MINEVILIZATION

Team

John Li, CEO

PhD in Quantum Physics from University of Southern California, dropped-out for entrepreneurship, NSF Fellow, 2021 TEDxShenzhen Speaker

John graduated from the University of California, then pursuing PhD in quantum information in University of Southern California with NSF full Fellowship. John's research interests include math engine , numerical algorithms, parallel computing algorithms, quantum computing, quantum communication, stability of nonlinear fluid dynamical system's topological relationship of steady states. During the PhD period, through the research of computer parallel computing theory and quantum information theory, John proposed the theoretical framework of brain-computer parallel computing-a new generation of math engine. Based on this theory, he invented brain-computer mathematical communication technology and applied for a patent. He is the student of Dr. Dennis Wixon, author of NUI from USC School of Interactive Media.

Main research results:

Fronzen reaction fronts in steady flows: a burning-invariant-manifold perspective, Physics Review E

System for Symbolic Computing with Symbolic Deduction, Commiunication Technology,and Teaching Device, us 16//370,808

Honors :

2012·American Ronald McNair Scholar

2012·Donald Strauss Foundation Scholar

2012·Based on his contribution in the field of education for disadvantaged young people, he was awarded the title of Merced Goodwill Ambassador by the Mayor of Merced, the United States.

In 2013, was selected as a Fellow of the National Science Foundation of the United States

2016· Maseeh Entrepreneurship Prize Competition - Top 2

2016·Completed the NSF ICORPS entrepreneurship training project and obtained entrepreneurial support.

In 2018, at the Chicago site of the global blockchain hackathon organized by Node Capital, IDEAS, Eigen Capital, and Cointimes, John led the team to win the programming hackathon championship with the D-Justice project

2018 NKN Blockchain Technology Competition : Won the first prize

2020 Alibaba Global Mathematics Competition-Finalists

Sharon Yang, CTO

University of California Irvine, B.S./B.A. Computer Science, Economy

Gatech, M.S. Computer Science,

Sifan Ye, SDE

BS in CS from University of Rochester with Highest Distinction and Highest Honors 0in Research.

Currently pursuing a MS in CS at **Stanford** University.

Interned at **Siemens** working on automatic code generation. Interested in artificial intelligence.

Yichao Zhang, SDE

Graduate from New York University, engaged in research and work in artificial intelligence for many years

---

Keming Wang, SDE

Graduated from University of Edinburgh , blockchain research direction, rich experience in blockchain architecture.

Advisors

Tony Tribelli

Advisor / Mobile Technology Specialist, M.S. Computer Science, MBA, NSF I-Corp Teams. Tony has over 30 years of experience developing software. He has led software development teams in the field of chemistry and mathematical software.

Jay Huang

2005-2008 Studied in the top 15 futures companies in the United States

2008-2017 Founded Bliss Venture Partners, a financial futures investment management company, served as CEO

2018-Now   Ruicoins Holding   U.S. compliant digital currency exchange, holds U.S. payment license and digital transaction license as CEO

Strategic Partners

Oh!DAT - BEASTBOX NFT Virtual Collection Trendy Fashion Brand

Introduction

The keynote of the game: my fate is not defined at the moment of my birth and every one can use imagination to create a new civilization.

"Minelivization" is a metaverse-oriented, high-concurrency, global multi-player, realtime online, programmable-voxel, non-zero (positive) sum meta-game, developed by quantum physicist John Li based on causal-oriented-programming math engine.

Without VR hardware, the game still can provide unique immersive experiences to the players. Since the game is runtime-Turing-complete, players can create their own gameplay through math engine setting.

The game simulates the development of real-world civilizations and reduces plentiful restrictions and limitations in the real world. Also, it enables alliances, wars, science development, patent protection, and asset transactions.

The technology development in game relies on math engine and blockchain. Eventually, the game's internal technology will be transfered into real-world technology (because the math is always real), and exchange value with the real world. In game, any idea not violating math principles can be achieved by causal oriented programming, and its effect can interact with any other objects (including players) in real time.

The innovative Proof-Of-Intelligence (POI) math engine blockchain can be mined by mobile phones with low power-consumption, high-concurrency, extremely high

security performance.

The built-in patent as NFT mechanism can encourage players to innovate and create value. Playing this game, players can not only earn money but also create positive value by improving game resources and game technologies---which is real world technology.

The game is divided into four development phases:

Phase I: Cambrian Explosion. (Based on Binance smart chain.)

Phase II: Farming Civilization. (Launch the mainnet)

Phase III: Industrial Civilization

Phase IV: Information Civilization

The entire game will realize that all game props, pets, buildings, inventions, and NFTizations can be converted into personal assets for free trading.

Features are：

● Does not rely on VR device

● High degree of freedom

● User generated contents. Use their imagination to create the universe.

● Compatibility.

● All ideas that do not violate math can be implemented programmatically in the game and interact with other objects/players.

● Create value to the real universe by processing information (decrease entropy) in the metaverse.

● Positive-sum game.

● not only play to earn, but create value to earn

- Eco-friendly mining.

Positioning

- World's first "runtime-Turing complete" meta-game, a programming-voxel is by itself a metaverse, and metaverses nested in metaverses. Slogan: Create any universe with imagination.
- World's first positive-sum (non-zero-sum) meta-game, which outputs low entropy to the real world.
- The value of metaverses is to compensate inefficient rules/laws -- based on math engines and smart contracts to make up for inefficient real-world artificial rules or natural laws-- such as currency, laws, patents, and God's laws -- the limitations of physics laws, and to enable the rapid development and iteration of technology.
- Freedom→fairness→diversity→self-actualization. My fate is not defined at the moment of my birth and everyone can use imagination to create a new civilization.
- After the innovative fourth programming paradigm (causal-oriented) is proposed, human civilization in the metaverse will usher in an exponential explosion, and will surpass the existing civilization of mankind in four years -- and then create values to the physical civilization.
- All internal assets of the game can be freely traded and circulated.

Value

- A new and fair employment environment for game players: create first world job opportunities for third world people.
- Let the idealists realize themselves and provide them the game experience of the world.

- Realize the function of mining by occupying virtual land, just keep the mobile phone online to perform the blockchain bookkeeping task, and realize decentralized eco-friendly mining.

- Visualization, trading of NFT art (skin)

- When the number of users reaches a certain number, the game's original value will attract institutions to enter the game and improve the financial ecology of the entire game.

- 1:1 atitude and longitude mapping for non-biologically-active real world.

- Since the entire game is based on the category theory math engine. At the fourth stage of the game, it will be runtime Turing complete, which can enable geniuses with programming knowledge to promote the development of programming, and to create value for the physical world by linking metaverse and real world with fully automatic patent protection.

- People without programming knowledge can learn programming through games, and then practice programming to create real value for the real world.

- Game is created based on mathematical principles. There will be a lot of mathematical principles throughout the game. Players can enhance their ability to think logically and improve their problem-solving skills through practice.

- Multi-dimensional trading platform: the trading system is divided into several categories: governance token system, transaction token system, NFT trading system. The game's mainnet is based on virtual land minding---running on the mobile phone with low-energy blockchain accounting system.

- The game encourages "coopetition". People can gain leadership skills, and realize global user cooperation and competition.

- Connect the world : the whole game has no borders and it is a self-contained system. Everyone lives in the interconnected metaverses and use his or her intelligence and coordination skills to interact with others. Whether you were

born in Africa or in America, everyone is on the same stage.

- As the development and growth of the entire system, the earlier users who own governance tokens will gain more ROI. Users with governance tokens can also vote to participate in game development and decision-making.

- Collection: the pets, props, buildings, skins, and patents in the game are unique and have collectable values. Also, the game provides mechanisms to enable these collections to trade freely.

- Entertainment : Playing the game is entertaining. The game has immersive and challenging gameplay which requires the user's unique strategy. The game breaks physical rules that cannot be violated in real life, so that players can realizes themselves in the game.

- A more environmental-friendly mining mechanism: due to the use of virtual land and lottery mining mechanism, players can participate in mining as long as they keep their mobile phone online. The mining mechanism uses a math engine to ensure safety and low resource consumption.

Value	Demand side	Supply side
Fair employment environment	labors who need fair employment	Employers who need cheap labor
Provide high-end players with the best entertainment experience	High-end players	Normal player
The game's unique land-occupying mining mechanism provides blockchain ledgering feature	People exploited by fiat currency inflation	Miners
Visualization and trading of NFT art (skins)	Players who want to highlight their personality	MINEVILIZATION
NFT artwork that has collectible value	Collector	Design artist

Token appreciation for game development bonus	Investor	Ecosystem builder
1:1 mirror mapping of the physical world	People who are disappointed in the physical world	MINEVILIZATION
Promote the development of programming and give back to the real universe	People who need to process information in reality	People who can process information in the metiverse
Learn and practice programming skills	Those who want to learn and practice programming	MINEVILIZATION
Multifunctional trading platform: currency, NFT, game asset	Players who wants game experience	Investors who want income
Develop leadership	High-end player	Normal player
Refined interconnection to the world	All	All
The currency's liquidity generates appreciation	Users who want a quick deal	Users who provide liquidity
Playing games to learn math and programming, enhance thinking and problem-solving skills	Those who want to learn and practice math	MINEVILIZATION
Entertainment→self-realization	Players who don't want to be constrained by existing games	Players who don't want to be constrained by existing games
A more eco-friendly mining mechanism	Individuals and groups who want to promote the healthy development of blockchain	Miner's intelligence

Mechanism

- Tower defense, sandbox, simulation, strategy.

- Everything is tradable. Property is protected but investment is not protected.

- 3D voxel world.

- Four talents: scholar, farmer, engineer, and merchant, will inevitably produce specialization of labor and then emerge cooperation, resulting in transactions.

- Allocating talent points evenly is the worst strategy.

- Scholar, farmer, engineer and merchant correspond to 4 kinds of resources: gas

(computing), land (crops, mining), block (building speed, construction cost), transaction priority (transaction fee)

- Land mining returns fixed minimal inflation (crops) to reward the land occupants, and a chance to win the big lottery (gas+engineering currency)

- It takes resources to create and duplicate building blocks. The construction mode is carried out locally and does not consume server resources. After debugging the building locally, player can submit it to the server. Then it goes through a construction cycle before it is finished. Construction speed and cost are related to engineer talents.

- Higher merchant talent points lead to lower transaction costs.

- Scholar, farmer, engineer, merchant have different advantages in different stages of the game, 1 farmer, 2 engineer, and 3 scholar (merchant have some advantages in every stage), but the 'supply and demand' will ensure the balance between the scholar, farmer, engineer. and merchant

- Talent points cannot be reset.

- Only land in mining state can be attacked (including when plays are offline). Switching mining state has a cooldown. Proof Of Intelligence converts to the mining rights, because only well-designed defense mechanism can help player to protect and retain the land. At the same time, the more complex the defense mechanism, the greater the consumption of GAS.

- Players can use defensive blocks to resist other players' attacks.

- Cubes can also be attacked, but players can create patented blueprint for their own homes, so that even if their home is destroyed, it only costs a little gas to recreate an identical one.

- Occupied any land to build a kingdom.

- Pet nurturance: attacking ohter players or NPCs for upgrading.

- Players can command their pets (carrying engineered equipment) to attack other

people's buildings.

- Each command consumes 25% of the pet's energy points, so thinking wisely before sending the command.

- Energy point recovery mechanism: Time & food, that is, you can't feed it after your pet are full, you must wait for the pet to be hungry before you can feed it. Therefore, each pet executes a limited number of instructions per day. Think carefully before sending commands.

- Alliance mechanism: only provides chating feature, no additional friendly fire mechanism (encourage betrayal).

- Smart contract: everything can be if-then (actually when-then, in causal-oriented programming). For players who do not understand programming, we also provide typical contract templates.

- Customized skin: the skin designed by artist is NFT.

- Everything in metaverses can be traded (except for the skills points).

Battle

【Pet v.s Monster】

Pets have talents and skills. Players can direct pets to fight against monsters. Pets can gain experience and supplies by defeating monsters. Killing monsters is one of the important ways for pets to upgrade. The dropped loots can be used for synthesis.

【Pet v.s Pet】

Pets of different players can enter the arena to compete and gain points. Players consume tokens in each matchup, and winning pets can gain a lot of experience and tokens.

【Player v.s Player】

Players can form an army to attack the lands of other players in the open (mining) state. Tokens are consumed to initiate a war. If the attacker manage to win, the attacker can get the land. If the defender manage to win, the defender gets the attacker's supplies (excluding pets).

Trade

Except for talent points, everything can be traded. For each transaction, transaction fee will be charged and be saved in public fund pool.

Game Phase	Transaction Fee
I	5%
II	4%
III	3%
IV	1%

Programming

By combining and decombining blocks, runtime Turing-complete programming is realized.

Encapsulated capsule

Any complex block combination can be encapsulated into a programming block (capsule), retaining its logical topology.

High concurrency

The program can process programming blocks in parallel on multiple servers at the same time, and the program is self-consistent. There is no upper limit to the theoretical capacity.

Topology

The blocks' topological execution dependence is a new codeless programming language.
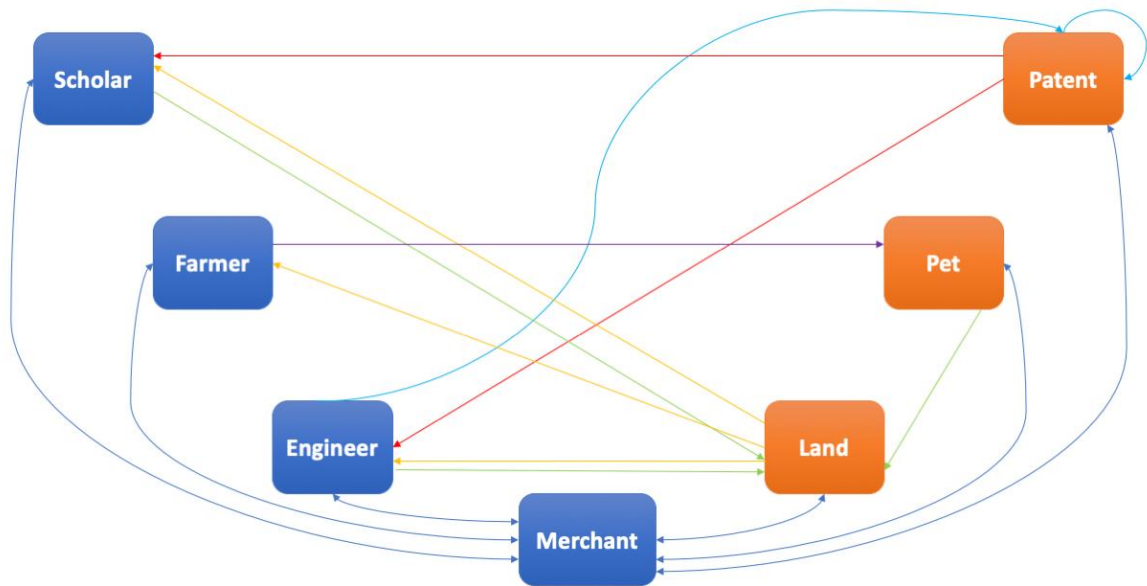
Cause and effect

Innovative causal-oriented programming language.

Composition

With category theory as the theoretical support, programming is carried out in a graphical and codeless way.

Economy

Economy ecosystem

How to obtain resources through means other than purchase

	Ocean era	Agricultural era	Industrial era	Information era
Scholar	-	Land mining 1	Land mining 1	Land mining 1, Patent dividend 1
Farmer	Daily task	Land planting, Daily task	Land planting, Daily task	Land planting, Daily task
Engineer	-	Land mining 2	Land mining 2	Land mining 2, Patent dividend 2
Merchant	Easter eggs from maps, monsters	Easter eggs from maps, monsters	Easter eggs from maps, monsters	Easter eggs from maps, monsters
land	-	Occupy open space, pets siege the city	Occupy open space, pet siege, mechanical siege	Occupy open space, pet siege, mechanical siege
pet	Breed, sacrifice pets	Breed, sacrifice pets	Breed, sacrifice pets	Breed, sacrifice pets
patent	-	-	Application for inventors	Free application for inventors

Development Route

This game world reimplements the progress of human civilization, from the origin of life to the development of agriculture, industry, science and information technology. The internal civilization of the metaverse will surpass the physical (realistic) civilization outside the metaverse within four years. By then, the metaverse will output value to the real universe—breaking the zero-sum game.

Phase I： Biological explosion, species/mutation/evolution

The initial environment is a vast ocean, and the initial player only owns one kind of fish as pet. All game creatures were born in the ocean. All characters are born in a selected part of the ocean, and the player only can see within a certain distance around him.

At this stage, there are two main goals for the players:

One is to upgrade their pet by fighting with monsters, or to fight against other player's pets. When the pet reaches level [18], it can reproduce. In the process of reproduction, there is a certain probability that new species will emerge (see the chapter on species evolution for details). The combat skill of the new species will be higher than that of the old species, and a major explosion of biological species will be achieved at this stage.

The second is to find the coast and get the opportunity to go ashore and occupy the land.

Marine creatures cannot survive on shore, so they cannot go ashore. The closest approach to landing is to mutate amphibians: amphibians can go ashore for a limited time each day. The first player to breed amphibians can gain a great advantage by

getting ashore and occupying land first. Creatures will keep evolving, and then reptiles, mammals, birds, etc. Each evolution has a certain probability to occur during the breeding process. Players who bred more suitable and more effective pets to survive on the mainland can seize the opportunity at this stage and obtain rapid development.

Phase II: Agricultural era, the battle for resources

The emergence of creatures that can live offshore to mainland indicates that civilization enters the age of agriculture. The occupied land can be used for mining (occupation of land as mining, see the mining chapter for details), planting crops, etc. Each land has two states: open and closed. The open state can be used for mining to obtain [x] tokens, but the open state also means that it may be attacked by other players and there is a risk of being robbed. The closed state is a safe mode. It cannot be the target of other players, but it also cannot obtain mining revenue. Players need to cleverly design their own strategies, taking into account all external and internal factors, to accumulate capital and gain income during this period. Once the player chooses the open state, he is at his own risk. Mining is risky, and needs to be cautious. Players can build fortifications and gather troops to protect their land. War allows multiple parties to attack one player, and the first attacker (if two or more armies attack at the same time) gets the defender's land. If the defending team wins, the attacking team will drop supplies as the defending team's loot. Agricultural products and its side products can be used as industrial raw materials (for example, thatch can be used to make thatched houses, stone can be used to make city walls, etc.)

Phase III: Industrial era, the explosion of machines

All voxels/blocks are programmable. Players can customize the functions of the blocks through programming. Each new block or new block combination design will be

patentable. Patent is protecting the inventor, and all achievements made using other people's patents are subjected to pay to the patent owner (the game itself will also charge a portion of the patent tax). Patent protection will expire after a certain period of time, and after that, players who use the patent no longer need to pay for the patent. At this stage, players can make full use of their wisdom to create value and gain benefits.

Phase IV: The explosion of science and technology

After reaching this stage, all blocks can be runtime-Turing-complete, which means all blocks can be programmed to the full possibility — each block is a metaverse. After reaching this era, players can break the physical limitations and freely realize what they want -- only limitation is the player's imagination. Various applications are blooming everywhere in the game, quickly catching up with and surpass the level of civilization in the real world. Finally, realize that output low entropy from the metaverse to the real world, and create value to the real industry.

Technical Adantages

The goal of this project is to meets the development needs of human civilization in the new era by developing a new generation of math engine---Devapath engine, and to meet the needs of modern civilization's human-computer communication (language) and deduction & simulation. Among them, the reasoning & simulation module is responsible for solving (mostly) mathematical problems, and the human-computer communication module is responsible for turning non-mathematical problems into mathematical problems---so as to cover all the problems that humans need everyday.

Key Technology

- Hyper-Turing-complete and logically consistent math engine architecture based on set theory and category theory

- Abstraction separated language, which can ask and answer questions in a distributed manner, in line with the modern economic system of specialization and cooperation. The user takes the lead in putting forward the demand, and then the expert solves the demand. Change the traditional business model from production first and then sales to demand first and then production.

- Innovative causal-oriented programming paradigm : more suitable for simulating the reality of high concurrency.

- Based on topology (category theory), C< (pronounced C-less) is a truly codeless programming language, rather than a language like Scratch that just puts a layer of graphical UI on traditional programming languages and claims to realize codeless programming.

【Mining】

Land occupation is blockchain mining. Players obtain mining rights by occupying land. The Master Chain system will randomly select n spots of land every 1 minute, and the owner of the land can obtain the right to append one block to the chain and receive token rewards. The more land a player owns, the greater the probability of obtaining ledgering rights. Land can be circulated among players through buying and selling, and players can also use army force to invade and occupy the land of other players. Players can build fortifications to protect their fields. Attacking and building fortifications need to consume gas, and the larger and more complex defense mechanism consumes more gas. In the same way, players can consume gas to build siege equipment to attack and occupy the land of other players. The more complex

the strategy is, the more gas will be consumed.

Master-Slave Blockchain

This project uses a double-chain (master & slave) structure. The annualized inflation rate of scholar's, farmer's, engineer's token is 2%, which is unlimited but predictable.

Master chain	Slave chain
Decide who is eligible to mine	Actual mining
Record the changes of mining rights	Record transactions and get mining rewards when blocks are generated
A number of miners (proportional to transaction volume) are randomly selected for each block	Miners equally share the reward of this mining. Absent miner do not receive reward, but the absent miner's reward is not shared to other miners.
Traditional blockchain structure	DAG chain structure
proof of work	proof of intelligence
TPS (throughput) fixed	TPS (throughput) unlimited
1 block per minute	N approximately equivalent blocks per minute, n is determined by the master according to network transaction volume.

【Evolution】

There is a certain probability that pets will mutate during the breeding process and produce new pet breeds. When the amount of mutation accumulates to a certain level, evolution will occur.

Evolutionary technology: Inspired by genetic algorithm, each pet's DNA adopts a double chromosome structure, one from the father and the other from the mother. The various abilities of pets are determined by calculating various hashes on the DNA code.

Token Schedule

Governance tokens (Merchant's tokens): 1 billion in total, 10% for the angel round (one-third released in the early stage, and linearly released within the remaining year), 5%-9% for the A round, 1% airdrop to players, The team owns 30%, and the remaining 50% are mined internally by the game. The team releases 5%, and the remaining   will be released in five years linearly.

Farmer tokens: The total amount is distributed according to the early market circulation of governance tokens, excluding team tokens, 1:10 airdrop to players, and the rest will be rewarded through mobile blockchain mining to be controlled at the annual inflation rate of 2%.

Token Types

There are four types tokens in the game: [**Scholar**], [**Farmer**], [**Engineer**] and [**Merchant**]. Each token can be used for one type of transaction:

   [**Scholar** (fixed interest rate with micro-inflation)]: used to pay for gas, that is, the cost of running code voxels.

   [**Farmer** (non-fixed interest rate with micro-inflation)]: the food itself. Can be used for feeding and breeding pets. It can be obtained through PVP battle game or defeating monsters .

   [**Engineer** (fixed interest rate with micro-inflation)]: used to pay for the cost of manufacturing, synthesizing game items and changing the map.

   [**Merchant** (Fixed Interest Rate with micro-deflation)]: Used to pay transaction taxes, breed pets, and are also the governance token of the game. Obtained in the form of easter eggs (battle with monsters), or purchased from the market (the earlier

the player enters the game, the cheaper the tokens). <mark>The difficulty of obtaining them increases, and the total amount decreases. Every time the game enters the next stage, the game platform will buy back and destroy 10%.</mark> (Deflationary mechanism)

That is, suppose that there are T(t) tokens in the token pool at time t. Then the rate of token pool releasing token per unit time is T'=-αT.

$$\dot{T}(t) = -\alpha\, T(t)$$

$$T(t) = \_C1\, e^{-\alpha t}$$

Therefore, the amount of [Merchant] tokens (acquired by Easter eggs) decreases exponentially over time, and at the same time, there will always be remaining tokens in the token pool that will continue to be released outward.

Due to the deflation mechanism of [Merchant] tokens, the value of a single token appreciates (without considering other appreciation factors) as shown in the following figure:

$$T = T_0\, 0.9^i$$

$$v_1 = \frac{1}{T_0\, 0.9^i}$$
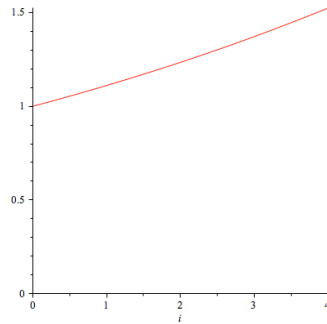
Tokens are involved during the entire life cycle of the game. As the game's civilization progresses, the types of transactions supported will increase, and various types of tokens will indispensably participate in all stage's transactions. For transactions between players in all stages, [Merchant] tokens will be charged as transaction tax. The transaction tax is paid by the bidding party, and part of the tax goes to reward the listing party for the liquidity provided, in which the platform rewards 10% of the transaction tax to the listing party. [Merchant] Tokens can be purchased from exchanges or obtained from easter eggs (occupying land for the first time / defeating monsters have a chance to get easter eggs). Players can decide the transaction price by themselves. After the two players negotiate, they can use a combination of four tokens to pay, or exchange for goods, and 1% of all coins/materials paid by the buyer will be taken as a tax.

Use of tokens in various periods

Phase I（Biological explosion）

In the stage of the biological explosion, all creatures were born in the ocean, and reproduction and evolution are the main purpose of this stage. Pets need to gain experience points through battles to upgrade, and each battle requires [1] health point. Pets automatically restore [1] energy points every [12] hours, and players can also restore their pet's energy point by feeding pet food. There is no agriculture during the marine period, and players can use [Merchant] tokens to buy pet food from the store. Pet breeding consumes a large amount of pet food. The first breeding

consumes [100] units of pet food, and the amount of pet food consumed for each subsequent breeding is 4 times that of the previous breeding. Until the first amphibian evolved randomly, the game entered the second stage.

Phase II（Agricultral era）

Entering the age of agriculture, marine life can go ashore after evolution. Land becomes one of the most important means of production. The game platform will use Merchant tokens to auction some of the lands in key locations that are easy to defend and difficult to attack. Alternatively, players who can go ashore early can take the advantage in occupying other free lands, and players can also use war to snatch the enemy's land in the open (mining) state. The land can be used for mining, and the landowner who has obtained the right to bookkeeping can randomly obtain a corresponding amount of [Scholar] tokens or [Engineer] tokens (see the mining rules for details). The coins obtained by mining need to pay a land mining tax, which is subject to the tokens mined. The land can also be used to grow crops, harvested for a fixed period, and the crops can be used to make pet food. Pet food can be synthesized by consuming agricultural product raw materials [Farmer] + [Engineer]. Pet food can be traded between players.

Players have two ways to protect their land:

  One is to consume [Scholar] tokens and [Engineer] tokens to build fortifications---only for Phase III and later

  The second is to consume food (combined with [Famer] tokens and [Engineer] tokens) to send pets to defend the city.

The siege player's army can consist of:

  Siege equipment: consumes [Engineer] tokens during construction, and consumes [Scholar] tokens during operation.

Pets, consume pet food.

Once a war is initiated, the victor can obtain the loot of the defeated player excluding pets. If the siege party wins, the siege party obtains the defender's land. If the defender wins, the defender will get all the siege equipment and pet equipment---not including the pets. After the pet is defeated, all equipment and supplies on the pet will be dropped, and the pet will return to the owner's base. After obtaining the loot, the defender has to pay [1]% of the value of the trophies as a tax.

Phase III（Industrial era）

Entering the industrial era, players can build single-purpose machines as fortifications and siege equipment, as well as some non-Turing-complete functional combinations. These items can be trades between players. At this stage, players can also buy and sell blueprint as patents (NFT). Players are required to pay transaction tax when purchasing. After obtaining the blueprint, they can consume [Engineer] tokens for construction, and consume [Scholar] tokens during operation.

Phase IV（Information era, explosion of science and techonology）

In the information era, science and technology is rocketing. With the runtime Turing complete programming, the player can program and combine all the blocks to achieve any function the player wants. The first inventor of any block or block combination can apply for a patent for free and publish the patent (The statute of limitations is 3 years). The copyright fee can be set by patent owner (Caution: high copyright fee may cultivate opponents). The right to use is separated from the right to develop and modify (black box use VS white box use), and the patent right is protected by NFT. Players can purchase patents from other players in two ways:

Black box: Players pay for patents according to usage. Users need to consume [Enginner] tokens for construction, and consume [Scholar] tokens to use. Similar to

the difference between buying a gun and buying bullets.

White box: Players pay a one-time payment for patents. After payment, players can use the patent unlimitedly, and modify it, or even apply for a patent after modification, without paying additional fees to the patent owner.

Players produce a lot of valuable math and information technology (patented or non-patented) in the offensive and defensive process, output low entropy and create value to the real world, and realize the positive-sum (non-zero-sum) game. The entire Metaverse is the Internet 3.0, which will completely replace old technologies such as traditional websites, apps, applets, Internet of Things, code warehouses, and 3D model libraries.

Resources

$E = MC^2$

Universe   Metaverses

-Entropy → Efficiency

Resources
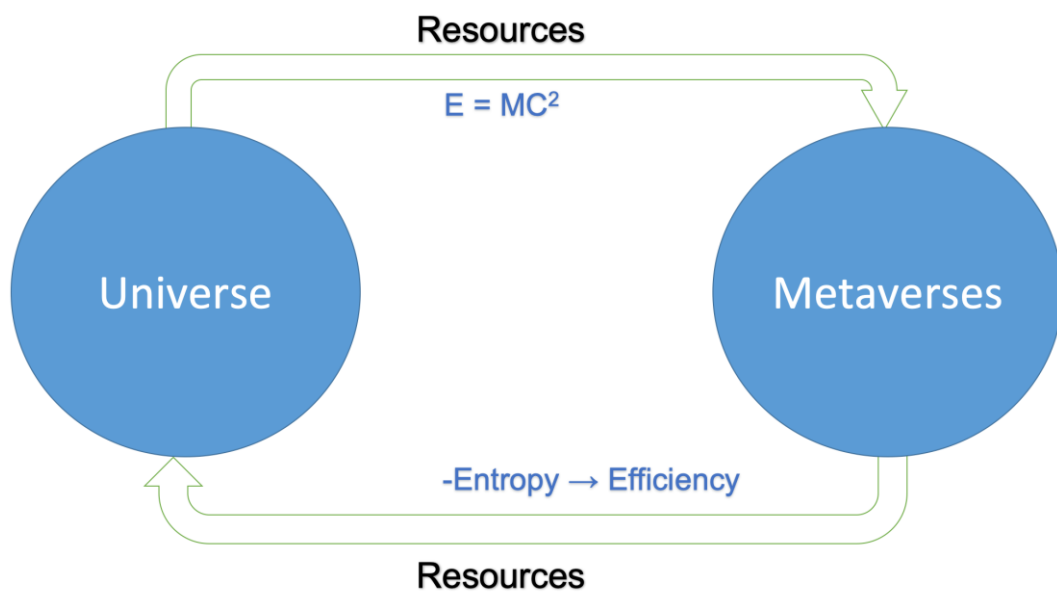
Mechanisms in Detail

Four talents

Scholar: The higher the scholar talent point, the less gas is consumed to run the Turing complete voxel program, and the higher the experience value gained when running the program successfully.

Farmer: The higher the farmer talent point, the lower the land tax paid after winning the prize. The more crops you can harvest on the land, the higher your harvest experience.

Engineer: The higher the engineer talent point, the lower the processing fee for building/production of game materials and the shorter the time-consuming, and the higher the experience gained when building weapons and fortifications to defeat monsters and enemies.

Merchant: The higher the merchant talent point, the lower the transaction fee in the game, the higher the priority, and the higher the experience value gained after the transaction is successful.

There is no hierarchy of importance among various talents, and each talent has its own advantageous period. The balance of supply and demand will also ensure the balance of the four talents.

After each player enters the game for the first time and pays the entrance fee, the system will automatically generate a character's talent profile for the player. The system will automatically assign [30] talent points to the character, and these [30]

talent points will be randomly assigned to these four talents. It is worth noting that once the initial talent points are generated, they cannot be modified. Subsequent talent points can be obtained by players through upgrades, and the talent points obtained by upgrades can be allocated by the players themselves.

Each game account has at most 1 character. If the player is not satisfied with the existing character's talent value, he can choose to delete the existing character and create a new one. The entrance fee paid for the deleted character is not refundable, but the player can get a discount when he subsequently create a new character and pay the entrance fee again.

How Metaverses create value?

How to prove that Metaverses can definitely create value? What is the single one principle of how metaverses create value?

In fact, we might just imagine the Metaverses as an independent country. This country is very advantageous in some resources, but it is very disadvantageous in some other resources. So the basic economics tells us that the way for Metaverses to survive is to exchange resources with other countries, aka trading.

A fatal disadvantage of Metaverses is that it cannot produce energy by itself (the law of conservation of energy). So it must rely heavily on importing energy. But Metaverses has an unprecedented advantage: using mathematics to create low entropy really efficiently. So the business model of Metaverses is to export low entropy to the real universe in exchange for energy, somewhat like selling ice (low temperature) in summer.
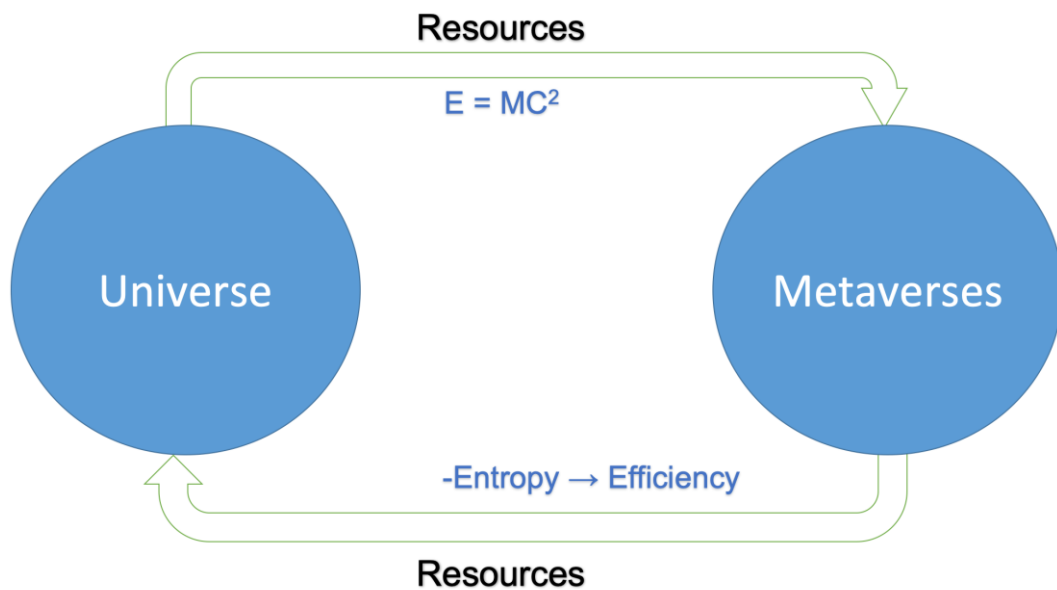
What is low entropy? What is its value?

Entropy is a very academic concept, which can be understood as **clearer, more orderly, less probabilistic and more certainty** --then one can imagine working in an environment of "clearer, more orderly, less probabilistic and more certainty" , which leads to higher working efficiency.

That's right, "Metaverses" is a universal efficiency amplifier, and **most of the work scenarios' efficiency can be improved in Metaverses. Metaverses improve the efficiency of various work scenarios by reducing rules and even eliminating physics constraints.**

To sum up, by amplifying efficiency, Metaverses can generate the following economic values:

Zero to one

It transfers internal virtual things to real things, using internal technological development to turn what is not in reality into what is in reality. In the process of simulating the development of real civilization, new inventions and technologies will emerge, because there are no humanly devised factors such as races, countries, regions, cultural differences, moral ethics, national boundaries, heroism, that hinder development in the game. People are able to freely reach a new elevation of civilization, followed by the explosion of science and technology.

Unable to able

Metaverses is best at solving "useless" problems.

Our lives are full of various problems of small value: due to the lack of tools that can efficiently solve these problems, the time/energy required to solve these problems is relatively large, and the benefits are relative low, or even negative. If we don't solve the problem, the value lost in vain seems a little pity. These problems are tasteless to chew, but also a pity to discard. In metaverses, by improving efficiency, these problems are again worthy to be solved.

Although there is little value in solving a single problem of this kind, the totality of all these valueless problems will form a long-tailed distribution, and the volume will be huge, even exceeding the total volume of those traditionally recognized as more valuable problems.

The incremented efficiency in Metaverses helps us dig out hidden value -- discover potential value in the process of solving more problems. Among so many "useless"

problems, there may be one or two "black swan" -- were thought to be useless but actually very valuable. After all, IBM once said: The world only needs 5 computers at most for this "useless" thing---needless to say the value of computers and mobile devices in our lives today.

Metaverses solves all long-tail problems, so there are no typical problems. For example, major Internet companies are actually platforms. We are also equivalent to a platform of all platforms, which cannot solve specific and typical problems, but can solve a lot of different types of problems. For example, you can buy a product on Ebay that you have never heard or seen before. In the same way, you can solve a problem in Metaverses that you have never heard or seen in the real world before, and it may become a demand for many people.

Able to better

As for the problems that can be solved, Metaverses makes it more efficient.

The augmentation of the math engine can lead to high efficiencies that could not be achieved before. For example, a product that requires thousands of people to collaboratively design. Generally, it may need to form a large technology company to do that. Howeer, in the game, without founding a company, thousands, or even tens of millions of people can work together distributively. Such a scene is unimaginable in real life, but it can be realized inside the game. Everyone can come from all over the world, and there is no racial discrimination. The more people who participate in, the greater the scientific and technological achievements that can be made. This is the world where physical constraints are removed, and the scientific and technological achievements are shared, instead of being owned by a single company, because NFT technology can prove that you are also a contributor of this patent. Here is a whole new world, an immeasurable world.

Sustainability

Finally, for Metaverses to be sustainable in the long run, it must continuously create profit to be sustainable---just like for life to be sustainable it must continuously create negative entropy. Taxation is set up inside the game to ensure the normal operation and iteration of the game.

Take the following picture as an example, the left side is the real world Universe, and the right side is the Metaverses.

Start from the upper left. If the user takes the route on the left, then the amount of work completed is 10, and 10 shares of revenue are obtained.

But if the user chooses to enter Metaverses first and then work, then because of the higher efficiency in Metaverses, they will eventually get 18 shares of benefits.

Therefore, users working in Metaverses can get 8 shares of extra income.
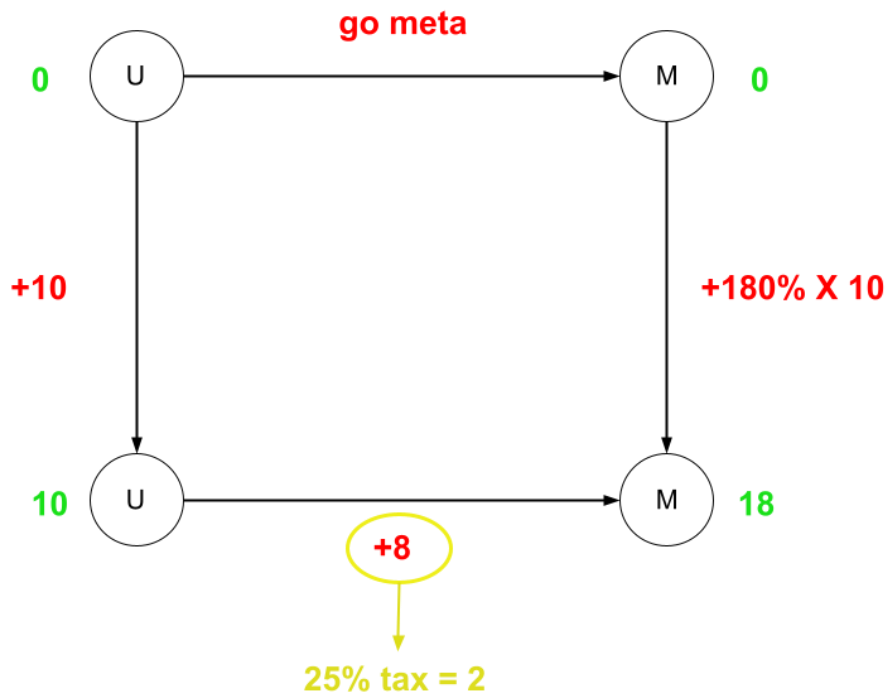
So Metaverse charges a certain percentage of the extra income of users as tax, that is the profit model of Metaverse -- in the example in the figure, Metaverse collects 2 shares of user's extra income as Metaverse's income.

Output low entropy is to enhance effienciey

First of all, Metaverses can use mathematics to automatically organize disordered information into **ordered** information-that is, low entropy, and obviously people can naturally achieve higher efficiency in an orderly environment.

The concise and rigorous rules in Metaverses can also enable people to make predictions. And **certainty** is equivalent to low entropy-this is efficiency again.
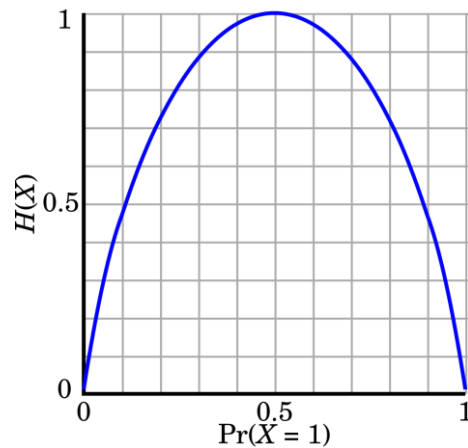
Unlike human's laws, the best laws are not those that people do not dare to break but the laws that cannot be broken, that is, the laws in metaverses.

For example, Colorado State has a law that has never been broken, not because no one dared to break it, but because no one can break it---the state law stipulates: "you monsters are forbidden to enter the city after dark."

For example, the laws of physics cannot be broken, and even birds cannot violate the laws of gravity.

For example, math...

The laws in Metaverses are written in mathematics, so they cannot be broken at all. So in Metaverses, you don't have to worry about someone breaking the law and you have to take the time and effort to file a lawsuit against him---this is agian the "efficiency" mentioned before!

Don't worry about the centralized Internet suddenly deleting or occupying your virtual assets without your consent. Personal assets are sacred and inviolable.

Employees do not have to worry about doing work for employers and discovering that the employers are running away. Also, employers do not need to worry that employee obtain money without working for it. Because a contract written in mathematics is absolutely impossible to be violated and it reduces the cost of cooperation.

A good law must satisfy the following requirements, while the laws in Metaverses all satisfy:

1. Good rules should be clear and unambiguous. The rules should be simple and easy to understand. Complicated rules can cause ambiguity and increase uncertainty.

2. The rules should be gradual, small penalties for small mistakes, big penalties for big mistakes. Any modification to the rules is not a sudden change, but a continuous process of change. The world is constantly changing, so static rules are not good, but rules that often change drastically are not good either.

3. A good rule should have certainty. Once the rules are violated, the offender will definitely be punished: for example, murderer will definitely go to the jail. Without the slightest chance, the crime rate will be greatly reduced-not to mention that there is no way to violate the rules in Metaverse.

4. Good rules should be immediacy. Once the rules are violated, the punishment mechanism will be triggered immediately. In Metaverse, punishment can be executed at the speed of light.

5. Good rules should be fair. Under the rules, everyone is equal in opportunities and has no privileges. Even if someone should be given privileges in order to achieve fairness, everything must be transparent.

Removing certain restrictions can also make the system enter a state of lower entropy. For example, after removing the Pauli exclusion principle , fermions can enter a lower entropy condensed state. In reality, only God can removes physical constraints in the universe, but everyone in Metaverses is God ---this is efficiency!

Innovative technology key points

Through the augmentation of math engine, the technical innovation can be more efficient and lower entry-barriered to output low entropy to the outside real world. Combined with Proof Of Intelligence blockchain technology, it can realize efficient and eco-friendly mobile phone mining, and achieve more democratic value production. Combining math engine and the blockchain technology, and through runtime-Turing-completeness, finally we can achieve the spontaneous and unlimited development of the internal civilization of the game. The blockchain technology (token distribution and economic independence) encourage all people to contribute, share the new generation of scientific and technological achievements, and use personal data, technological innovation, and intelligence to create value. The self-actualization of life can be realized directly within the game. The game uses a math engine and a new POI blockchain technology to create a new simulation of human development process, and achieves this goal through four major iterations. This can speed up the removal of unnecessary restrictions in the real world, and therefore improve efficiency, so as to develop a new world -- an one-to-one correspondence with the real world, but different, and finally can contribute back the real world through the improvement of the internal world civilization and technology that could not be achieved under the real world constraints.