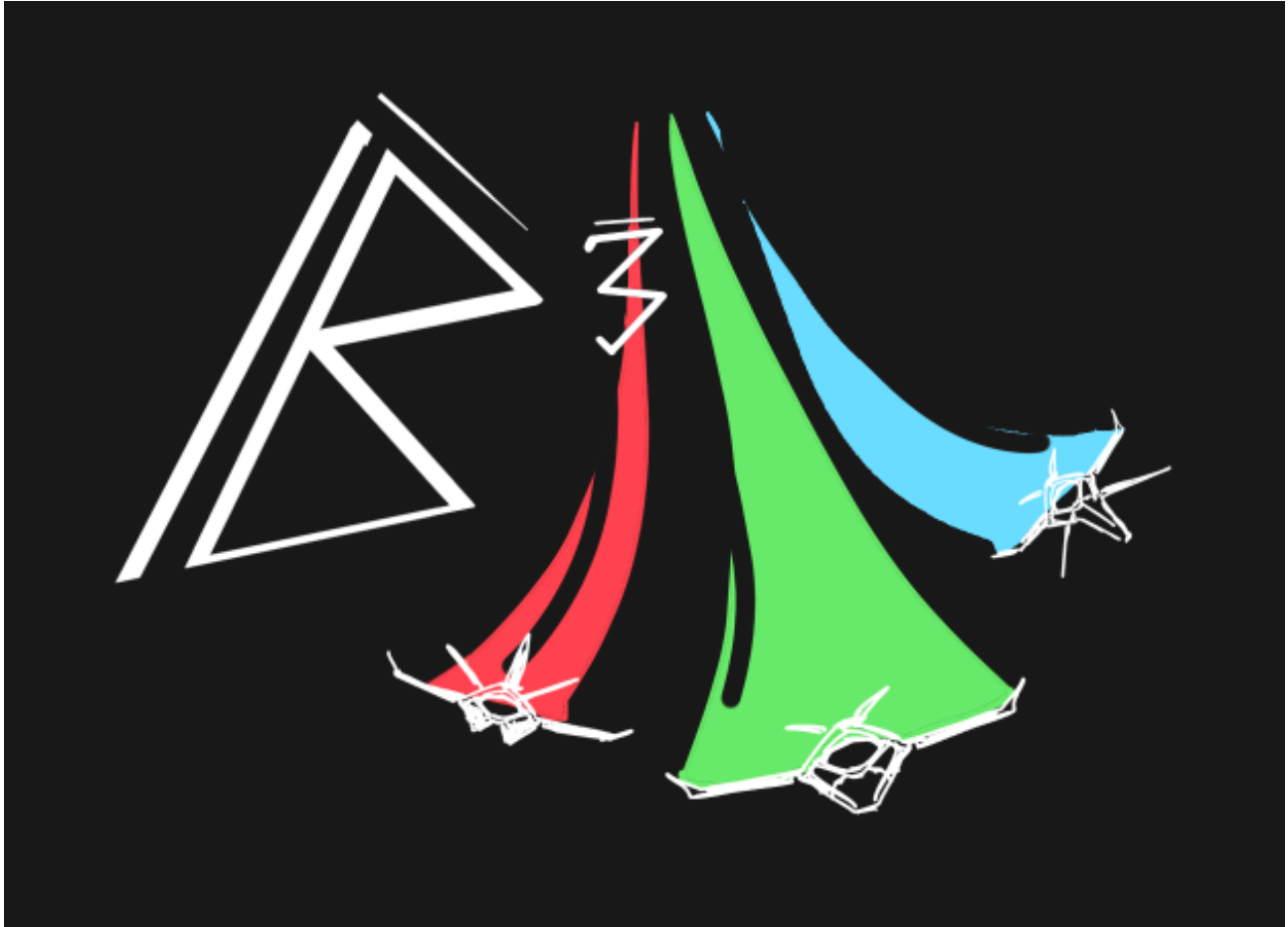


B^3 Design Document

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1 Game Design

1.1 Game Description

B³ stands for Boost, Barrier, and Blast which are the core mechanics of our game! *B³* is a fast paced combat racing game where each player must manage there resources and use there abilities at key moments to gain an advantage. Each driver will have a limited amount of charges to use there boost, barrier or blast abilities. More charges can be regenerated over-time or through in-game pickups on the race track. Players win the race by completing three laps of the race track! The theme of the track and cars will be a cyberpunk/neon theme.

- Boost - Accelerates the player and breaks barriers.
- Barrier - Shields player from incoming blast missiles.
- Blast - Shoots a blast missile which causes the enemy player to spin-out if it hits.

1.2 Feel of Gameplay

We want our game to have a "Mario Kart" feel with cars that have responsive handling so that players can drive while still focusing on the combat elements. The cyberpunk aesthetic of the game will also give it a futuristic feel to the player. The car will be displayed from a 3rd person view.

1.3 Game Goals

- Engaging
 - Create ways for players who fall behind to catch up during the race.
 - Create bottlenecks on the race track to encourage combat.
 - Spin-out caused by getting hit with a blast should be a set back in the race but should not feel frustrating.
- Fair
 - AI should present the right level of challenge.
- Aesthetic
 - Create pleasing neon environment.
 - Have transparency effects for barrier.
 - Neon trails following car engines.
 - Cars have a sleek futuristic style.
- Multifaceted Game Play
 - Tight driving controls to allow for focus on combat.

- Balance power up frequency and charge regeneration so resource management is encouraged.
- Balance between boost, barrier, and blasts. All three abilities should be useful in certain situations.
- Satisfying
 - Blasts should feel good to shoot.
 - Boosting should provide a sufficient speed up while still being manageable.
 - The ability to parry incoming blasts with the barrier.

1.4 User Interface

The user interface will include the following features:

- Radar - That shows players and incoming blast missiles. This is important for allowing parrying of the missiles with the barrier to be possible.
- Charges - The amount of charges a player has left will be displayed on screen with used charges greyed out.
- Cool-downs - Ability cool-downs will be displayed on-screen to let the player know when they can next use an ability.
- Placement in Race - The player's ranking among the other players will be displayed.

1.5 Game Genre and Branding

The genre of the game is a combat racer. The branding will be focused around the fast-paced game play and neon lights aesthetic.

1.6 User Engagement

One of the core goals of B^3 is to increase player engagement throughout the entire race. Both players who fall behind in the race and players who get too far ahead of the pack present unique problems to user engagement. Players who fall too far behind may want to give up and feel that there are no other racers to interact with. Players who get too far ahead tend to also get bored as they have no one to compete with. That is why we have thought of the following solutions to both of these common problems in combat racers.

- Players who fall behind:
 - Will recharge their abilities faster.
 - Can boost without fear of being shot at (blast missiles are shot from the front of a player's car).
- Players who get too far ahead:

- Will have longer ability recharge times.
- Can parry blast missiles that are shot at them (Since, they are in the front they will not be able to shoot missiles. To still allow them to feel engaged in the gameplay we created the parry mechanic which allows player to barrier at the perfect moment to send blast missiles back in the direction they came).
- Blast missiles don't have a range, they will shoot until they collide with a game object. This makes it possible for players to still shoot at players who are far ahead.

2 Gameplay

2.1 Abilities

- Boost
 - Provides a temporary speed boost to the player.
 - Boosting into a player using barrier breaks their barrier.
 - While player is boosting they cannot barrier leaving them vulnerable to being hit by a blast missile.
 - Added acceleration may make it harder to control the car.
 - A cool-down will be activated once the player has finished boosting. There is no way to cancel a boost once it has been initiated.
 - When boosting ***we need some visual indication that the car is boosting***
- Barrier
 - Barrier that protects player from all blast missiles while it is active.
 - The barrier remains active for a set amount of time.
 - The barrier can be deactivated by being boosted into.
 - While active the barrier cannot be deactivated by the player.
 - The player can "parry" incoming blast missiles by timing their barrier to become active at the same moment a blast missile would hit the barrier. Once a blast missile has been parried it will be reflected back at the same direction it came from.
 - A cool-down for when the player can use their next ability becomes active once the player's barrier is deactivated (this can be due to the time-limit or the player being boosted into).
 - When a player has their barrier up a transparent sphere will be placed around their car.
- Blast
 - When a blast missile hits an enemy player that player will "spin-out" and be slowed/loss control for a duration of time.

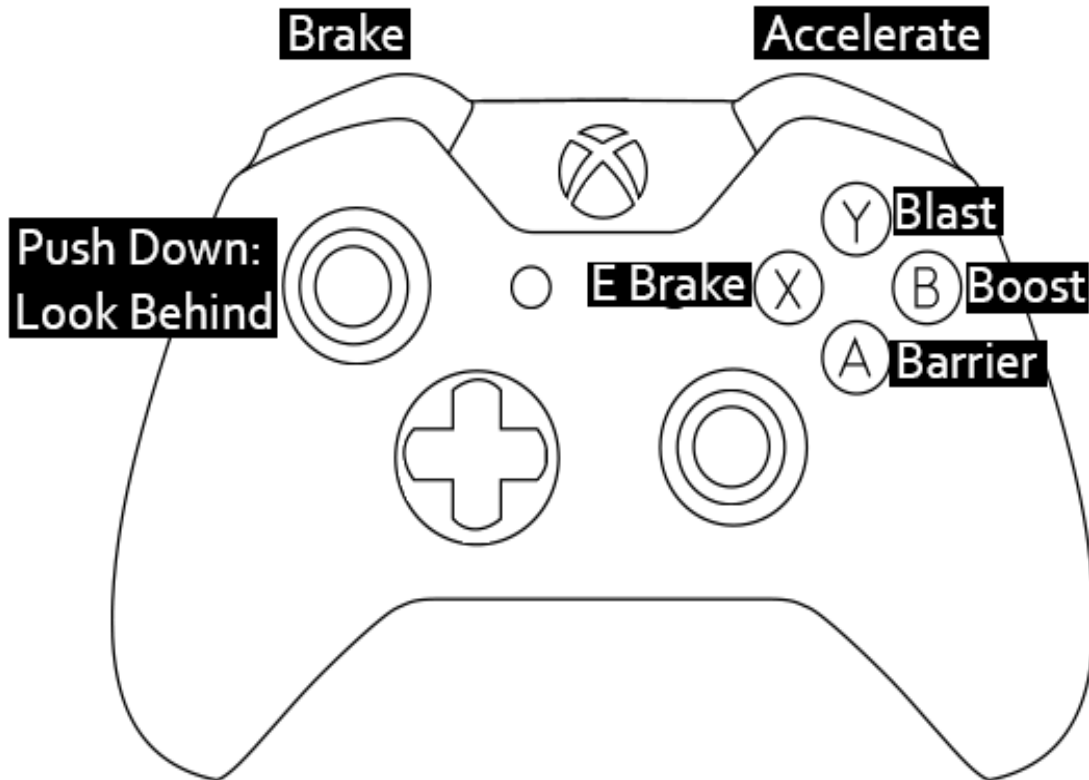
- Each blast missile has an infinite range. It will keep moving in the same direction until it collides with a game object.
- When the blast missile is shot it will go in the direction the front of the car is currently facing and originate from the front of the car.
- The blast missiles will be colored according to the player that shot the blast missile.
- Player will not have to wait for blast to collide with an object before using another ability. Instead they will have to wait for a cool-down that starts after the missile has been shot.

2.2 Game Rules

- Players can only use one ability at a time.
- After using an ability the player must wait out a cool-down before they can use another.
- Getting a pick-up on the track will recharge one ability charge.
- Ability charges will slowly regenerate throughout the race.
- Using an ability decreases the charge by one, no matter the type of ability.
- Player wins once they have completed 3 laps of the race-track.

2.3 Controls

The following controller configuration was created with players in mind. Intuitively the blast button was placed as the top button because the blast missiles come out of the front of the car and is an offensive action. The boost was placed in the middle because that button is commonly used as boosts or power-ups in racing games. The barrier was placed on the bottom button because it is defensive and that is the button closest to the player.



2.4 Features

- Abilities - Core abilities of boost, barrier and blast.
- E Brake - Allows players to slide around corners while maintaining their velocity.
- Spin-out - Slow down/ loss of control that happens after a player is hit by a missile.
- Music - ???
- Sound Effects - ???
- Neon Signs - Bright signs to decorate the track. One sign should have B^3 logo on it.

- Car Bodies - Will have shining lights on the sides and be a different color for each player.
- UI - Implemented with a clean and crisp design that is informative and easy to read.
- AI Racers - We aim to make the AI have the right level of challenge. They should be able to use all abilities the player is able to use.
- Main Menu - Allows the user to choose amount of human players.
- Loading Screen - Will display player controls.
- Laps - The win condition of our race is to complete three laps. We need to implement checks to make sure a lap was fully run by the players.
- Driving - Should feel responsive and smooth.
- Track - Should facilitate an engaging race with choke points and curves.
- Background Environment - Vapour-wave aesthetic galaxy that sets the tone of the game.
- Recharge Mechanism - Players will recharge abilities faster or slower based on their placement in the race (ie. The player in last will recharge the fastest).
- Pickup Mechanism - Place pickups at various locations around the track. A pickup instantly recharges one of the player's charges.
- Local Multiplayer - Allows up to four human players.

3 Concept Art