MINDFUL OCEAN METAVERSE

Make Art
Save Ocean

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Executive Summary

Mindful Ocean Metaverse is a groundbreaking initiative aligned with the United Nations' Sustainable Development Goal #14 - Life Below Water. Focused on addressing the urgent crisis facing the world's oceans, the project leverages blockchain, augmented reality (AR), and artificial intelligence (AI) to build a sustainable ecosystem that encourages art creation for ocean conservation.

Our initiative aims to foster empathy towards marine life by promoting art-making as a means of developing individual mindfulness and social mindfulness. The project's three social missions are to encourage more people to make art, explore the use of Web3 for social changes, and support conservationists by cultivating empathy.

Our solution encompasses various components and technologies to facilitate a series of art-making events, aiming to foster an active community to raise funds for ocean conservation by making art.

In our art contests, we adopt a unique process that involves an offline AI analysis to determine the Authentic Scarcity of artworks, ensuring a fair and transparent approach to NFT rarity. Artists can be rewarded based on the visual uniqueness of their art. The AR Metaverse feature, powered by Auki Labs, enables users to interact with virtual marine life in our AR Metaverse, fostering empathy through gamified experiences.

The NFT Tokenomic in this white paper outlines the roles and actions of artists, Web3 users, and conservationists within the Mindful Ocean Metaverse. Partnerships and sponsorships of this project are sought from companies aligned with our social missions, offering opportunities for building brand awareness and engagement for social enterprises. Additionally, the initiative supports educational institutions, scientists, and ocean conservation organizations to co-create content and participate in fundraising events.

Proceeds from our art-making events, along with other sponsorships or donations, contribute to the project's sustainable ecosystem. The roadmap in this whitepaper outlines key milestones for 2024 and 2025, including the launch of real live events, an Android app, and an educational program.

Backed by Yat Siu, an award-winning entrepreneur with a track record in making art and technology more accessible, Mindful Ocean Metaverse strives to make a significant impact on ocean conservation by uniting a global community through the power of art-making.

Introduction

Can you imagine one day, there are no fish in the ocean?

Overfishing, climate change, and plastic pollution have put 90% of marine species at risk of extinction. What you are facing is not just a crisis for marine life, but a catastrophe that threatens your life on earth. The ocean provides food to feed you, supplies oxygen for you to breathe, and absorbs carbon dioxide to relieve global warming. A healthy ocean is crucial to the ecosystem that you live in. We can't live alone if marine life is dying.

If you are lucky, you may be one of the 0.5% world population who can dive. But you may feel so desperate and helpless, because you may have already heard that 99% of the beautiful coral reefs you saw are dying. If you are one of the remaining 99.5% world population who have never dived, you may not have the privilege to witness the collapse of the ocean ecosystem, but you may have heard about the ocean crisis. Without even knowing, some of you may have developed what scientists called eco-grief, the anxiety that can arise from experiencing ecological destruction directly or indirectly.

Yet many people are not aware of the urgency to save our ocean. They may think fish are just food, and fish don't feel pain. To them, the ocean is an unlimited resource that we can harvest, and an invisible site with infinite space for dumping waste. How can we cultivate more empathy towards marine life? How can we unite and empower more people to save our ocean? How can we recover from eco-grief? Mindful Ocean Metaverse is a social project that tries to answer these questions.

Our vision? Let's make art to save our ocean.

We believe art is an effective way to cultivate understanding and empathy. Through the lens of art, you can see and feel what you normally can't perceive. In addition, art is an accessible stress-reliever. Anyone can make art and feel its healing power to our anxiety. Research has found that art-making can reduce stress hormones like cortisol, and increase pleasure hormones like dopamine. Art-making can also create new neural pathways in your brain, allowing you to link different concepts more easily to generate creative ideas.

In addition, art-making can develop mindfulness, which allows you to be more aware of the present moment, and enables you to look at the world with new angles. We believe developing mindfulness is extremely important for everyone living in a fast-paced world. It can also lead to the development of social mindfulness, so that more people can be aware of the unprecedented ocean crisis we are facing.

In this white paper, we will explain how we use blockchain, augmented reality (AR), and artificial intelligence (AI) to create a sustainable ecosystem for artists, Web3 users, and conservationists to save our ocean collaboratively.

Problem Statement

Our ocean is dying. Many feel powerless to take actions, yet many aren't even aware of the consequences if we fail to save our ocean. Ocean is less accessible to many people, compared to land. Not many people have a chance to develop an intimate relationship with marine animals. Hence, there is a lack of awareness about the importance of protecting our ocean, a lack of empathy towards marine life, and a lack of solidarity that can unite everyone on earth to resolve the ocean crisis.

Project Vision and Social Missions

Mindful Ocean Metaverse has a vision to protect our ocean through art-making.

We use blockchain, AR, and AI technology to empower anyone to take part in ocean conservation by making art. We organize art-making events and art contests to raise awareness of the ocean crisis, nurture mindfulness, and promote creativity. With our tools, you can easily create NFT artworks that simulate marine life in a co-created virtual space - the Mindful Ocean Metaverse. We empower anyone to become an NFT artist, and use their art to raise funds for conservationists to carry out urgent actions that can save our ocean.

Our vision is also guided by 3 social missions that we want to contribute to.

Encourage More People To Make Art

Many people think art-making is hard. With the advance in generative AI technology, we find that more and more people are giving up on art-making. Many think it is a waste of time to craft an artwork because AI can now generate a piece of decent artwork in a second.

We believe it is important to let more people recognize the value of art-making and its benefits to mindfulness, shifting the emphasis from the product of art-making, to the process of art-making. People are just too focused on the question about whether AI can beat our talents, replacing us. We think what AI could never replace is the creative and stress-relieving process that people can immerse in through art-making. Hence, our first social mission is to encourage more people to make art.

Explore the Use of Web3 for Social Changes

Many believe Web3 is just about profits, but we believe Web3's true value is to empower social changes. Web3 technology provides the tools for people to decentralize decision-making, enable transparent governance, and protect digital ownership.

Our second social mission is to explore the use of Web3 for social changes, especially in the areas that leverage Web3 technology to foster a community of changemakers for ocean conservation.

Support Conservationists by Cultivating Empathy

We believe the lack of empathy towards marine life is one of the major challenges that conservationists are facing. Even though many scientists, NGOs, and policy makers are working very hard to save our ocean, they may find it hard to get enough people to support their actions.

Our third social mission is to support conservationists by cultivating empathy. We leverage the power of art-making and Web3 technology to help conservationists reach the hearts of their audience.

Solution Overview

At the heart of our solution is a co-created virtual space that empowers you to raise awareness and funds for ocean conservation, using your creativity. The virtual space is also an open metaverse where you can access via blockchain technology, and interact with other community members through multiplayer AR technology. In our fundraising art contests, we use AI to ensure content safety, and determine the scarcity of our NFT collections co-created by our contest participants.

NFT Standards

All NFTs in our project follow the ERC-721 standard, and are deployed on the Polygon blockchain network. Polygon (formerly Matic) is more environmentally friendly than traditional blockchains due to its use of the proof-of-stake (PoS) consensus mechanism. Unlike energy-intensive proof-of-work (PoW) systems, PoS doesn't rely on resource-intensive mining. Validators are chosen based on the tokens they hold and "stake" as collateral, eliminating the need for energy-consuming computations. This significantly reduces Polygon's energy consumption and carbon footprint, making it a sustainable and eco-friendly blockchain network.

Multiplayer AR

Our multiplayer AR technology is powered by Auki Labs, which provides us with the groundbreaking technology that enables collaborative spatial computing. It allows you to interact with your friends and the virtual marine animals in our AR Metaverse together.

AI Usage

We use an offline AI algorithm to determine the uniqueness of each artwork in our art contests. We also leverage AI to enable users in our AR Metaverse to interact with virtual marine life through hand gestures. During the artwork submission process in our art contests, we also use AI to facilitate the filtering of inappropriate content.

Art-Making Events

Currently, there are 3 types of art-making events that the infrastructure of Mindful Ocean Metaverse can support. These art-making events aim at building an active community, supporting artists to make art, and raising funds for ocean conservation.

Community Building Social Media Contests

These are recurring social media contests for building an engaged Mindful Ocean Metaverse community. Participants are encouraged to make simple art in their daily lives and post their art in social media to raise awareness for ocean conservation.

As a token of appreciation, free NFT drops will be given to the winners of the social media contests. The winners will be selected based on criteria such as the total number of likes gathered by a social media post within a certain period. The NFT drops will include our own NFTs as well as NFTs sponsored by our partners.

Crowdfund an Artist Events

These are recurring crowdfunding events where we will invite artists to collaborate. In each event, an artist will be featured. The artist will design a special and limited edition of a Mindful Ocean NFT, which can be used in our mobile apps.

Different ways of selling these special NFTs will be explored, including presales and various types of auctions. Proceeds will be allocated to fund the artist, encourage more people to make art, donate to conservationists, and support our project development.

Mindful Ocean Art Contests

These are recurring art contests open for the public to participate in. Participants can use our mobile apps to create and submit their artworks, and turn their artworks into Mindful Ocean NFT, which can be used in our mobile apps.

Each Mindful Ocean Art contest has 6 phases, resulting in a co-created NFT collection at the end of the contest. Owners of a Mindful Ocean NFT may receive a creative reward based on the visual uniqueness of the NFT computed by an offline AI analysis.

6 Phases of Mindful Ocean Art Contest

Our Mindful Ocean Art Contests provide an innovative platform for creators and collectors to contribute to ocean conservation. The following describes the 6 different phases of a Mindful Ocean Art Contest.

Artwork Creation and Submission

Overview

Each contest will feature a specific marine animal. You will find a template of the featured marine animal in our mobile app. You are invited to complete a creative challenge, in which you need to design the outlook of the marine animal, and submit your unique designs to the contest.

Develop Mindfulness Through Art-Making

Research has shown that art-making can develop mindfulness, which is essential for our mental health. To make art and to experience its healing power, you don't need to be an expert! Do you like coloring? That's art-making. Do you doodle? That's art-making too. Carol Edmonston explains how doodling can develop mindfulness, and how it helps her and other cancer patients overcome trauma. Her book "The Healing Power of Doodling: Mindfulness Therapy to Deal With Stress, Fear, & Life Challenges" has been featured in Forbes Health and the New York Times.

Encouraging more people to make art is one of our social missions. In our art contests, you can make art by doodling, coloring, painting, drawing, illustrating, or designing on our templates. Whatever it takes to express yourself, you can just relax and enjoy the process. Focus on your breath, listen to your inner self, and discover new angles to perceive your surroundings. This can help you develop mindfulness and release stress.

Content Safety and Inclusivity

To ensure content safety, participants who submitted artworks with inappropriate content or copyright infringement will be disqualified in our art contests.

Currently, we are focusing our effort on refining the art creation and submission experience in our iOS app. If you don't have an iOS device, you can contact us to request access to our other artwork submission channels. Artworks submitted via these alternative channels require a more complicated process to ensure content safety. So our priority is given to participants in K-12 schools, colleges, universities, other educational institutes, and art-making organizations who can help us ensure the content safety of the entries.

Mint Pass Creation

Overview

On our website, you can select a submitted artwork, and turn it into a Mindful Ocean Mint Pass. At the end of the contest, each Mint Pass can be used to redeem a Mindful Ocean NFT, which contains the submitted artwork and its metadata.

Entry Fee and Waiver Program

Beside encouraging more people to make art, our art contests also support individuals or organizations to carry out their ocean-saving actions. Requiring an accessible entry fee to participate in our art contests can help us raise funds for ocean conservation. The entry fee will also be used to cover the cost of operating our art-making events, and providing creative rewards to participants.

Before each art contest, we will announce the required entry fee, and how participants can pay the entry fee. For example, we may collect the entry fee from the mint fee of the Mindful Ocean Mint Pass. For some special community building events, we may waive the entry fee for all participants.

In the future, we will also seek sponsors from other organizations, so that we can launch different waiver programs for specific participants, making our art contests more accessible.

AI Analysis

Overview

Once we have received all the submitted artwork in an art contest, we will compute a score for each artwork using AI. Each artwork will be organized into clusters, while each cluster will be further organized into superclusters. The total number of artworks in the cluster and supercluster that a specific artwork belongs to will be used to derive a score that can represent the scarcity of the artwork authentically. We name this score Authentic Scarcity.

Authentic Scarcity

For many other NFT projects, each NFT in a collection has a predetermined rarity. For example, if NFT #100 has 100 copies, and NFT #1 has 1 copy, then NFT #1 is rarer than NFT #100. Let's name this predetermined rarity - Artificial Scarcity, which is controlled by the NFT project team because they are the creators of all the NFT artworks, and they can decide the quantity of each artwork in the collection.

For the NFT collection resulting from an art contest, how can we describe individual artwork's scarcity? Our solution is to perform an offline AI analysis for all the artworks collected in a contest to compute a score called Authentic Scarcity.

By adapting an AI image classification algorithm, we can perform a multipass image clustering process for all the artworks in a contest. Then, we can organize the artworks into different groups and subgroups based on their visual similarity. After that, we can compare the rarity of different artworks using their group info. For example, let's say Subgroup A has

100 artworks, while Subgroup B has 1 artwork, we can tell the artwork in subgroup B is rarer than the artworks in Subgroup A.

NFT Redemption

Overview

After the AI analysis is completed, we will embed each artwork alongside metadata like Authentic Scarcity, Cluster ID, and Cluster Size into a Mindful Ocean NFT. Owners of the Mindful Ocean Mint Pass can then burn their mint pass to redeem the Mindful Ocean NFT, which can be used in our mobile app and is subject to receiving a creative reward based on its Authentic Scarcity or other criteria.

Creative Rewards

Before each art contest, we will announce the details of its associated creative rewards, including the winners' selection criteria. Creative rewards are digital or physical gifts that we will buy or receive from our business partners to encourage more people to take part in our art contests. The entry fees collected from an art contest may be used to cover the cost of the creative rewards.

AR Metaverse

Overview

In our mobile app, you can unlock our AR Metaverse, a co-created virtual space where you can interact with the virtual marine life created in our art-making events. You can play with the simulated marine life using hand gestures, and interact with other users. Our AR Metaverse is powered by our partner Auki Labs' cutting-edge AR technology.

Cultivate Empathy with Augmented Reality

Do you know there are less than 0.5% of the world population who have the privilege to interact with marine life in person? We believe a challenge for ocean conservation is to cultivate empathy towards marine life. Our solution is to empower people to develop kinship with marine animals using augmented reality. Compared to other augmented reality solutions with a similar mission, our solution has 3 main differences:

1. We integrate art-making into our solution because we believe art can cultivate empathy, activating our audience's creativity to imagine a better world for marine life.
2. We do not aim at achieving a realistic simulation of the underwater world. Instead, we gamify the experience, and provide many fun and engaging ways for people to play with virtual marine animals using hand gestures. We believe through play,

people can develop a special bond with the virtual animals, and rethink their relationships with marine life.

3. Our solution can support multiplayer live events that can happen in a physical environment like a shopping mall.

Unlocking the AR Metaverse Feature

In our mobile app, you can unlock the AR Metaverse feature with IAPs. A percentage of the revenue generated from the IAPs will be donated to individuals or organizations that support ocean conservation.

Donation

Overview

A donation will be made to support individuals or organizations who contribute to ocean conservation. The amount of the donation will be a percentage of the net revenue generated from the art-making events dedicated to the specific individual or organization. We aim at building a Web 3 community and become a decentralized autonomous organization (DAO). In the future, a mechanism to allow our community members to govern the details of the donations will be developed.

Sustainable Ecosystem

Mindful Ocean Metaverse is a social project that builds a sustainable ecosystem for artists, conservationists, and Web3 communities to save our ocean. We have 3 major social missions:

1. Encourage more people to make art.
2. Explore the use of Web3 for social changes.
3. Support conservationists by cultivating empathy.

Proceeds from our art contests will be allocated to the above missions. We will use various Web3 tools such as Snapshot to engage with our users, and ensure diverse stakeholders' voices will be included in our decisions and actions.

Computation of Authentic Scarcity

Below are the details of how we can compute Authentic Scarcity:

1. Use an AI image classification model to perform k-means image clustering for all artworks
2. In each resulting cluster, compute the average value for each feature, then use k-means clustering again to group similar clusters into superclusters
3. Compute the average image counts for all clusters (Cm) and all superclusters (Sm)

4. For each image, get the image counts in its cluster (Cn) and supercluster (Sn)
5. Compute the following to get the Authentic Scarcity rounded to the nearest integer (Higher means scarcer)

$$\frac{C_m}{C_n} \; X \; \frac{S_m}{S_n} \; X \; 1{,}000$$

Below are some examples for Cm = 10 and Sm = 30:

Image X	Image Y	Image Z
Cn = 1, Sn = 1 Authentic Scarcity = (10/1) x (30/1) x 1,000 = 300,000	Cn = 1, Sn = 2 Authentic Scarcity = (10/1) x (30/2) x 1,000 = 150,000	Cn = 50, Sn = 600 Authentic Scarcity = (10/50) x (30/600) x 1,000 = 10

In the above examples, image X is the scarcest.

Partnerships and Sponsorships

We seek business partners that align with our social missions to sponsor art-making events. They include the following types of companies

- Companies that provide products or services to nurture artists.
- Companies that provide products or services to engage Web3 users.
- Companies that provide products or services to support sustainable development.

Sponsors in our art-making events can build brand awareness, engage with their target audience, and support our social missions.

As a scientist, you can participate as the beneficiaries of our community art events. Proceeds of each community art event can be dedicated to a partnered scientist's project. Also, partnered scientists can also benefit from the educational social content we create to raise awareness of their conservation projects.

We are looking for ocean conservation organizations to co-create educational content for ocean conservation, co-organize fundraising events, and collaborate in cross-promotion through our project.

Other Use Cases and Applications

If you are an administrator of an educational institution, you can co-organize fundraising events with us to support ocean conservation in your institution. For example, we can collaborate with scientists and artists to conduct virtual outreach with your students.

Students can learn about the science of ocean conservation, explore how blockchain, AI, and AR technology can save marine life, and participate in art-making and fund-raising to solve a real-world problem. Part of the proceeds in an event can go to a reserve for your institution to carry out other sustainability education.
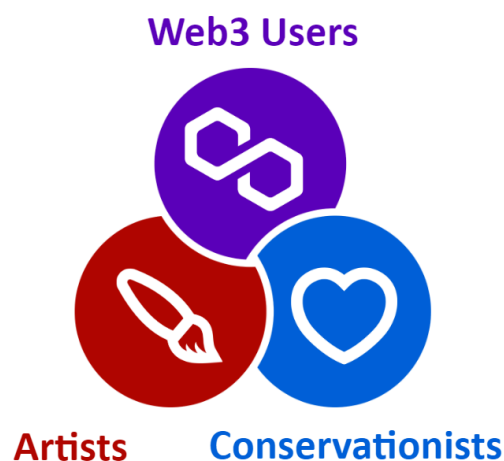
Proceeds Allocation

We target to allocate 50% of our net revenue for making donations to ocean conservationists to carry out their projects.

Net revenue = gross revenue - cost of goods sold - operating expenses

Items	Examples
Gross revenue	IAPs, Mint Fee, Royalties, Advertising
Cost of goods sold	Channel costs (e.g. App Store, OpenSea) Marketing costs, Gas Fees
Operating expenses	Cost of creative rewards in our art contests Cost of sourcing NFT drops from our partners Cost of community management Project development Art creation fee paid to partnered artists

NFT Tokenomic

Our NFT tokenomic is build around 3 pillars of community members

Web3 Users

Artists   **Conservationists**

The following table summarizes their roles in Mindful Ocean Metaverse:

Members	Needs	Actions	Roles

Artists	Publicity Resources	⭐Become a crowdfunded artist ⭐Win creative rewards in art contests ⭐Trade their art and creative rewards	Increase art quality and art diversity
Web3 Users	Benefits Social recognition	⭐Buy our Web3 products for social good ⭐ Collect Mindful Ocean NFTs to receive perks ⭐ Play with friends in our AR Metaverse	Increase liquidity and utility
Conservationists	Audience Funders	⭐ Tell our users about their stories ⭐ Sponsor special perks in fundraisers ⭐ Receive donations from fundraisers	Increase trustworthiness

The following figure illustrates the transactions in our NFT ecosystem:
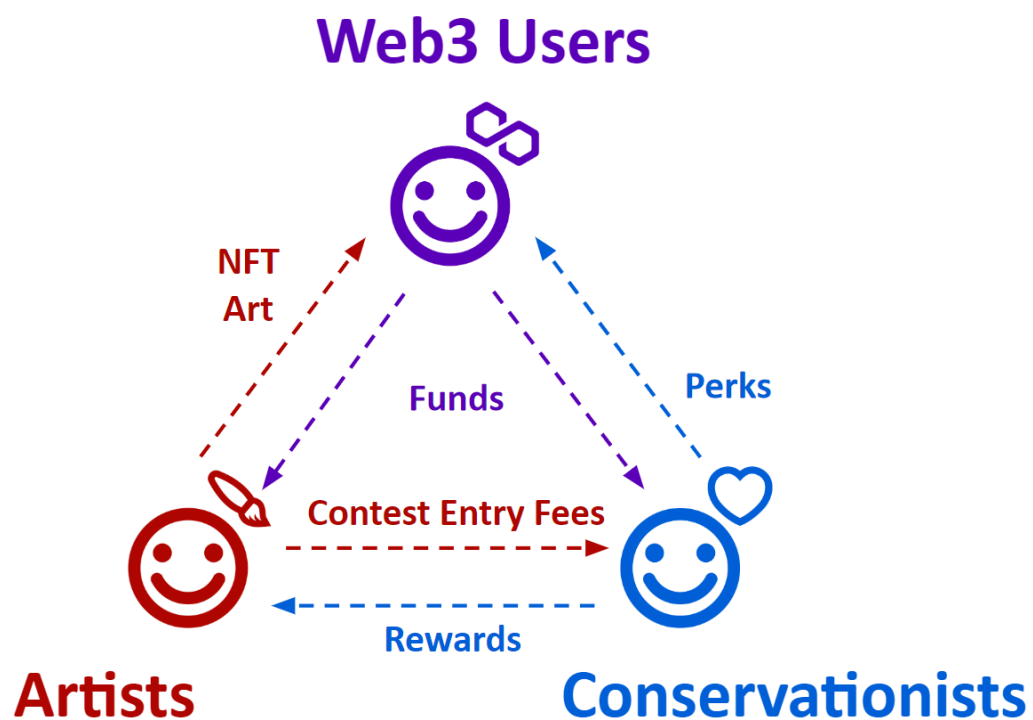
Utility

Mindful Ocean Mint Pass

Mindful Ocean Mint Pass is used to facilitate the artwork submission in our art contests. Participants can use an artwork they submitted to get a Mindful Ocean Mint Pass,

which can allow them to redeem a Mindful Ocean NFT containing the original artwork they have submitted.

Participants can choose to sell their Mindful Ocean Mint Pass instead of using them to redeem a Mindful Ocean NFT. Once a participant sold a Mint Pass to another owner, the participant also sold the right to receive the potential creative rewards associated with the artwork.

Another possible use case of Mindful Ocean Mint Pass is to distribute special and limited editions of our Mindful Ocean NFT created by our featured artists.

Mindful Ocean NFT

Owning a Mindful Ocean NFT represents your support to our social missions. You can also use it for the following:

- Receive creative rewards from our art contests
- Propose and vote for whom we will donate our proceeds to
- Interact with the virtual marine animals embedded in the NFTs in our mobile apps
- Participate in real live events where you can interact with other players in our innovative multiplayer AR Metaverse

Security and Compliance

Our NFT smart contracts have been audited by CertiK , you can access the report through the following link.

https://github.com/edwardtam919/DLL-Smart-Contracts/blob/main/REP-final-20231031T211646Z.pdf

Roadmap

The following is our tentative roadmap for 2024 and 2025

Time	Description of Major Milestone
2024 Q1	All art-making events have been thoroughly tested and operational
2024 Q2	Launch a fundraising campaign by partnering with a major artist and NGO
2024 Q3	Launch of our first real live event with a business partner
2024 Q4	Launch of new app features - Phase 1
2025 Q1	Launch of new app features - Phase 2
2025 Q3	Launch of our educational program to support partners in using our project as a tool for fundraising

Team

Mindful Ocean Metaverse is a project backed by Yat Siu, an award-winning entrepreneur in making art and technology more accessible, and an advocate for the concept of open metaverse

- Member of the Government Task Force on Promoting Web3 Development in the Hong Kong SAR
- Founder and CEO, Outblaze Limited (Hong Kong Business Awards 2018)
- Chairman Of the Board, Animoca Brands Corporation Limited (Fortune Crypto 40)
- Member of the Advisory Board, The British Academy of Film and Television Arts
- Board Member, Asian Youth Orchestra

Other brainchildren of Yat Siu related to art, blockchain, and education:

- Chord Hero - Making music education more accessible
- TinyTap - Using NFTs to innovate learning and reward teachers

Conclusion

In conclusion, Mindful Ocean Metaverse represents a pioneering initiative aligned with the United Nations' Sustainable Development Goal #14 - Life Below Water. This comprehensive white paper outlines a strategic approach to address the urgent crisis facing the world's oceans by leveraging blockchain, augmented reality (AR), and artificial intelligence (AI). The project's core missions of encouraging art creation, exploring Web3 for social changes, and supporting conservationists through empathy cultivation underscore a commitment to holistic ocean conservation.

The solution overview demonstrates a multi-faceted approach and a range of art-making events to build an engaged community. The emphasis on promoting art as a means of fostering mindfulness and empathy towards marine life is a unique and impactful aspect of the project.

The six phases of the Mindful Ocean Art Contest, powered by AI analysis for Authentic Scarcity, ensure a fair and transparent approach to NFT rarity, rewarding artists based on the visual uniqueness of their contributions. The AR Metaverse feature, with its gamified experiences and Auki Labs partnership, enhances user engagement and empathy-building by allowing interaction with virtual marine life.

The NFT Tokenomic and utility aspects highlight the roles of artists, Web3 users, and conservationists within the Mindful Ocean Metaverse. The commitment to sustainability, with the use of the environmentally friendly Polygon blockchain network, further aligns with the project's overarching goals.

Led by the visionary Yat Siu, Mindful Ocean Metaverse seeks to unite a global community through the transformative power of art-making. By providing a platform that encourages creativity, mindfulness, and empathy, the project aspires to make a significant contribution to ocean conservation and raise awareness about the critical need to protect our oceans for future generations. The combination of technology, art, and community engagement positions Mindful Ocean Metaverse as a unique and promising endeavor in the realm of environmental conservation.