



Blockchain Battle Royale (with Cheese)

Whitepaper

Version 0.1

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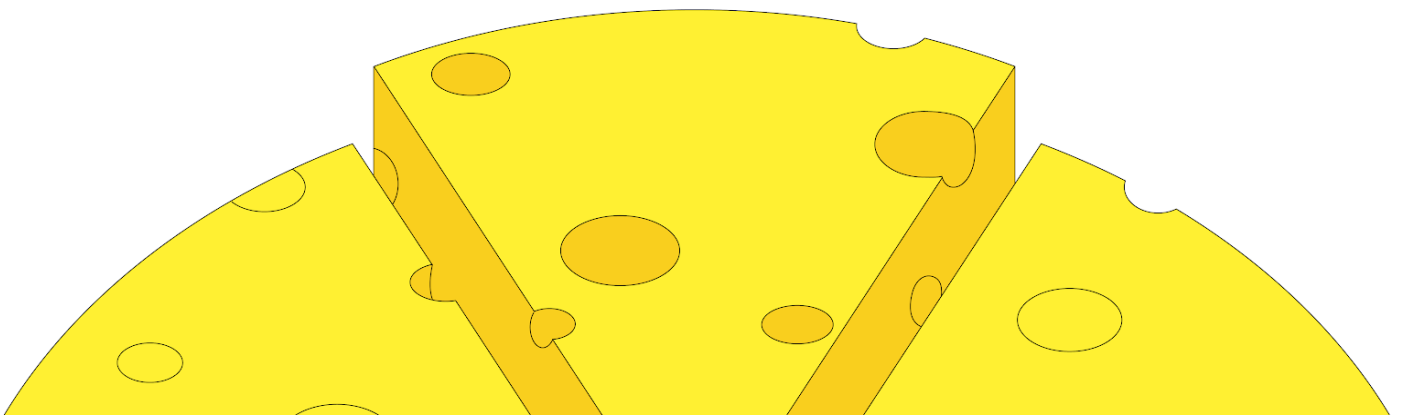
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What is Cheeze Wizards?

Cheeze Wizards is the world's first blockchain battle royale (with cheese).

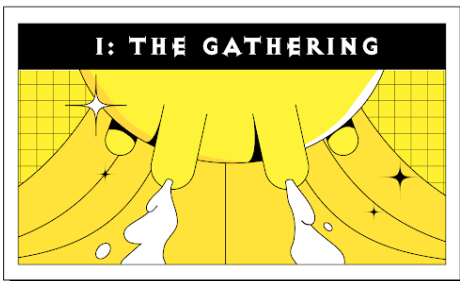
Cheeze Wizards explores several new dimensions in blockchain gaming: NFTs with consumable value, on-chain player-vs-player (PvP) gameplay, composability from on-chain gameplay, and the role of NFTs in game governance or as part of Decentralized Autonomous Organizations (DAOs).

Players summon Cheeze Wizards with Ether to compete in a Tournament where the last Wizard standing wins the title and prize of the "Big Cheeze". The Big Cheeze grows with every Wizard summoned, adding to the prize pool up for grabs.

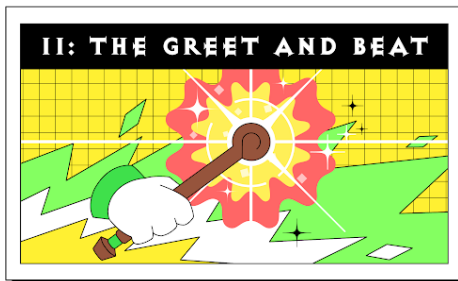
The start of every tournament is divided into two phases:

- 1) the Gathering (where new Wizards can be summoned, but dueling does not take place); and
- 2) the Greet and Beat (where both summoning and dueling is allowed).

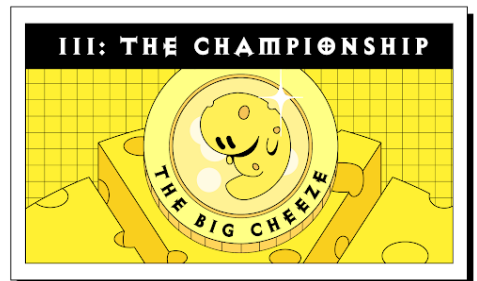
The tournament will then progress to its third phase, the Championship, where primary sales of Wizards close; secondary sales on marketplaces become the only way for players to buy new Wizards or power; and the strategic decisions players make to try to win the Big Cheeze have higher and higher stakes.



- ✓ Summoning returns
- ✓ Form parties



- ✓ Summoning continues
- ✓ Form parties
- ✓ Dueling begins



- ✗ Summoning ends
- ✗ Can't form parties
- ✓ Dueling continues
- ✓ Blue mold arrives

Wizard Lore

Origins

Cheeze Wizards are said to descend from dragon's milk—a dragon with udders may sound absurd but so does a race of sentient, magic-wielding cheese.

The world of Cheeze Wizards balances on the four teats of a giant cow's udder. That's why it's common practice to follow up "Holy Cow!" with "Amen."

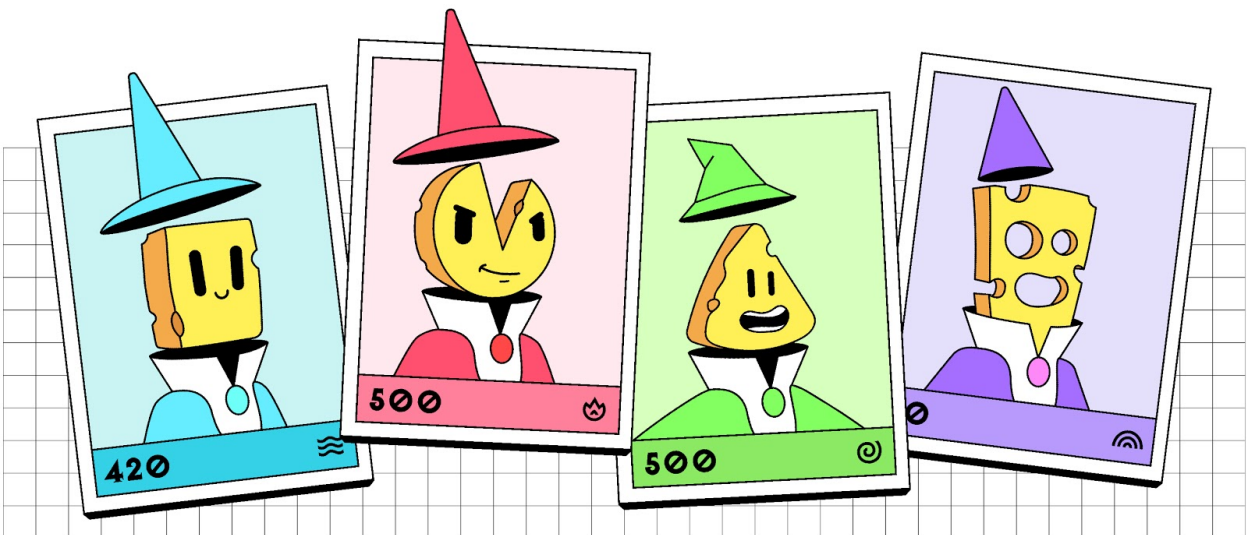
The Cheeze Wizards tournament in turn carries the proud tradition of using magical forces beyond mortal understanding to settle petty disagreements.

When a Wizard is summoned, they enter into an ancient pact known as a "smart contract": the Wizard gets a chance to compete for glory and title, and the summoning player gets all their winnings for the rest of the Wizard's unending life.

Seems fair, right?

Wizard Factions

There are four types of standard Wizard factions as well as special, limited-edition Exclusive Wizards, each with their own special skills and/or collectability. Fire, Water, and Wind Wizards are collectively known as Elemental Wizards.



Mocked for being wishy-washy, **Water Wizards** can use all the elements, but their water spells are extra strong against fire and extra weak to wind. They are inexplicably moist all the time.

Known for being hot-headed, **Fire Wizards** can use all the elements, but their fire spells are extra strong against wind and extra weak to water. They are poor role models due to their smoking habit.

Recognized as the nation of blow-hards, **Wind Wizards** can use all the elements, but their wind spells are extra strong against water and extra weak to fire. They are known to be full of hot air.

Impolitely described as “basic”, **Neutral Wizards** can use all the elements. They have no strengths, no weaknesses, and no strong feelings one way or another.

Special Edition Wizards

Just like humans, most Cheeze Wizards are somewhere on the spectrum between good and evil. Not so with the Sorcerers or the Mold Magicians: in the world of Cheeze Wizards, these special Wizards represent the two extremes. That said, both are extremely powerful, morally dubious, and udderly idiotic.

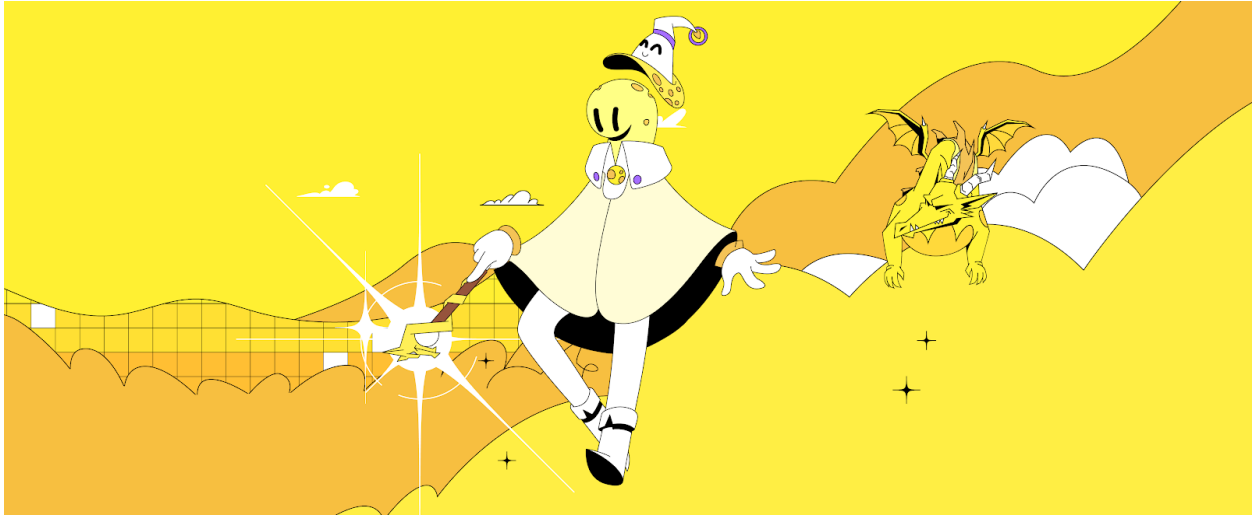
Mold God and the Mold Magicians

Mold Gods are the result of lactic build-up that burst out of the Holy Cow’s lesser-known extra nipple. Mold Gods are considered evil—or at least inconsiderate.

We say *Mold Gods*, but really the only one in existence today is Moldemort. Standard Wizards that were stuck behind Moldemort curdled and became Mold Magicians, conspiring with their new leader to build a world full of stinky cheese.

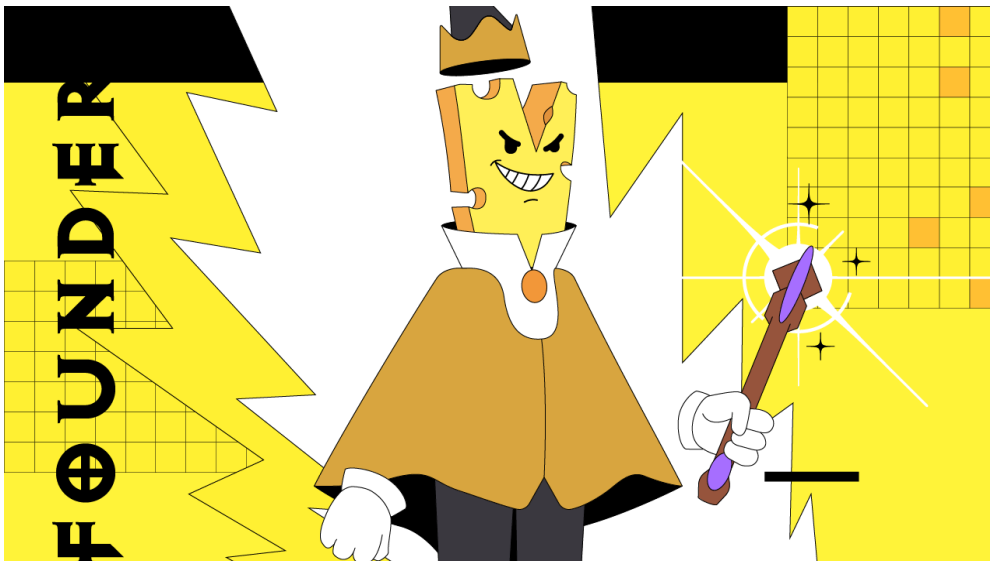
Moldemort has been lost for millenia, but the Mold Magicians’ Q4 OKR is to bring him back. Mold Magicians believe that if they’re all gathered in one place, Moldemort will appear. Due to scheduling conflicts, this belief has remained untested for a thousand years.

The Sorcerers



Sorcerers are a force of pure good in the Cheeze Wizards universe, the mirror image of Moldemort and the Mold Magicians. Only eight Sorcerers exist: The Supreme Sorcerer and his seven disciples. The Supreme Sorcerer is (supposedly) the most righteous and powerful Wizard in the world.

The Founders



Founder Wizards are the first Wizards summoned to Earth from the world of Cheeze Wizards. They are well-aged and apolitical, earning them an extra degree of crusty respect in the Cheeze Wizards community.

Product pillars

NFTs with consumable value

Every Cheeze Wizard is an NFT. That means Wizards you summon are yours forever.

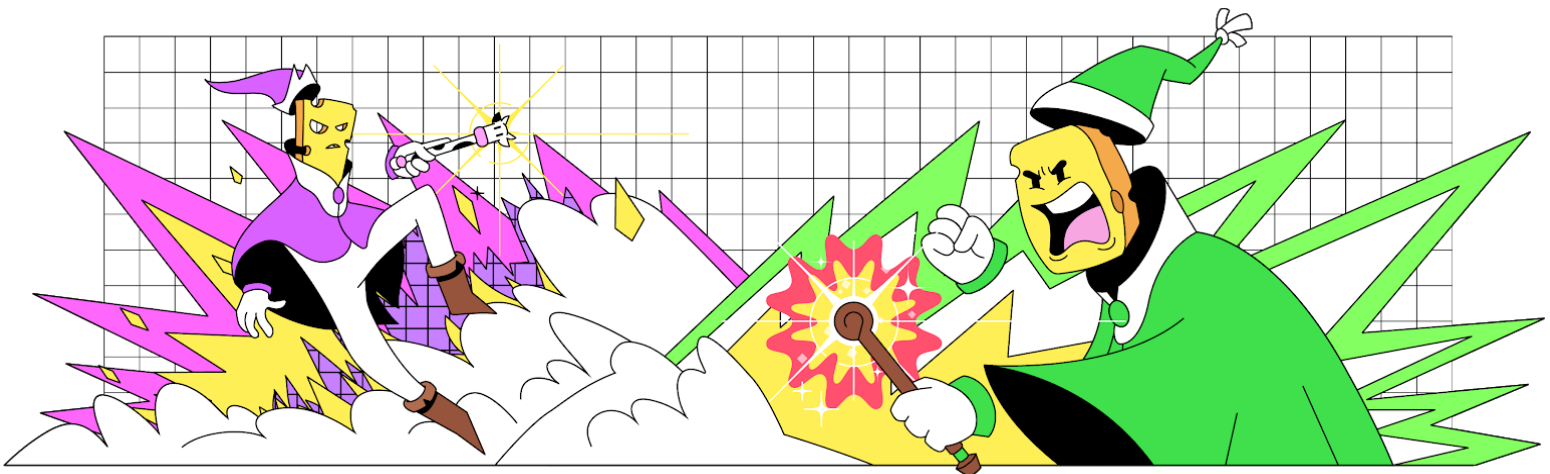
Many blockchain games use some level of scarcity to create value for NFTs. When designing Cheeze Wizards, we looked to find a way to embed functional, transferable value for NFTs outside of scarcity, aesthetics, or in-game stats.

The answer was Power. Every Cheeze Wizard summoned during a tournament starts with Power directly proportional to its original sale price.

A Wizard's Power is entirely on-chain, as is every Wizard battle: that means when two Wizards duel with one another, Power is securely transferred between the two NFTs based on the results of the on-chain computation of the duel.

Third party developers have already created decentralized exchanges and marketplaces for players to exchange Power without trading their Wizard NFTs.

The key thing to remember is that Cheeze Wizards don't die if they lose duels and deplete all their power—they just get tired and have to drop out of the Tournament. As NFTs, Wizards can be used in future gameplay as well as third-party applications.



On-chain PvP

Because of the limited scalability of current blockchains, direct player-to-player interaction is absent in most on-chain crypto games.

CryptoKitties[®], for example, is largely a Player vs Environment (PvE) game. Even though Kitty siring and marketplace trading are social behaviors, the most common action is breeding, and the majority of breeding happens between an individual's own Kitties. In fact, much of CryptoKitties' social interactions happen outside of the gameplay itself, largely in Discord.

With Cheeze Wizards, we wanted to play around with different ways to build engaged communities: full, on-chain PvP.

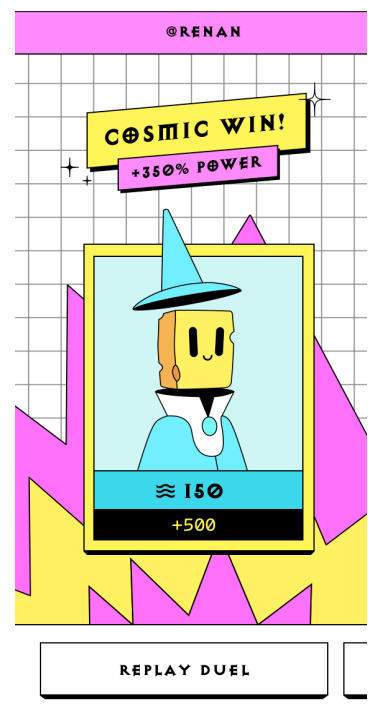
Predictably, this comes with major UX implications:

Encrypting Wizard spells

We initially tried a fully open asynchronous gameplay, where duels could happen at any time and players could send moves to other wizards freely. This game design broke down quickly once we had to account for duels being on-chain: on-chain data is visible to anyone so the spells (when sent) would have to be encrypted. Because the spells are encrypted, an extra step is required from the player: revealing the moves by sending an encryption key. We now have 4 steps in a duel: A sends moves, B sends moves, A reveals, then finally B reveals.

Before the reveal, the backend/chain is only ever given a commitment hash that comes from a random salt and the moves. We store the moves and the salt in the browser. Revealing sends the moves and the salt to the backend/chain, which then produces the same commitment hash verifying the moves are correct.

Some UIs for Cheeze Wizards (including our own) include an "auto-reveal" option that works in the same way, but instead of the user pressing a button, the browser receives a push message from our backend, initiating the reveal process.

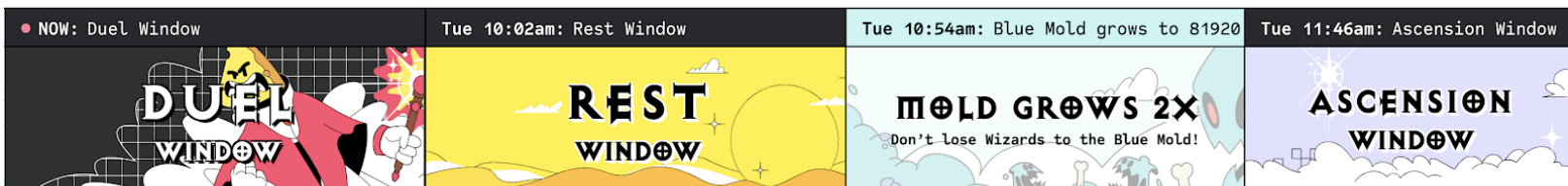


Duel timeouts and off-chain challenges

Only after both A and B have registered their encrypted moves should they reveal: this introduces the concept of wizards being "locked" in a fight.

This notion of locking into a fight, without a "referee," would allow for much abuse from bad actors. We are now forced to timeout fights in a clear and simple way. The challenge of communicating timeouts and durations for multiple wizards to players proved tricky. Also, updating on-chain the state of wizards—which includes constant fights, multiple challenges, and timeouts—increases complexity dramatically.

As a result, we came up with an elegant solution: player A can challenge player B off-chain with a short timeout; player B would then have to pick and submit their moves when accepting a challenge. At that point, player A has a limited time to respond by picking their moves, at which time everything gets pushed on-chain and the result of the duel is computed.



Duel windows

In any PvP game, match-making is important: a player will have a terrible user experience if they are unable to find a dueling partner when they want one, or if they have to wait hours for their opponent's next move.

Given the scalability and usability challenges still inherent in decentralized applications, we knew we had to optimize Cheeze Wizards for a small number of high-value players. This way, other than the usual latency that comes with Ethereum today, an entire Cheeze Wizards duel can happen in a few minutes.

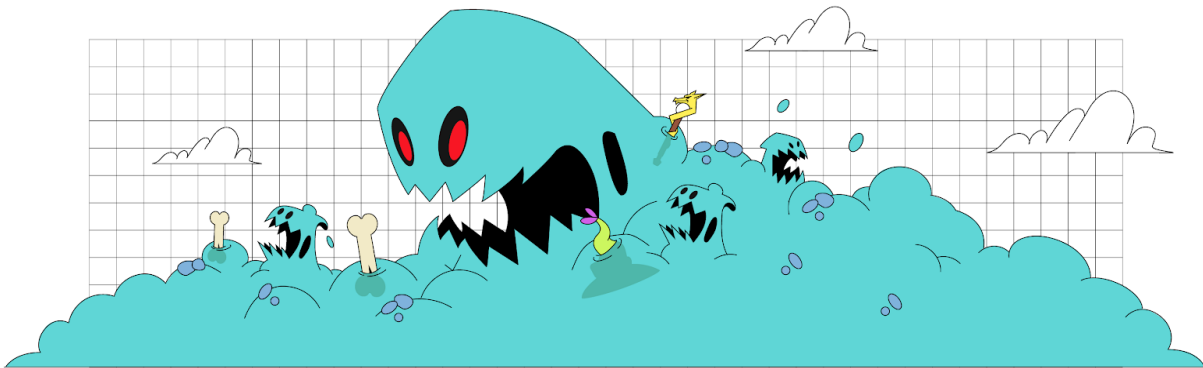
The default Cheeze Wizards Tournament uses dueling windows that are approximately 3 hours long and occur approximately three times per day. Specific block numbers will always be posted on cheezewizards.com.

Blue Mold

As we playtested the game internally, we worked to find a way to “raise the stakes”: a mechanism similar to the circle of death in Fortnite, forcing players to fight and shaving off the weakest among them. We call this the Blue Mold.

The Blue Mold logic is on the smart contract: once started, it can't be stopped.

In the inaugural Tournament, the Blue Mold remains dormant at very low power (1 power) until activated during the Championship phase, after which it grows in power with every duel window. Any Wizard who falls below the power of the Blue Mold will immediately lose their Power and get knocked out of the Tournament.



Wizard Ascension

After the Blue Mold is activated in the Tournament, a special Ascension Window opens up before every Duel Window. Wizards at risk from the Blue Mold are eligible to enter Ascension, giving them a chance to double or even triple their Power.

When a Wizard enters Ascension, they're automatically paired with another opponent's Wizard and slated to duel during the Duel Window. Unlike Duel Challenges, you CANNOT decline an Ascension pairing! But the stakes are high: if your Wizard wins a duel during Ascension, the prize is DOUBLE Power!

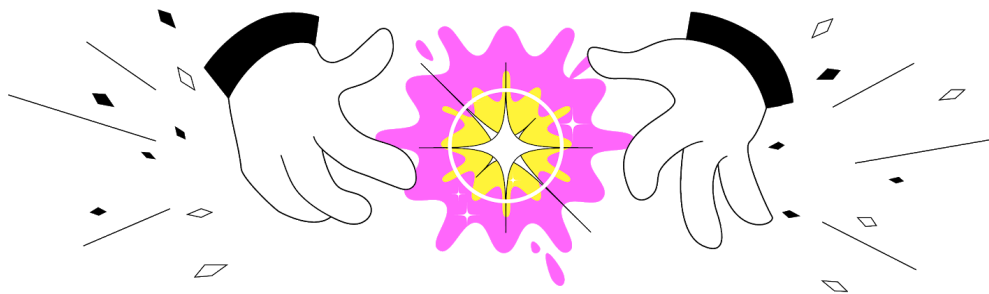
But if your Wizard loses, they're kicked out of the Tournament. Finito.

In the case that there is an odd number of total Wizards ascending, one Wizard will have the potential to TRIPLE their power, but only if they remain unchallenged during the entire Duel Window. This should be an **extremely** rare event.

Composability as a native feature

Most crypto games leverage the blockchain for one important purpose: tracking asset ownership and provenance. Giving players true ownership, liquidity, and tradability for their assets is the fundamental first step, and is incredibly valuable in and of itself; but we think that's a place to start, not stop.

One of blockchain's best qualities is the freedom for anyone to build on top of their favorite dapps — all without having to ask for parmesan! This is known as composability.



While many blockchain games are closed ecosystems, Cheeze Wizards was designed from the start to be composable. A composable game not only means more content for players, but more ways to interact with the NFTs.

Cheeze Wizards' game logic runs entirely on the Ethereum blockchain, meaning consumers can trust our Tournament contract (or any unchanged fork) with their crypto, and developers can build dapps or games for the community without asking permission or taking platform risk.

This means Cheeze Wizards is one of the first interface-agnostic online games — anyone can create their own interface that interacts with the smart contracts directly.

Demonstrating this point, a collection of dapps, games, and tools was built around the Cheeze Wizards universe even before we even launched the project. Visit cheezewizards.com/cheezyverse to see some examples!

Building on the Tournament contract

The Cheeze Wizards game logic is stored inside the Tournament contract, ready for usage by any developer. Here's how the Tournament contract works:

- All Wizards who enter the Tournament are required to provide a contribution to the Big Cheeze prize pool that is directly proportionate to their power level. There is no way for any Wizard to have power disproportionate to their contribution amount; not even for any of the Tournament operators.
- All Tournaments created with this contract follow the time constraints set out in the `TournamentTimeAbstract` contract. While different Tournament instances might run more quickly or more slowly than others, the basic cadence of the Tournament is consistent across all instances.
- The Tournament contract is designed such that once the contract is set up, all participants can enjoy the Tournament with the ability to independently verify any aspect of the competition. A nifty checksum makes it easy to check that the contract hasn't been modified in a way that isn't already audited as secure, resulting in zero fear of manipulation from any Tournament operator.

Importantly, the Tournament contract is designed with a built-in business model: operators can take a percentage of the grand prize as compensation. Tournament operators may also get access to official Cheeze Wizards art, assets, and even animations. If you're interested in building and hosting a tournament, email info@cheezewizards.com.

Kitty Tricks and Curdlin

Since CryptoKitties are the adorable mascots of blockchain, they naturally had to try their paw at interoperability. That's why some Kitties can unlock features in other dapps. This superpower is known as Kitty Tricks.

Curdlin is a time-limited Fancy Cat that has been breedable since the original announcement of Cheeze Wizards. For a limited time, each Curdlin had special powers.

For example, each Curdlin below Gen 5 came with the "Make it Meow" Kitty Trick that turned a Cheeze Wizard into a Kitty Wizard with a special pawhead. These Kitty Wizards qualify for a separate "Last Kitty Standing" side prize when the Tournament ends.



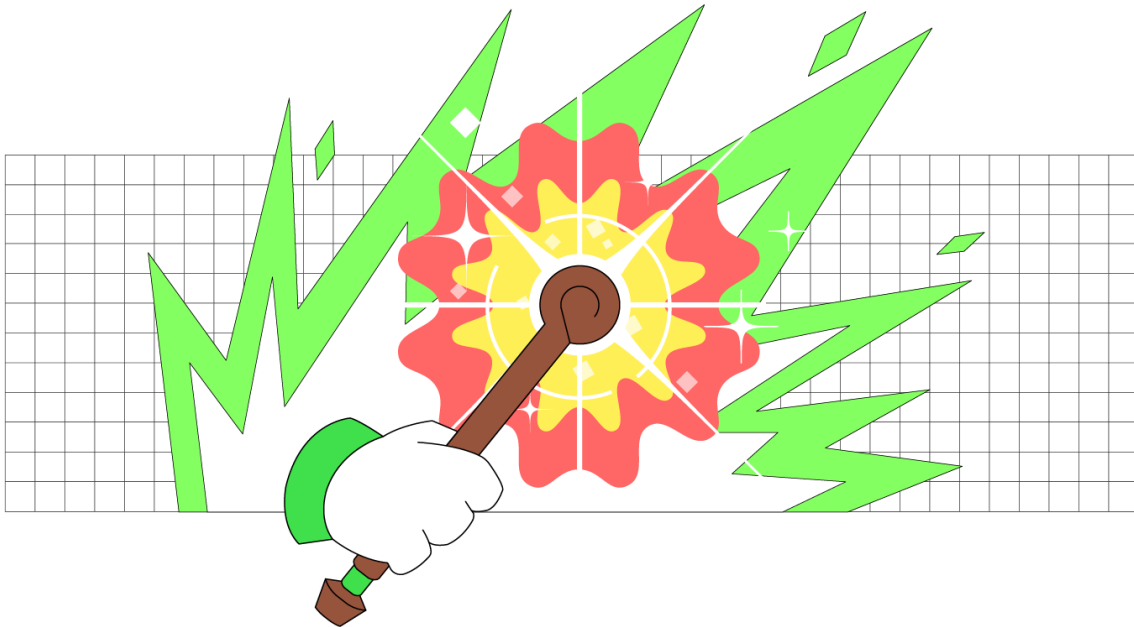
Governance tokens and DAOs in gaming

One of the most interesting applications of blockchain is in governance and decision-making. So-called DAOs are the first time anonymous individuals can coordinate or compete peer-to-peer without trusting a third party middleman.

Thanks to open source code and composability of smart contracts, building a DAO for Cheeze Wizards is quite straightforward. The community has already started to experiment with DAOs around different aspects of the game:

- A skill-based meta-game based on an individual Wizard NFT's win/loss ratio (providing more influence on governance to more skillful players)
- Join a DAO with other players to team up and split the grand prize proportionately based on initial Power (providing more influence on governance based on spend)
- Tokenize your Wizard's Power and create a Uniswap pool

We're excited to see the impact of DAOs in gaming: not only can DAOs create interesting testing ground for meta-games around each core experience, they are also an unprecedented way for players to have real power within the communities of which they are a part.



Collectibility with no limits

The collectibility of a Cheeze Wizard is influenced by its intrinsic unique properties, as well as the actions of its owner. Learnings from CryptoKitties encouraged us to productize emergent behavior and design the token and tournament contracts in a way that allows users to directly influence the collectibility of their assets.

A Cheeze Wizard's traits are unique properties that make up the visual appearance of a Wizard. Traits are generated off-chain for player-summoned Wizards with rarities as low as 0.007%. Once the traits have been determined, they are used to generate Wizard art before being added to the token metadata.

Exclusive Wizards like Mold Magicians and the Supreme Seven are minted by UFE and possess traits that cannot be generated by players.

The Cheeze Wizard token contains the following immutable properties:

- ID: Unique ID numbers are issued as new Wizards are summoned, which makes it impossible for UFE to fore-mint novelty editioned Wizards.
- Innate power level: A record of the initial summoning price of a Wizard.
- Affinity: The elemental affinity of a Wizard.
- Metadata: A 256-bit string storing key Wizard attributes. Metadata can only be set once at creation of the NFT and will be locked forever thereafter.

Cheeze Wizards provenance and history: While a Cheeze Wizard can only be summoned in official tournaments, they are NFTs and remain in players' wallets for use in future experiences. A Wizard's provenance, accomplishments, and ownership history is permanently recorded on the blockchain as long as the action that led to it was processed on-chain.

Examples of accomplishments:

- Winning the Big Cheeze
- Knocking out a big wig!
- Being part of a winning Party

Cosmetic Rarities

Cheeze Wizards have different rarities—common, uncommon, rare, and Legendary—for cosmetic categories like hats, wands and even colour. The chance of obtaining a rare cosmetic is directly affected by the summoning price for all rarities except Legendary. Legendary cosmetics like the Dragon Wand are capped at 5% regardless of the summoning price of the Wizard.

All Neutral Wizards have the same probability of obtaining a rare cosmetic.

Wizard Cost (ETH)	Uncommon Chance	Rare Chance	Legendary Chance
0.07	5.969%	0.199%	0.007%
0.56	22.426%	0.886%	0.057%
1.12	35.055%	1.659%	0.116%
3.56	59.795%	4.893%	0.392%
7.12	69.918%	9.246%	0.852%

Special Edition Wizards

The four Normal Wizard types (Fire, Water, Wind, and Normal) are sold for a limited time in every Tournament directly from the smart contract. Their eventual scarcity is determined by the number of summonings during this period.

Special Edition Wizards, on the other hand, have pre-announced limitations in terms of scarcity. In the inaugural Tournament, the following Special Edition Wizards will be minted and distributed:

- Supreme Sorcerer: 1
- Mold God (Moldemort): 1
- Sorcerer Seven: 7
- Mold Magicians: Mold Master (7), Mold Edgelord (9), Mold Apprentice (12), Mold Fun Guys (15), Mold Groupies (80), Mold Followers (42)
- Founder Wizards: IDs #1 to #100

Conclusion

We built Cheeze Wizards to let blockchain gamers explore and lean into what's special about crypto today.

We believe the future of gaming is ubiquitous decentralized interoperable play, but that's not today.

Today, while we are only scratching the surface of what we envision as the future of decentralized gaming, we can still show some of what is possible when you combine real ownership for players with provably fair mechanics and native monetization.

That's Cheeze Wizards.

Made by crypto-people, for crypto-people.

As the great Maya Angelou once said, "You may write me down in history with your bitter, twisted lines. You may trod me in the very dirt, but still, like dust, I'll rise."

Are you ready to duel?

