V_**1.0**
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VIRTUAL ROBOTICS LEAGUE

Learn robotics in the metaverse with **Learn 2 Earn** and **LearnFi** gaming models.

This White Paper's information does not constitute investment advice, financial advice, trading advice, or any other type of advice, and you should not treat any of its content as such. Before making any investment decisions, conduct your own due diligence and consult with your financial advisor. This White Paper is intended only to publically share our current thoughts about the future direction of Virtual Robotics League and is subject to change at any time.

TOC

SUMMARY

The Virtual Robotics League (VRL) is a new, fun, modern game that teaches robotics and STEM to its players, while at the same time, providing opportunities to earn rewards they can use both within the game and without. VRL will not only educate players while they're practicing, playing and competing, it will do so without requiring a significant outlay of money. This opens the door to robotics and STEM for millions more students. The VRL takes robotics tournaments into the Metaverse where deeper learning in immersive environments takes place.

VRL is both a Player Versus Environment (PVE) and a Player Versus Player (PVP) game. Its goal is for a community of players to learn STEM through robotics while competing and having fun in a sci-fi action adventure world.
Recent innovations in crypto finance, NFTs, and "play to earn" gaming are making it possible for players to earn rewards while learning. This new category of Web3 educational games is called **Learn to Earn** (#Learn2Earn) gaming.

This White Paper introduces five innovations that combine to launch VRL:

1. How Teachers and our community can access the financial upside of innovation in education at the founding "startup" level without the need for crypto currency.
2. Creation of new **Learn 2 Earn** and **LearnFi** mechanisms in educational gaming.
3. Financial opportunities for students and creators in the new education economy.
4. Implementation of a dynamic economy within immersive STEM environments that enable deeper learning.
5. A framework for testing and assessment within complex learning spaces.

Following a brief description of these innovations, an overview of the vision and game design for VRL will be covered.

The roadmap for the development of VRL will be released in the following weeks.

1

INNOVATION #1:
TEACHER AND COMMUNITY UPSIDE PARTICIPATION

Edtech startups are usually privately held entities that create immense value and opportunity without including teachers, educational professionals, or even students in the ownership of these entities; Apple, Google, and Microsoft are prime examples. Bell Buckle Holdings, Inc. (Symbol: BLLB), a public company trading on the OTC, is aquiring the VRL for development of its cutting edge Learn 2 Earn game. As a "penny stock", BLLB affords teachers and the public access to participate in the upside of innovation in education. At the time of this writing, the stock is selling at 0.004 cents. You don't have to be an insider in the stock market or of a crypto seed round to get in on the ground floor. You don't even need crypto currency.

This is a critical innovation anyone purchasing BLLB stock is an owner, a stakeholder. And it's immediately liquid. You can buy, sell and trade it any time at your discretion. No waiting for years for a company to raise multiple rounds of venture capital hoping for an exit.

We are building a community and new set of tools for innovation in education. VRL is the first demonstration of what's possible in Web3 gaming post-industrial era thinking. Whether or not you are a robotics or STEM teacher, a gamer, a developer or just anyone interested in the future of education, we welcome your input.

Join us. **And truly be part of the vision, development, innovation, and upside as we escape the industrial model of education.**

2

INNOVATION #2:
THE VALUE SHIFT FROM INSTITUTIONS TO STUDENTS / **LEARN 2 EARN**

"Free" is the bottoming out of educational value. As a public good, we have come to expect education to be free. Yet we now live in a new, bolder economy. Innovation is outpacing the education system that is unable to create a new set of skills required for success. It has taken nearly 10 years for the U.S. education system to implement computer science in only 51% of schools. Currently, hardware based robotics programs reach less than 5% of students.

There is now even a call to forgive student debt implying that higher education did not deliver appropriate value in step with our new economy.

We are at the point where “free” is no longer valuable. “Free” does not pay the bills. High school students in many communities are forced to work at fast food restaurants instead of learning to code.

Why shouldn’t we be paying students to learn coding, robotics, and STEM?

LEARN 2 EARN

The value driver for education has passed “free” and has moved to “pay”. **We need to start valuing these new skill sets and paying students appropriately to become a part of the new economy. This is what will be called “Learn 2 Earn”.** The new world of Web3 gaming will align complex thinking and critical content in games with an economy that captures and compensates the value of your learning.

CRYPTO GAMING: “PLAY TO EARN”, NFTS, AND GAMEFI

Crypto currencies are being used to fund and facilitate new economies in games on Web3 platforms. A typical game economy goes something like this:

> Imagine a medieval world where knights go out on quests. A knight will need a sword. So the knight visits a blacksmith in town that is selling swords. But to make the swords, the blacksmith needs to smelt iron ore. So the blacksmith deals with peasants who have gone out into the wilderness and found iron ore. Value is exchanged for the iron ore. The blacksmith adds expertise and work to craft the sword increasing it in value. The sword is then sold to the knight who uses it to go on a quest with a bounty to kill a dragon that has been plaguing a local village.

In general, the act of gathering resources is called the “grind” of the game. Of course the challenge is to make the grind fun and valuable enough to attract players. Players can grind their way up through the game creating value and using it to “level up” or improve their position through the game.

This hierarchical economy is the framework for “Play to Earn” games. Games that use crypto currency to exchange the value in the game create real value. Players earn real money by grinding.

This is such a phenomenon that people in third world countries are being lifted out of poverty playing Play to Earn games.

NFTS

NFTs take this economic dynamic one step further. Using the prior example, our knight could have leveled up with a number of swords, armor, and skills in the game giving him access to harder, more valuable quests. Linking this knight to an NFT allows a player to sell this character on the open market within the game and be rewarded or paid outside the game.

GAMEFI

GameFi is short for Game-Finance. Imagine a player is building a kingdom using all of his or her game assets. But they can't afford to defend their castle. The NFTs for large complicated machinery and ammunition are expensive. This is where GameFi comes in. You have diligently worked to craft NFTs that represent these expensive items, and now you can loan them for a price to other players and earn interest as well. When players join together to make even more complicated and valuable assets, they form a "guild". This "guild" now earns value by building and loaning out more complicated and valuable assets in the game.

Guilds then give rise to competitive guilds that continue to create value and complexity in the game.

3

INNOVATION #3: EDUCATIONAL GAMING: LEARN 2 EARN, NFTS, AND LEARNFI

The grind and "mining" in educational games will be at the factual level, the lowest value. But this value serves as a foundation. As players apply their knowledge to certain crafting or questing scenarios in the game, additional value will be earned. Creating objects of value, storing that object and value in an NFT, allows a player to exchange the value they created. Finally, more complex objects that require much more learning input can be created for other players to use in a LearnFi model. We see Universities and non-profits sponsoring and collaborating on worlds for exploration and competition using any finances gained through LearnFi to reward the community.

As the game evolves, expert players and guilds will emerge to continue to add content and complexity to the game.

EXAMPLE OF LEARN 2 EARN IN VRL

For example: In a more modern sci-fi game like VRL, a player may begin a quest by training a robot to mine for resources. They may add a scanner to their robot and code the scanner to identify certain chemicals in the landscape that indicate a much more valuable resource. This saves the player time and increases the value of their payload. Now, exchanging that payload for a higher value rewards the player for learning.

VALUE IN THE CLASSROOM

Note: In the VRL, the task of coding a sensor to identify chemicals on the surface of a landscape will introduce science concepts usable in the classroom. In fact, that is the objective. At each step in the value chain of the game, more knowledge is required. This produces an "aha" effect where the student connects what they are doing in the game to what they are learning at school.

For more on this topic, see the peer reviewed research published based on Clegg's seminal work in game-based learning, an FPS/action-adventure to teach algebra released with full multiplayer in 2004.

The Effects of Modern Math Computer Games on Learners' Math Achievement and Math Course Motivation in a Public High School Setting

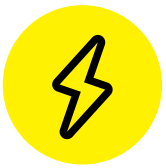
Mansureh Kebritchi, Ph.D., Atsusi Hirumi, Ph.D. and Haiyan Bai, Ph.D.

LEARNFI

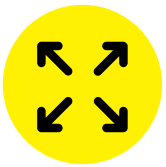
After learning about the resources found during the grind, the player may take a quest that uses their knowledge to repair a factory that combines the raw materials into usable goods.

Once the player amasses enough knowledge and value, they may join a guild to create their own factory in a LearnFi model and create more advanced objects and interactions in the game.

These advanced objects can create passive income for the student.



LEARN



CREATE

EARN

4

INNOVATION #4: BEYOND MULTIPLE CHOICE - DEEPER LEARNING FRAMEWORK

To create deeper learning, you must have a dynamically complex environment. Chess has long been considered a complex game. Understanding how chess uses simple rules to create complexity is how we will establish a framework for deeper learning in Web3 educational gaming.

SIMPLE RULES, COMPLEX STRATEGY

First, chess is spatial, meaning it is played on an 8x8 board. There are only 6 pieces that have different rules about how they move within the space. There are a total of 16 pieces on each team.

The fascinating part is that all the tactics and strategy emerge from the system, not the rules or pieces. The game doesn't tell you how to play (strategically that is), it merely allows you to do certain things with the pieces. So the combination of the spatial boundaries with rules governing the movement of pieces is a system. The competition is what evaluates players. Players who consistently beat other players understand the system better than others ranked below them.

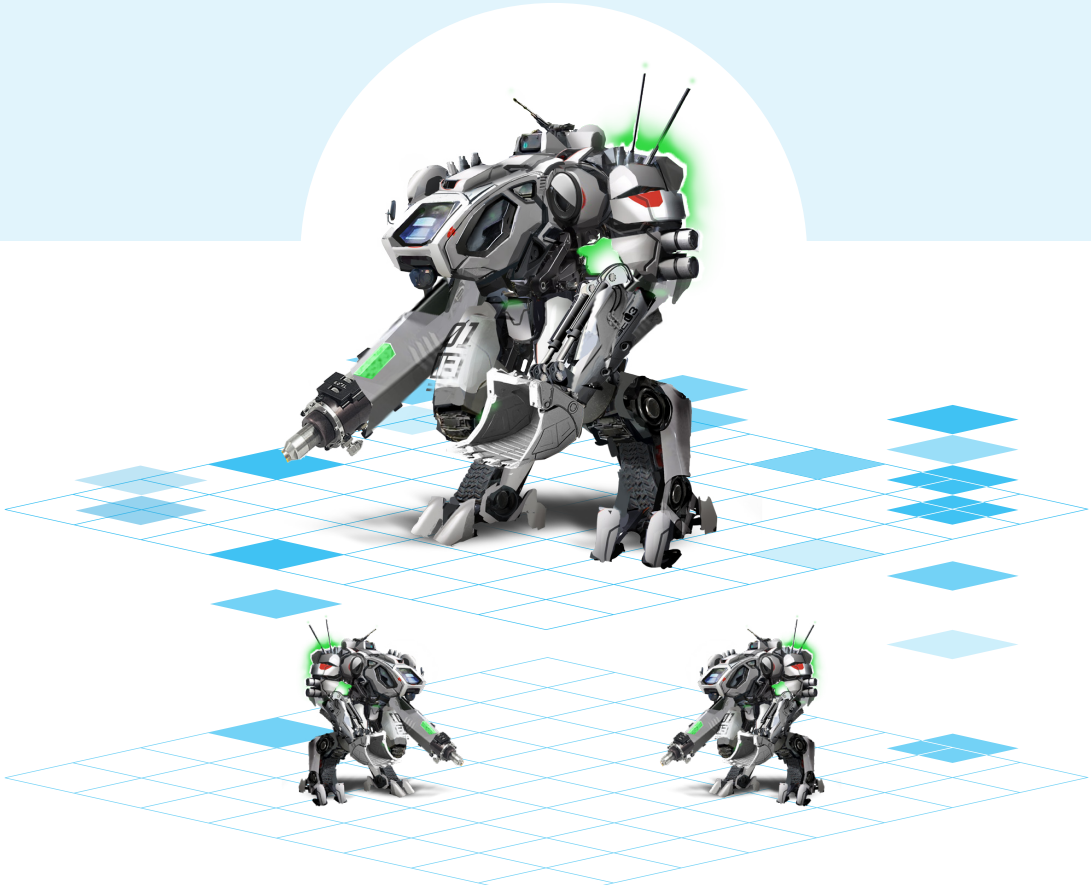
FROM CHESS TO BASKETBALL

The same thing happens in basketball. There's a spatial dimension, the court, five players on each team and a few basic rules that govern how a player moves. The rules don't govern how a team uses a zone defense, full court press, pick and roll, or any of the strategies that have emerged over the years. In fact, the rules don't even describe what kind of players you have to have! Tall ones, fast ones, quick ones, strong ones, how many should be good shooters or how many should be good rebounders. None of that is in the rules. All these things, done by the players (the pieces) within the rules, are the system. And now basketball is a multi-billion dollar industry because the ever-changing complexity of the game is entertaining.

FRAMEWORK FOR DEEPER LEARNING IN THE VRL

The VRL is an action adventure game in a spatial environment; players move in real-time unlike chess which is turn based. There will be sub-objectives spatially located in the playfield. The player/"pieces" will be able to interact with each other either supporting their movement or thwarting/capturing the opposing player. Two teams will compete for territorial advantage.

Like chess pieces on an 8x8 board and basketball players on a court, VRL's dynamic environment will create deeper learning just by playing, competing and having fun.



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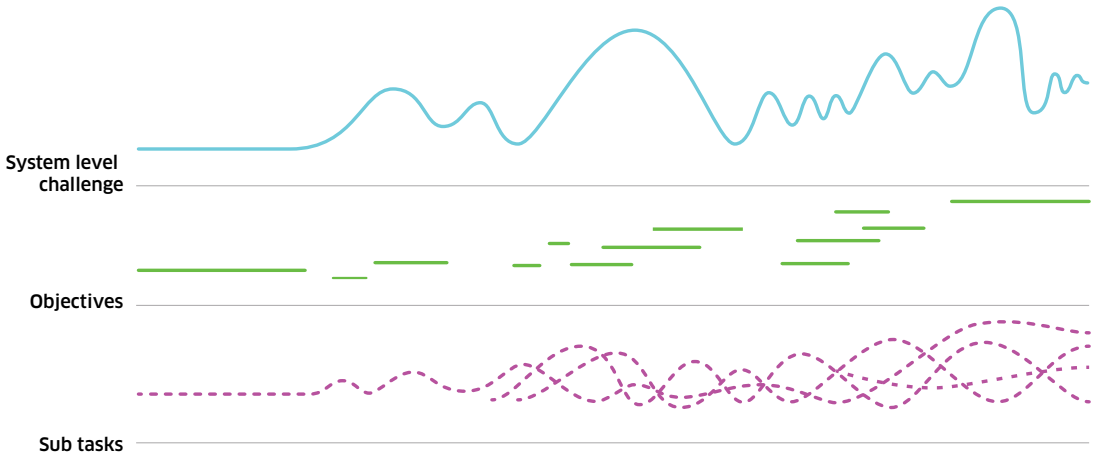
INNOVATION #5: TESTING AND ASSESSMENT IN COMPLEX LEARNING SPACES

We've established that the framework for deeper learning in VRL is a complex space just like chess or basketball:

> When teams compete to solve the challenge more efficiently, a strategy emerges. Leveraging a system with multiple solutions and dynamic inputs causes a constant re-evaluation of strategy. The players and teams that win these competitions demonstrate an ability to think critically in complex situations.



- Sub tasks demonstrate factual knowledge.
- Objectives connect several smaller tasks together into a concept.
- Putting several concepts together begins to solve a system level challenge.
- When the inputs to the sub tasks change, the system becomes dynamic.

TESTING AND ASSESSMENT

Assessment is merely tracking the tasks and objectives completed in the game. This already happens in traditional learning games and edtech in schools. Tasks are aligned with state standards. The software keeps track of what has been accomplished and reports the data to a teacher dashboard.

Testing becomes the final measurement of one's ability to solve the system level challenge.

SCORING AND RANKING

Creating a score or rank for a player is done the same way it is done is chess and basketball, through competition.

For those players not interested in direct competition, AI will be used to analyze patterns of play that emerge in winning strategies at various levels. A non-competitive player's performance can be compared to those patterns that have emerged during competitive play. Chess is a great example of this. There are numerous books detailing various strategies and counter-strategies.

Kids hate being scored on standardized tests because the content isn't relevant to them. But kids love scores in video games because it gives them feedback on performance in which they are interested.

Many are calling for the end of testing. It's not testing; it's the content and how it's being tested.

WHY ROBOTICS?

We've chosen the field of robotics for 7 fundamental reasons:

1 The urgent need to educate our workforce for future skills not being taught in schools.

First of all, robotics and AI are future skills not being addressed by our education system. According to a report on the potential for future job, **"automation has the potential to eliminate 73 million US jobs by 2030, which would equate to a staggering 46% of the current jobs."**

2 Robotics already has an after-school and tournament model accepted by schools.

First Lego League and Vex Robotics are already popular hardware based programs in after school settings.

3 Hardware based robotics is not scalable and is too costly for most schools.

The cost of fielding a competitive robotics team ranges from **$24,000 to $35,000** depending on how competitive the team is. Some teams spend $35,000 on backup robots for competition. Pay to win anybody?

4 Robotics Tournaments are already sponsored by the world's leading tech companies.

First Lego League generates over $30M/year in sponsorships for Lego Robotics tournaments. Our creative content and data analytics platform will create more opportunities for sponsors. Instead of spending on travel, accommodations, and arenas for tournaments, **the VRL can put sponsorship money towards high end content that delivers verifiable learning events.**

5 Virtualization will introduce 100x more STEM content.

The VRL game design introduces robotics in a cool sci-fi game world. Playing with **rocket fuels, new battery technologies, and gravity fluctuations** are just the beginning of creating immersive worlds that apply the possibility of science to robotics.

6 Game-based learning opens the door to millions more players and play-styles.

The game design for VRL allows for many more students and gamers to participate. Each player has their own mech. Each player can follow a tech-tree that matches their learning interests. **A game-based learning approach means players have access to content that schools are not able to provide.** Much of the barriers to entry have been dramatically lowered.

7 Game-based learning opens the door to millions more players and play-styles.

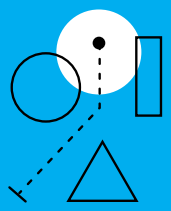
Team challenges and tournaments ...
Let's Go!

THE GAME

VISION

The Virtual Robotics League takes robotics tournaments into the Metaverse. The VRL is a 3rd person 4x game* where players can explore, build, create, and compete in a new form of robotics competitions.

WAYS TO PLAY IN THE VIRTUAL ROBOTICS LEAGUE:



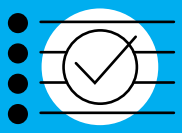
Obstacle Courses

Much like traditional robotics tournaments, players will compete to complete tasks in more of an obstacle course layout. However, obstacles in the metaverse can mean something completely different!

(Con't)

Creator Tools and NFT Market

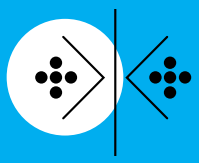
We will release creator tools that allow players to create their own obstacle courses to be shared with friends. Creators may even create their own robots and objects for the game to be sold with NFT access in our market.



Missions

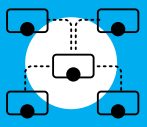
In a more guided learning mode, players will go on missions to complete objectives and earn the in-game currency used to acquire assets.

WAYS TO PLAY IN THE VIRTUAL ROBOTICS LEAGUE:



Team Competitive Arenas

Arenas will be organized to facilitate team play. We'll use some familiar game modes to integrate more complex team obstacles into a competitive match.



Esports Tournaments

Elimination tournaments for prize awards and global rankings.

The first ever Persistent World Robotics Tournament

The Virtual Robotics League is creating the first persistent world challenge where individuals and teams will compete over longer periods of times, hours, days, maybe longer. What players do in this event will remain changed over the period of play.

How will teams build and unite over the course of time? When should you build versus how will you defend? Will alliances form or be broken?

One thing is for sure, robotics tournaments will never be the same!

* A 4x game has 4 main components: eXplore, eXpand, eXploit, and eXterminate. Players explore for resources, expand the empire, exploit efficiencies in the game, and defend or attack other teams.

LEARN 2 EARN IN VRL

The purpose of the VRL is to incentivize learning robotics and STEAM concepts both intrinsically through game design, and extrinsically using our points and token system which are designed to reward and impact learning. Players will earn our points or token by:

Mining
Mining is the collection of resources powering the game's economy. As players learn the science behind technologies that will optimize their search, transport, and conversion of resources, they will be rewarded with token.

THE OBJECTIVE OF A GREAT EDUCATIONAL GAME IS NOT TO JUST REWARD LEARNING. IT IS TO LEVERAGE AND IMPLEMENT HOW THAT LEARNING IMPACTS YOUR GAMEPLAY.

Repair and Build
Tasks and missions within the game include repairing objects and systems. More complicated tasks involve building more complex objects such as machines and factories. Creating additional value in these objects and systems requires scientific knowledge which will be rewarded with tokens.

LearnFi
Players may build objects or systems that others in the community may rent. For example, players may create a robot that automatically mines the environment. Or a player may write code that optimizes a mech's landing procedure to minimize use of fuel and damage to physical systems.

When a player creates the loadout for a mission, the player may choose to spend points towards premium components. A portion of those points spent are shared with the creator of those subcomponents.

Completing Missions
Missions are a collection of objectives that may be interconnected to teach a larger concept. Therefore, completing a mission or series of missions may result in additional rewards.

Advancing through the Tech Tree
Providing multiple pathways to play the game, gain expertise, and demonstrate knowledge, can result in creating an expertise within the game. The game will have a tech tree that rewards combining areas of knowledge into an expertise. Completing a pathway will result in additional rewards.

Participating in Competitions
Demonstrating proficiency by achieving high scores or beating other teams in competitive arena play will result in winning token.

BLOCKCHAIN DEVELOPMENT OBJECTIVES

Our Blockchain will be used to create NFTs, decentralize, and validate learning so that new learning credentials can be created for complex learning spaces in web3. We are also looking at ways to incentivize our community as the VRL grows.

Data Structure for defining a learning event

- Singular problem is solved, data is entered, game event is completed
- Links to state or other reference standards

Smart contract structure for assigning and delivering value for completion of learning events

- Sponsor donates money: monetary value is assigned to learning vent
- Contract triggers delivery of value to player
- Parents may load value into an account to be dispersed to child
- Dynamic value. Puzzles/problems solved first = x, players that solve subsequently x-1, x-2, etc.

Data Structure for defining a learning context and complexity

- Associated learning events that make up the context
- Associated conditions
- Order of operations for learning event sequences if sequential
- Parameters for asynchronous completion of multiple events
- Score, points, awarded
- Value component: crypto, currency, game points

Ranking system

- Validated scoring based on player stats
  - Similar to a world ranking in Chess
  - Scoring system to rate complex learning

Interoperability

- Passing learning credentials from one game or system to another
- Validating learning aligned to other credentialing platform
- Composability of objects that may include objects from other platforms
  - **Shout out to Mech.com!**

NFT

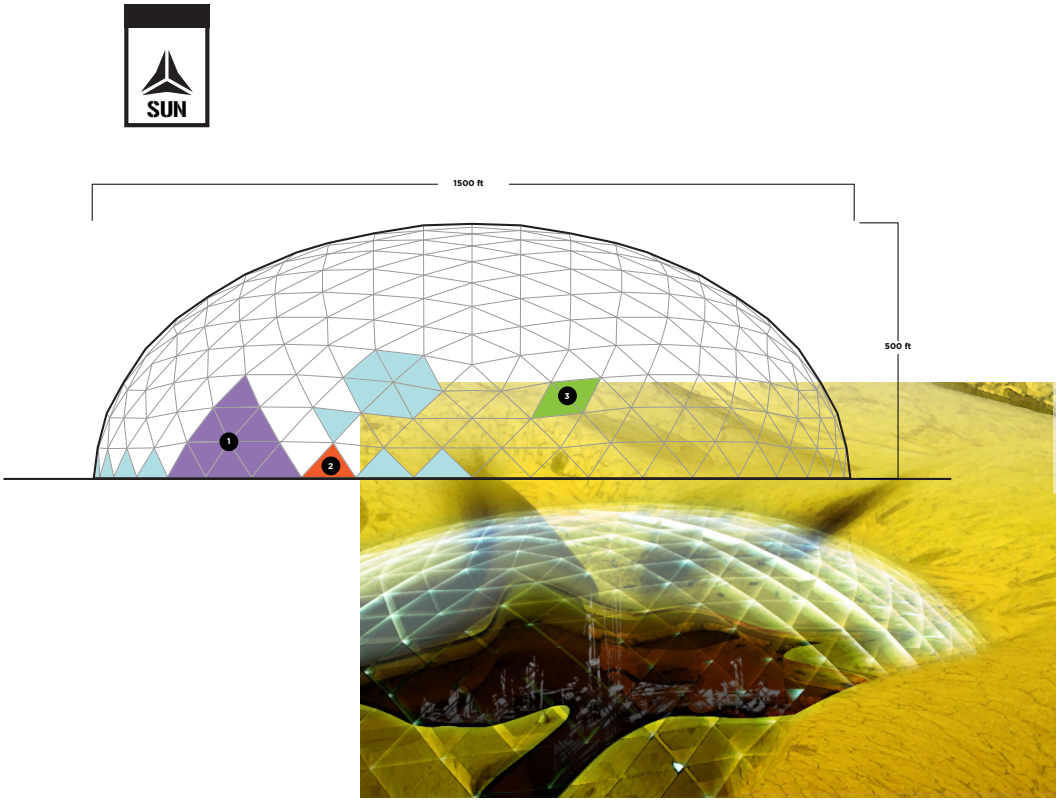
- Assignment to players
- Tracking authorship through composability
- Tracking of value
- Marketplace for sale
- User Generated Content (UGC)

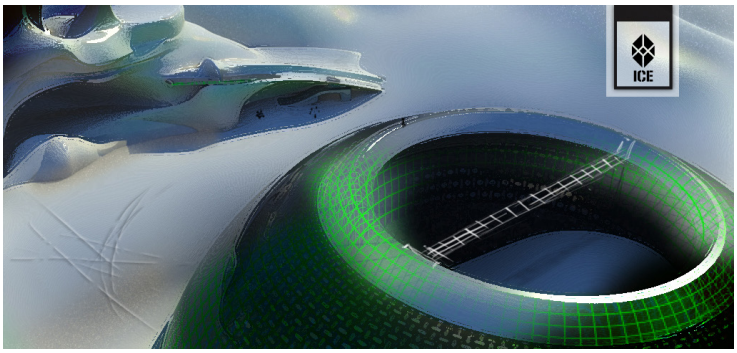
Community Rewards

- Early adopters, alpha and beta testers, and community rewards, tokens
- Token access to restricted areas, content

BACKSTORY AND GAME ENVIRONMENT

As the race to Mars accelerates, nations and corporations compete to build technologies that will support life on a new planet. Testing sites and proving grounds for the creation of a new planetary climates and habitats begin popping up in remote areas of the earth. It didn't take long to realize billions of dollars were flowing to companies that are leaving us all behind as an elite few escape to Mars.





New initiatives, new governments, and decentralized economies aligned to direct funding, planning, and security for planet earth. However protecting the earth soon became more than a matter of climate change, it devolved to survival.

… THE YEAR, UNKNOWN.

Super-magnetic shockwaves have fractured the digital record. Was it a final war imagined by a desperate dictator, a disastrous technological meltdown, a meteor, an uprising? We don't know; the ledgers of history are now fractured and disconnected. Those who remain are hidden and clinging to the synthetic bio-structures meant for another world.

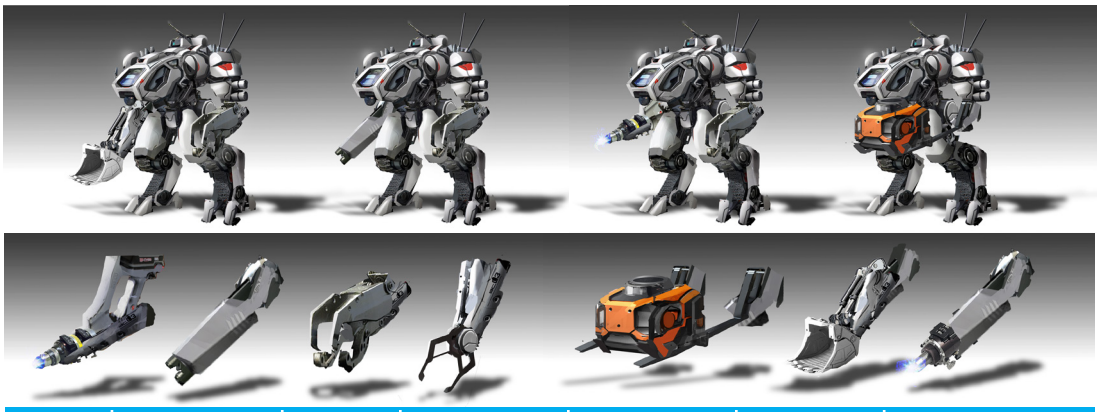
… YOU:

You were once part of an elite team trained in disaster recovery.
You have one mission: Rebuild.

MECHS

CHASSIS SYSTEM

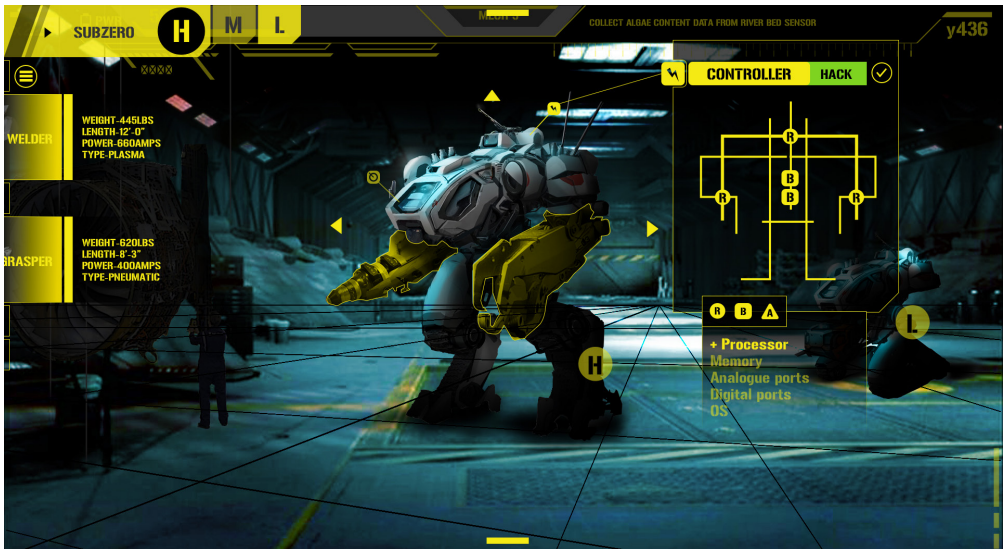
The VRL uses a chassis system for building your mech with a custom loadout. During missions some aspects of the loadout may be modified in the form of pickups, a quick exchange of sensors or work tool add-on.



Arc Welder	Magnetometer	Repair Clamp	Continuity-Tester	Fork Lift	Dig Tool	Gravitational Field Sensor

CHASSIS

Players choose from 3 chassis: light, medium, heavy. Depending on the challenge, the player will have to decide between speed, durability, and workload.



Power Source

Players may upgrade or adjust the power plant that enables the mech to move, jump-thrust, or power external tools or objects. This will include customizing the fuel and electrical systems.

Mobility

Depending on the task, choosing a biped over a track powered vehicle maybe an advantage

Weapons

The next generation now knows defense is critical. Choose your role andyour loadout wisely.

Sensors

Add sensors specifically designed for a mission

Tools

Pick up tools along the way. Switch them out depending on the job.

OBJECTS

OBSTACLES

Many of the obstacles will feel familiar to traditional robotics: Placing objects precisely, aiming, targeting, and timing. The virtual world will let us play with gravity, magnetic forces, fuel thrust, sensor data, and a whole host of other game features.

TEAM OBSTACLES

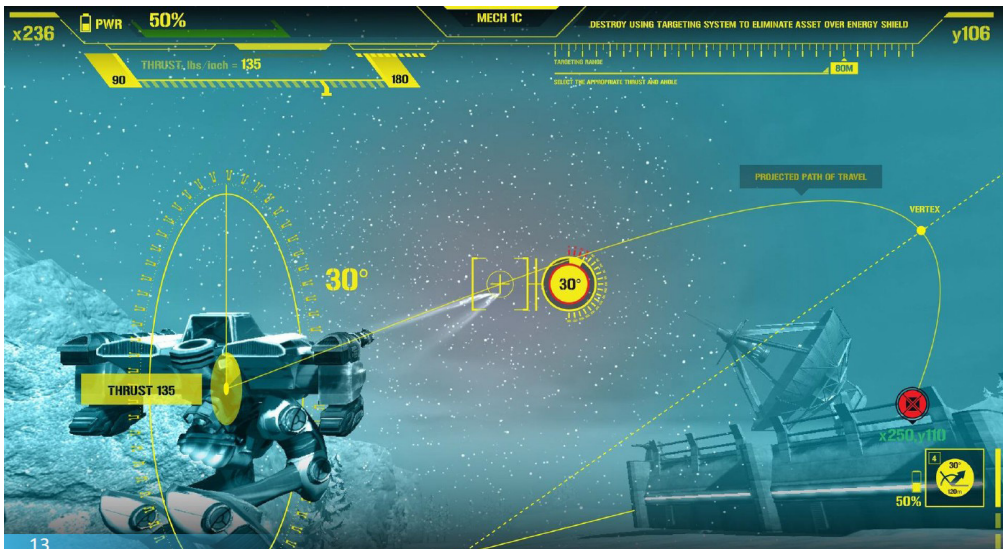
Team play in obstacle courses will open a new world challenges requiring teamwork. This brings into play timing challenges where teams may need to do things in synchronicity or in sequence where objectives are distances apart and out of view.

Players will build objects that require teamwork, alignment and cooperation to gain amplification effects, and more.

SENSORS AND UI

DATA INTERFACES

Whether you are locating a resource, repairing a facility, placing sensors to capture data, or analyzing the physics at play, interfaces will make data accessible and meaningful during play.



SENSORS

Accelerometer: Acceleration, speed, force, position

Gyroscope: angular velocity, position

Magnetometer: Magnetic field, digital compass

Barometer: Air pressure, altitude

Temperature: Kelvin, Celsius, Fahrenheit

Ultrasonic Rangefinder: (Sonar Systems) – Measures distance within a (2 cm to 6 m) range.

Radar Systems: Measures distance, altitude, direction or speed of objects within a range of (1km to 100km).

Magnetic Encoders: Measures angular distance.

Microphones: Measure many different acoustics including different direction propagation types, sound level and frequency types.

Remote Camera: Take various visual information in the form of pixel information, which can be processed by computers for many different applications.

Tactile Sensor: Measure information from physical interaction between objects using a pressure sensor array.

FACTORIES, ECONOMY, AND ENVIRONMENTS

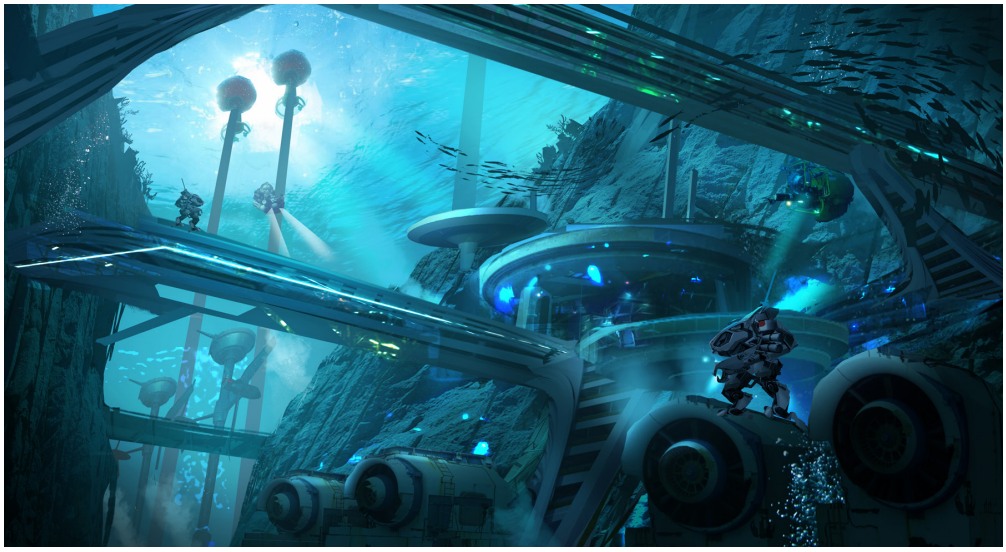
Mining

Whether you are locating a resource, repairing a facility, placing sensors to capture data, or analyzing the physics at play, interfaces will make data accessible and meaningful during play.

Factories

Natural Resources

Strategic Locations for Survival



NFTS

As we move closer to officially beginning production, we will create a class of **Alpha NFTs** for access to the pre-production resources, discord, and community input into the game.

As we progress through milestones, a Beta series of NFTs will be created for access to pre-release builds.

Pre-Launch NFTs will be available during the final stages of testing before release.

CRYPTOCURRENCY AND BLOCKCHAIN

We will be creating a VRL Token along with wallet login support and NFT creation management.