



THE AUSTRALIAN OPEN ART BALL

GENESIS NFT

THE FIRST **AO** NFT

LITE PAPER

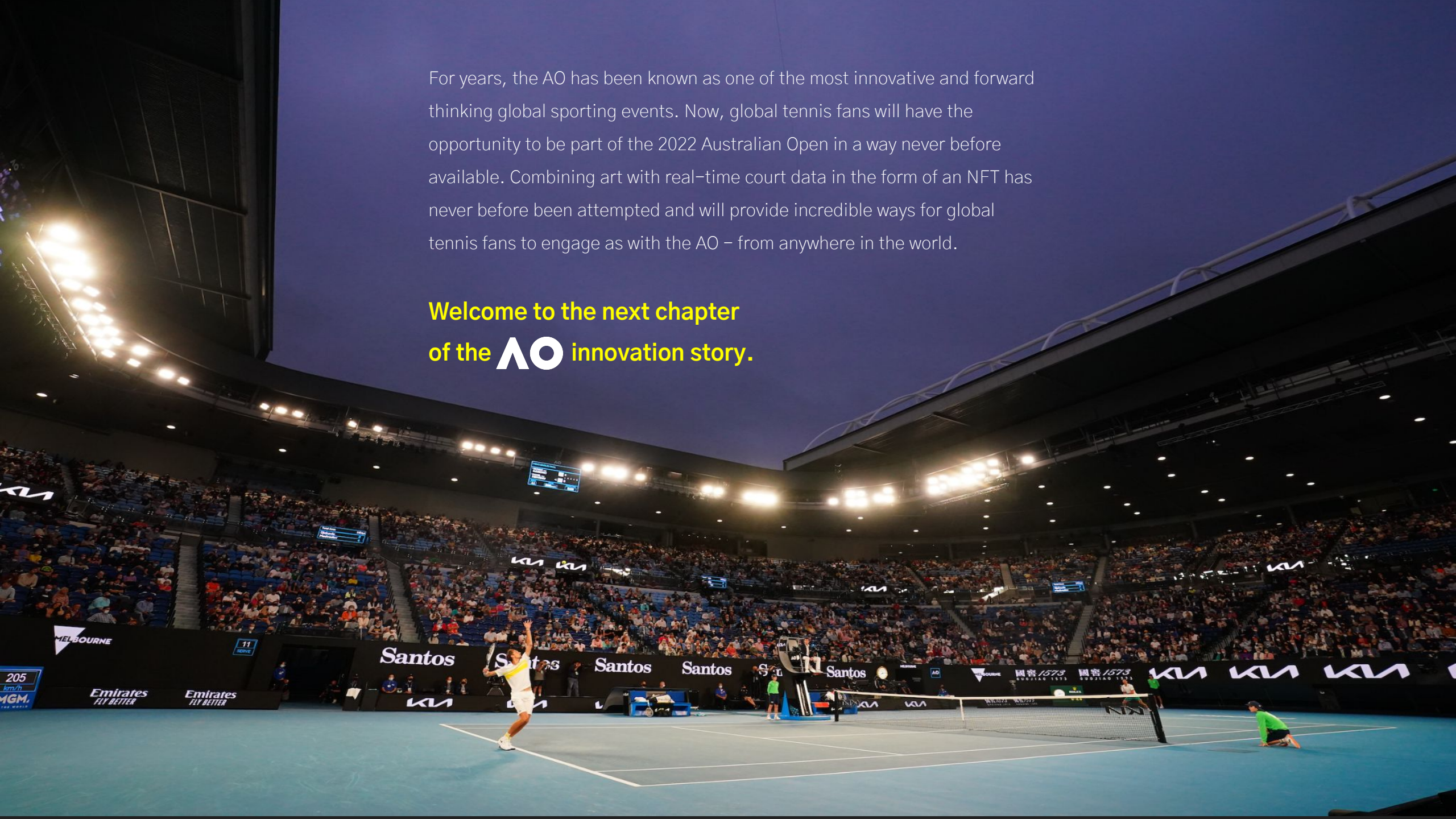
REVISED 16/01/2022

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

For years, the AO has been known as one of the most innovative and forward thinking global sporting events. Now, global tennis fans will have the opportunity to be part of the 2022 Australian Open in a way never before available. Combining art with real-time court data in the form of an NFT has never before been attempted and will provide incredible ways for global tennis fans to engage as with the AO – from anywhere in the world.

Welcome to the next chapter
of the **AO** innovation story.



Our commitment to environment

Tennis Australia has become the first Australian sporting organisation to commit to the United Nations Sports for Climate Change Action Framework. Speaking at an event for climate action in Paris, Tennis Australia CEO and Australian Open Tournament Director Craig Tiley explained how sport can play a major role in promoting innovative and sustainable practices required to achieve climate neutrality.

“As the biggest sporting event in the world each January, the Australian Open is in a unique position to help drive awareness of the need for increased sustainability,” Tiley said. “While minimising the environmental impact across all of our events is an important focus of our team, equally, we know that as the national sporting body, we also have the power to influence and drive the behavioural changes required to achieve climate neutrality at the local community level.

Recognising the environmental impact of NFTs, the AO has committed to purchase carbon reductions to entirely offset the NFT carbon emissions associated with the primary sale. AO has enlisted the services of Australian-based carbon emissions advisory Carbon Neutral to provide a carbon offset solution. To that end, the AO has chosen to use [Biodiverse Reforestation Carbon Offsets](#) for this purpose. Carbon offsetting from the AO Art Ball NFTs will contribute directly to revegetating the landscape of the Yarra Yarra, with native trees and shrubs which encourages wildlife to return while at the same time removing carbon from the atmosphere. The goal is to create a 200km long green corridor from inland all the way to the coast, reconnecting remnant vegetation with 12 nature reserves across a 10,000km² area.

To date, Carbon Neutral have planted over 30 million native mixed species trees and shrubs, restoring over 13,000 hectares of degraded farmland in Western Australia’s wheatbelt.

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

The AO 2022 NFT is an ecosystem of experiences

spanning art, sport, community, utility and the metaverse.



LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

The Art Ball NFT Ownership Experience

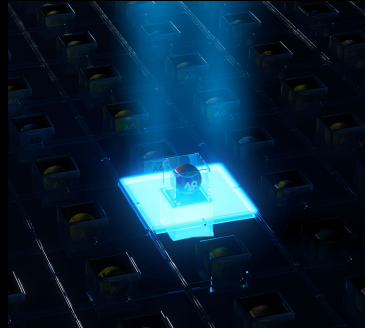
Utility

Sport

Art

Collectibles

Community



STEP 1 MINT

Head to www.ao.artball.io and connect your Metamask to mint. Join the [Discord](#) to hear the latest announcements.



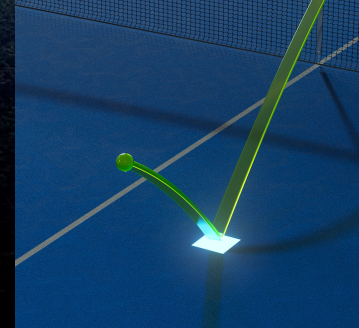
STEP 2 REVEAL

Open your Metamask wallet to view your ball's artwork and the court location you have been allocated.



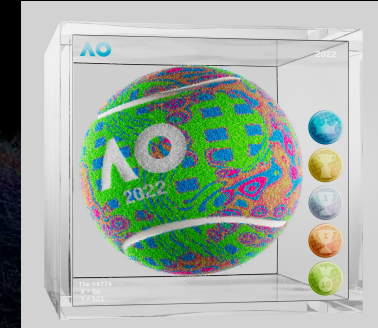
STEP 3 WATCH

Watch the Australian Open and join the [Discord](#) and Twitter to see if any match winning points have landed in your plot.



STEP 4 MATCH POINTS

Reveal additional utility such as limited-edition wearables, AO merchandise, NFT stickers and other benefits in the future.



STEP 5 HOLD

Hold onto your AO ball and engage in events, earn rewards and utility beyond AO 2022 including whitelist access to future releases.

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

The Melbourne Park AO precinct in Decentraland

Utility

Sport

Art

Collectibles

Community

Throughout the two weeks of the AO, fans from around the world will have virtual access to the Melbourne Park precinct in AO Decentraland. There they will be able to virtually discover the precinct which has been built from the ground up — along with a few surprises. Experience our great event from anywhere in the world, view 24 hour live-streams, access historic match content, play virtual tennis and interact with other users, all from the comfort of your own home.

Special access for Art Ball NFT holders, stay tuned on [Discord](#) to find out more.



VIRTUAL AO PRECINCT EXPERIENCES

- Rod Laver Arena
- AO Beach House
- Grand Slam Oval
- AO Ballpark
- Garden Square
- Rod Laver Arena Terrace

ADDITIONAL VALUE FOR USERS

- POAP collectibles
- Gamification
- Archive Match Footage Feeds
- Behind the Scenes Live Feeds
- Fan Conferences with Players
- AO Radio and Live Commentary

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

Match winning points

Utility

Sport

Art

Collectibles

Community

The tennis matches themselves are at the heart of the Australian Open. To that end, an AO NFT would be incomplete without a link to the matches.

For every match in the AO, the ball mark data of the match point will be used to award the NFT owner of that court plot. This will update your AO Ball NFT with the appropriate match winning sticker depending on which round your ball won the match point in, along with updated traits and metadata.



LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

Match winning points Breakdown

Utility

Sport

Art

Collectibles

Community

An overview of the 441 match point winners of the 2022 Australian Open and their corresponding stickers.

Category	1st Round	2nd Round	3rd Round	4th Round	Quarter Final	Semi Final	Final
Men's Singles	64	32	16	8	4	2	1
Women's Singles	64	32	16	8	4	2	1
Men's Doubles	32	16	8	–	4	2	1
Women's Doubles	32	16	8	–	4	2	1
Mixed Doubles	16	8	–	–	4	2	1
Wheelchair Men's Singles	–	–	–	–	4	2	1
Wheelchair Women's Singles	–	–	–	–	4	2	1
Wheelchair Men's Doubles	–	–	–	–	–	2	1
Wheelchair Women's Doubles	–	–	–	–	–	2	1
Quad Wheelchair Men's Singles	–	–	–	–	4	2	1
Quad Wheelchair Men's Doubles	–	–	–	–	–	2	1
Totals	208	104	48	16	32	22	11



Champion
(Most wins)

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

Match winning points 6,776 Court plots

Utility

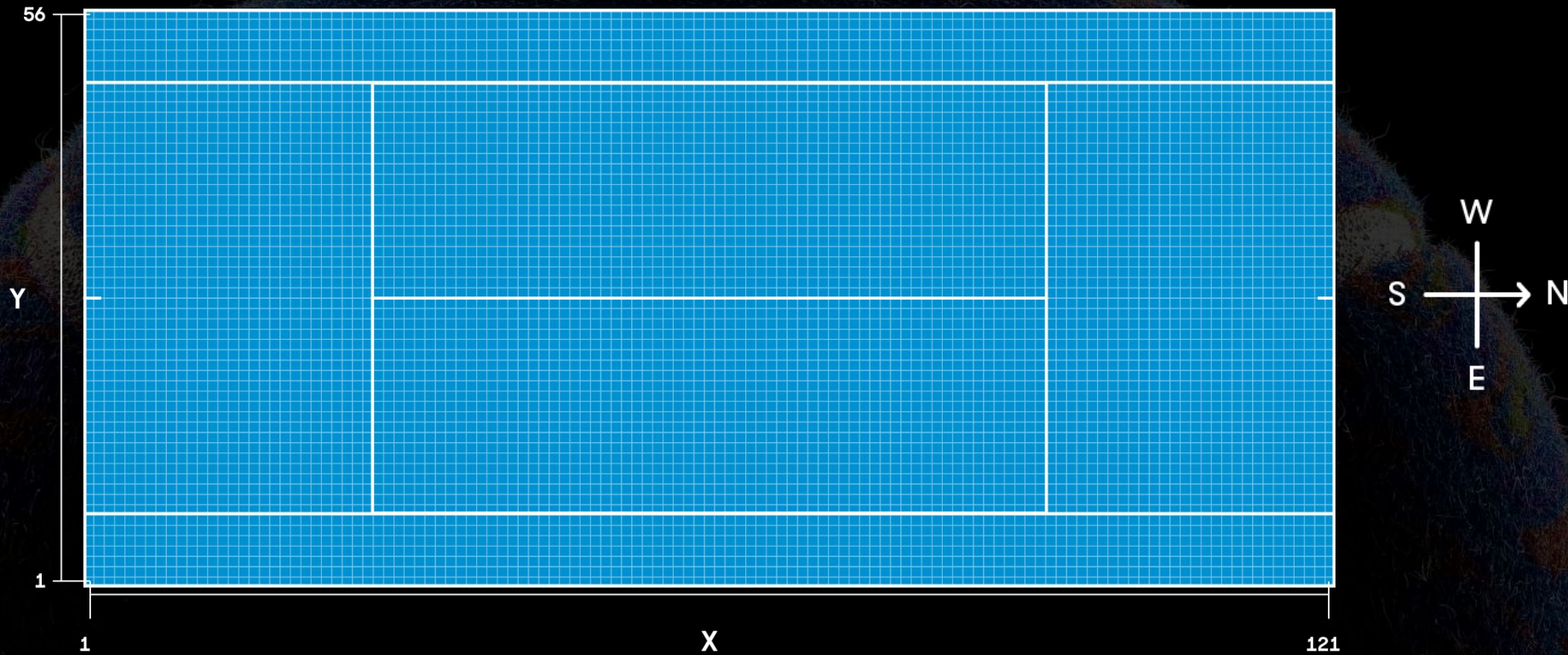
Sport

Art

Collectibles

Community

The court plot tied to the NFT will be revealed when the balls are minted, meaning a buyer can't choose a specific position on-court. Upon minting, every AO Art Ball NFT is randomly assigned an individual court plot. For this task we've partnered with [Chainlink VRF \(Verifiable Random Function\)](#), which provides cryptographically secure & fair randomness for all NFTs.



LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

Match winning points The rules

Utility

Sport

Art

Collectibles

Community

Each AO Art Ball is linked to a plot of the tennis court. Match points that land on that plot, will update the NFT metadata and reveal rewards to the owner.

THE RULES

1. A plot of the tennis court is randomly allocated to the NFT at the time of minting. Our smart contract applies an on-chain randomisation technique that ensures each AO Art Ball holder is allocated a verifiably random plot.
2. The ball mark for each match point, for every match of the Australian Open, will be mapped to the corresponding plot.
3. The ball mark is the precise point at which the tennis ball makes contact with the surface of the court, and is provided by data from Tennis Australia's electronic line-calling technology. This is the same data and technology used to officiate Australian Open matches down to the millimeter.
4. If the match is determined by a shot that does not land on a plot (e.g. double fault or 'out' balls), then we will revert to the last legal bounce inside the court of play (from the winning player).
5. In the case of Wheelchairs, the second bounce of the ball will be deemed the winner – if the second bounce is outside the court of play, the last bounce inside the court of play will be deemed the winner.
6. Tram lines are inclusive for all matches featuring doubles.
7. If at the conclusion of the AO, there is a tie in the total match point winners, the NFT with the most recent winning shot is deemed to be the champion.
8. The metadata on the NFT will be updated with match details.
9. If more than one match point lands on one plot, then the NFT metadata will be updated accordingly.

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

The championship points

Utility

Sport

Art

Collectibles

Community



Note: Image for illustrative purposes only.

A championship point refers to the point that decides the winner of a match that decides the championship. There are a total of 11 AO championship points in the following tournaments:

1. Men's Singles Final
2. Women's Singles Final
3. Men's Doubles Final
4. Women's Doubles Final
5. Mixed Doubles Final
6. Wheelchair Men's Singles Final
7. Wheelchair Women's Singles Final
8. Wheelchair Men's Doubles Final
9. Wheelchair Women's Doubles Final
10. Quad Wheelchair Singles Final
11. Quad Wheelchair Doubles Final

When a championship point lands on a plot, the owner of that plot can claim and receive the physical tennis ball used in the match, see terms and conditions [here](#).

To find out more, stay tuned with news and announcement by following us on [Twitter](#) and joining us on [Discord](#).

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

Electronic line-calling technology

Utility

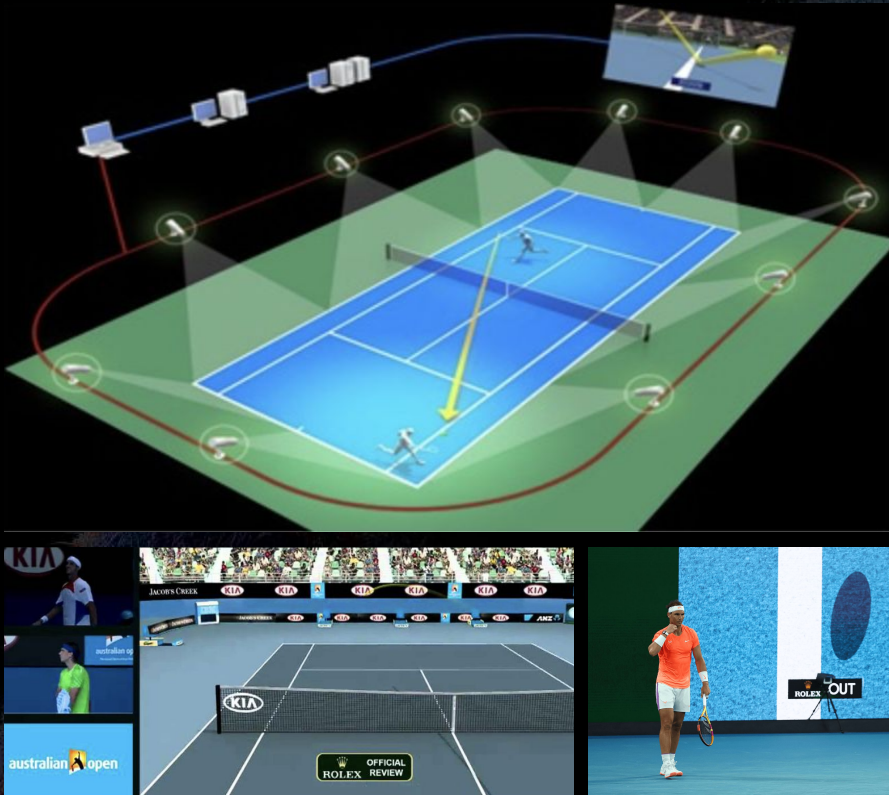
Sport

Art

Collectibles

Community

THE FIRST AO NFT



The AO uses electronic line-calling technology which traces a ball's trajectory using multiple computer-linked cameras situated around the court and reads video in real-time and tracks the path of the tennis ball on each camera. These separate views are then combined together to produce an accurate 3D representation of the path of the ball. The 2021 Australian Open was the first grand slam tennis event to be played entirely without line judges, as the electronic line-calling system is making all line calls.

We will be making use of this data to determine winning NFTs, the very same data used in AO matches.

AO ART BALL LITE PAPER PAGE 12

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

The championship points Match-linked NFTs

Utility

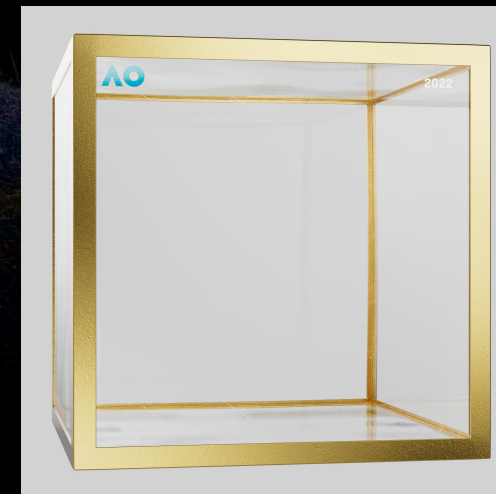
Sport

Art

Collectibles

Community

When one of the 11 championship points lands on a plot, the NFT's glass case will be updated with a golden frame to signify that it was a championship winning NFT.



Men's Singles



Women's Singles



Men's Doubles



Women's Doubles



Mixed Doubles



Wheelchair Men's Singles

Wheelchair Women's Singles

Quad Wheelchair Men's Singles



Wheelchair Men's Doubles

Wheelchair Women's Doubles

Quad Wheelchair Men's Doubles

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

Introducing the AO artwork Generative Series (6,636)

Utility

Sport

Art

Collectibles

Community

Generative art has existed since the 1960s, and with the rise of blockchain technology, along with modern generative art techniques, we're able to push the art form toward new and exciting directions. Generative art, the algorithmic combination of different colour schemes, patterns and textures, ensure each AO Art Ball is individual in appearance. Drawing inspiration from tennis culture, pop art and modern art, the use of exciting geometric forms paired with a vibrant colour palette results in beautiful, individual generative Art Balls.



LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

Generative NFT Traits

Utility

Sport

Art

Collectibles

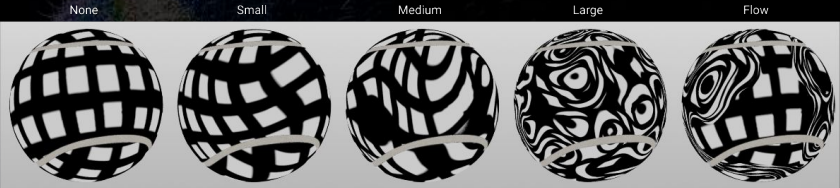
Community

Each generative ball base pattern is modulated through a series of processors to create new, randomised, one-of-a-kind patterns for every AO Art Ball.

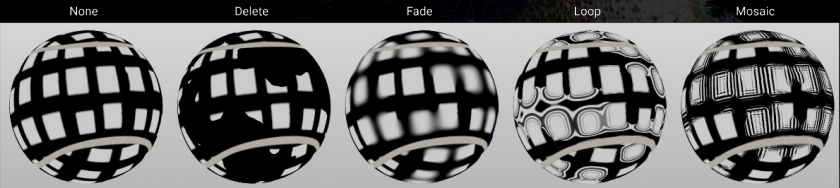
Pattern



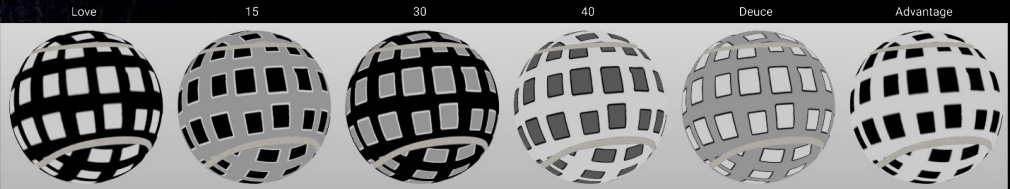
Warp



Overlay



Rally



LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

Generative NFT Traits

Utility

Sport

Art

Collectibles

Community

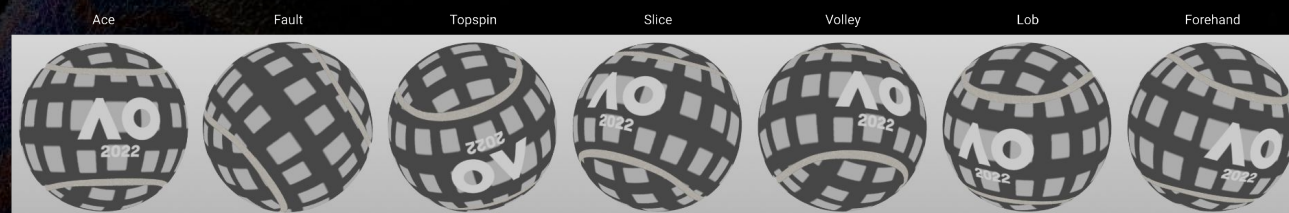
Then, each generative ball is given either a white or black AO 2022 logo, and assigned a random orientation (shot), resulting in a truly one-of-a-kind AO Art Ball to call your own.



White

Black

Logo



Ace

Fault

Topspin

Slice

Volley

Lob

Forehand

Shot

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

Generative NFT Traits

Utility

Sport

Art

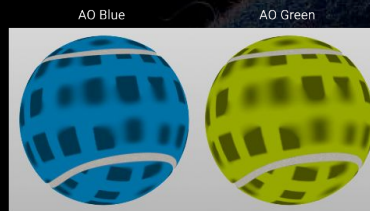
Collectibles

Community

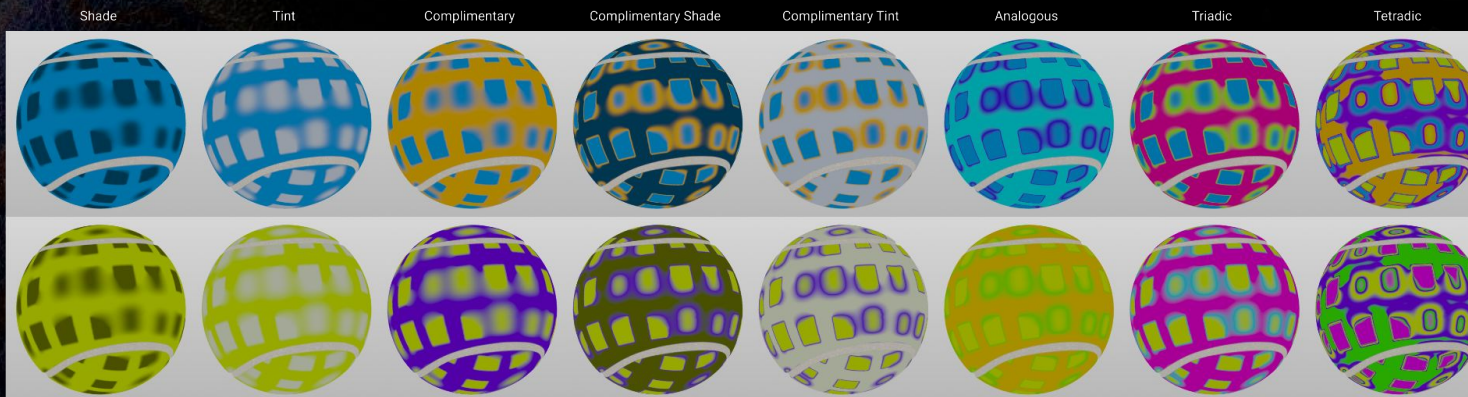
One of the two AO base colours are then chosen, AO Blue or AO Green.

From which they are further processed to randomly assign a scheme for the corresponding colour chosen — creating limitless colour combinations.

Colour



Scheme



LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

Introducing the AO artwork Artist Series (118)

Utility

Sport

Art

Collectibles

Community

Artwork Submission Details

DOWNLOAD TEMPLATE

as Photoshop documents


DOWNLOAD TEMPLATE

as PNG images

Resolution
2048x2048px

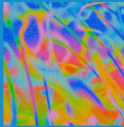
Format
PNG or JPG

Art Tip
Bold shapes & pattern based artworks will work best!



Step One
Download the AO Tennis Ball Texture Template. The template includes outlines for each section of the tennis ball.


This 2D layout will then be used to wrap around and texture the 3D AO Tennis Ball.



Step Two
Create a unique design for this project or use an existing artwork.


Bold shapes & patterns will work best. Any details that are too small will be lost amongst the fur of the tennis ball.

(Be aware any artwork that infringes on existing intellectual property will not be used)



Step Three
Use the template to make sure your artwork lines up how you intend. Also don't forget to colour the AO logo however you wish.

Please DO NOT include the template outlines in the artwork you submit.



Step Four
Submit your artwork using the form at the top of this webpage, and we'll take it from there.

See you on the court!

In the spirit of inclusiveness and participation, we are welcoming community art submissions for a chance to be included as part of the AO Artist Series within the collection. Artworks will be presented against a tennis ball canvas as a NFT. A design committee has been assembled who will review submissions to ensure compliance with standards, terms and conditions.

Submissions are limited to one per artist with each artist receiving 0.025% of gross revenue, with a minimum of \$500 (AUD).

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

Introducing the AO artwork Legend Series (22)

Utility

Sport

Art

Collectibles

Community

THE FIRST AO NFT



The Legend Series is limited to a release of only 22, a mere 0.3% of the collection and digitally crafted from scratch. On the left is a preview of one of the actual Legend Series Art Balls. The “Tennis Man” silhouette, first introduced in the 1997 Australian Open, has been revived and reinterpreted on an Art Ball canvas and presented as a 1-of-1 NFTs.

AO ART BALL LITE PAPER PAGE 19

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

AO virtual and physical Collectibles

Utility

Sport

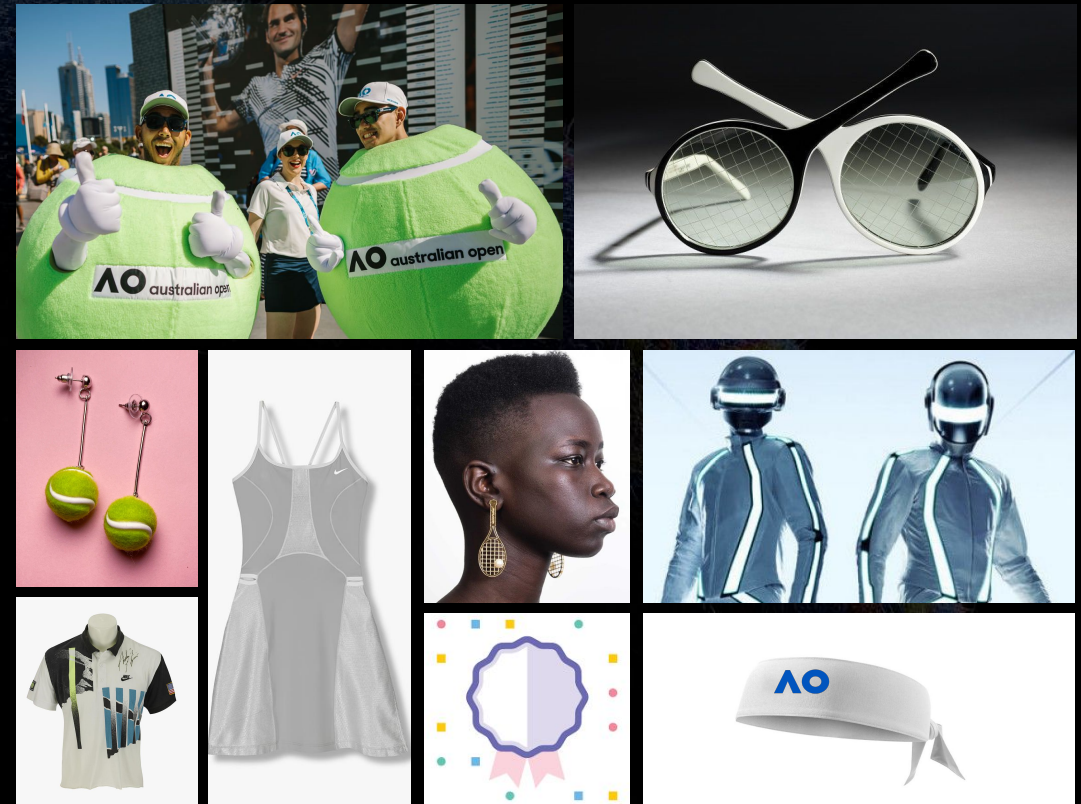
Art

Collectibles

Community

Bridging the virtual with the physical, the AO Metaverse and NFTs will offer real-life and digital collectibles including:

- **Proof of Attendance Protocols (POAP)**
- **Future NFT Collections**
- **Limited edition AO merchandise**
- **Limited edition wearables**



LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

Our commitment to community and charity

Utility

Sport

Art

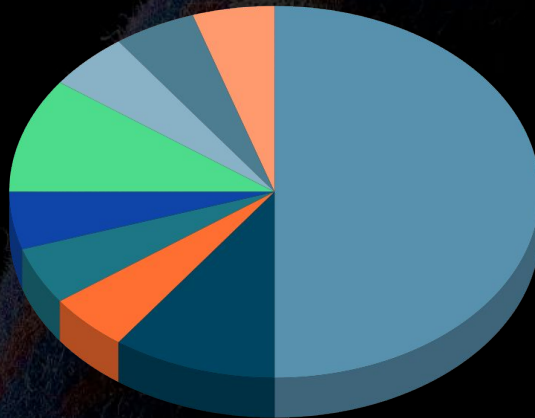
Collectibles

Community

As part of our continued commitment to community and charity, 50% of the funds raised from this project will be directed to carbon offsetting and charitable causes via our charity, the Australian Tennis Foundation (ATF). The Australia Tennis Foundation is committed to supporting resilient communities valuing respect, connectedness and diversity; programs delivered aim to inspire brighter futures for all children and young people.

Alongside offsetting carbon emissions funds raised will be directed towards the delivery of Tennis Hot Shots programs across Australia's Indigenous communities in partnership with local indigenous organisations and State Member Associations. This includes a new four year initiative due to be delivered in partnership with Wanta Aboriginal Corporation and Tennis NT in 2022. This program will see 750 young people across 9 remote communities surrounding Alice Springs and Katherine engage in culturally appropriate tennis programming delivered within the Kinship system. Wanta staff and local community leaders will receive coaching qualifications to build capacity and promote sustainable pathways for Indigenous youth, while incorporating tennis as a vehicle for Cultural Practises on Country.

AO ART BALL LITE PAPER PAGE 21



- Charities and Carbon Offsetting (50%)
- Metaverse investment [LAND, builds & experiences] (10%)
- Metaverse experience, design and build (5%)
- Metaverse wearables design and build (5%)
- Marketing and press (5%)
- Artwork, generative dev and artist fund (10%)
- NFT design and build (5%)
- Smart contract design, build and test (5%)
- Website development and build (5%)

As part of our long-term commitment to the metaverse, we are reserving funds for the acquiring of land in Decentraland which serves the dual-purpose of connecting with new audiences and providing existing fans with new ways to engage.

Project build costs including designers, engineers, artists, metaverse builders and developers comprise 40% of designated project funds.

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

A note on process, provenance and achieving fairness

PROCESS

To achieve true fairness in the allocation of artwork and court plot, a mapping procedure is executed by our smart contract that assigns a ball and a court plot to each of the 6,776 available NFTs. This 5-step process is outlined below:

1. Three lists of numbers are created, that represent 6,776 tokens, 6,776 art balls and 6,776 court plots.
2. Two random numbers between 1 and 6,776 are generated.
3. The first random number is generated and used to assign an art ball to the NFT. For example, if the number is 10, the 10th ball is assigned to the NFT. Now allocated, the 10th ball is removed from the list of available balls.
4. The second random number is generated and the corresponding plot is assigned to the token. Now that it's allocated, this plot will be removed from the list.
5. Steps 2 to 4 will be repeated 6,776 times.

FAIRNESS

Randomness, although simple in principle is complex technically to accomplish on the blockchain.

Powerful computers can out-compute others to affect blockchain outcomes. Although oftentimes cost prohibitive, we have implemented preventative measures so that fairness can be achieved.

Leveraging ChainLink's Verifiable Randomness Function (VRF) within our smart contract, random numbers are generated along with cryptographic proof of how that number was determined. The proof is published and verified on-chain before it can be used. This ensures that results cannot be tampered with.

For further information please see:
<https://docs.chain.link/docs/chainlink-vrf/>

PROVENANCE

Since the randomness of tokens to balls and plots are fairly established, how do we prove images uploaded to IPFS are not tampered with?

After images are uploaded to IPFS, the IPFS protocol will provide a cryptographic hash of the files, this is called a content identifier or CID. We then record this CID on the blockchain ahead of the random token allocation.

This proves, that at this point in time, that this is the image dataset we are using and thereby establishing provenance of the ball images.

For further information please see:
<https://docs.ipfs.io/concepts/content-addressing/>

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

The AO Art Ball NFT is brought to you by a passionate team of thinkers, dreamers, builders and tennis fanatics (of course)



Australian Tennis Foundation

Tennis Australia's Official Charity who aims to inspire brighter futures for children and young people.



Carbon Neutral

A carbon emissions advisory, recognised offset entity and signatory on the Australian Carbon Industry Code of Conduct.



Chainlink

Chainlink is a decentralized blockchain oracle network built on Ethereum.



Decentraland

An open-source 3D virtual world platform built on the blockchain.



Metakey

The ONE token with utility across gaming, virtual worlds, discounts, and much more!



Pellar

Specialist full-service blockchain development and solutions provider.



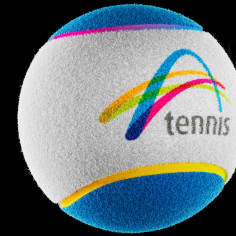
Rarer Things

Web 3.0 advisors to Tennis Australia



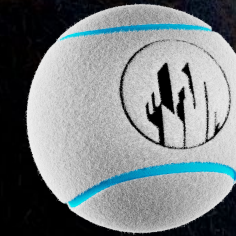
Run It Wild

A multidisciplinary blockchain studio specialising in art, collectibles and gaming.



Tennis Australia

The governing body of the Australian Open.



Vegas City

An open-source virtual world and one of the largest Decentraland districts.

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

Australian Open Metaverse and NFT roadmap

GENESIS
2022

Build a passionate, thriving and forward-looking community of like-minded individuals with a shared passion for art, culture, charity and tennis.

EXPLORE
2023

Explore utility that adds value to our community, including exclusive physical and metaverse experiences, access to other grand slams and enhanced metaverse experiences.

EXPAND
2024+

Expand into play-to-earn gaming, multi-metaverse and Web3 enabled experiences across ticket sales, sponsorship contracts, on-site and off-site experiences.

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.



Be part of the future of tennis.



LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.

Key Definitions

Blockchain – a data structure that holds transactional records and while ensuring security, transparency, and decentralization. You can also think of it as a chain or records stored in the forms of blocks which are controlled by no single authority.

Decentraland – An Ethereum-based blockchain platform where users can purchase, build and monetize virtual reality applications.

Ethereum – Ethereum is open access to digital money and data-friendly services for everyone – no matter your background or location. It's a community-built technology behind the cryptocurrency ether (ETH) and thousands of applications you can use today.

ERC721 Smart Contract – A standard for representing ownership of non-fungible tokens, that is, where each token is unique. ERC721 is a more complex standard than ERC20, with multiple optional extensions, and is split across a number of contracts.

GWEI Fees – Ethereum transaction fees, known as Gas Fees. When you mint your token you will incur a gas fee. These are payments made by users to compensate for the computing energy required to process and validate and vary depending the demand on the blockchain at that moment in time.

IPFS – The InterPlanetary File System is a protocol and peer-to-peer network for storing and sharing data in a distributed file system. IPFS uses content-addressing to uniquely identify each file in a global namespace connecting all computing devices.

NFT – A non-fungible token is a unit of data stored on a digital ledger, called a blockchain, that certifies a digital asset to be unique and therefore not interchangeable. NFTs can be used to represent items such as photos, videos, audio, and other types of digital files.

Metamask – A cryptocurrency wallet used to interact with the Ethereum blockchain. It allows users to access their Ethereum wallet through a browser extension or mobile app, which can then be used to interact with decentralized applications. This is where your NFTs and Ethereum can be stored.

Minting – is the process of creating tokens on the Ethereum blockchain.

Tennis Australia – Tennis Australia (TA) is an Australian-based not-for-profit organisation and the governing body responsible for overseeing the Australian Open. In addition, TA supports the development and promotes the participation of tennis at all levels and ages.

LEGAL

Details and terminology in this document are subject to change. This document is for reference only, and should not be used or considered as investment advice or recommendations for any technology mentioned within. This document is for personal use only, and should not be edited, updated, or reattributed.