



# CRYPTOMECH

NOV 2021

# DIGITAL COLLECTIBLES AND GAMING ASSETS MARKET

The assets created on the CryptoMech Platform are meant to be digital collectibles and Gaming Assets

## Gaming Industry: A blockchain boom about to happen

Blockchain based gaming environments and new world building/simulation games are on the rise, with more gaming companies looking into true digital ownership with skins and other game loot. In 2019 the gaming industry generated \$152.1 billion global revenue (Statista, IBISWorld, NewZoo, 2020).

## Millennial and Gen Z: Gaming is part of their daily lives

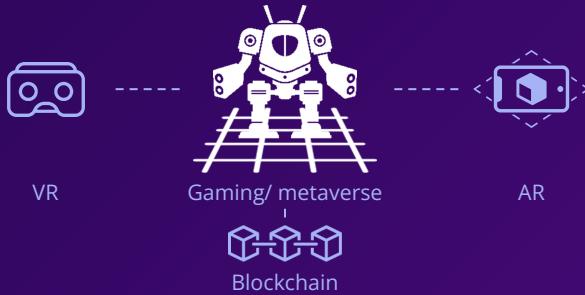
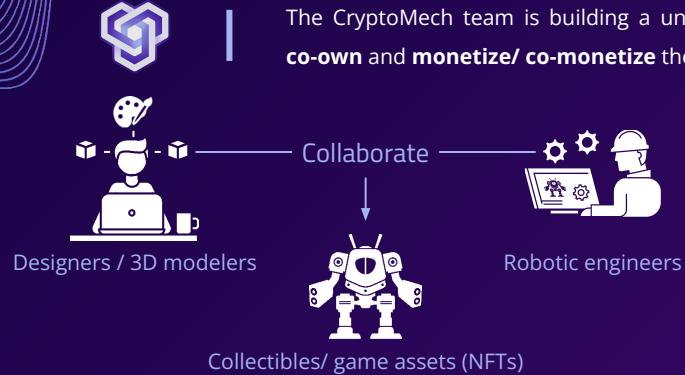
Millennials and Gen Z age groups are passionate about gaming: millennials were found to spend \$112 monthly on gaming (SuperData, 2019), 43% of Gen Z played online games daily (Cybercultural newsletter, 2020). During the pandemic, video game traffic increased by a hefty 75% and is poised to grow (Verizon, 2020). They are also the demographic that is most interested in trading and holding cryptocurrency.

## Digital Collectible to be the new standard in gaming: NFT sales new record high

Blockchain-based games and digital collectibles are a booming new trend in this industry and have the potential to deliver true digital ownership to 2.6 billion gamers worldwide, allowing trading of gaming assets and the much-needed interoperability. 2020 has seen a 30% increase of crypto players and a significant boom in the trade of NFTs ranging from the major art auction houses entering the scene to a record price of \$6.6M (2021-02-25) in Ether, paid for an animated artwork created by Beeple.

Noteworthy news on digital collectibles, there is a breakout success of NBA TopShot, which at the time of writing has generated over \$70,000,000 in aftermarket transactions of officially-licensed NBA NFTs by nearly 30,000 buyers on the FLOW blockchain. The team behind NBA TopShot, Dapper Labs, previously had a hit with CryptoKitties, helping to create and popularize the NFT collectibles space in 2017 and subsequently driving nearly \$30,000,000 in gross merchandise value (GMV). That its latest NFT installment -- NBA TopShot -- is already double the GMV size of CryptoKitties in one-quarter of the time, is proof that “native digital collecting” has not only arrived, but is also substantial in size, and growing.

# INTRODUCTION



## CO-CREATE AND EXPERIENCE GOOD MECH DESIGN

Mechs will be created or co-created by the community of designers and robotic engineers who partake in the development process. These professionals and enthusiasts alike can design in a mech world without limits for creation. CryptoMech believes in bringing the highest quality and standard of mech design with the latest VR, AR, and blockchain technology.

## GOVERNANCE (DAO) AND BLOCKCHAIN TECHNOLOGY

MECH token holders will be able to participate in governance of the platform via a Decentralized Autonomous Organization (DAO), where they can exercise voting rights on key decisions of the CryptoMech platform. Creators can create digital assets (Non-Fungible Tokens, aka NFTs), to be traded in marketplaces, and use them in and outside of various games. CryptoMech aims to bring blockchain into mainstream collecting and gaming, attracting both crypto and non-crypto mech enthusiasts by offering the advantages of true-ownership, digital scarcity, monetization capabilities, and interoperability.

# OVERVIEW

## WHAT IS MECH TOKEN:

MECH Token is an ERC-20 utility token that is designed to be the currency of purchase, utility, and attribution of mecha-themed digital collectibles (in the form of non-fungible tokens, NFTs) in and outside of various games.

## VISION:

The CryptoMech Platform aims to bring imaginative artists and mechanical engineers to the same platform to create aesthetically pleasing and practical gaming assets through knowledge sharing and collaboration



PHASE 1



PHASE 2



PHASE 3

### DIGITAL COLLECTIBLES STAGE

During this stage NFTs of LAND, Mech, Mech Drivers, and Components will be issued according to a set plan defining the supply of various rarity levels of NFTs ranging from more common to super rare NFTs.

### COLLABORATIVE CONTENT DEVELOPMENT

- a.) Art: MECH-ART token holders will vote on the best mech designs to be 3D modeled and minted into NFTs
- b.) Engineering: MECH-SYS token holders will vote on the most inspirational mechanical/robotics engineering papers for designers works to be based on.
- c.) Eventual outcome with the most valuable NFTs - ERC 1155 which contain multiple unique tokens. For example, an ERC 1155 token that contains a mech design inspired by 2 mechanical/robotics engineering papers and 2 creators signature.

### GAME DEVELOPMENT STAGE

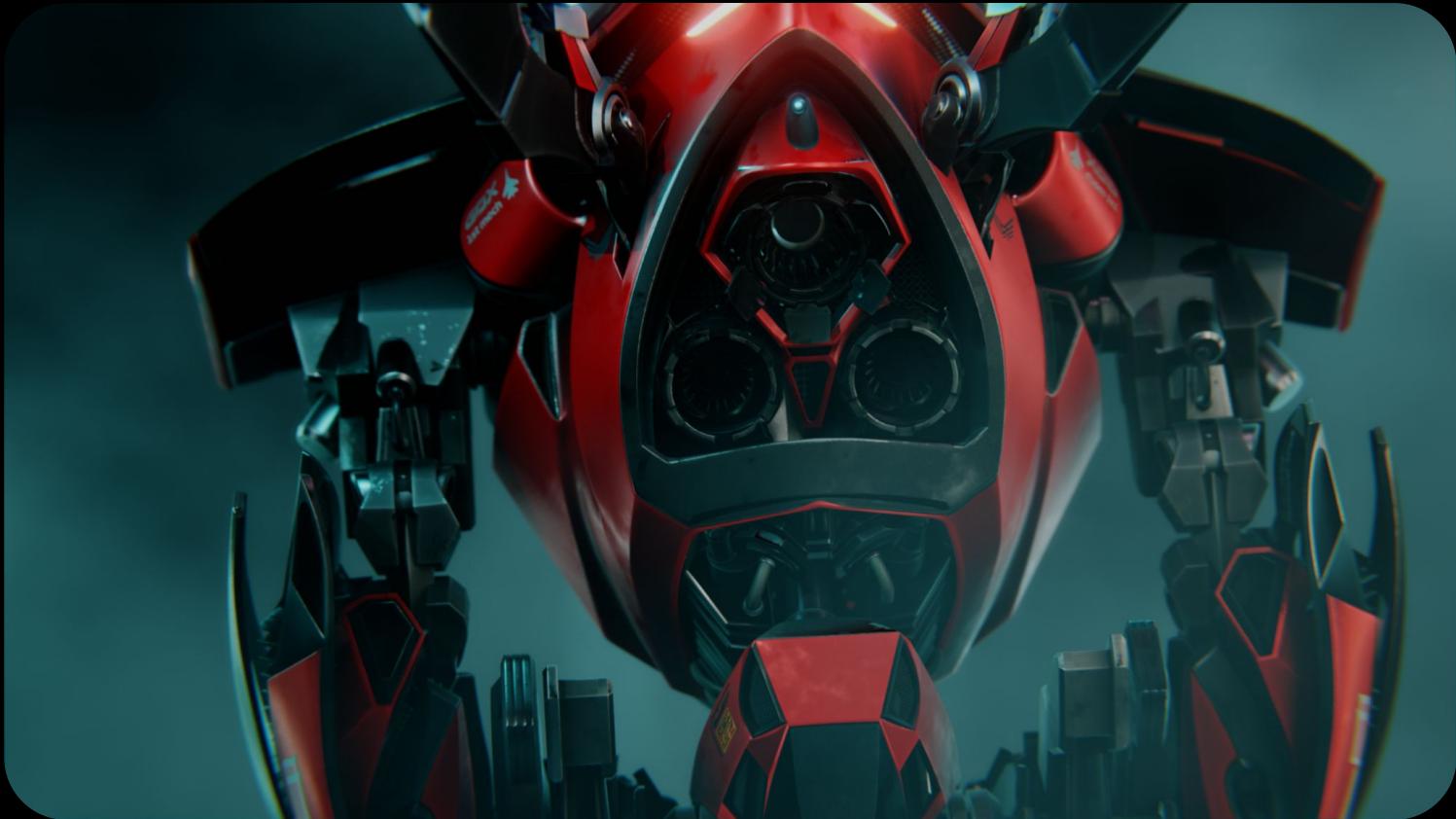
Play-to-earn games will be developed. Stats will be added to Mech and Components (different parts or equipments) for players to assemble and improve Mechs base performance for mech-themed games.

# GENESIS UNITS: LEGENDARY

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# GENESIS UNITS: LEGENDARY



# GENESIS UNITS: EPIC



# GENESIS UNITS: EPIC



## NEXT: PREMIUM - TRANSFORM FROM RACING CARS



# CRYPTO MECH TEAM



**ALEX ESCOBAR**  
**3D Artist**

Expert in Blender, Unity, Unreal Substance Designer and Houdini. Lecturer at Academy of Interactive Entertainment in Sydney. Former Sr. 3D artist at Aither who was in charge of developing workflow & integrating new tools.



**JUSTIN KWAN**  
**Blockchain engineer**

Skills includes Ethereum and multichain concepts and architecture, developed smart contracts with Solidity for Solid Protocol. Worked at Karta-X as data scientist who built deep convolutional networks for construction object detection.



**LOK WONG**  
**3D engineer**

Skills includes Effect Node VFX and ThreeJS.  
An award winning developer:  
• Webby Awards Judge 2019  
• Webby Awards Nominee 2019  
• Webby Awards Honoree 2021



**CHARLES OBENG**  
**Full stack engineer**

Blockchain: Solidity, Web3.js, Ethers.js, Truffle.  
Skill: CSS, JavaScript, Vue.js, jQuery, NoSQL Databases.  
Worked at Bloom Impact, built SaaS management platform for financial institutions to manage loans, and financial products



**KAM CHEUNG**  
**Concept Artist**

Currently working at Animoca Brands, a top 5 blockchain gaming company in the world. Kam is an experienced art director. Worked at various renowned gaming companies, such as GREE International Inc, Play Studio Asia.

# THANK YOU !

**Website:** [cryptomech.com\\*](http://cryptomech.com)

\*Website under construction

NFT presale will take place in Dec 2021



# CRYPTOMECH

Whitepaper V.1

NOV 2021



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# MECH TOKENS UTILITY



ERC-20 Tokens	MECH	MECH-ART	MECH-SYS
<b>UTILITY</b>	<ul style="list-style-type: none"> <li>Buy and sell NFTs of LAND, Mech, Mech Drivers, and Components</li> <li>Vote on proposals of design, ecosystems, such as amount of supply and pricing</li> <li>Payment for services needed for producing NFTs</li> <li>Speeding up in-game wait times such as deployment and crafting cooldowns.</li> <li>Purchase MECH-REPAIR tokens that is required to repair MECH-NFTs after rounds of games</li> <li>small amounts of MECH token are required to pay transaction fees</li> </ul>	<ul style="list-style-type: none"> <li>Govern the art and design aspect of MECH-NFT production</li> <li>Vote on concept art proposals</li> <li>Ensure 3D models comply with technical requirement</li> </ul>	<ul style="list-style-type: none"> <li>Govern issuances for MECH-NFT for games</li> <li>Propose mechanical / robotics engineering papers as inspiration for concept artist</li> <li>Propose amount and stats for each issuances of MECH-NFT base on the game economic</li> <li>Approve acceptance of MECH-NFT to be use in games</li> </ul>
<b>Ways to acquire</b>	<ul style="list-style-type: none"> <li>Collect-to-Earn through pro-community activities</li> <li>Airdrop/ referrals</li> </ul>	<p>By getting 40% of votes in the art community who are MECH-ART token holders, to be qualified to become a member of the MECH-ART community</p>	<p>By getting 40% of votes in the technical community who are MECH-SYS token holders, to be qualified to become a member of the MECH-SYS community</p>

\* The annual inflation of 2% after the fifth year is to encourage token holders to utilize their tokens in order to make some contributions to the gaming ecosystem. Besides the 2% annual inflation, the DAO will also be in place for the governance of the community in a decentralized autonomous way after the third year. The purpose of these two arrangements is to ensure the healthy growth of the MECH Token community in a decentralized, organic, active, autonomous, scalable and sustainable setup in the long run.

# THE MOST VALUABLE ASSETS BUILT BY DESIGNERS AND ENGINEERS



## Problem:

1. The quality of NFTs varies greatly, how will we prove our value and effort into making our digital assets? How do we demonstrate our creativity and good design in our development process?
2. Not all Mecha are good designs, some are questionable. Such as *Mermaid Gundam*, some may say mistakes were made here. In the episodes focusing on international giant robot combat, a mech put in a mermaid gundam may not be entirely practical.
3. Community don't have input in what they can buy. They have to rely on the designers understanding their needs without actually consulting them. Their voice and opinion is not heard.

## SOLUTION:

### The best Mech assets be produce under the following principle:

#### 1. Collective voting = Good Design:

"We must nurture tolerance, collective wisdom and democracy." Nelson Mandela

The most effective way to find the best design might be by having a community who are willing to share ideas and knowledge in the purest way possible with other like-minded, thought-provoking, inspiring people, therefore substantial positive changes and improvement can be made.

Even though designers can have all the creative license, the engineers should have a say on what is and isn't magic, and what is possible with technology. Even if a mech is designed purely for the aesthetics and fun, it's good to know that the utility is still available.

#### 2. Good research on the subject matter = Good Design:

"The importance of research, of truly understanding their subject matter and chosen environment, was coded in Pixar's DNA. The creative team had conscientiously done their research for TOY Story in the form of company-funded field trips to Toys R Us, but ultimately the world of toys was very familiar to them. It was a world they'd grown up in, one whose rules they intuitively understood." (Source: To Infinity and Beyond! The Story of Pixar Animation Studios)

Arguably, the most valuable mech should be design with good research and understanding of mechanical/robotics engineering, such as designing hydraulic arms with principles of lever and Pascal's principle; designing parts with understanding of the latest 'Robotic blacksmithing' technology. Through this grounding to reality by engineers, our digital assets can look and operate in the digital environment just as on earth or another planet. A cross between immersive simulation and great design.

#### 3. Collaboration = Good Design:

"Cross pollination of ideas facilitate new ways of thinking by sharing knowledge. It is about combining the intellectual capital of individuals with different ways of thinking to reach solution." (Source: Growth Engineering, Dec, 2019)

For instance, LIDAR technology lays the foundation of driverless technology, which may have inspired Spielberg to commission Lexus to design an autonomous concept car for a film, *Minority Report*, 2002, resulting in the Lexus 2054. The fictional future car technology have proven prescient as Tesla Motors rolled out of autopilot feature on their Model S vehicle in 2015.

We believe designers and engineers inspiring each other and working together will facilitate mech coming to a practical reality in the near future. This type of dynamic modelling and simulation may even help inspire the robotics industry or unmanned robot drone technology with new ideas.

# INCLUSIVE PLATFORM FOR ALL CATEGORIES OF MECHS



The word "mecha" or "mech" is an abbreviation, first used in Japanese, of the word "mechanical". In Japanese, mecha encompasses all mechanical objects, including cars, guns, computers, and other devices. Outside of this usage, it has become associated with large humanoid machines with limbs or other biological characteristics. Mechas are often piloted from a cockpit, typically located in the chest or head of the mech. CryptoMech intents to be inclusive to every kinds of mechs, whether if they are utilitarian vs fantasy designs, slim vs athletic, including and not limited to the following categories.

UTILITARIAN DESIGN	MILITARISTIC DESIGN	ANIMAL INSPIRED DESIGN	FANTASY	TRANSFORMABLE
<p>Utilitarian design has function as its priority, which stresses that the design should be based on its purpose and cost-effective construction, rather than the grandeur of ornamental purpose.</p> <p>Some designers and engineers may choose to work together on a Lever Arm Prototype Design Iteration, knowing a robotic arm design is technical feasible before putting it on a mech and producing it whether physically or virtually.</p>	<p>In some cases, mecha are depicted as fighting machines, whose appeal comes from the combination of potent weaponry with a more stylish combat technique than a mere vehicle.</p> <p>In some stories, such as the anime series Patlabor and the American wargame BattleTech universe, also encompass mecha used for civilian purposes such as heavy construction work, police functions or firefighting.</p>	<p>This kind of designs resemble animals and imitate life and nature. Animals do have some elegant designs and highly efficient solutions to problems like locomotion, flight, and dexterity.</p> <p>For instance, Boston Dynamics built BigDog and Spotmini that borrowed from nature, which were four-legged robots. BigDog were designed to be a robotic packhorse for soldiers. the latter came with a robotic arm and was touted as a domestic helper (Source: SingularityHub.com)</p>	<p>Fantasy is a genre that features elements that do not exist in the real world. Although some creators juxtapose a real-world setting with fantastical elements, many create entirely imaginary universes with their own physical laws and logic and populations of imaginary races and creatures.</p> <p>This type of mechs are speculative in nature, their fantastic design is not tied to reality or scientific fact.</p>	<p>Transformable mech will the most valuable mech, which allow players to ride as cars in metaverses and transform into mechs when encounter battles</p> <p>A transforming mech can transform between a standard vehicle (such as a racing car or fighter jet) and a fighting mecha. This concept of transforming mecha was pioneered by Japanese mecha designer Shōji Kawamori, when he created the Diaclone toy line which was adapted into the Transformers franchise in 1986. (Source: Forbes.com)</p>



NFT

MECH ERC-20 TOKENS AND NFTS

# TOKEN PORTAL - LIGHT MINTING

## TOKEN PORTAL

Token portal is used when there is a change in supply needed, the token itself is on the blockchain therefore every call on minting and burning will be executed in the smart contract. Since it could consume gas and there is a time delay when on smart contract interactive, we will introduce a method called **light minting** that will pre-mint/pre-burn more tokens by batch so most minting and burning will not actually be executed on the blockchain.

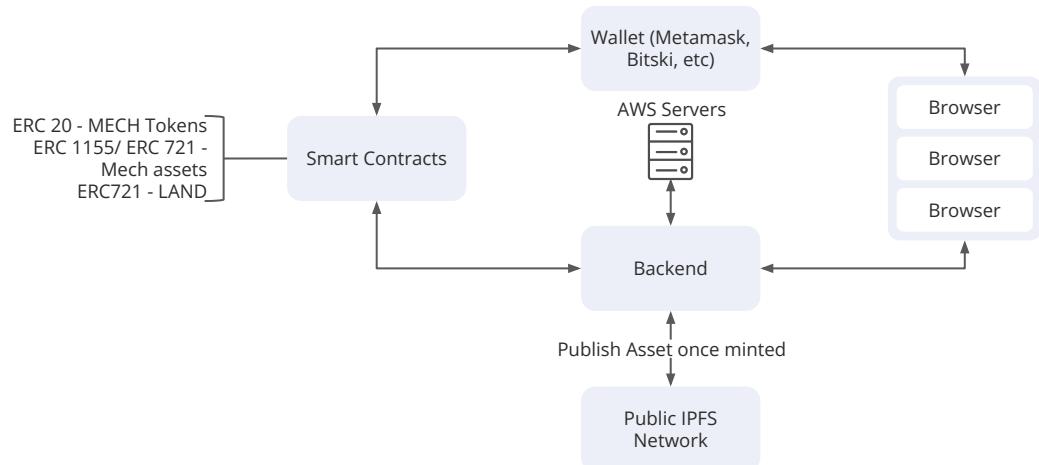
For example, the current supply of MECH token is 3 billions and one wins a the mech game, the system would mint 10 token to the player, the system in this scenario would not actually mint 10 token to the player, instead it will send 10 token from the **token portal** that has collected pre-minted token. Once in a while, a batch of minting will be called and a huge amount of token will be sent to the token portal.

The minting portal will only mint MECH tokens based on the in-game rule which will be governed by MECH-SYS token holders, when a player wins a MECH token in the game.

## TECHNICAL INFRASTRUCTURE

The CryptoMech platform will runs on Ethereum or a Layer 2 solution, such as Matic, which is used to record the ownership of tokens and allow owners to transfer, sell, or use them without restrictions. IPFS is used to store all related information of Mech assets and ensures that this information cannot be changed without the permission from respective owners. The ERC-20 standard is used for the MECH tokens, while ERC-1155 and ERC-721 standards are used for the storage and trading of LAND and Mech assets.

AN OVERVIEW OF THE OVERALL CRYPTOMECH ARCHITECTURE IS SHOWN BELOW:

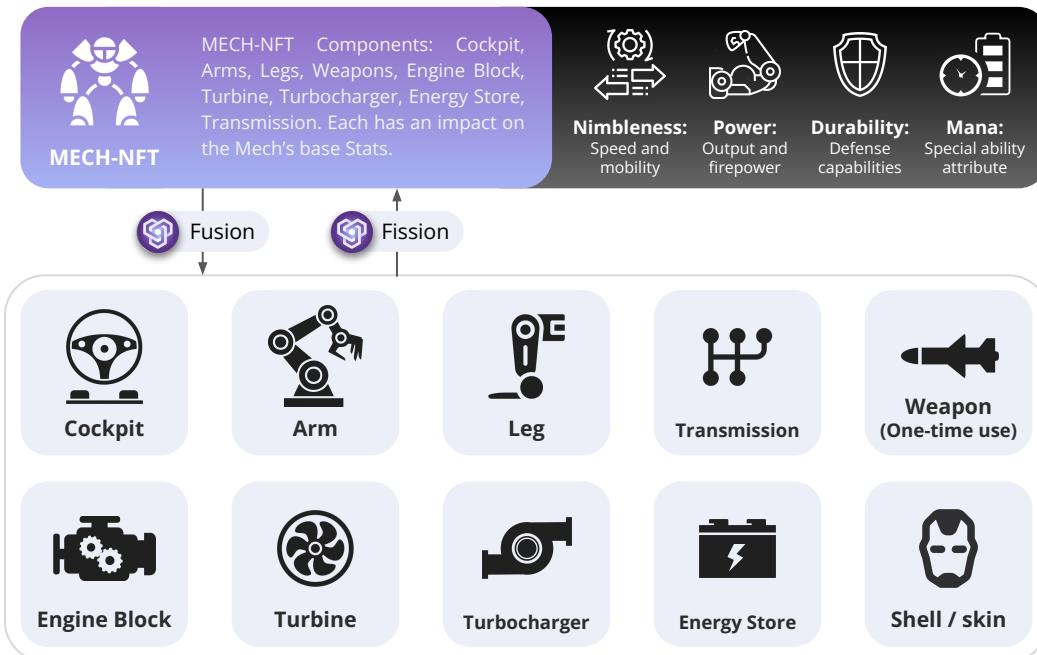




# USER CUSTOMIZABLE PARTS

Community members could propose to create **MECH-NFT** with different small parts (also NFT). The MECH-NFT could be created through a process called **fusion**, in vice versa, **fission** will happen when parts of the MECH-NFT is disassembled back into those small parts. In both fusion and fission, MECH token will be burnt as a fee and will be distributed to the staking pool of the MECH token.

In the mech game, critical game elements include **NFTs: Mech, Drivers, and Components**, with Components referring to different parts or equipment that can be attached to a Mech or Driver to improve its performance, such as special abilities that affect how units interact on the map. Effects include such things as ranged / area of effect attacks, abilities which decrease movement distance or cooldown for targeted units, deploying traps in particular areas, and many more.



In both fusion and fission, 80% MECH-REPAIR token will be burnt as a fee and 20% remaining will be distributed to the staking pool of the MECH token

Let E be the expected action per day, A be the EMA(exponential moving average of all actions in day).

Adding 1 NFT or removing 1 NFT to a MECH-NFT would cost MECH-REPAIR tokens based on the following formula:

R represents rarity factor of the NFT part being added/removed based on Rarity  
(common-1, rare-1.5, epic-2, legendary-3, prime-5)

$$\text{Cost} = R \cdot A / E \text{ (in MECH-REPAIR)}$$

Therefore, the cost of MECH spent could fluctuate from time to time according to the total amount of actions from all players.

For example, if E is 10000, A is 12000 at the time a player decided to remove a common Turbine and then replace it with a rare Turbine into his MECH-NFT, the cost will be  $1 \cdot A / E + 1.5 \cdot A / E = 2.5 \cdot A / E = 3$  MECH-REPAIR tokens.

This mechanism acts as a dynamic gas that increases as the demand of switching parts increases.



# EDUCATIONAL ASPECT: ROBOTIC LAB

## LEARN AND EARN

In the robotic lab, after given robotics educational materials for players to watch/read, players will be given a set of questions. If players are able to answer questions correctly, which reflects players improving knowledge on robotic engineering, they will be rewarded with MECH-REPAIR Tokens that are needed for repairing their mechs after rounds of games, or boosting special attributes for their mechs.

Players will also be given 5-10 daily trivia questions, which are drawn randomly from the question bank database. Players are required to answer each within 30 seconds. Rewards will be distributed based on amount of questions correctly answered.

Disassembling and assembling different mechanical parts in order to maximize base performance of their mechs while answering questions would be the hardest one, but will be the most rewarding.



Driver NFT  
Components: Gloves, Suit, Boots, Helmet.  
Each has an impact on the Driver's base Stats.

**DRIVER**



**Intellect**  
Repair capability



**Stamina**  
Consistency of performance



**Helmet**



**Suit**



**Knowledge**  
(See Robotic Lab)



**Tools**

Example of changing the base performance of a mech through disassembling and assembling. Each MECH-NFT consists of the 10 parts which may have impact such as following:

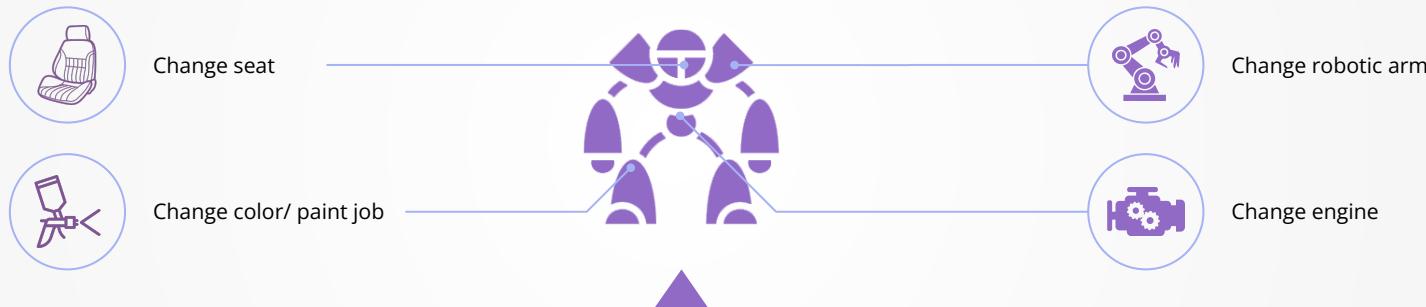
- Cockpit (+25% movement speed, in transforming and weapon recharge)
- Arm (+5% movement speed, in transforming and weapon recharge and damage)
- Leg (+5% movement speed, in transforming and weapon recharge and damage)
- Transmission (+25% in transforming and weapon recharge)
- Engine block (+25% in movement speed, weapon recharge and damage)
- Turbine (+25% in movement speed, in transforming)
- Turbocharger (+30% in boost during game)
- Energy store

Movement speed will be depending on weight on the MECH-NFT, it is simply the reciprocal of weight, movement speed is calculated as the following:

$$M = 1/W$$

Part that has advantage in damage, transformation speed should have a higher weight resulting in a lower movement speed, this creates a balance in the gameplay.

# INTERACTIVE NFT LAYERING



Open digital assets can be center of the experience in itself. For instance, different services can be added to a mech.

## LAYERING

Layering – Each layer in a 3D model could be a different NFT since they could be detached, different layers of NFT could have different outlook, such as paint, and styling, etc. Layers could also interact with another layer (see through interactive NFT), resulting in a different outlook of the MECH-NFT.

For example, art creators could provide services to tailor made skin and paint for individual MECH-NFT and Avatars, in exchange for payment from gamers/ collectors

## INTERACTIVE NFT SYSTEM

Interactive NFT – an interactive NFT adds state to a NFT, that a NFT could change depending on variation of data, for example, a gear NFT inside a car could have lower fraction index in a rainy environment.

For instance, in gameplay a turbine that is not designed to be run in a rainy environment will have a performance deduction up to 15% max(same for terrain). This encourages players to reassemble their META-NFT to spend MECH-REPAIR token to get a higher chance of winning in a game.

Level of deduction

- Star 1 - 5%
- Star 2 - 7.5%
- Star 3 - 10%
- Star 4 - 15%

An interactive NFT system is used here as a representation of mechanical parts that have different changes in different environments. There will be moment that some NFTs could not be used because of the environment

# OPPORTUNITY TO CO-CREATE, CO-OWN, CO-MONETIZE



CO-CREATE	CO-OWN	CO-MONETIZE
<p>Anyone with different expertises can initiate the creative process on the CryptoMech platform. Important creators includes <b>concept artists</b>, <b>3D modelers</b>, and <b>mechanical engineers</b>.</p> <p><b>Example A:</b></p> <ol style="list-style-type: none"><li>1. A concept artist come up with an aesthetically pleasing design with many "likes".</li><li>2. 3D modelers express interest in 3D modeling it, make it into an NFT, and sell it in the market</li></ol> <p><b>Example B:</b></p> <ol style="list-style-type: none"><li>1. An engineer publish a new 2-shaft jet engine paper on the platform.</li><li>2. A 3D modeler express interest in 3D modeling and animating it, in order to illustrate how does the engine work.</li><li>3. Concept Artists express interest in incorporating this new jet engine design into their aerial mechs</li><li>4. ERC 1155 NFT is therefore created which contains the paper, 3D model of the engine, from which concept art works are inspired.</li></ol>	<p><b>BLOCKCHAIN ENABLED BENEFITS:</b></p> <ol style="list-style-type: none"><li>i. Fractional Ownership allows co-creator to own NFTs with provenance.</li></ol> <p>Fractional ownership is a system where several unrelated parties can share the ownership a high-value asset.</p> <p>Ever since shares of companies were sold on stock exchanges, this idea that ownership of a valuable entity can be split and sold openly has opened the door for smaller, retailer investors to chip into a world that otherwise would be dominated by the wealthy.</p> <p><b>IMPLICATION:</b></p> <p><b>With blockchain technology enabling fractionalize ownership, concept artists, 3D modelers, mechanical engineers are co-owning the NFT assets that they create.</b> Collectively they can create high value assets that are otherwise usually produced by big corporates.</p> <p>With help of smart contracts, details of ownership structure can be generated upon consensus.</p>	<p><b>BLOCKCHAIN ENABLED BENEFITS:</b></p> <ol style="list-style-type: none"><li>ii. Blockchain technology allow digital assets to be traded with ease and flexibility. It cut down the complex legal agreements, paperwork, erroneous transactional and legal fees as has been done by commodity exchanges.</li><li>iii. As ownership is blockchain verified, owners of the NFTs can be ensured dividends.</li></ol> <p>Co-creators will decide the price and initial amount of copies to be minted upon consensus. <b>They can co-monetize by listing their mech products on CryptoMech</b> in various of sale formats, whether in "flexible supply and pricing base on vote", or "auctions with fix supply.</p>

# CONTENT PORTAL - NFT MINTING



## CONTENT PORTAL

Content creators can upload their art masterpiece/ mechanism proposal to a content portal, it will require 30% vote from the community in order to get the content passed to the next voting (second vote).

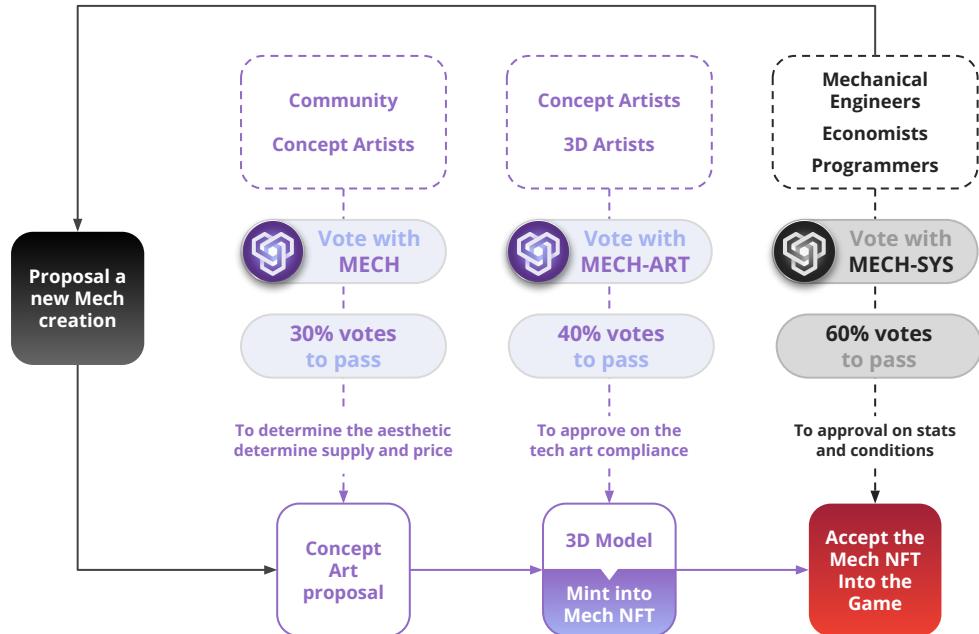
In the second round of voting, it will require 40% and 60% votes from the art community and mechanism community respectively for art work and MECH ecosystem approval. If it has passed the second round of voting, it will be used in the MECH ecosystem.

\*Note that in the first round, voting power is based on the amount of MECH token, while the second round of voting is based on MECH-ART, and MECH-SYS token.

## DAO TOKENOMICS

MECH token could be acquired in the market through buying, however MECH-SYS/MECH-ART token could not be acquired through purchasing, the only way that an individual could acquire MECH-SYS and MECH-ART token is either through getting a vote of 40% in the community in MECH-SYS/MECH-ART, as one qualified to become a member of the MECH-SYS/MECH-ART community. The second way will be a direct pass from authority such as the CEO to become a member of such a community.

MECH-REPAIR token could be acquired through educational game play in the Robotics Lab and through crafting.

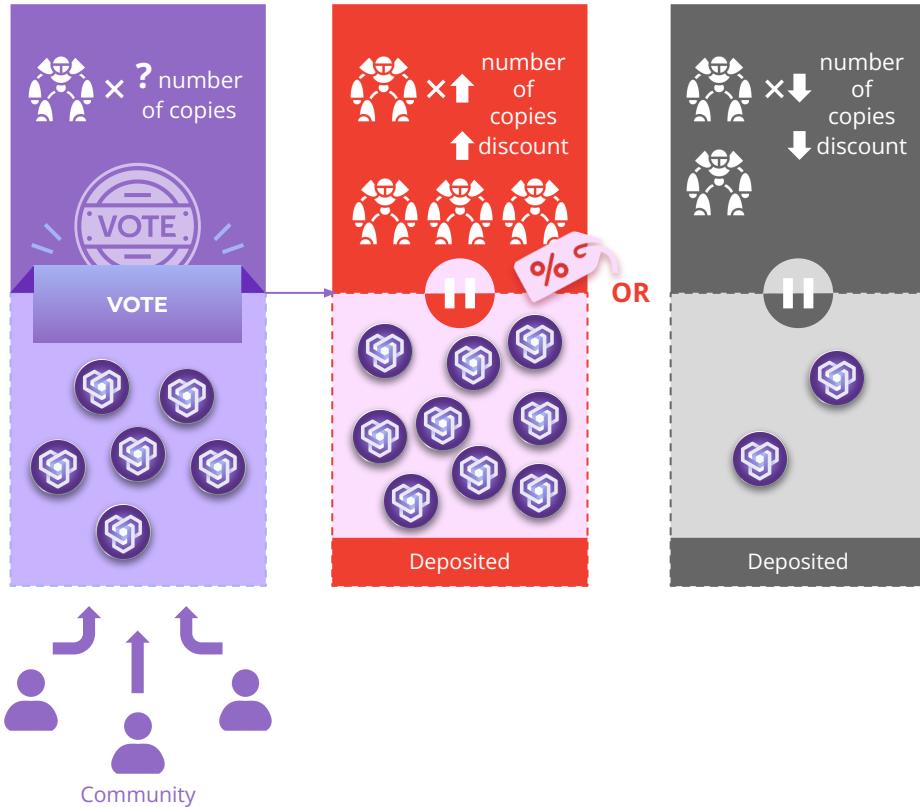


# SUPPLY AND PRICING DILEMMA



PROBLEM	SOLUTION	LEARN FROM AN OVERTSUPPLY ISSUE FROM HISTORY OF COLLECTIBLES
<p><b>Oversupply = devaluation:</b></p> <p>Digital world is capable of making infinite copies of an item, this could also mean oversupply in the blockchain world.</p> <p>When demand is lower than supply, it results in a surplus, which pushes the price for a collectible down to a level where collectors are losing money.</p> <p><b>Mispricing:</b></p> <ul style="list-style-type: none"><li>Underpricing may be perceived as 'cheap', needless to say it does not maximize profit.</li><li>Overpricing can be just as detrimental since the buyer is always going to be looking at your competitors pricing.</li></ul> <p>(Source: <a href="http://www.inc.com">www.inc.com</a>)</p>	<p><b>Model 1 - Flexible supply and pricing model:</b></p> <p>CryptoMech will utilize a flexible supply and pricing model, which will be discussed in the following pages. In simpler terms, a model that computes supply based on demands (votes), pricing base on supply. We believe this model will solve oversupply problem by knowing the demand and apply discount to additional supply, according to investopedia.com - "solve potential oversupply issue by reducing production and discount."</p> <p><b>Model 2 - Scarcity Model:</b></p> <p>Scarcity Model is an idea that there are finite copies and that there is competition for said copies. If the copies has a higher demand than supply, it is scarce and therefore more valuable.</p> <p><b>DAO - Governance:</b></p> <p>CryptoMech players with governance token holders will involve in decisions new productions from new creators. In doing so, collectors can work collaboratively to ensure that if new items are released, they are accretive to the value of the overall market, including those items that came before. (DAO will be gradually structured and formed after the 3th year of operation)</p>	<p><b>Learn from an oversupply issue from history of collectibles</b></p> <p>Collectibles markets collapse when item value is diminished. And nothing can diminish value faster or more severely in a collectibles market quite like a gross misalignment of supply and demand.</p> <p><b>Take an example of the baseball trading card market:</b></p> <p><i>Unexpected Market Value</i></p> <p>Baseball cards were not collectibles in 1952. Many collectors neither saved their cards nor took good care of them. This made high-condition copies very hard to find years later.</p> <p>Fast forward to the late 1980s. As older cards became scarce and gained collectible value in a small, but growing aftermarket, a new breed of collector emerged -- one who looked after his cards as though they were fragile antiques. Influenced by the increased value of rare vintage cards, contemporary baseball card values were supposed to see steady climbs.</p> <p><i>Oversupply Response</i></p> <p>After this initial surge in demand, the baseball card supply chain responded in order to cash in, triggering a three-step shockwave:</p> <ol style="list-style-type: none"><li>More baseball card factories were built (e.g., licensors expanded the number of licensees that could produce officially-licensed trading cards).</li><li>Each factory dramatically ramped up its print runs per existing set.</li><li>Each factory increased its number of unique sets produced per year.</li></ol> <p><i>Loss in Value</i></p> <p>Not only was the market flooded with millions of cards and dozens of varieties, collectors meticulously cared for each one. More new production paired with less loss while in collectors' custody turned into an abundance of perfect, mint condition cards.</p> <p>The abundance triggered a drop in perceived value, which then triggered a dramatic drop in demand. Supply and demand 101.</p>

# COMMUNITY VOTING FOR FLEXIBLE SUPPLY/ PRICING



## VOTE WITH MECH TOKENS

This kind of pre-sale discount event allows the community to have a say in which Mechs are most popular and more copies will be made so everyone can own a copy. We are gauging the interest of the players to see which pieces have better reaction. The more Mech tokens they use to vote, the more deeper the discount they will be able to buy the final mech NFTs. This allows early players an opportunity to scoop up a steep discount and obtain more copies of the Mech they really like for the game or resale. Excess Mech NFTs that are unsold by the end of the period will be burned and the surviving copies will become more rare and valuable. Unused mech tokens can be used during the next event so there is virtually no downside for collectors to use their tokens to vote for their favorite designs.

- The total votes cast by the collectors will determine the total supply of a mech **within the framework of scarcity model governed by MECH-SYS token holders**:
  - The total votes (total MECH deposited by players) will determine the total supply of a mech: the more MECH is deposited, the more the supply of a mech will be increased. Therefore, there isn't a rigid hard cap on content. Instead, the hard cap has been converted into a fluid model.
- \* CryptoMech may take 1 or 1% (whichever is greater) of each mech NFTs creation for the "mechs reward pool", which will be reserved for rewards, incentives, and alternative sale usage

# COMMUNITY VOTING FOR FLEXIBLE SUPPLY/ PRICING (pt.2)



Mech A	Mech B	Mech C
20 people voted	403 people voted	20 people voted
3000 MECH	15,000 MECH	130,000 MECH
<b>DEPOSITED</b>	<b>DEPOSITED</b>	<b>DEPOSITED</b>
<b>Price/ Mech</b> 100MECH	<b>Price/ Mech</b> 30MECH	<b>Price/ Mech</b> 700MECH
Copies 50	Copies 1000	Copies 200
10% Discount 3000 MECH Deposited	10% Discount 10,000 MECH dep.	10% Discount 700,000 MECH dep.
25% Discount 4000 MECH Deposited	25% Discount 20,000 MECH dep.	25% Discount 100,000 MECH dep.
50% Discount 5000 MECH Deposited	50% Discount 30,000 MECH dep.	50% Discount 140,000 MECH dep.

Voting period will be for a limited time, an opportunity to purchase contents (NFTs) from the CryptoMech platform at a discount of up to 40% off (the discount is determined by users voting participation).

This kind of voting event enables collectors to own discounted content:

- **The more popular a content is**
- **The deeper discounts it will offer**
- **The more amount of copies of the same NFT will be minted**

E.g Jan 1	6 Jan	7 Jan	11 Jan			
<b>VOTING PERIOD BEGINS</b>  Vote by depositing how much MECH Tokens a collector (potential buyer) would intend to spend. Any unspent MECH will be returned to the collector after the sale  <b>CONDITION:</b> MECH is the only currency usable in the sale.	<b>DEPOSIT PERIOD ENDS</b>  E.g 7 days for collectors to participate in the voting process by deposition your MECH  <b>SLIDING DISCOUNT SYSTEM available for creators to adjust:</b> The total MECH Tokens deposited by all collectors will determine the discount for this sale, for example as following.  <table border="1"> <tr> <td>10% Discount 20,000 MECH</td> <td>25% Discount 30,000 MECH</td> <td>40% Discount 40,000 MECH</td> </tr> </table>	10% Discount 20,000 MECH	25% Discount 30,000 MECH	40% Discount 40,000 MECH	<b>PURCHASE PERIOD BEGINS</b>  Use MECH Tokens collectors deposited to purchase Mech NFTs  <b>EXCESS WILL BE BURNED:</b> Any of the MECH NFTs not sold by the sale period will be burned	<b>PURCHASE PERIOD ENDS</b>  End of pre-sale. After this date, any MECH a collector deposited and did not spend will be returned the person. (unspent tokens may have 5% transaction fee)  <b>COLLECT MECHS IN YOUR LAND:</b> Collectors can import their newly purchased Mech into the LAND they own.
10% Discount 20,000 MECH	25% Discount 30,000 MECH	40% Discount 40,000 MECH				

# MARKETPLACE FOR ROBOTIC ENGINEERS AND DESIGNERS



The screenshot shows the CryptoMech marketplace interface. On the left, there's a sidebar with filters for 'On Sale', 'Pre-Sale', 'Auctions', 'Has Offers', 'Has Bounty', and 'Bundles'. It also lists 'CRYPTOMECH' items (268), currency filters ('Ether'), property filters ('All'), and collection filters ('Infinity', 'Meow', 'First Edition'). A 'Clear All Filters' button is at the bottom. The main area displays a grid of items and documents. Top row items include: 'Paperbot System' (Offer: 0.4), 'Robotic Arm with 6 axis' (Offer: 3), 'Robotic Leg concept' (Offer: 2.5), 'Robotic Modular Leg...' (Prev: 415.9), 'Reconfigurable Hexapod...' (Prev: 91), and 'Robotic Hand Exoskeleton...' (Prev: 108). Below these are several documents: 'Flexible Joint Robotic Manipulator Modeling and Design', 'Industrial Robotic Arm', 'Reflection on Robotic Intelligence', 'Trajectory Optimization...', 'Soft Robot Gripper...', and 'Inverse kinematics...'. The bottom row shows more items: a robotic arm, a robotic head, a robotic engine, a complex mechanical assembly, and a yellow robotic arm.

Trading on decentralized Marketplaces happens through a smart contract, meaning that no central authority ever holds custody of your items. Instead, users store items in their wallet of choice, such as Trust, Coinbase Wallet, and MetaMask.

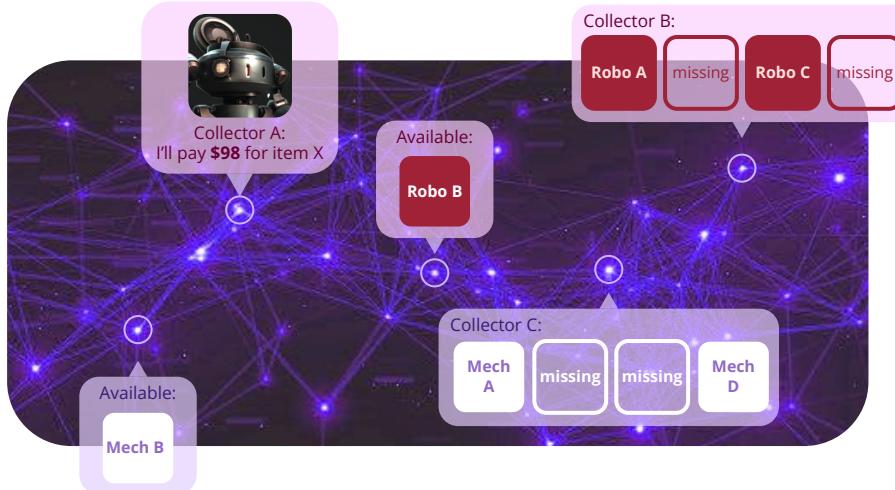
A core part of our vision is that open protocols like Ethereum and interoperable standards like ERC721 will enable vibrant new economies where users truly own their digital items, such as valuable robotic papers, concepts, innovations that users created can be brought into CryptoMech ecosystem where users can present as starting points or inspiration for MECH-NFT creations. We think open, liquid marketplaces will help power a new economy which creators of various kinds, engineers and designs can get together to co-create, co-own and co-monetize mech/ robotic innovations that has utilities in metaverses and games.

For the educational use case, Question Banks about robotic knowledge can be imported to the mech game ecosystem. MECH-REPAIR can be earned as players acquire more knowledges on robotics and be able to answer robotics questions.



# BID SYSTEM & UNLISTED SALES

## A DECENTRALIZED MARKETPLACE FOR COLLECTORS



### Supply Chain Management:

One of the newer adapted applications of blockchain technology is supply chain management. Because blockchain is a digital record-keeping system for cryptocurrency networks, the same system can help create a complete, transparent and tamperproof history of information flow, inventory flow and financial transactions.

### Filling in the Gaps - A New Trading Style:

Blockchain can enable convenient product delivery and make our Mech NFTs more traceable to enhance coordination among buyers and creators. Because of the transparency and traceable transactions, CryptoMech can find out which wallets are holding missing items in other buyers' collections. We will be able to match potential buyers with specific NFT holders.

### Innovative user experience for sellers - Bid System & Unlisted Sales:

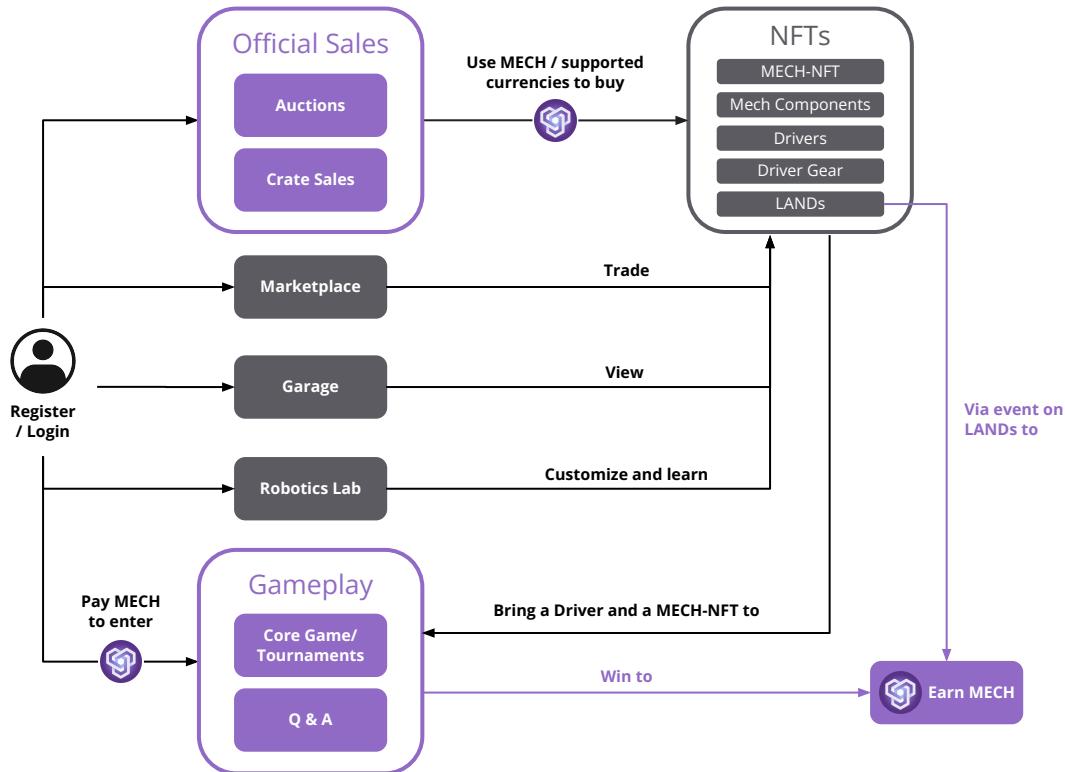
The system will know buyer preferences and what is missing in buyer's collection. ie. we can line up potential buyers at seller's door front for them to bid on the desired item.

- Collectors click onto shelves of missing items in their collections
- Persons who holds the missing items (NFTs) in their wallet will be receive news feeds of potential buyers. (Unlisted Sales mechanism)
- If there are more than one potential buyers, a bidding process will proceed.



## IN GAME RULES

# MECH GAME FLOW





# 1. GAME INTRODUCTION

## 1.1 INTRODUCTION:

CryptoMech Game is a strategy game that runs on the Ethereum and Polygon blockchain. Ethereum is used to create token and metadata of storage for CryptoMech, while Polygon is used as L2 solution to save gas fee for minting, burning and distribution of token.

Players will be purchasing units (MECH-NFTs and other game units) that will be fighting for domination in a single world to earn MECH token. The units will be ERC-721 or ERC-1155 tokens that will have unique stats and can be traded amongst players. Through strategic gameplay, strong units and powerful alliances, players will be able to capture territory and earn MECH token daily. The power of a unit matters but strategy will be important since every unit has strengths and weaknesses. The 3D terrain will also play huge part in contributing to unit strategy. Joining a strong alliance and navigating inter-alliance politics will also be a huge factor in a player's success. Units will be sold in random unit packs but ultimately players will want to trade units amongst each other as they seek matching units to upgrade. Although there will be an overall meta, demand will also be unique to players as they search to upgrade their ideal army. The game is a hybrid on-chain/off-chain dapp. The units are ERC-721 or ERC-1155 tokens purchased on-chain but the game actions are all off-chain. This ensures that players will be able to move, attack and play the game without having to pay and wait for each action.

## 1.2 Value of Units

Players will have the chance to win MECH Tokens by catching a crash landed Supply Drop in their territory. The earning power of a player is dependent on how much territory they can capture with their units. The amount of territory they can capture is dependent on a player's strategy and the power of their units. Units can be bought as random unit packs from the website.

The chances when buying a pack with a COMMON unit or better:

- Common 50.95%
- Rare 30%
- Epic 14%
- Legendary and Premium 5.05%

The chances when buying a pack with a RARE unit or better:

- Rare 75%
- Epic 20%
- Legendary 8%



## 2. GAME DESIGN

### 2.1 OVERVIEW:

CryptoMech is a strategy game where all players will be fighting for dominance in a single world. Players start with their purchased units in their inventory. Players then click on a tile and a unit that they want to send to that tile. Units will initially travel from the closest point on the outside edge of the map. A unit can only move a max travel distance. To attack an enemy unit, players simply move a unit on top of an enemy unit. The unit will travel there and after a short battle animation will determine the winner.

### 2.2 MECH UNITS DON'T DIE

When a mech loses a battle, they go back to their owner's inventory and cannot be deployed for another 12 hours while they're being repaired. However, some units crafted by using resources can be destructible and will be lost forever.

### 2.3 CAPTURING TERRITORY:

Units will own the territory around them in a small radius. Players will earn MECH Tokens based on the total territory owned throughout the day. We call this Land Earnings. A Supply Drop contain one of the following: MECH Tokens, resources, Components will also come crashing down 3 times a day. Players will have to move a unit to the dropped location to pick it up and earn. This encourages active play and the potential to steal a satellite from the territory of players that are not paying attention.

### 2.4 UNIT UPGRADING:

Upgrading a unit through acquiring and assembling better Components increases its earning power by allowing access to the next inner ring on the map.



### 2.5 THE WORLD :

The world is a circular continent broken up into a grid viewed from an isometric camera angle. It has an approximate radius of 100 tiles. The world is broken up into 4 rings. As players move towards the center, the tiles in a given ring has an increased value per block for players to earn MECH Tokens through Land Earnings. Each ring also has an increased chance that the Supply Drop will land in it.

### 2.6 DISASTERS

High value regions such as the center will be subject to periodic disasters. Disasters occur randomly and during disasters each unit within a specified area will have a negative effect incurred upon them (e.g., temporary inability to move or attack) or be destroyed. Players will receive a 2 hour warning that a disaster is imminent in a particular region. This will provide players with some time to prepare for the disaster and opposing clans to strategize a response as well.



# 3. RESOURCES

## 3.1 ALLOCATION OF RESOURCES:

Resources will spawn in the world occasionally. Players must position their units on top of the resource to begin mining it. The unit will begin mining the resource over time. Eventually the resource patch will be depleted and removed from the world. A new resource of that type will spawn somewhere in that ring soon after.

Resources will have different rarity tiers. All resources have the potential to be spawned in any zone but rarer resources will spawn more frequently in higher tier zones.

Resources with rarity tiering is as follows:

- Oil > Petroleum > Fuel Cell
- Iron > Steel > Carbon Fiber
- Titanium > Composite Materials > Nanomaterials
- Uranium > Purified Isotope > Fusion and Fission Material
- To be announced - The Rarest Resources

Frequency for rarity is the following:

- Tier 4: 87%
- Tier 2: 12%
- Tier 3: 1%

## 3.2 UTILITY OF RESOURCES:

Resources will not only be used to purchase Components for units or destructible units, but also for powering up units and fuel special abilities that some units or Components will have. They can also be crafted into one time use Components, or sold in the in-game marketplace with MECH tokens. They may be used to craft units as well but this will require significant resource investment and have a long crafting time.

## 3.3 HOW THE RAREST RESOURCES ARE MINED:

When player mine any particular resource patch, it has the potential to be a higher rarity patch. Visually, all patches of a particular resource type look the same and only someone actively mining will be able to identify which rarity tier the patch is.

The Rarest Resources is unique in that it cannot be immediately mined. It only appears surrounded by patches of other resources in layers. Only the outermost layer can be mined at a given time and all surrounding resources must be mined before the The Rarest Resources patch is mineable.

This means that players who wish to mine The Rarest Resources will need to hold territory for long periods of time that is likely to be highly sought after. (Be sure to protect your miners while they are harvesting a precious mineral!)



# 4.1 UNITS: MOVEMENTS

## MOVEMENT & PATHFINDING:

A unit can move their max travel distance once every 90 minutes. They can travel less than their max travel distance but they still incur the full 90 minutes refueling time. Units can move pretty far in one move (~50–100 grid squares) but they need to pathfind. Each terrain tile will be one of the following:

- Plains
- Mountains
- Forest
- Water

That means they will automatically avoid obstacles when the player selects a destination. Here are the pathfinding rules:

- Ground units will avoid other ground units, mountains, forest and water.
- Helicopters can fly over water, forest and ground units but will fly around other air units and mountains.
- Jets can fly over water, mountains, forest and ground units but still need to avoid other air units.

We've balanced jets and helicopters by making them have very low resource mining rates. Players can move through their own units and alliance mates' units. Creating blockades and protecting your weaker units will be key to survival. Players can upgrade a unit's max travel distance by evolving that unit and increasing its star-rating.

## GAME PLAY INFLUENCING DEMAND ON DIFFERENT KIND OF UNITS:

Proper strategizing will influence a player's earning power. Therefore, terrain and overall player behavior will also drive unit demand. For example, a map with a lot of rivers might drive the demand for flying units. If flying units become popular, then mechs may become popular since they counter jets and helis. If a strong alliance is fortifying a plateau chokepoint with a lot of artilleries, then flying units may become popular again.

## RARITY RELATE TO TERRITORY RADIUS

Higher rarity units have a larger radius. Here are a unit's territory radius for each rarity:

- Common 10
- Rare 14
- Epic 18
- Legendary 20

When 2 opposing units have intersecting radii, they will split the territory. For a given unit, each grid square has a weight applied to it. That weight starts at 1 and drops to 0 as you move from the center to the edge of a unit's territory circle. When there are intersecting radii, a unit will own a grid square if they have the higher weight. Basically, a higher rarity unit will be able to have more territory "pushing" power since they have a larger radius.



## 4.2 UNITS: STATS

### STATS

A unit is made up of a few different stats. Here are the stats that are unique to a given unit:

- Damage vs Tanks
- Damage vs Trucks
- Damage vs Mechs
- Damage vs Jets
- Damage vs Helis
- Mining Rate
- Birthdate. Used to calculate the unit's age.

The rarity of a unit defines a range for the damage and mining rate. The actual damage or mining rate is a random number within that range. The birthdate is the purchase date (when the token was minted).

Example of stats are given by the rarity:

- Territory radius

Example of stats that are defined by the unit type:

- Max travel distance. This is increased as a unit evolves its star-rating.
- Available enhancements. Enhancements are unlocked as a unit evolves its star-rating.
- Special traits like +20% damage to adjacent ground units.

**Here are the stat ranges for each common unit type at different star-ratings:**

	stars	Damage								Mining			
		Min tank	max tank	min truck	max truck	min mech	max mech	min jet	Max jet	min heli	max heli	min	max
common tank	1	44	56	b61	78.	52	67	35	44	26	33	70	80
common truck	1	26	33	44	56	61	78	52	67	35	44	70	80
common mech	1	35	44	26	33	44	56	61	78	52	67	70	80
common jet	1	52	67	35	44	26	33	44	56	61	78	1	5
common heli	1	61	78	52	67	35	44	26	33	44	56	5	10
common tank	2	110	140	152	195	130	167	87	110	65	82	82	94
common truck	2	65	82	110	140	152	195	130	167	87	110	82	94
common mech	2	87	110	65	82	110	140	152	195	130	167	82	94
common jet	2	130	167	87	110	65	82	110	140	152	195	5	
common heli	2	152	195	130	167	87	110	65	82	110	140	5	11
common tank	3	275	350	381	487	325	418	218	275	162	zo6	97	111
common truck	3	162	206	275	350.	381	487	325	418	218	ozs	97	111
common mech	3	218	275	162	206	275	350	381	487	325	418	97	111
common jet	3	325	418	218	275	162	206	275	350	381	487	1	6
common heli	3	381	487	325	418	218	275	162	206	275	350	6	13
common tank	4	687	515	953	1218	812	1046	546	687	406	515	115	131
common truck	4	406	515	687	875	953	1218	812	1046	546	687	115	131
common mech	4	546	687	406	515	687	875	953	1218	812	1046	115	131
common jet	4	812	1046	546	687	406	515	687	875	953	1218	1	8
common heli	4	953	1218	812	1046	546	687	406	515	687	875	8	6

\*This table is subject to change according to community feedback



## 4.3 UNITS: COUNTERS

A given unit type will hard counter a single unit type and then soft counter a second unit type.  
Here is a good rule to know:

### Tank > Truck > Mech > Jet > Heli > Tank

For example, a tank hard counters a truck, and soft counters a mech. Of course this pertains to when the units are the same rarity and star-rating. The chart below shows the matchups for units with average stats for star-rating 1: (\*This chart is subject to change according to community feedback)

	Common tank	Common truck	Common mech	Common jet	Common heli	Rare tank	Rare truck	Rare mech	Rare jet	Rare heli	Epic tank	Epic truck	Epic mech	Epic jet	Epic heli	Legend tank	Legend truck	Legend mech	Legend jet	Legend heli
Common tank	50.00	79.57	66.67	33.33	21.43	20.00	46.67	30.00	13.33	8.57	8.00	18.67	12.00	5.33	3.43	3.20	7.47	4.80	2.13	1.37
Common truck	21.43	50.00	78.57	66.67	33.33	8.57	20.00	46.67	30.00	13.33	3.43	8.00	18.87	12.00	5.33	1.37	3.20	7.47	4.80	2.13
Common mech	33.33	21.43	50.00	78.57	66.67	13.33	8.57	20.00	46.67	30.00	5.33	3.43	8.00	18.67	12.00	2.13	1.37	3.20	7.47	4.80
Common jet	66.67	33.33	21.43	50.00	78.57	30.00	13.33	8.57	20.00	46.67	12.00	5.33	3.43	8.00	18.67	4.80	2.13	1.37	3.20	7.47
Common hell	78.57	66.67	33.33	21.43	50.00	46.67	30.00	13.33	8.57	20.00	18.67	12.00	5.33	3.43	8.00	7.47	4.80	2.13	1.37	3.20
Rare tank	80.00	91.43	86.67	70.00	53.33	50.00	78.57	66.67	33.33	21.43	20.00	46.67	30.00	13.33	8.57	8.00	18.67	12.00	5.33,	3.43
Rare truck	53.33	80.00	91.43	86.67	70.00	21.43	50.00	78.57	66.67	33.33	8.57	20.00	46.67	30.00	13.33	3.43	8.00	18.67	12.00	5.33
Rare mech	70.00	53.33	80.00	91.43	86.67	33.33	21.43	50.00	78.57	66.67	13.33	8.57	20.00	46.67	30.00	5.33	3.43	8.00,	18.67	12.00
Rare jet	86.67	70.00	53.33	80.00	91.43	66.67	33.33	21.43	50.00	78.57	30.00	13.33	8.57	20.00	46.67	12.00	5.33	3.43	8.00	18.67
Rare heli	91.43	86.67	70.00	53.33	80.00	78.57	66.67	33.33	21.43	50.00	46.67	30.00	13.33	8.57	20.00	18.67	12.00	5.33	3.43	8.00
Epic tank	92.00	96.57	94.67	88.00	81.33	80.00	91.43	86.67	70.00	53.33	50.00	78.57	66.67	33.33	21.43	20.00	46.67	30.00	13.33	8.57
Epic truck	81.33	92.00	96.57	94.67	88.00	53.33	80.00	91.43	86.67	70.00	21.43	50.00	78.57	66.67	13.33	8.57	20.00	46.67	30.00	13.33
Epic mech	88.00	81.33	92.00	96.57	94.67	70.00	53.33	80.00	91.43	86.67	33.33	21.43	50.00	78.57	66.67	13.33	8.57	20.00	46.67	30.00
Epic jet	96.57	94.67	81.33	92.00	96.67	86.67	70.00	53.33	80.00	91.43	66.67	33.33	21.43	50.00	78.57	30.00	13.33	8.57	20.00	46.67
Epic heli	96.57	94.67	88.00	81.33	92.00	91.43	86.67	70.00	53.33	80.00	78.57	66.67	33.33	21.43	50.00	46.67	30.00	13.33	8.57	20.00
Legendary tank	96.80	98.63	97.87	95.20	92.53	92.00	96.57	94.67	88.00	81.33	80.00	91.43	87.67	70.00	53.33	50.00	78.57	66.67	33.33	21.43
Legendary truck	92.53	96.80	98.63	97.87	95.20	81.33	92.00	96.57	94.67	88.00	53.33	80.00	91.43	86.67	70.00	21.43	50.00	78.57	66.67	33.33
Legendary mech	95.20	92.53	96.80	98.63	97.87	88.00	81.33	92.00	96.57	94.67	70.00	53.33	80.00	91.43	86.67	33.33	21.43	50.00	78.57	66.67
Legendary jet	97.87	95.20	92.53	96.80	98.63	94.67	88.00	81.33	92.00	96.57	86.67	70.00	53.33	80.00	91.43	66.67	33.33	21.43	50.00	78.57
Legendary heli	98.63	97.87	95.20	93.53	96.80	96.57	94.67	88.00	81.33	92.00	91.43	86.67	70.00	53.33	80.00	78.57	66.67	33.33	21.43	50.00

## 4.4 EVOLVING UNITS: RARITY AND SPECIAL ATTRIBUTES



### RARITY

When opening a unit pack, the player has a chance to get a common, rare, epic or legendary unit. All unit types exist at all rarities. Damage stat ranges will be 2.5x higher than a unit 1 rarity lower. Mining stat ranges will be 1.18x higher than a unit 1 rarity lower.

Here's a table to show the average win rate vs a 1-star common and how the different rarities and star-ratings vary. Increasing a unit's star-rating is equivalent to going up in rarity for the damage stats.

1-Star	2-Star	3-Star	4-Star	Win rate vs common 1	Power scalar
Common 1				50.00%	1
Rare 1	Common 2			80.00%	2.5
Epic 1	Rare 2	Common 3		92.00%	6.25
Legendary 1	Epic 2	Rare 3	Common 4	96.80%	15.625
	Legendary 2	Epic 3	Rare 4	98.72%	39.0625
		Legendary 3	Epic 4	99.49%	97.65625
			Legendary 4	99.80%	244.140625

- Damage stats increase
  - **2.5x** battle stats increase for each level up. 4-star unit will be over 15x more powerful than a 1-star unit.
- Resource mining rate increase
- Travel distance increase
- New enhancement unlocks
- Access to the next map ring
  - Access to a new resource for an unlocked enhancement
  - Access to more rarer resources for land earnings
  - Access to tiles that have a higher chance of the Supply Drops

### SPECIAL ATTRIBUTES

Units with different rarity and Components (parts and equipments) will give units special abilities that affect how units interact on the map. Effects include such things as ranged / area of effect attacks, abilities which decrease movement distance or cooldown for targeted units, deploying traps in particular areas, and many more.

Below are examples of special attributes:

#### *10% Plateau Bonus*

All ground units get their damage stats boosted by 10% if they are the defending unit on a plateau.

#### *Bonus Travel Distance*

Units that have this attribute will be able to travel much farther than any other unit at its star-rating.

#### *2 Attack Range, -20% while defending*

Some units will be able to attack a unit 2 tiles away from them. Normally a unit has to move on top of a unit to attack it. However, their stats are lowered by 20% if they are the defender. Be sure to surround and protect this unit.

#### *20% bonus to nearby ground/air units*

These units will increase the stats of the units around them. This includes the 4 units directly north, south, east and west. The units can only be 1 tile away.

#### *+20% while attacking, -20% while defending*

These units get a 20% boost to their stats when they attack but a 20% penalty when they are defending. Be sure to protect these units.

#### *+50% mining rate, -50% damage stats*

These units mine 50% faster but are very fragile. Their damage stats have a 50% penalty.

### ENHANCEMENT

Every unit has a set of enhancements that can increase a unit's stats. The player spends a certain amount of resources to activate the enhancement. The enhancement then has a set of charges. These charges are spent every time the unit attacks or is destroyed. Once these charges run out, the enhancement must be repurchased with resources.

# 5. PLAY TO EARN FORMULA AND MECH-REPAIR MECHANISM



## MECH-REPAIR TOKEN

MECH-REPAIR token is 100000, the total supply doubles every year, everyday 70% of MECH-REPAIR token will go into MECH-NFT player and 30% of MECH-REPAIR will go into LAND NFT owners.

## LOCKING INFLATION OF THE TOKEN WITH IN A RANGE

Difficult is used here as to ensure the inflation of the token to be locked within a range, in which it is frequently used in mining in different blockchains.

After each battle, let D be difficulty, EMAW be exponential moving average of win in 30 day, EW be expected wins, TW be the total amount of win/gameplay, TPW be token won per win, CP be current supply, all value will calculated as following:

After each game play

$$TW = TW+1$$

TW is reset to 0 every 24 hours

D, EMAW will be updated every 24 hours before TW is reset based on the following formula:

$$EMAW = EMAW(old)/30 + TW*29/30$$

$$D = EMAW/EW$$

TPW will be calculated according to the below formula:

$$TPW = CP/2/365/D/F$$

TPW amount of MECH-REPAIR token will be distributed to each player as following  
Tax will be distributed to owner of LAND NFT based on amount of wins:  
Tax = Total\*30%\*win of that land/win of all land in total

After each round of game, the durability of NFT could change based on in-game interaction, player will need to repair their NFT by spending MECH-REPAIR token, different NFT will require different amount of MECH-REPAIR token, for example, a legendary item will require more MECH-REPAIR token to repair than a rare item.

Here is the rule that will apply to all MECH-NFTs:

- -0.5% durability after each game
- 1,1.5,2,3,5 MECH-REPAIR token required (common,rare,epic,legendary,prime) per 1% fix of MECH-NFT

Let EMR be Expected MECH REPAIR, CPbe current supply of MECH-REPAIR, total amount of MECH-REPAIR required to repair MECH-NFT is calculated as following:

$$\text{Amount of MECH-REPAIR required} = \text{EMR}*CP/100000$$

For instance, for a MECH-NFT with 6 common, 2 rare and 1 epic parts, that will have a EMR cost  $6*1+2*1.5+2 = 11$  MECH-REPAIR. If the current supply of MECH-REPAIR is 300000, the actual amount to repair will cost  $11*300000/100000 = 33$  MECH-REPAIR tokens.

## MECH-REPAIR Tokens earning

After watching education videos or reading robotics papers, players will be given a set of questions. If players are able to answer questions correctly, which reflects players improving knowledge on robotic engineering, they will be rewarded with *MECH-REPAIR Tokens* that are needed for repairing their mechs after rounds of games, or boosting *special attributes* for their mechs.



# 6. PLAY TO EARN: CLANS

## 6.1 CLAN

There will initially be 5 clans but additional ones can be added as the player base grows. Players will be heavily incentivized to join a clan as players not in a clan will take a 50% penalty on land value. Players in a clan are not able to attack one another nor do their units block the path of their clan-mate's units though two units still cannot occupy the same location.

In order to increase tension of the game, the earning structure encourage people to leave their clan and help out a weaker clan. Highly dominant clans will receive a penalty which is distributed to weaker clans in order to encourage switching.

Distribution will be **65% dependent on controlled land**. It will also be **35% dependent on salvage** (see next page) which is obtained through destroying units. In addition, there is a clan scaling factor that is dependent on your clan's relative strength to other clans. Members of a totally dominant clan in land value will receive fewer rewards due to this scaling factor in order to incentivize members of the clan to leave and join other clans to keep the game balanced.

The scaling factor is calculated as follows based on ranking:

- Top Ranked Clan by Land:  $Scaling = DV * (0.4 - \sigma)/0.4$  where DV is the unweighted distribution value and  $\sigma$  is the standard deviation of all five clans
- Rank 2 Clan:  $Scaling = DV * (1 - (1 - (0.4 - \sigma)/0.4)/2)$
- Rank 3 Clan: No penalty or bonus
- Rank 4 Clan: Receives bonus equivalent to the penalty of rank 2 clan
- Rank 5 Clan: Receives bonus equivalent to the penalty of rank 1 clan

Because it's based on standard deviation, this scaling factor will always encourage people to join the weakest clan and leave the strongest clan regardless of the actual distribution among the five clans. Clan changes are limited to once per week to prevent excessive hopping and keep land gains meaningful.

## 6.2 SALVAGE

Salvage is given every time a player attacks regardless of whether they win or lose. If they win, they gain salvage equal to the defender's power. If they lose they will gain salvage equal to half the power of the unit that they attacked with. The amount of salvage an account holds drops by 0.1% every minute. The proportion of salvage drained per player relative to the total amount drained across all players determines the share of the salvage dividends that this player is eligible for. This is to encourage combat and **discourage excessive camping as 35% of the distribution will be provided to players based on destroyed units**.

Whenever MECH token is spent for any purpose in game, 70% will be redistributed back in the form of land/salvage dividends, quests, and Supply Drops over the course of the following 30 days. 10% will be allocated to cover development costs. 10% for



## 6.3 EVENTS

Periodically, special events will occur on the island such as an invasion by NPC units or a boss event where **Clans need to work together to bring down a big enemy**. Players can choose to engage in the event in order to gain potentially valuable drops or take advantage of the chaos in order to gain the upper hand on the map.