The Economics of A Blockchain Game:

A Case Study on *Gods Unchained*

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Introduction:

For quite some time now, Web3 has been a buzzword to describe the future of blockchain and web democratization. The term is used repeatedly, but only a few realize the basic principle. What does the concept of Web3 truly encompass? Put simply, Web3 is a catchall term meant to capture the next evolution in the internet/web. Web3 refers to a future world in which the internet is wholly rewired/redesigned around the blockchain. In this vein, the blockchain would alter how information is stored, exchanged, and owned across the web by allowing individual data ownership. In theory, this could lead to a future where today's "big players" no longer have dominant market power/monopolies ("What is Web3?"). Some herald Web3 as the true democratization of the internet and believe this evolution will lead to a period of peer-peer transfer/control unlike any other in human history ("What is Web3?" Para. 1-6). Unfortunately, these highly idealistic perceptions of Web3 are only partially grounded. Many fanatic proponents of Web3 easily get carried away with their assertions. For one, for all the hype Web3 promises, immense strategic hurdles prevent this ideal future from happening anytime soon. Most likely, some version of Web3 will exist in the future. It may or may not deliver on all its promises ("What Is Web3?"). If history is any indication, any knowledgeable person should expect the transition to be slow and full of problems that will need to be solved ("What Is Web3?" Para. 7). Nonetheless, Web3 will most likely come to fruition in some way, shape, or form.

A use case of blockchain technology and a current spindle in the overall Web3 thread is videogames being developed on blockchain platforms. While still considered somewhat childish and niche to many consumers compared to other sectors in the entertainment/services industry, it is clear that the gaming industry/market is growing rapidly. In a report curated this summer by Technavio, it is estimated that the gaming market will experience growth of roughly $125.65 billion over the five years spanning from 2020 to 2025 ("Gaming Market Size to Grow by USD

125.65 Billion" Para. 1). This figure comes out to approximately a 12.5% CAGR - Compound Annual Growth Rate - Year over Year (YoY), which is a remarkable feat for any industry ("Gaming Market Size to Grow by USD 125.65 Billion" Para. 1). A myriad of factors can explain the gaming industry's expected growth: increased exploration into the mobile gaming arena, the introduction of blockchain technology and protocols into the space, and growing popularity in ESports events, amongst other variables. Whatever the reason, the gaming industry is undergoing a revolution. As Web3 protocols and the blockchain become more popular, this sector will only continue to shed more of its old skin and evolve.

In the past five to seven years, several games have been published that function entirely on blockchain platforms: *Crypto Kitties*, *Axie Infinity*, *MyCryptoHeroes*, *Evolution Land*, and finally, *Gods Unchained* ("Ethereum Crypto-Games: Mechanics, Prevalence and Gaming Similarities" 382). [1]As time progresses, there is no doubt that more game developers will try to fill this space. That being said, the question remains: How do Web3 games like *Axie Infinity* and others differ from traditional Web2 games? Namely, what makes blockchain games inherently unique? Similar to other decentralized protocols that have evolved in recent years, blockchain games grant users/players true digital ownership of the in-game items they acquire. On the most basic level, if a player earns an in-game item/asset - i.e., a bejeweled gold sword - that item is retained in the player's virtual wallet and possesses external marketplace value ("Blockchain Games Explained: What are NFT Games?" 6:00-8:00). If a player/user has the same bejeweled sword in a Web2 game, the sword is only available/accessible in that particular virtual world. Once the machine - the gaming console, PC, etc. - is turned off, the player can no longer access that item. In Web2 games, items acquired in-game only have very specific use cases and thus

[1] See Figure 1 in Appendix

little utility. In contrast, Web3 games allow users/players to use the same bejeweled sword in other blockchain gaming ecosystems. Suppose a user earned the sword in game A. In that case, he/she could use that same item - depending on the developer - in game B because the specific information of that sword has been encoded into the player's wallet within the inner blockchain platform that forms the network. In this case, assets in blockchain games derive their value from several use cases: players can use an item from one blockchain game in another, players can trade their in-game item with other players, and finally, players can sell the in-game item on a cryptocurrency exchange - many of these items are NFTs - for Ether or whatever cryptocurrency network the game runs on. Thus, these in-game assets hold real monetary value. Web3 game items always exist outside the virtual realm of the game. As a result, blockchain games give users/players absolute and secure ownership of their respective game items ("Blockchain Games Explained: What are NFT Games?").

While many Gen1 Blockchain games have faced setbacks due to in-game economy failures, token hyperinflation, and general technological barriers, one game stands out among the rest: *Gods Unchained.* This game is paving the way for other game developers on how to create a sustainable blockchain game. Developed by the likes of Chris Clay (Game Director), Matt Aldrich (Lead Art Director), Derek Proud (Producer), and Arash Mahoubi (Crypto Product Lead), *Gods Unchained* is a Trading Card Game [TCG]. *Gods Unchained* functions - on a gameplay level - similarly to the popular Web2 game developed by Activision Blizzard, *Hearthstone. Gods Unchained* - GU, for short -[2] was developed on Immutable X, a Layer 2 Ethereum network ("The Story of Gods Unchained, The Web3 Game Ahead of Its Time").

[2] To save some space - I will be writing this name repeatedly - I will refer to *Gods Unchained* as GU numerous times throughout the rest of the paper.

In this paper/essay, I aim to demonstrate a future in which blockchain games can thrive despite the myriad difficulties posed by conducting a case study on *Gods Unchained.* The game successfully addresses the most common/fundamental problems that have previously marred other Gen1 Crypto/Blockchain games by developing innovative solutions. Unlike its predecessors, GU has solid gameplay mechanics and lore. In layman's terms, it is a fun game, contains engaging lore items, presents competitive challenges to players, and focuses on retaining users rather than solely the "play to earn" aspect of its economy. The GU development team has successfully migrated to an Ethereum network that dramatically cuts costs compared to other blockchain games in the space, making the game more affordable/accessible. The newly adopted Ethereum network reduces various transaction barriers players encounter in numerous other blockchain game titles. In addition, the developer's tokenomic structure is robust and complex. The GU in-game economy runs on a total of three tokens, which provides stability. In addition, the tokenomics of the game are set up in such a way that the physical minting process of the NFT - what is called "fusing" - leads to the retirement of $GODS tokens. This setup allows GU to avoid potential hyperinflation, a problem that has plagued many Gen1 Blockchain games and ultimately crashed their in-game economies ("The Story of Gods Unchained, The Web3 Game Ahead of Its Time"). Furthermore, the game developers have curated a specific supply schedule for their $GODS tokens, leading to sustainable token distribution and, therefore, a relatively stable marketplace. Lastly, the staking rewards system avoids any potential problems that could arise from having a fixed supply of total tokens ("Gods Unchained Whitepaper"). Overall, *Gods Unchained* is a highly complex product from an engineering and an economic/market perspective. The GU development team's innovative approach guarantees that

the in-game economy thrives, that there are ample user growth opportunities, and that the game retains its current player base.

GU Basic Gameplay:

To understand the full complexities of how the GU economy operates, one must understand the basic process of the gameplay itself. In fact, the gameplay and great attention to worldbuilding are one of the many reasons GU is one of the most successful, if not the most successful, Gen1 blockchain games. Many of GU's predecessors, such as *Axie Infinity,* solely focused on the "play to earn" aspect of the game; players got into the game early, played a lot, and won. As a result, these early adopters earned the innate token within the ecosystem and made "x" amount of money. Unfortunately, however, this led to bad/underdeveloped gameplay mechanics. Blockchain games like *Axie Infinity* have very few, if any, user retention loops, and the gameplay becomes overtly repetitive in a very short period. As a result, a game like *Axie Infinity* tends to become monotonous and more of a job/task. It falters as an entertainment medium, which drives player retention numbers down ("The Story of Gods Unchained, The Web3 Game Ahead of Its Time" Para. 3-8).

Conversely, the GU developers have built a sufficiently entertaining, intriguing, and competitive TCG that holds its ground compared to famous Web2 TCGs like *Hearthstone, LOR* [Legends of Runterra], and others ("The Story of Gods Unchained, The Web3 Game Ahead of Its Time"). The basic gameplay/lore surrounding the game functions as follows: players can build their player deck around a God of interest. There are six Gods available: **Death**, **Deception**, **War**, **Light**, **Nature**, and **Magic** ("The Story of Gods Unchained, The Web3 Game Ahead of Its Time"). [3]Once the main God is chosen and a player assembles his/her deck - newly

[3] See Figure 2 in Appendix

onboarded players get basic decks to start with that consist entirely of "plain" cards - this player will battle another in an online 1v1 match. A basic "duel" consists of one player having his/her God card face up on the board/table within the virtual playroom. Each God card has a specific HP - Health Points - attached to it. The player's main objective is to play cards from his/her hand that deal enough damage to the opponent player's God card such that its HP reaches zero. The player whose God card reaches zero HP first is the one that loses the duel. The game modes available to GU players are as follows: Ranked Competitive Play, Player vs. Computer, and Direct Challenge [a player invites a friend to a game to do battle] ("The Story of Gods Unchained, The Web3 Game Ahead of Its Time).

Two main aspects of the overall gameplay experience make GU stand out compared to other blockchain game titles. For one, the game has a satisfying art and narrative vision. Each God has a unique design and intricate backstory that players can learn as they play. Furthermore, each set of unique deck cards tied to one of the six Gods contains narrative backgrounds and meaning that help players unlock more critical information about the world in which these Gods exist. Fundamentally, the game is about a pantheon of Gods who are betrayed by their leader God. Thus, they must "Unchain" themselves and fight for valor ("Mortal Judgement: The Story So Far" 1:00 - 1:30). [4]The attention to detail and story crafting by GU developers is important because users/players of Web2 games value these traits greatly. In most Web2 games, players can read journals written by main characters of interest, obtain items/art pieces, and other tangible items that all aim to enmesh the player into the virtual world. GU has successfully done this, aiding the GU developers in retaining their player base. Other blockchain games like *Axie Infinity* and *Crypto Kitties* have very few of these components. Thus, players/users never get

[4] See Figure 3 in Appendix

very vested in the world. Mix this with monotonous gameplay mechanics, and these games have little to offer aside from their "play to earn" promise. Lastly, GU has a gameplay system called "The Gauntlet." The Gauntlet rewards players with an in-game currency known as FLUX for playing other Gods and garnering wins with them ("Flux & Fusing: Play to Earn Returns"). As a result, GU has conceived an incentive system for players to rotate through the six Gods, allowing users to change their playstyle and return for more ("The Story of Gods Unchained, The Web3 Game Ahead of Its Time). While a minor feature, it amplifies player retention compared to other blockchain titles.

GU Blockchain Infrastructure & F2P:

The GU developers have made two critical decisions that have made their game greatly more accessible compared to the other blockchain games available on the market. *Gods Unchained* is built around the Ethereum network (other games are built on the same or other crypto platforms). However, many challenges are associated with having a game function on Layer 1 Ethereum. Specifically, blockchain games like *Axie Infinity* and others have struggled with extremely high gas fees, slow transaction times, and high entry costs when using the Ethereum network to run their platforms. To avoid this problem, the GU developers built their product on Immutable X, a new Layer 2 Ethereum protocol built specifically for NFT projects ("Gods Unchained Whitepaper" 8). This decision has changed the entire experience and sets GU apart from all its potential competitors. For one, this network provides all the robust security that Ethereum does, so users/players can rest assured that their items will be stored on the chain just as securely as before. More importantly, however, the decision to build on this new Layer 2 solution has greatly enhanced transaction efficiency. On this new protocol, roughly 9,000 transactions a second can take place with instant trade confirmation. As a result, the experience

of trading cards, minting NFTs, and other in-network actions are very smooth compared to other blockchain titles (“Gods Unchained Whitepaper” 8). In addition, Immutable X utilizes Starkware, which reduces the overall computational power required to verify transactions/update the chain via proof of work built into the Ethereum network protocol (“The Story of Gods Unchained, The Web3 Game Ahead of Its Time”). Thus, players pay no gas fees when using the game, which is a technical feat. Lastly, because Immutable X is such an elegant solution for NFT projects, GU transactions now take up 99% less energy than traditional Layer 1 alternatives. Having made this infrastructure decision, GU is primed to be a space where various transactions occur with low-value NFTs (“Gods Unchained Whitepaper” 3-12).

In addition to the technical infrastructure of the game, *Gods Unchained* is free-to-play [F2P]. Being free-to-play solves a serious problem most blockchain games incur during their lifecycles: extremely high onboarding costs. For a majority of Web3 games, it is a requirement that players acquire a minimum number of tokens to begin playing. This initial buy-in creates a strict upfront cost that most players are unwilling to pay. For example, a game like *Axie Infinity* requires players to purchase a minimum of three “Axies” - the token specific to its virtual economy- to begin playing. As a result, the minimum entry price is around $110, and even more investment from the player is required to continue progression/advance in the game (“How Much Does It Cost To Start Axie Infinity”). Thus, overall expenditure can range in the hundreds of dollars (“The Story of Gods Unchained, The Web3 Game Ahead of Its Time”). This cost is significantly higher than the entry price for traditional Web2 games, which at maximum is anywhere from the $60-70 price range. Unlike other blockchain games, GU has eliminated all costs to entry for its platform. As a result, players from any economic demographic can onboard and play the game (“The Story of Gods Unchained, The Web3 Game Ahead of Its Time”). This

gives GU a unique position in the blockchain space and allows players to indulge exclusively in gameplay before committing any tangible investment into the GU ecosystem. Overall, GU is a blockchain game that puts its players first while simultaneously crafting a sustainable experience. These solutions are game changers and illustrate that GU has growth potential and scalability, unlike many other Web3 games currently out on the market.

GU Tokenomics:

Currency System Overview:

The tokenomics of GU is how the in-game economy remains stable, viable, and primarily functions. Thus, there will be many sub-sections within this larger one to devote ample time to explain how the entirety of the system works. While not every nuance will be discussed, most people should discern a concrete understanding of GU tokenomics after reading. *Gods Unchained* operates on a three-tiered/leveled currency system: $GODS, FLUX, and STARS. $GODS is an ERC-20 token - a technical label for fungible tokens created using Ethereum - whereas both FLUX and STARS are variable soft currency tokens that only have a purpose within the GU virtual realm ("The Story of Gods Unchained, The Web3 Game Ahead of Its Time," "What are ERC-20 Tokens on the Ethereum Network?")

$GODS Tokens:

$GODS are a token/in-game currency that players can spend whenever they want to mint a new asset (an NFT) on the blockchain or purchase card expansion packs that the developers release throughout the year ("Gods Unchained Whitepaper," 20). The NFT minting process within GU is formally dubbed "fusing." The fusing process is simple to understand, and it proceeds as follows:

(1) Users/players enter "The Forge" in the game hub: a location/page in GU that allows players to craft NFTs ("Gods Unchained Whitepaper" 20).

(2) To mint new NFTs, players need two key ingredients: identical cards from their deck and $GODS or FLUX tokens. Specifically, players need to combine two or more copies of "plain cards"[5] and a combination of either $GODS tokens or FLUX to mint an NFT ("Gods Unchained Whitepaper" 20). [6]

(3) In the most straightforward formulation, a player who combines two identical "plain" cards with either $GODS or FLUX can mint a "Meteorite" NFT card. This process mints the asset onto Immutable X - the chain - creating an entirely new card (the NFT) with real-world value ("Gods Unchained White Paper" 20).

The Meteorite label refers to the rarity of the card. If a player uses more identical cards in tandem with more $GODS or FLUX tokens during the fuse process, the rarity of the newly minted NFT increases. [7]Hence, the real-world value of the asset increases as well[8]. Put simply, the rarity of the NFTs is positively correlated with their sale price on external crypto exchanges like Token Trove, amongst others ("The Story of Gods Unchained, The Web3 Game Ahead of Its Time").

<u>$GODS Utility:</u>

While $GODS are used in the minting process of NFTs in GU, how else do they demonstrate value in the GU economy? Well, the answer is simple. Once players have created unique NFTs - these are all saved to their unique wallet IDs - these new cards can be traded between players on external marketplaces that use the same Immutable X layer technology:

[5] Remember, that "plain cards" just refer to in-game cards that are NOT NFTs
[6] See Figure 4 in Appendix
[7] See Figure 5 in Appendix

Token Trove ("The Story of Gods Unchained, The Web3 Game Ahead of Its Time"). Players can buy expansion card packs from the developers using $GODS and use $GODS to trade NFTs with one another. To provide legitimate meaning to the $GODS token outside its fusing necessity, the game developers have made it a protocol that 20% of all primary sales and, subsequently 20% of all secondary trading fees in GU will be paid for in full with the $GODS token. This requirement ties $GODS to the heart of the GU economy and ensures that tokens constantly flow through it sustainably ("Gods Unchained Whitepaper" 21). $GODS tokens used in the primary/secondary sale process are moved to the Staking Rewards Pool following this action; here, active stakers will receive a distribution of tokens based on a proportional formula ("Gods Unchained Whitepaper" 21). Lastly, players who amass more $GODS will be granted staking for governance rights in the future development/evolution of GU. This governance structure has yet to be officially implemented, but the developers have a plan in place for this ("The Story of Gods Unchained, The Web3 Game Ahead of Its Time").

How does fusing/trading prevent hyperinflation within the GU economy?

As already mentioned, minting an NFT - fusing - in GU requires players to expend $GODS tokens. This requirement is a creative solution implemented by the developers to combat a common problem in many Gen1 blockchain games: hyperinflation. Inflation occurs because the supply of a currency - in this case, an in-game token - outstrips the demand for the said currency/token ("Inflation in GameFi and Traditional Game"). Inflation is a problem that besets most blockchain games. Blockchain games like *Axie Infinity* initially experience high demand for their product because players want to maximize their returns. For example, at one point in time, *Axie Infinity* had reached over two million unique players because of its prevalence in developing nations like the Philippines and Venezuela ("Axie Infinity Finds Ready Players in

Hyperinflation-Racked Venezuela"). Unfortunately, demand died out/plateaued quickly because of the lack of gameplay features (discussed previously). Once a significant proportion of users exited, so many tokens remained in the in-game economy that, naturally, prices for in-game assets became heavily inflated to deal with the extra supply. As a result, the inherent token value decreased massively, and the in-game economy crashed ("The Story of Gods Unchained, The Web3 Game Ahead of Its Time").

On the other hand, GU has been able to avoid this outcome because it has implemented burning/retiring token mechanisms into the fabric of the game itself. Since both fusing and trade transactions require players to burn their $GODS tokens, GU can successfully experience changes in demand without worrying about hyperinflation that will invalidate the in-game purchasing and trading experience. GU is one of the only blockchain games with a mechanism that controls the token supply in this manner, which is key to the economy's long-term survival and flourishment ("Gods Unchained Whitepaper" 14-16).

FLUX & STARS Currency:

FLUX & STARS are currencies found within GU exclusively, meaning they do not hold external marketplace value like the $GODS ERC-20 token. The two coins are slightly different from one another, but they give more meaning to the in-game economy and prevent the "play to earn" aspect of the game from being manipulated by network hackers/bots ("The Story of Gods Unchained, The Web3 Game Ahead of Its Time"). The FLUX currency is earned when players play through the Gauntlet, and it can be used during the fuse process to mint NFTs ("The Story of Gods Unchained, The Web3 Game Ahead of Its Time"). Since FLUX currency is only awarded to players who rotate through the six different God cards available and play the game, it discourages bots from entering the platform. Before this addition to GU, bots would enter the

ecosystem, play one God character, and continuously play matches to extract as many $GODS tokens as possible. Now that FLUX exists, however, it discourages this fraudulent behavior because players must rotate their decks and record a set number of wins to be awarded any FLUX (“The Story of Gods Unchained, The Web3 Game Ahead of Its Time”). Ultimately, this benefits the GU ecosystem by discouraging fraudulent activity. Secondly, the STARS currency is essentially a currency that aims to help players new to the game garner some basic cards. STARS are awarded to players based on the number of games they have won in their first batch of roughly 20 or so match wins. The STARS coins can only be used in the “STAR store," where players can buy specific cards to add to their decks for varying amounts (“The Story of Gods Unchained, The Web3 Game Ahead of Its Time”). The FLUX & STARS coins add more significant meaning to the in-game economy and prevent fraudulent actors from simply value-hacking the blockchain for $GODS tokens.

GU $GODS Supply Schedule:

Now that the fundamentals of the $GODS token have been discussed, it is crucial to demonstrate how the Gods Unchained corporation plans on supplying its in-game economy sustainably with $GODS tokens. The GU developers have set the total supply of $GODS tokens to be precisely 500,000,000 (“Gods Unchained Whitepaper” 16). Once this number of tokens is in circulation, no more will be created/released by the developers. The GU developers have developed a detailed supply schedule to manage this fixed currency supply. This supply schedule ensures $GODS will be released sustainably and induce player interest over time. The GU supply schedule consists of six macro areas that the game developers want to disperse $GODS tokens. These areas are as follows: (1) Play to Earn Rewards, (2) Gods Unchained Reserve, (3) Community & Ecosystem Fund, (4) Community Allocation, (5) Token Foundation, and (6)

Token Sale ("Gods Unchained Whitepaper" 16). The GU developers have allocated 34% of the total $GODS token supply - 170,000,000 tokens - to Play to Earn Rewards unlocked over a six-year time interval. This allocation began approximately two months following the $GODS ICO. The GU Reserve has been allocated 25% of the total token supply - 125,000,000 tokens - unlocked over four years. The Community & Ecosystem Fund has been allocated 20.5% - 102,500,000 tokens - unlocked over six years. Community Allocation has been awarded 7% - 35,000,000 tokens - where 3.5% was unlocked immediately, 3% after that was unlocked over three months, and the last 0.5% is going to be used for token claims issues. The Token Foundation has been awarded 6.5% (32,500,00 tokens), and finally, the Token Sale has been awarded 7%, coming out to 35,000,000 tokens ("Gods Unchained Whitepaper," 16). Each of these specific areas receives a proportion of the total $GODS token supply because the GU developers have realized how the tokens must flow so that the in-game economy remains viable.[9]

Each area of token allocation serves an essential purpose to the GU ecosystem and its sustainability.[10] More specifically, the Play to Earn pool receives the most significant proportion of the overall token supply because it is GU's number one value proposition as a gaming/Web3 product. The developers want to incentivize players to earn money and unique in-game items through their hard work playing the game. As a result, players will unlock a utility not available in other games. The Community & Ecosystem receives a substantial proportion of the $GODS token supply because the GU developers believe that players/groups acting as catalysts and representatives of GU are valuable to the ecosystem and its sustainability. Namely, players who create competitive leagues, community tournaments, community engagements, and even

[9] See Figure 6 in Appendix

[10] The description of these allocations/their uses was primarily derived from the "Gods Unchained Whitepaper." The correct credit is given at the very end of the paragraph.

influencers are all viable candidates to receive tokens through this fund. These actors help keep GU relevant and excite outside users to try the platform. A quarter of the $GODS tokens have been granted to the Gods Unchained Corp. fund, which is a way for the larger corporation to have visible "skin in the game." In consensus with economists Christian Catalini and Joshua Gans, it is reasonable for ventures to have holdings in their native coins so that they are incentivized to create a more quality product ("Initial Coin Offerings and the Value of Crypto Tokens" 23-27). The Community Allocation of $GODS tokens is split amongst two large competitive game events that will reward players for being present/winning those competitive matches. The Token Foundation is allocated $GODS tokens that are unlocked immediately to provide the in-game economy with liquidity. Finally, the token sale is allocated a set amount of $GODS tokens for when GU formally launched its ICO and thus its gaming product ("Gods Unchained Whitepaper" 17-19).

GU Staking Rewards System:

A fixed money supply is a problem for most economies; in GU, there is a fixed amount of 500,000,000 $GODS tokens. Therefore, players need a mechanism to obtain $GODS tokens from other transactions organically. A solution to this problem is the GU Staking Rewards System. This system provides $GODS awards to individuals who are active stakers within the GU ecosystem. Active stalkers are classified as follows by the Gods Unchained developers:

"To qualify as 'actively staking' the user must have voted on a proposal in the last 30 days, and must have held $GODS within Immutable X for the full duration of the specified 7 days period" ("Gods Unchained Whitepaper" 22-23).

The Staking Reward pool is populated with $GODS tokens that are collected from two places in the GU ecosystem: The GU store - where players buy new card expansions with

$GODS - and the forge (the place where players mint new NFTs). Stakers in this pool are rewarded a certain number of $GODS based on a proportional formula. More specifically, stakers receive a number of $GODS tokens proportional to the lowest amount held in their current wallets/Immutable X accounts ("Gods Unchained Whitepaper" 22-23). [11]By allowing $GODS tokens to be reintroduced to the market this way, the GU developers avoid the potential problems resulting from having a fixed money supply. Thus, this is once again a creative solution the GU developers have curated to make their economy last long-term and to provide their tokens with value.

Conclusion:

Almost all of the blockchain games that have come out thus far have failed in one way or another. Many indeed overpromised and, thus, subsequently failed to deliver. That being said, many people need to realize how incredibly hard it is to create a decentralized open economy that can flourish. As evidenced, many economic and technical feats must be overcome/addressed to make such an ecosystem plausible, let alone viable. While *Gods Unchained* still has visible flaws and future improvements to make, its fundamental design is working. At large, *Gods Unchained* offers three things that most people would declare impossible in the current state of Web3 gaming: a generally good gaming/entertainment experience, a "play to earn" economy that is self-sustaining, and a revenue model that is allowing the game to expand/get better. As such, game developers and those looking to build tech solutions on the chain should examine the *Gods Unchained* model. *Gods Unchained* has successfully done what it set out to do; it has established a relatively stable "pay to earn" model for an entertaining TCG. Hopefully, *Gods Unchained*

[11] See Figures 7 & 8 in Appendix

inspires other studios and organizations to take the leap and experiment with the possibilities blockchain technology has to offer. The future is bright.

Appendix:

Figure 1: Popular Blockchain Games (Credit: Scholten, Oliver James et. al)

	30 Day Transaction Statistics				Criteria Fulfilled				
Name	Accounts	Vol (ETH)	Vol (GBP)	GBP/Account	1	2	3	4	5
CryptoKitties	2,749	1,331.895	139,023.20	50.57	✓	✓	✓	✓	✓
MyCryptoHeroes	4,208	4,256.066	444,248.17	105.57	✓	✓	✓	✓	✓
HyperDragons	882	481.977	50,308.76	57.04	✓	✓	✓	✓	✓
Gods Unchained	914	1,228.185	128,197.95	140.26	✓	✓	✓	✓	✓
0xUniverse	1,366	720.428	75,198.27	55.05	✓	✓	✓	✓	✓
Evolution Land	140	106.236	11,088.91	79.21	✓	✓	✓	✓	✓
Axie Infinity	625	1,072.305	111,927.20	179.08	✓	✓	✓	✓	✓
Ethermon	876	54.209	5,658.34	6.44	✓	✓	✓	✓	✓
Blockchain Cuties	1,501	81.267	8,482.02	5.65	✓	✓	✓	✓	✓
Average	1,474	1,036.951	108,236.98	75.43	-	-	-	-	-

Figure 2: The Gods in *Gods Unchained* (Credit: Alexandra Takei)



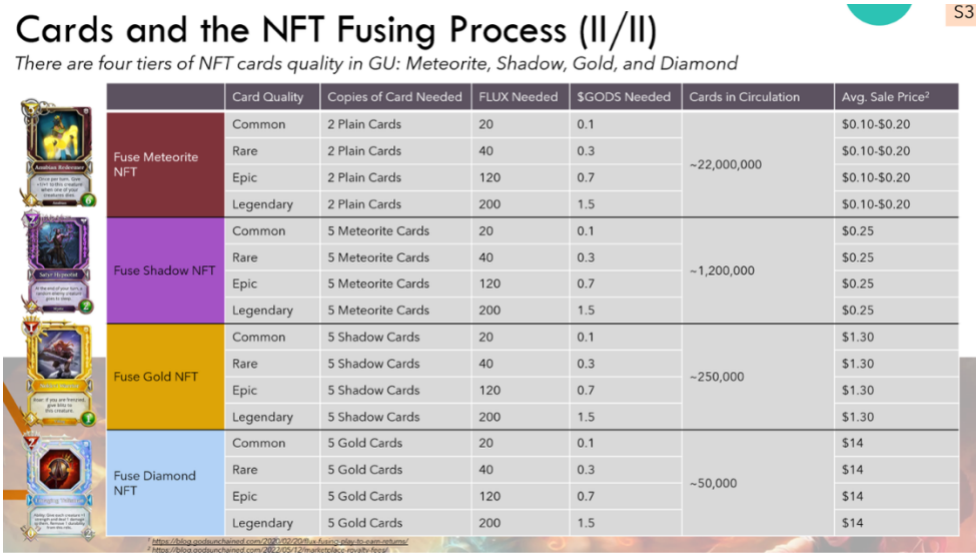
Figure 3: Basic story in *Gods Unchained* (Credit: Gods Unchained YouTube)



Figure 4: The Fusing Process in GU (Credit: Alexandra Takei)



Figure 5: Rarity Hierarchy NFTs in GU (Credit: Alexandra Takei)

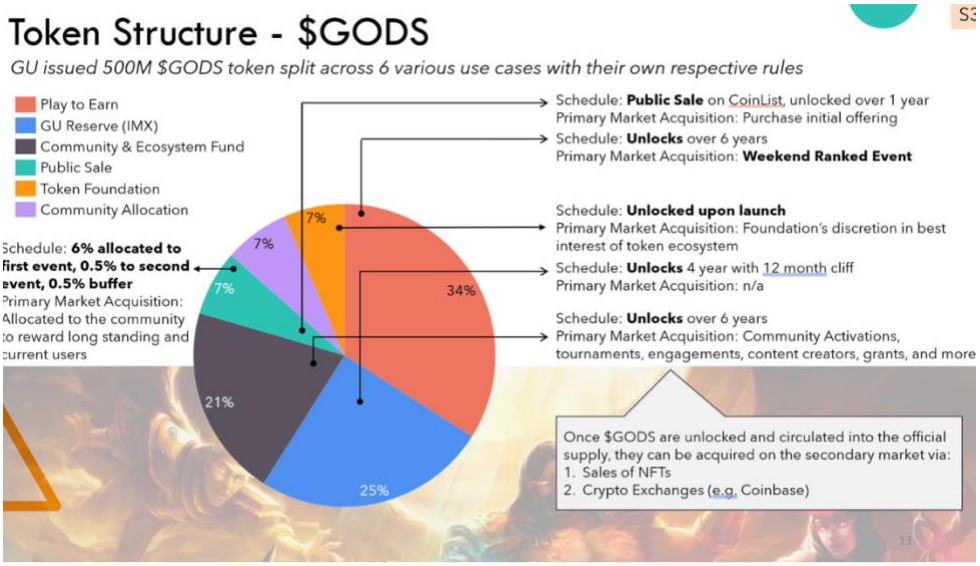


Cards and the NFT Fusing Process (II/II)

There are four tiers of NFT cards quality in GU: Meteorite, Shadow, Gold, and Diamond

	Card Quality	Copies of Card Needed	FLUX Needed	$GODS Needed	Cards in Circulation	Avg. Sale Price[2]
Fuse Meteorite NFT	Common	2 Plain Cards	20	0.1	~22,000,000	$0.10-$0.20
	Rare	2 Plain Cards	40	0.3		$0.10-$0.20
	Epic	2 Plain Cards	120	0.7		$0.10-$0.20
	Legendary	2 Plain Cards	200	1.5		$0.10-$0.20
Fuse Shadow NFT	Common	5 Meteorite Cards	20	0.1	~1,200,000	$0.25
	Rare	5 Meteorite Cards	40	0.3		$0.25
	Epic	5 Meteorite Cards	120	0.7		$0.25
	Legendary	5 Meteorite Cards	200	1.5		$0.25
Fuse Gold NFT	Common	5 Shadow Cards	20	0.1	~250,000	$1.30
	Rare	5 Shadow Cards	40	0.3		$1.30
	Epic	5 Shadow Cards	120	0.7		$1.30
	Legendary	5 Shadow Cards	200	1.5		$1.30
Fuse Diamond NFT	Common	5 Gold Cards	20	0.1	~50,000	$14
	Rare	5 Gold Cards	40	0.3		$14
	Epic	5 Gold Cards	120	0.7		$14
	Legendary	5 Gold Cards	200	1.5		$14

Figure 6: Token Supply Allocation (Credit: Alexandra Takei)



Token Structure - $GODS

GU issued 500M $GODS token split across 6 various use cases with their own respective rules

- Play to Earn
- GU Reserve (IMX)
- Community & Ecosystem Fund
- Public Sale
- Token Foundation
- Community Allocation

Schedule: **6% allocated to first event, 0.5% to second event, 0.5% buffer**
Primary Market Acquisition: Allocated to the community to reward long standing and current users

Schedule: **Public Sale** on CoinList, unlocked over 1 year
Primary Market Acquisition: Purchase initial offering

Schedule: **Unlocks** over 6 years
Primary Market Acquisition: **Weekend Ranked Event**

Schedule: **Unlocked upon launch**
Primary Market Acquisition: Foundation's discretion in best interest of token ecosystem

Schedule: **Unlocks** 4 year with 12 month cliff
Primary Market Acquisition: n/a

Schedule: **Unlocks** over 6 years
Primary Market Acquisition: Community Activations, tournaments, engagements, content creators, grants, and more

Once $GODS are unlocked and circulated into the official supply, they can be acquired on the secondary market via:
1. Sales of NFTs
2. Crypto Exchanges (e.g. Coinbase)

Figure 7: Sources of Tokens for Active Stakers (Credit: Gods Unchained Whitepaper)



Figure 8: Allocation Formula for Active Stakes (Credit: Gods Unchained Whitepaper)

Example: $GODS tokens staked measurement						
Number of $GODS tokens held in Immutable X each day within the 7 days reward Interval.						
Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
200	200	**100**	**100**	500	500	500
Total number of tokens staked in this interval for rewards = **100**						

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