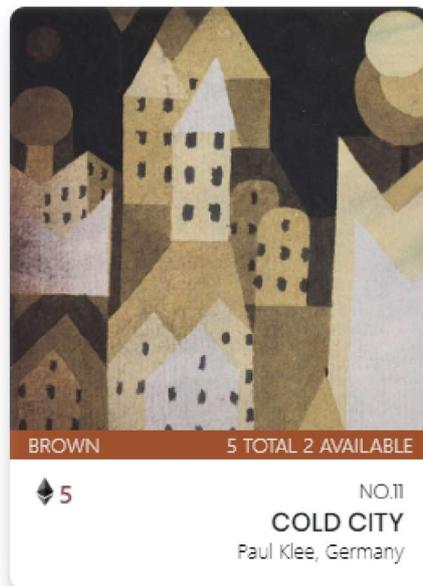


ETHER-ARTS: Crypto Arts Collectibles

Own blockchain-backed lottery cards with unlimited chances!



Whitepaper

Version 1.2 Eng

CONTENTS

1. DIGITAL COLLECTIBLES POWERED BY BLOCKCHAIN
2. ETHER-ARTS.IO
 - 2.1 ABSTRACTION
 - 2.2 ARTS
 - 2.3 PROPERTY OF CARD COLOURS
 - 2.4 HOW TO GET A CARD
 - 2.5 LOTTERY DRAWS
3. RANDOM NUMBER SELECTION - FAIR AND SECURE
4. USER-TO-USER CARD EXCHANGE MARKET
5. BOUNTY PROGRAM
6. CONCLUSION

1. DIGITAL COLLECTIBLES POWERED BY BLOCKCHAIN

Digital collectibles have been widely used in various fields; with games, commemorative collectibles and even promotions benefitting from their concept and distribution. However, the worth of traditional digital collectibles can be dealt a severe blow, owing to myriad reasons; sustainability of the service, the avarice of the service provider and lack of practical usages, to name, but a few.

- If the publisher fails to provide any more services, the collection itself disappears.
- If the publisher decides to issue a greater number of rare collectibles than originally planned, the value of collectibles could be harmed. A continuous audit would be required to prevent the abuse by the issuing authority, although the audit itself might not be executed in the real world.
- A physical collectible has value due to its intended purpose. For example, because of its objective beauty, art is aesthetically enjoyable and therefore holds inherent monetary value. However, it is not easy to design digital collectibles that have general as well as practical value.

Some of the aforementioned problems that threaten the value of digital collectibles can easily be overcome by the application of blockchain technology, as follows:

- True Ownership: You outright own your digital assets on blockchain. Data and ownership information provided by the issuer can be registered in the blockchain to solve the problem of loss of data and ownership.
- True Scarcity: The issue volume of crypto collectibles is truly limited. An asset's issuer cannot create more within the blockchain itself.

There exist a few distinct features of physical collectibles (artwork lending itself as a good example), which do not readily give themselves to easy implementation as a digital collectible. Conversely, we can provide additional functionality for a digital collectible which a physical collectible cannot have:

Cryptokitties.io is arguably the best example of a non-fungible token. Cryptokitties.io takes a collection of unique cats, serves to place them on a blockchain, where each cat inherits 'DNA' from its 'parents'. These cats will never disappear thanks to blockchain technology, even if a decision is made by the service providers to halt the service. **Ethermon** is another example of popular crypto collectibles. Its use-case is to create a world of fantastical monsters that are

pitted against one another via Ethermon cards (in like manner of Pokémon). The player who emerges victorious from the duel receives an ERC20 token as a reward.

Taking this concept further, Ether-Arts have developed a first-of-its-kind crypto collectible service that fuses art and games into one engaging blockchain experience.

2. ETHER-ARTS.IO

2.1 ABSTRACTION

Ether-Arts is an innovative utilisation of blockchain, that employs the use of digital cards featuring beautiful, real-world works of art upon them. The cards themselves also serve a secondary function as a lottery token which can be drawn at random from amongst a pool of other Ether-Arts cards, in competing for Ethereum rewards for their owners. The lotteries themselves are drawn indefinitely on days of the month ending with 5 (5th, 15th, 25th every month). A smart contract selects two winning cards at random, with participants who own the chosen cards receiving Ethereum rewards from an accumulated prize-pool via a predefined policy. There is nothing more that participants need to do in order to take part in the lottery. All that is required is for card owners to keep their cards on their account. A full 80% of the prize-pool will be divided and assigned to the players' accounts who have ownership of the winning cards at the moment of winner determination. Please refer to sub-section 2.5 for more detail on prize pool distribution. Winners can claim their rewards at the "MY COLLECTION" page on the website.

Winner selection will be transacted in a provable and transparent way. Since all winners will receive an equally divided reward from the prize-pool, it necessarily follows that winners will get bigger rewards if the number of winners in a particular round is small. Therefore, it remains our expectation that the demand for rare cards will be increased by this game rule.

2.2 ARTS

The arts used on the cards are selected by the design artists in the Ether-Arts team. Artworks used on Ether-Arts cards are as follows:

2.2.1 COPYRIGHT OF EXPIRED MASTERPIECES

In the example of artworks exhibited by the Old Masters, we have been careful to use pieces whose copyright licenses have expired. It is standard practice in most countries that artworks by artists who have been deceased for 70 years enter the public domain

and are no longer subject to copyright infringements. The copyright durations for each country can be checked on the following page:

https://en.wikipedia.org/wiki/List_of_countries%27_copyright_lengths

2.2.2 CONTEMPORARY ARTS

As part of our commitment to art in all its forms, Ether-Arts set about contacting contemporary artists around the world. As of February 2019, we have a contract with twelve artists around the world in using their artworks for our card designs. Furthermore, we will seek to add up to an additional fifty artists in due course. The royalties paid to the artists will be ten percent of the total amount raised from arts cards sold, which feature their work of art upon them.

2.2.3 AI ARTS CREATED BY TEAM'S OWN DEEP-LEARNING ALGORITHM

- (1) Art that is created by Ether-Arts team's own deep-learning algorithm
- (2) Reconstructed art by style-transfer algorithm from royalty-free pictures.

All Special Cards bearing the artist name "**ether-arts.io**" will feature art generated by Ether-Arts deep-learning AI. Any and all rights of these artworks are solely reserved by Ether-Arts.

2.3 PROPERTY OF CARD COLOURS

Each card issued has its own colour property. Cards with the same colour property have the same price and same publishing amount, even though the art featured upon them may be different. The colour properties of the card are listed below. Please look at the relationship between colour attributes, volume, and price.

Colour	Volume	Price (ETH)	Volume x Price (ETH)
GREEN	120	0.25	30
OLIVE	75	0.4	30
ORANGE	50	0.6	30
RED	25	1.2	30
GRAY	15	2	30
BLUE	10	3	30
BROWN	6	5	30
WINE	4	7.5	30
INDIGO	3	10	30

ROSYBROWN	2	15	30
AMBER	50	N/A	N/A
SILVER	20	N/A	N/A
GOLD	10	N/A	N/A
EMERALD	5	N/A	N/A
SAPPHIRE	3	N/A	N/A
RUBY	2	N/A	N/A
DIAMOND	1	N/A	N/A

Fig 1. Card types and attributes

Special Cards (Amber, Silver, Gold, Emerald, Sapphire, Ruby, Diamond) appearing on the shaded cells, are not for sale. They will be listed in the market purely for reference purposes. Each Special Card has two recipe cards. Any player who undertakes to collect both recipe cards is in the position to acquire the corresponding Special Card for free. Although, Special cards are limited, meaning time is of the essence if it is a participants wish to procure them. Once an entire Special Card's stock has been depleted, the only way to acquire them will be through the marketplace, where sellers will register a price which they will be willing to relinquish them at!

2.4 HOW TO GET A CARD

2.4.1 BUYING FOR STANDARD PRICE AT THE MARKET

Each Ether-Arts card has a unique price and supply amount according to the colour property of the card. It can be purchased from the market menu of the website at a fixed price. Simply purchasing Ether-Arts cards with your Ethereum wallet, such as METAMASK, is all you have to do to join in - there is no convoluted sign-up required.

2.4.2 GET A CARD BY PLAYING THE PROBABILITY GAME: ROLL!

There is a great chance to obtain Ether-Arts cards at a 50% discounted price. If a player is willing to bet 50% of the standard price of a given card, they will have the chance to get said card at a probability of 50%, or in other words, a 50/50 outcome. A random number generated via a secure and tamper-proof external 'oracle' will provide the determination. Ether-Arts contracts are designed to receive these random numbers through a trusty provider, namely Wolfram-Alpha. In addition, our roll engine is written into an Ethereum smart contract, which is transparent, fair and provable. We can guarantee that in 50% of all cases, a player taking part in this incentive will succeed.

However, participants must also be aware that in 50% of cases, they will not be successful and lose the amount which they were willing to gamble to secure the card.

By way of example, a player wishing to own a grey card which is worth 2 Ethereum (according to Ether-Arts system), must pay 1 Ethereum to take part in the Roll Game with a grey card at stake. Once the Roll fee is transferred, the system receives a random number from the external oracle (Wolfram-Alpha). Once this process is complete, the player will be informed as to whether it has been a 'Roll' favourable to them, or otherwise.

2.4.4 SPECIAL CARD ACQUISITION

If a player has collected two or more Ether-Arts cards, they are eligible to receive a Special Card without additional purchase. To choose a "SPECIAL CARD" in the market, a prompt of what recipe/ingredient cards are needed will appear. Owning both recipe/ingredient cards will activate the "CLAIM" button on the market for the corresponding card. All Special Cards have their own maximum supply like regular cards, and are just as likely to be selected in a lottery draw as regular cards. Please note that recipe/ingredient cards already used to claim a Special Card cannot be used again for claiming another Special Card of the same type.

Fig.1 below shows an example of a Special Card generation recipe. A player with a single RED card and a single BROWN card can claim a GOLD Special Card. Even when a GOLD Special Card (or any Special Card for that matter, this being purely an example) has already been claimed, the player's RED and BROWN cards will still function without limitation as before, with the exception of further generation of that particular Special Card proceeding from the combination of both cards. It will NOT be removed or disabled. Since the cap on the number of GOLD Special Cards is ten, GOLD Special Cards cannot be claimed more than ten times.

Fig 1. Special card recipe (example)

2.5 Lottery Draws

2.5.1 WINNER DETERMINATION

The frequency with which the lottery draws will be made is roughly every ten days, or to be more specific, will always take place on days of the month that end in 5, for example: 05/15/25. A secure and transparent lottery algorithm registered in the blockchain determines the lottery winner/winners. The lottery algorithm will receive random number seeds from a trusted source outside of the blockchain via Random.org or Wolfram Alpha, with the express purpose of extracting two card numbers using a predetermined formula. The two numbers can result from the following ranges:

- One random card number from amongst all Ether-Arts card numbers in current circulation.
- Once a card is issued, it has an open-ended chance of selection in all subsequent draws that will be made, indefinitely. Should a card be selected therefore, none of its functions,

nor eligibility are affected in any way for all future draws, meaning that the potential value of early-issued Ether-Arts cards is huge.

- One of the N most recently registered art cards is selected

Ether-Arts will add 3-5 new cards after each draw. As the number of cards available increases, the probability of a participant owning both winning cards decreases, leading to greater passages of time without a winner being determined, allowing the prize-pool to accumulate substantially. To counter a possible loss of interest from players in the event of this scenario, the Ether-Arts team reserve the right to adjust the N value accordingly.

Players with early-issue Ether-Arts cards can resell them at a higher price owing to the demand for older cards in the market.

At least two weeks before any changes are implemented regarding the N value (please read above), the Ether-Arts team will promptly notify participants of these changes through website announcements, SNS channels, mailing lists etc.

2.5.2 DISTRIBUTING SALES AMOUNT

Ether-Arts smart contract, which is responsible for winner determination and funds distribution, is an unmodifiable algorithm that is registered in the blockchain as an integral part of our service. Since smart contracts are part of the blockchain, they are cryptographically secure and cannot be altered by anyone, including developers and/or contract owners.

The sales amount will be distributed as follows:

➤ Distribution of sales income from picture cards sold

- Transfer 10% of total sale to copyright holders of art images
- Transfer 5% of total sale to marketing costs
- Transfer 35% of total sale to team operation fund
- Remainder of the sales income will be transferred to the prize-pool.

➤ Distribution of sales income at the time of winner determination

NOTE - The reward is assigned to a winner's account address.

■ FIRST PRIZE WINNER

Card owners who possess both winning cards at the time of the draw are termed a "FIRST PRIZE WINNER".

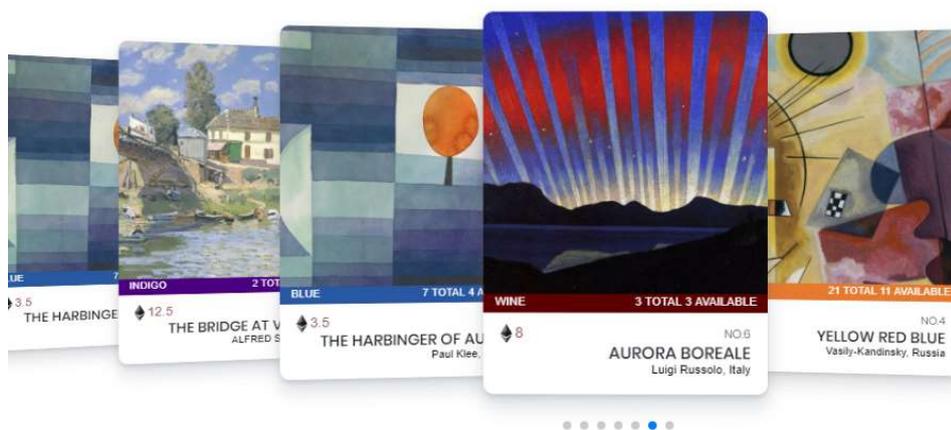
- ✓ First prize winners equally divide 45% of the total prize-pool.
- ✓ Our smart contract evenly distributes 45% of the prize-pool to any and all first prize winners. However, in the event of there being no winner, the entirety of the 45% prize-pool will be reassigned to the prize-pool of the next round.
- ✓ The owners of accounts selected as winners must go to the "MY COLLECTION" menu on the Ether-arts.io website to claim their rewards. They will be rewarded by smart contract when signing via an authentication process to verify that they are the account holder.

■ SECOND PRIZE WINNER

A player who owns just one of the two winning cards selected at the time of the draw is termed a "SECOND PRIZE WINNER".

- ✓ Our smart contract distributes 35% of the prize pool to 2nd prize winners according to Ether-Arts' predefined rules.
- ✓ Due to the requirement of owning two winning cards for 1st prize winners, 2nd prize winners are divided into two groups. Depending on the total supply of cards owned, the size of the prize money received by 2nd prize winners may vary from player to player
- ✓ As an explanation; card type A and card type B are selected as winners. A second-placed winner who owns only card type A will split 17.5% of the total reward pool. Also, 2nd prize winners who own only card type B will share 17.5% of the total reward pool. Due to the difference in the number of 2nd prize winners in each of the winning card type groups (A and B), the amount awarded to each player will be dependent upon the amount of other players who share their card type.
- ✓ A similar scenario involving greater disparity between 2nd prize winners, is in the event that card A is a rare card with only three being issued, but card B had thirty of its card type issued, the prize reward could differ by up to ten times in this case.

- ✓ If there is no 2nd prize winner for a particular card, the 17.5% that would have been awarded to that card's holders (had there been any), will not be executed and will be credited to the next round's prize-pool.
 - ✓ Vis-à-vis the 1st prize winners, the owner of an account selected as a 2nd prize winner must also go to the "MY COLLECTION" menu on the Ether-arts.io website to claim their reward. There is no difference in the process of reclamation of rewards between 1st and 2nd prize winners, with the exception of the amount awarded.
- In order to motivate participation in every subsequent round, the remaining 20% of any current round's accumulated rewards will be assigned to the following round's PRIZE-POOL.



MY REWARDS

Stage Number	Winner Cards	1st Winner Reward	2nd Winner Reward	My Unclaimed Rewards
STAGE #1	NO.9 , NO.3	0.000 ETH (winners : 0)	4.996 ETH (winners : 1)	Claimed - 4.996 ETH
STAGE #2	NO.1 , NO.9	0.000 ETH (winners : 0)	4.835 ETH (winners : 1)	CLAIM 4.835 eth

Fig 2. Claiming Reward

3. RANDOM NUMBER SELECTION - FAIR AND SECURE

Blockchain is characterized by fairness and transparency. In spite of this, there are structural deficiencies with regard to random number generation inside blockchain, itself. The method using block numbers or hash values can easily be disabled, because of their use of predictable seed values. Future block hashes can also be intervened with by miners, whereby, they can reject certain blocks if they do not match their intentions. Private data in a block cannot protect private property from

malicious attacks, so it is still difficult to make perfect, random number generation using only the data inside the blockchain. Therefore, our services utilise a method of receiving random numbers from an external random number Oracle (Wolfram-Alpha), that provides reliable data for a fee. This method is burdened with managing interfacing with the blockchain, but is fairer and much more secure than relying on random numbers generated by only the blockchain's internal data.

4. USER-TO-USER CARD EXCHANGE MARKET

The Ether-Arts team have integrated the user-to-user card transaction functionality into the site. This is a system that allows individuals to sell their cards at a pre-designated fee. If a player wishes to sell their card, they must register the card and the price which they intend to sell it for at the "my collection" menu. All rights and claims on the card are retained by the original owner until the actual card transaction (sale) is made. Further to this, it is also the right of the selling party to claim any and all rewards linked to the card, up to the time that the sale has been completed.

When a particular type of card's stock is entirely depleted, the user-to-user transaction mode is enabled for that card type, only. When a user has successfully registered the selling price of their card, the sale item will appear on the purchase page of the market.

5. BOUNTY PROGRAM

We have in place a bounty program for those willing to help in the promotion and endorsement of Ether-Arts and its services. Ether-Arts cards ranging between 0.25 and 10 ETH are issued as bounty rewards, dependent on the quality and scale of work undertaken. These cards, when issued as a bounty reward, in no way differ from those same cards when purchased, either in limitation or functionality. The bounty reward program will continue in earnest, as the addition of new cards after each round will ensure fresh opportunities for new players and old, meaning that the work of promotion, engagement, communication and interaction roll on, unabated. Almost every type of card has the potential to be offered as bounty, and will continue to be offered to key players who undertake a substantial role in promoting Ether-Arts.

5.1 YOUTUBE BOUNTY

Those who publish a review on Youtube, explaining Ether-Arts services and whitepaper, also qualify to be recipients of bounty cards. There are additional bounty points considered by the Ether-Arts

team, when selecting your bounty reward, if your Youtube review contains an actual reward winner's case.

Card colours that are eligible for bounty rewards, are: RED (1.2 ETH), GREY (2.0 ETH) BLUE (3.0 ETH) and BROWN (5 ETH). The Ether-Arts team will determine the reward card that each bounty participant receives, according to the quality of their work, zeal in promotion and dissemination, number of viewer/readers, and also the response of viewers/readers

On the 25th day of each month, the list of bounty hunters to be rewarded will be published on our announcement channel on Instagram. For those wishing to participate in the bounty campaign, please send an email to admin@ether-arts.io with a link to your work, before the 20th of every month.

5.2 CRYPTOCURRENCY NEWS SITE ARTICLES

Cards among Brown (5 ETH), WINE (7.5 ETH) and INDIGO (10.0 ETH) will be issued.

The reward card to be selected, will be based on: Fidelity of content; reputation of the site; number of readers; influence of the site. Articles must remain in circulation for at least two months and have their own URL, so as to be able to utilise their link. Please contact us at (admin@ether-arts.io) if you are a reporter or an administrator for a cryptocurrency news site.

5.3 TRANSLATION OF WHITEPAPER

We require: Chinese / Spanish / Japanese / Indian / Korean / German / French / Russian version of this whitepaper. Anyone fluent in one or more of these languages, please contact us by email at (admin@ether-arts.io).

We have assigned the following colour cards as reward for successful translation: ORANGE (0.6 ETH), RED (1.2 ETH) and GREY (2.0 ETH) cards. Our marketing team will select the card type to be awarded, relating to the accuracy of translation, achieved. Please note: Use of Google translate is prohibited.

Participants need to consult with the operator in advance, to avoid duplicate translations (admin@ether-arts.io) This could result in us requesting submission of past translation works by the applicant.

5.4 PROMOTING ETHER-ARTS TO THE WIDER CRYPTO COMMUNITY

It is the aim of Ether-Arts to reach as many people as possible with our unique project. The greater the participation, the greater the rewards. With this being said, there is nothing akin to word-of-mouth in helping promote a project, no matter how good or how ethical its' aims may be. We recognize this and offer bounty, accordingly. By posting yours or others' Ether-Arts reviews to cryptocurrency communities around the world, you are helping spread the word. We pay these bounty hunters the appropriate compensation, based on the total cumulative view count of their posts. (Minimum cumulative view count: 300+)

Participants of community promotion can obtain these card colours as bounty: GREEN (0.25 ETH), OLIVE (0.4 ETH), ORANGE (0.6 ETH), RED (1.2 ETH) and GREY (2.0 ETH). Links to your promotion posts should be emailed to (support@ether-arts.io) before the 20th day of every month. At the time of viewing, only articles that are still active will be valid. Please be aware that we filter purposefully for unfaithful posts. Screen captures will not be permitted, owing to the ease with which they can be manipulated.

6. CONCLUSION

We, at Ether-Arts, wanted to create something that would engage the burgeoning Crypto-community. We know it's the future, and we know that you know it's the future, too. With this in mind, two things usually bring people together: 1) A mutual appreciation of something - in this case, artwork. 2) The promise of big reward – this is where the lottery comes in.

The Ether-Arts project acts as an umbrella for multiple, singular ideas. By bringing them all together under one canopy, it not only makes for an all-round more interesting project, but serves to illustrate the flexibility and versatility of blockchain technology and its' use-cases. In any event, if you are someone who appreciates art in all its' myriad forms, then this project is for you. If you are a risk-taker, reveling in the thrill of chance and the possibility of big rewards, then this project is also for you. If you like to support those of the 99% percent whose work goes largely without remuneration, leaving them unable to sustain creativity that will inspire others and give pause for thought to many, then this project is for you, too. If you consider yourself an investor or collector of the rare and valuable, and are seeking digital commodities with a finite issue, then this project is most definitely for you.

We hope you enjoy it as much we have enjoyed creating it!

Ether-Arts – Part-Art, Part-Lottery, Part-Philanthropy, Part-Investment.