ARC

ADVANCED RACING CONSTRUCT

ARC: Advanced Racing Construct is an entirely new type of game, and as such, requires some specific hardware to make the experience possible.

Platform:

ARC is a next generation racing game that requires a particular hardware configuration to work properly. The game client itself is designed to be cross compatible among popular phones, tablets, smart TVs and PCs, but requires a 'smart' bicycle trainer (Wahoo Kickr, Cycleops Hammer, etc.) and a bicycle equipped with electronic shifting, and either a smartphone or an Elite Sterzo. An additional piece of add-on hardware will be created to allow players to adapt their Peloton trainers to play **ARC.**

Controls:

ARC taps into the power measurements generated by the smart trainer as well as changing the mapping of controls on the Shimano Di2 and SRAM eTAP levers. Essentially, ARC uses the existing electronic hardware typically used to control the shifting of a bicycle gears and re-purposes them as controls for playing the game. An Elite Sterzo is used to support the front wheel to control direction; an alternative is use a smartphone that is mounted to the handlebar.

1.)
Pedal for power: propel yourself to the top of the podium in this challenging new form of competition where physical efforts and swift skills combine to determine who is first, and who is history.

2.)
a) Racing, Fitness Simulator, eSport

b) ARC combines the pick-up-and-playabliligy of *Mario Kart*, with the competitive fitness elements of *Zwift*, with strong futuristic, cyberpunk themes.

3.)
This isn't just a game; this is an entirely new form of competition. Using power data gathered from a smart trainer, your real-world pedaling efforts propel you through digital worlds with countless obstacles, power ups and challengers. But your physical prowess isn't the only thing that matter; you'll need to have quick handling, a sound strategy, and maybe just a little bit of luck if you want to stand on the top of the podium.

"ARC: Advanced Racing Construct" bridges the gap from traditional fitness trainer simulators and multiplayer racing games. Create an avatar and race against the computer or competitors around the world. Progress your character with upgrades, cosmetics that imply achievement, and compete for glory.

For *ARC: Advanced Racing Construct,* there are two different types of characters: an avatar and the vehicles. I'll attempt to add some depth to both below:

Avatars: The backstory of the game is presented through the prospective of an avatar. These will be customizable characters that can be made to be unique to suit each players personal preference; gender, hair, skin tone, etc. There will also be special cosmetic items that are earned as rewards. The avatar is used as a human element to connect the player to the world, but is not strictly a playable character. There will be establishing cutscene/walkthroughs in the introduction of the game, but outside of these thematic instances, the gameplay takes place through racing in the 'vehicles'.

Vehicles aka 'racers': I think it is appropriate to consider the vehicles characters as well. I envision that there will be a handful of 'stock' configurations for the racers, and then various 'mods' that enhance certain aspects of there performance.

The racers are what's used for the competition which is what the gameplay revolves around. The best example of the type of racing that I would hope to emulate is Mario Kart; easy to understand and with lots of elements of chance, skill, and luck.

For the design of the vehicles, I imagine them to have strong 'Redout' influenced design; futuristic, fusion powered racing ships (see photo for an example). 'Mods' would be upgrades that are visible while they game is happening. Other aesthetic influences are 'Transistor' and 'Tron'. Each vehicle would have some sort of backstory that moves the narrative forward, and would be unlocked as progress is made.

1.)

       In a post-automation neon future, most of the worlds population live in hyper-urban, overbuilt cities. Automation has eliminated the need for human labor, so the majority of the population lives on 'basic' government assistance provided to every adult; enough to survive but never enough to escape. With no jobs to occupy the populations time, an elite autocracy attempts to control a public that is starved for purpose. In an effort to prevent more civil unrest, they have created a competition that tests both the contestants physical capabilities and their skills. For the winner, a chance to break free of the basic caste they were born into. Do you have what it takes to break the cycle?

2.)

       You play as Finn, a hopeful competitor trying to make a name for yourself and break free of the 'basic' cycle. You can customize your avatar and give yourself a nickname (used for multiplayer).

The game exists in two stages:

       First: the "Tutorial Stage". This will be the most narrative driven portion of the game, establishing our time and place. Here we create our avatar and learn the basic controls of the game. The controls are the most unique part of the game. See below for required equipment*. In the tutorial stage, you'll compete in a few 'qualifier' events that increase in difficult while also layering in additional controls (jump, drift, use powerup, etc.)

       Second: The bulk of the game is centered around the racing competition. The trainer measures the amount of power that the player is producing, which then allows the racer to move faster. Handling is measured with a gyro on top of the handlebars (smartphones can easily be mounted and used for steering, which can also act as a heads up display for powerups, leaderboard, etc.

       Your avatar races others in real-time against either a bot designed to push you, or other competitors. Races vary in length, complexity of the course, and have different thematic elements. Races will not strictly be a matter of physical strength leading to victory, but a combination of well timed and strategist efforts and smart game-play.

*   Necessary to play, is a bicycle trainer that is capable of measuring the power output of the player, a smartphone, an Elite Sterzo, and a bicycle that is equipped with electronic shifting (Shimano Di2, SRAM Etap, Campagnolo EPS), and computer.

       If all of this sounds very strange and excessive, it might be for now, but it won't be for very long. Indoor cycling has exploded* and popularity will continue to grow as the technology matures and becomes less expensive.

This project is an effort gamify indoor training and fitness.

* Peloton has exploded to 47B in market capitalization and Zwift has received over $600 million in VC in the last year alone.

ARC: Advanced Racing Construct

HUD Descriptions

A)   These two half moon crescents represent the current power level of your racer. The rightmost crescent is the amount of power being output by the player, with the yellow portion of the gradient representing a moderate effort (and there for in game speed) to orange/red to show a hard effort and fast speed. Remember, in **ARC**, the racer is powered by the players real time pedaling efforts.
        The second crescent on the left side of the screen shows the players combo progress. After obtaining pickups throughout the course, this meter will fill and once full will allow the player to use a 'special', which will be different depending on the current racer that the player has chosen.

B)   This is an example of an on course power-up. The triple triangles being an immediate speed boost for a certain amount of time that also contributes to the cumulative power score represented by the left crescent.

C)   This is your position on the course relative to other players.

D)   The players racer will remain centered on the screen as the player navigates the track. Tracks will have obstacles to be avoided as well as plenty of twists, turns, and gradient changes to keep the player engaged.

E)   This is a crude representation of the 'racer'. **ARC** will feature five different types of racers that players are able to use once they have been unlocked. Each racer will have different benefits that might lend itself to being favorable for different courses or to suit player preference.
        The racers are inspired heavily by 'Redout' and 'F-ZERO'; they are relatively small, one person low orbit, fusion powered racing ships. Racers will be customizable by the player with 'mods'.

Music and sound is an essential part of the game-play experience of "ARC: Advanced Racing Construct". The game is set in a neon lit, futuristic dystopia, so it is only appropriate to use exclusively electronica. In fact, I would go so far as to say that all of the music, sounds, and ambiance should be strictly electronic and inorganic, so that when there is a need for narration and some dialogue, it should cut sharply in contrast with the rest of the sound environment. I have chosen a song from a little known artist named NAKANI86 or the intro/title screen music. Their song 'MOSS' helps set the futuristic tone and I particularly enjoy it because it gives me strong 'Need for Speed' and nighttime driving vibes. Because it is a smaller indie artist, securing rights shouldn't be challenging.

Another acoustic element that I would incorporate is the use of 'escalating pitch' sound effects. Modern slot machines, particularly those that have a 'progressive jackpot' use this technique to build suspense and anticipation (please see attached sample) for the player.

The first positive sound, lets say when you hit one lucky #7, is a high but fairly neutral note; it catches your attention but it doesn't make you particularly excited. But as the wheels continue to spin, the sound of wheel spinning rising in pitch, sometimes getting actually louder too, until the second lucky #7 slots into place! Once this happens we hear the same sound as the first #7, but this time it has crescendoed to a higher pitch, and perhaps even grown in depth with more layers being added on make the player that much more engaged and hopeful. This crescendo continues to build, and if it really is your lucky day, you hit all three #7s and the machine erupts with immense sound and positive happy loops.

A design goal would be to incorporate this 'escalating pitch' technique into game-play. It is possible to do this for multiple segments of the game, but the most fun and engaging implementation would be to use it as way to signify combos growing in number. The first time a player links together to turns, or hits a power-up, you get hear a neutral noise, but as you score the second, the same noise becomes amplified, higher in pitch and more densely layered with positive tones. This would pattern would continue until either the combo is broken or the max number is reached, in which case it resets.

The graphics of **ARC: Advanced Racing Construct** will be mostly minimalist and put an emphasis on the experience. For the overall art style, I really like technique used in the game 'Art of Rally'. Unlike that game, the mood will shift towards something more slightly futuristic, dark, and dystopian, but the low-poly and well rendered style is very attractive and will help put an emphasis on the gameplay, rather than a sensory overload.

This is a game that should be able to be run on a very wide range of devices (Apple TV, Roku TVs), so making it graphically simple should help overall adoption. I included a screenshot of the game 'Transistor' which is a great representation of the mood I would hope to emulate; lots of neon highlights, shadows, and slightly darker thematic overtones.

The level that I am most excited about is a mobius strip race course (see attached photo). Racers would start on opposite sides of the track and race towards each other. The race would be over if a player gets caught, or after a predetermined amount of laps the player with the lower time split would be the winner.

In **ARC,** a the players racer is powered by his or her real-time pedaling efforts, and just like in the physical world, more power is needed to go up an incline, and subsequently the opposite is true. This makes the mobius course design so intriguing because of the almost constant gradient articulation throughout the level, meaning that the player is constantly having to steer along the curves as well as deal with the changes in pitch.

The fastest players are going to have time their efforts very well for maximum value all while navigating a paradoxical race track.

In **ARC: Advanced Racing Construct**, players are able to compete against one another in real-time by connecting their personal clients to **ARC**'s servers. The game will be compatible with a wide range of devices, including PC, iOS, as well as tvOS devices. A single player and campaign mode are available, but the most engaging part of the platform is the ability to race people from all over the world.

The play style of **ARC** follows in the footsteps of the great arcade racers that came before it but with an emphasis on competitive play. Players select a 'racer', outfit it with their personal selection of 'mods' and choose a race style. Players can join specific lobbies to compete against friends, or jump into a pool of random players. The core play style is head to racing, but players can elect to add other elements to events, like weather, that adds to the chaos.

Conclusion:

ARC: Advanced Racing Construct, is a pioneering effort to change the landscape of not just the gaming industry, but the world at large. In a time of uncertainty and fear, uniting people in spirited competition, a competition that is both a test of physical and mental strength, will surely help everyone discover how strong they really are.

ARC will be the first game to expand on the growing markets of virtual racing, fitness simulations and eSports competitions by combing all of the elements that makes those genres great into a completely new and unique experience.