steel Obs to upgrade their vehicle. The player must log into their profile to load their progress from when they previously played.

Multiplayer: This is where players can race against a friend to test their skills. They can use the vehicles that they have upgraded from single player mode.

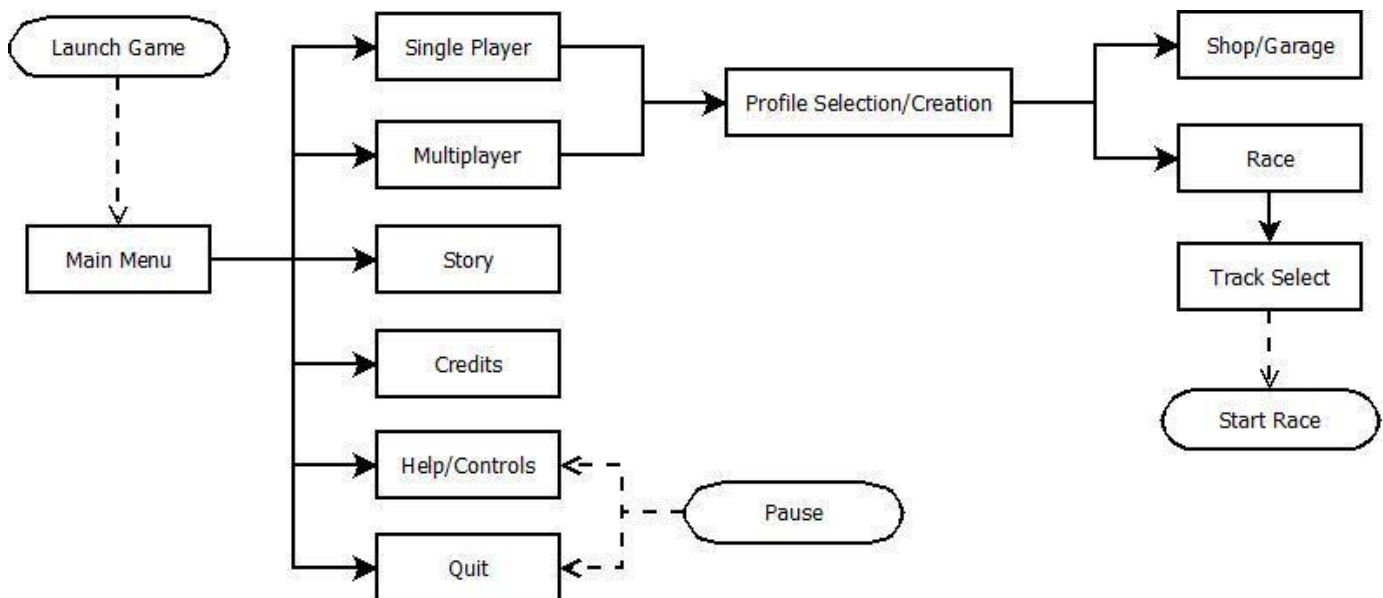
Story: Players may read about the background story of the mPULSE universe. Text and pictures will help build upon the atmosphere of the game.

Credits: A list of all of the people who helped create the game.

Help/Controls: Here players can read about the rule of the game as well as view the controls. This is a quick way to gain a basic understanding of how to go about playing.

Shop/Garage: Upgrades can be purchased and added to a player's vehicle here. These upgrades are purchased using Steel Obs which are collected through completing races.

Race: This is where players will test their driving skills against opponents. They can choose a track which they wish to race on and then compete for first place. Winning the race gives reward of Steel Obs, but there are also other ways to obtain Steel Obs during the race.



3.3.6 Tracks

Star Track

This track is a fairly wide track, but with open sides. Opponents can be knocked off the sides to gain an advantage. It will have a space theme with stars and galaxies in the background. The more challenging parts of the map will have a narrower track so players will have to use their skills to bump off opponents and not fall off themselves.



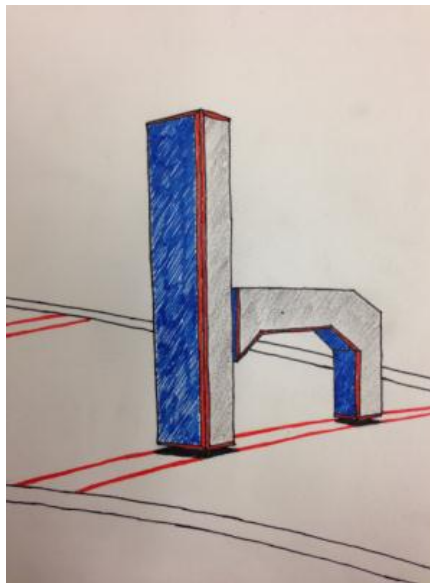
Image of player racing on the Star Track

Dune Track

This track is desert themed. The main track has no walls, but leaving the track for too long may attract a worm. There will be potential places to save time by cutting across small sections of desert, but you risk getting eaten.

Cyber City Track

This is the main race track in the most populated city in the galaxy. Sliding walls and obstacles make quick reaction speed necessary to win. Strategically slam opponents into walls to gain an advantage. Behind the stadium's walls you can see Cyber City's tall buildings with bright lights and neon signs.

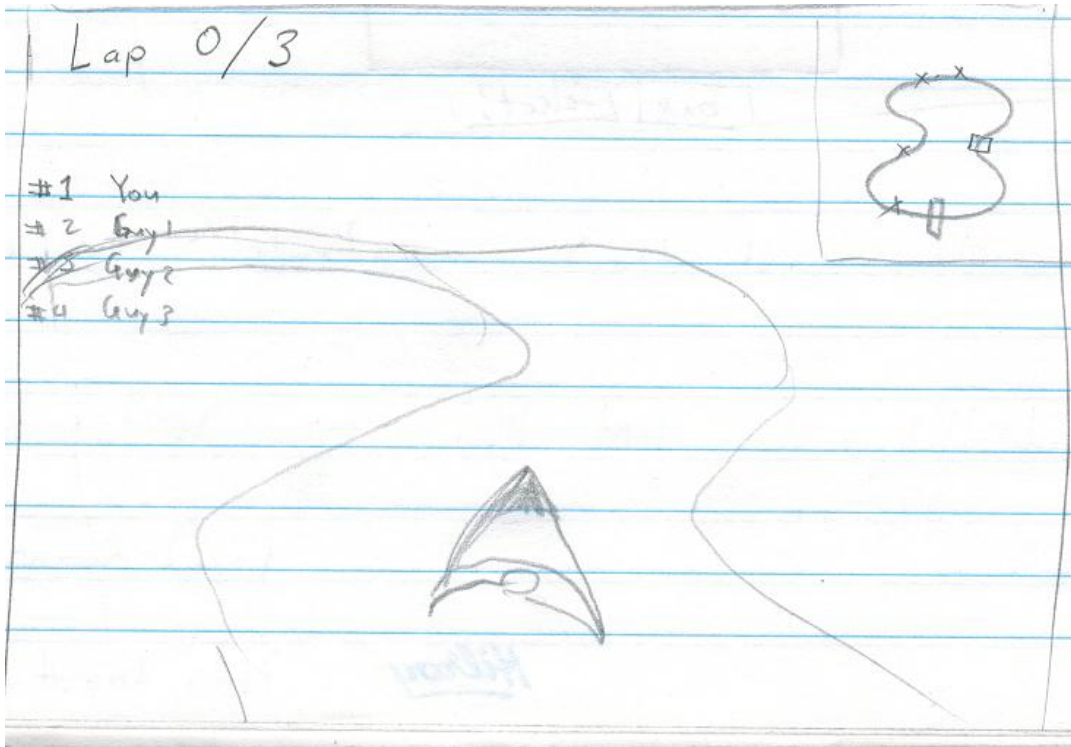


One of the shifting obstacles on the track

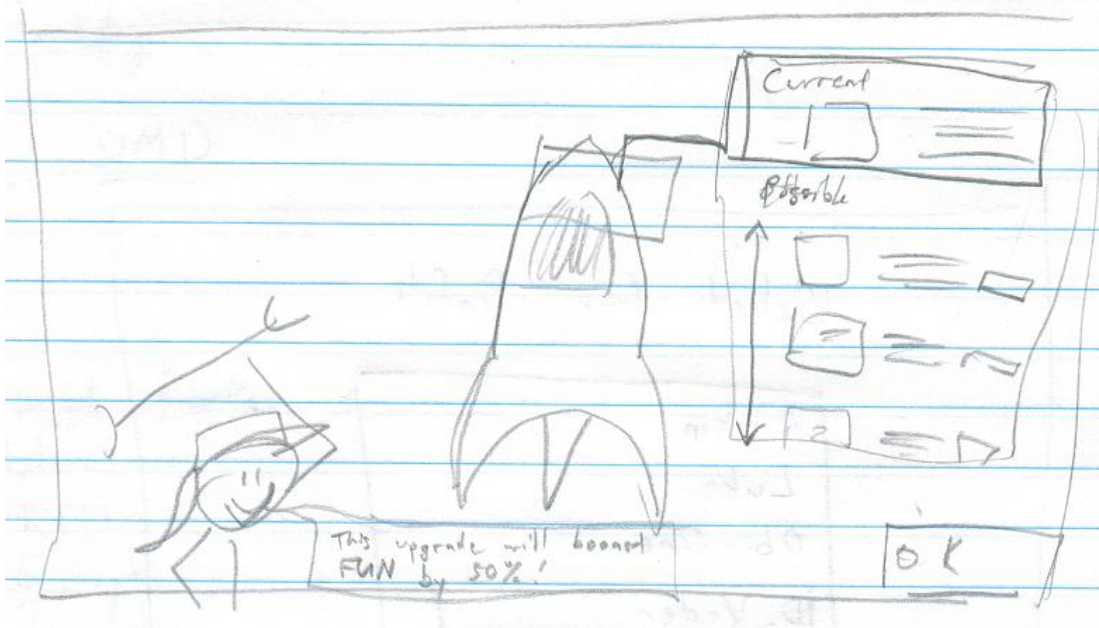
4 Game Architecture

For simplicity, mPULSE will have a monolithic game loop with a fixed time step. This will simplify development and is not expected to lead to performance issues. The internal object architecture is rather more complicated, using a component-based software engineering approach. The Visitor pattern will be used for communication between software modules, which is an advanced form of callbacks to implement multiple dispatch. The Visitor pattern also meshes very well with the component-based design.

5 Concept Art



The layout display in a standard race



The screen displayed when in the shop



Some of our initial ship concept art



Some of our initial object art (power-ups, upgrades and obstacles)



This is a pile of Steel Obs, the currency used in mPULSE