SOTA

A multi-chain digital content NFT P2P platform

WHITEPAPER V1.0

DISCLAIMER

The information provided in this whitepaper is only for information purposes of the SOTA project. This should by no means be interpreted as a recommendation of investments in the SOTA coin. Investments in SOTA coins are associated with risks that are above the control of the founding team such as market circumstances. Besides, the plan laid out in this document may be adjusted to adapt to future situations to achieve the best performance of the SOTA platform.

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I. INTRODUCTION

1. Abstract

With the revolution of the internet, digital content has become an essential part of our modern life. Talented artists now find themselves connected with fans all over the world. While digital content and artwork can be transmitted easily from one to another, copyright has become a prominent issue globally. Though various forms of laws and regulations across countries have been trying to address the issue, costs and administration work required are hurdles that prevent creators from seeking copyright protection.

Non-Fungible-Token (NFT), a blockchain technology, has brought a revolution to the digital content landscape. Artists can now issue unique “digital signatures” on their work in the form of NFT to ensure the authenticity of the creation. At the same time, true collectors are recognized and protected as owners of the digital work (NFT) they have purchased.

SOTA is a multi-chain platform digital content NFT application where users can create, sell, and buy digital content NFT easily. Moreover, users can earn the platform’s governance token, SOTA, as they participate in platform activities, including airdrops during sign-in, buy/sell activities, and farming NFT contributions. SOTA token owners are eligible to farm limited NFT editions provided by select artists, propose/vote for new functionalities or developments on the platform to get rewards.

Phase 1 of the platform allows NFT creation on Ethereum and Binance chains. In phase 2, we will add NFT creation on the TomoChain public blockchain and gradually extend it to other blockchain networks. Users can create NFTs and then sell their own NFTs on our platform. Collectors can buy and trade NFTs in the secondary market. Moreover, selected NFTs on the platform are provided to users for farming them using SOTA tokens. Farmed NFTs are then traded in the market. The platform is also connected with external markets, such as OpenSea, to allow users to trade their NFTs in other markets.

In our future vision, the aim is to bring a variety of digital content markets to the platform with famous entertainers and media businesses using the platform to distribute limited digital edition items to their fans.

2. Digital content market

In the past few years, the digital content creation market has seen huge demand from small businesses to large enterprises. Organizations from different industry verticals have adopted digital content formats to promote their brands and products. Moreover, the widespread use of social media such as Facebook, LinkedIn, Twitter, and others has increased the demand for digital content in the modern age. The growing popularity of smartphones, tablets, and e-Readers, has significantly increased the number of digital content viewers. As a result, the e-commerce industry is observing a spontaneous growth that has further added to the use of digital content, to display product images, videos, and catalogs online.

Increasing demand for digitized content from various business sectors is a key factor expected to drive the growth of the global digital content creation market over a forecasted period. According to the report "Global Digital Content Market 2020-2024" from Reportlinker.com, the digital content market is poised to grow by $ 519. 83 bn during 2020-2024 progressing at a CAGR (Compounded Annual Growth Rate) of 15% during the forecast period.

As can be seen, digital technology is at the core of a significant change in many areas of our lives, including digital content for e-commerce, social media, and even in the cultural field made up of concrete and tangible pieces of art. The rise of digital technology has acted as a way to generalize the process of buying a piece of art previously monopolized by auction houses' regular customers.

Online marketplaces selling affordable digital art assets are popping up and reshaping the rules of supply and demand. Thousands of unknown artists now have access to an online market, taking care of all the buying and promoting processes by themselves.

Many national museums are trying to take this technological turn by digitizing their collections and archiving them in 3D, which is a new powerful marketing tool. They will be able to provide easy access to their collections to any clients that have access to the internet.

Digital art is also helping the preservation of our cultural heritage.

Digital art is moving fast, the global Digital Art Board market size is projected to reach USD 460.1 million by 2026, from USD 279.4 million in 2020, at a CAGR of 8.7% during 2021-2026 (A report by MarketWatch).

3. The problem of digital content ownership

The general notion that Digital Artworks is a new way of creating, promoting, and selling is quickly emerging and evolving. This is an opportunity for the young generation to deepen their interest in art and enrich artistic emotions and experiences using their digital tool knowledge. However, on the flip side, it might not always be the case.

Creative works such as art, literature, music, and film are protected by copyright law. This is true for digital works as well as traditional works, but the effectiveness of these laws in the digital world has been limited.

When a digital file is available on the internet, metadata is usually absent regarding who owns the content, whether it is possible to use the work, any limitations, and a mechanism for payment due. At the same time, the creators and owners cannot see how, where, and how much their work is being used.

Google allows users to search and view images and does not block the ability to copy the image. Websites such as Youtube, SoundCloud allow users to upload music for others to share and in certain circumstances, the site pays a royalty to the creators. There is a lack of transparency as to the contractual process of the website. The creators of digital content lack the visibility of the use of their materials.

In the area of Art, Uniqueness and novelty are generally considered to be the founding principles of creativity in the arts. These principles, however, are often challenged in the digital art world where the proliferation of unauthorized digital copies makes it close to impossible to prove the ownership or the authorship of the digital content in question.

The threats of infringement of copyright in the digital domain have given rise to certain preventive measures which ensure that the rights and interest of the owner or creators are protected.

The Blockchain technology comes as a long-sought solution for the digital art space providing an opportunity to not only limit the number of copies as intended by the artist but also to create unique non-fungible versions of digital masterpieces.

4. What is Non-Fungible-Token (NFT)?

NFT (Non-Fungible-Token) is a new, innovative building block of the digital world. Anyone can issue digital content, like JPEGs & GIFs, with a "new format" called NFT which is recorded on a public blockchain network.

What makes NFTs different from other digital formats is that ownership transfer of an NFT is recorded on public blockchain networks, which are transparent and unchangeable. Moreover, the NFT creator's blockchain wallet address is an inherent aspect of the NFT. When an artist creates an NFT using his wallet address, the address is attached to the NFT like a "digital signature."

NFTs can be transferred easily from one user to another. The user with a wallet that holds an NFT is the owner of the NFT. All the transaction history is recorded and transparent in the public blockchain network.

While Ethereum is the most popular NFT creation blockchain at the current time, most public blockchain networks support NFT creations. TomoChain is used by large entertainment companies to create digital content NFTs for their fans, especially in the Japanese market, due to its low-cost, high transaction speed, and non-crypto-user friendliness. In addition, TRON and EOS are popular especially for gaming application NFTs with their speedy transaction capability.

5. SOTA's solution with NFT and blockchain technology

SOTA is a multi-chain platform digital content NFT application where users can create, sell, and buy digital content NFTs easily. A creator just needs to upload his/her digital content such as pictures, artwork, select a blockchain network, and other settings of the NFT to create limited NFT versions of the content.

Creators may provide their profiles and supplementary documents to the platform administrators to receive "verified profiles", which can differentiate them from other normal creators. Moreover, users can report NFTs that are suspected of copyright violations. The combined screening system of both the platform side and user side will ensure that NFTs created from original digital contents are evaluated in the market. Moreover, creators will have their digital identities (associated with their wallets) in a similar way as in other social networks. Their followers will know exactly which digital content editions are provided originally by the creators. True collectors will value these original content editions more than other copies floating on the internet.

Most NFT creation engines available in the current market are based on Ethereum. However, current Ethererum network congestion issues have become a bottleneck for NFT creation and transfer. SOTA platform targets to be a multi-chain NFT platform, where creators and users can optimize the blockchains they want to use, and seamlessly transfer them across different networks.

II. OUR TEAM

1. Content Advisors and Partners

Dao Hai Phong, Advisor

Painter

Dao Hai Phong is a well-known painter in Vietnamese contemporary art. Landscapes in his paintings are dreamy, and touching the deepest memories with an outstanding painting style and color combination. His works have been included in various collections and exhibitions in Asia, Europe, and the US. Dao Hai Phong is passionate about the digital transformation of the art industry and bringing art closer to the younger generations.

- Solo Exhibitions

  2019 *"The Path of Phong" at Korean Cultural Center – Hanoi, Vietnam*

  2015 *"Gems of Hanoi – A Retrospective" at Thavibu Gallery – Bangkok, Thailand*

  2007 *"A Coloured Symphony" at Red Sea Gallery – Singapore*

  2006 *Solo Exhibition at Ryder Street Gallery – London, United Kingdom*

  2005 *"The Magic of Dao Hai Phong" at HKFINEART.COM Gallery – Hong Kong*

  2003 *Solo Exhibition at Kee Club, HKFINEART.COM Gallery – Hong Kong*

  2001 *Solo Exhibition at KIM 3 Gallery – New York, USA*

  2000 *"Peaceful Season" at Vinh Loi Gallery – HCMC, Vietnam*

  1999 *"Twilight Moment" at Plum Blossoms Gallery – Hong Kong, Singapore, and Apricot Gallery – Hanoi, Vietnam*

- Group Exhibitions (only a few group exhibitions are included)

  2010 *Group Exhibition at Apricot Gallery – London, United Kingdom*

  2009 *"A Peaceful Place" at Toriizaka Art Gallery – Tokyo, Japan*

  2002 *Group Exhibition at Max Mara – Florida, USA*

  2001 *"Vietnamese Contemporary Fine Arts" at Wilfrid Israel Museum – Hazorea, Israel*

  1999 *"Pure and Piercing Colour" at Rich and Famous Gallery, Rudolf & Sybille Kubli – Rapperswil, Switzerland*

  1997 *"A Winding River, The journey of contemporary art in Vietnam" at Meridian International Centre – Washington DC, USA*

  1994 *"The Art of Vietnam" at Roy Miles Gallery – London, United Kingdom*

Francesco Giannitrapani, Advisor

University Professor, Doctor of jurisprudence

Francesco used to work as a Professor teaching Law and Economics at many Italian high schools, including Itis Olivetti Ivrea, ITC Sommeiller Torino, and Liceo Gramschi Ivrea. He also teaches and collaborates with Popular University of Ivrea, Torino University, and Hanoi University. On the other hand, Francesco is a global social activity veteran who organized several initiatives to support children in poor countries, and a motorsport racer at the highest level in Italy. He is very keen on art and has a strong connection with Italian artist communities.

Valentina Cobetto, Digital Content Partner

Digital Product Designer

Valentina has more than 6 years of experience working as a Senior Strategist Product Designer at a Digital Firm in Turin, Italy. She is involved in various projects related to IoT, Data Insights, Blockchain and Design Thinking, supporting major customers in developing high-quality digital products. Valentina used to be an Interaction Design Professor at ITS ICT (Turin, Italy). Before that, she worked as a UX/UI mentor, Visual Designer, and Graphic Designer.

Huy Anh Nguyen, Game Content Partner

Online Game Publisher, CEO

Huy Anh is the CEO of several technology product solution companies including Online Game Publisher, LearnHub online education training, and ERP software solutions. She started her career as an IT engineer, and had 10 years of experience in the area of technology product development. Huy Anh has been adding Blockchain related game services to her portfolio recently. She also has a strong connection with major online game providers in Vietnam.

2. Blockchain Advisors and External Reviewers

Long Vuong, Blockchain Advisor

Founder and CEO of TomoChain

Long Vuong is the founder and CEO of TomoChain Pte. Ltd., the company that runs TomoChain public blockchain - a successful blockchain project that is recognized globally. Before starting the TomoChain project, he was the project lead at NEM blockchain. Long is known for his long-time experience and expertise in the global blockchain industry and is a popular guest speaker at various blockchain events and seminars.

William Nguyen, External reviewer

CTO of VCC Exchange

William Nguyen is the Founder and CTO of VCC Exchange, a Singapore-based crypto-exchange with a strong presence in the Vietnam market. William was awarded various prizes such as the Champion of Student Science Research Conference or Google Summer of Code for NASA's project. He also worked at Senior levels of international corporations such as DeNA or MitaniSangyo Co.LTD.

Andy Nguyen, External reviewer

Co-CTO of SotaTek

Andy Nguyen is known for his extensive expertise in constructing complicated ERP and enterprise systems. Moreover, Andy is a Certified IBM Solution Designer, specialized in developing smart contracts with Bitcoin, Ethereum, Neo as well as related systems.

3. Founding team

Dung Nguyen, Co-Founder

Dung Nguyen, a Doctor of Business Administration, has more than 15 years of experience in Economics, Business Management, and blockchain research and development. He has been in the Board of Directors of several successful blockchain projects.

Tommy Le, Co-Founder

Tommy is a serial entrepreneur with demonstrated performance to deliver large-scale projects. He started his career in FPT Software, the largest IT company in Vietnam, and later on became a director. After leaving FPT, he founded and became the CEO of SotaTek - an IT consulting and development company with 200 employees, providing services to customers worldwide. He is in the founding team and CEO of SotaNext Corporation, an IT company that specializes in blockchain consulting and development services. With almost 18 years of experience in all kinds of software development projects, Tommy knows how to manage a business successfully to bring true value to customers.

Thao Nguyen, CEO

Thao had 14 years of working experience in the financial and fintech industry in Japan and the Netherlands. Her expertise covers various financial areas including investment, risk management, and asset modeling. In 2019, she became the Business Development Director of TomoChain Japan, TomoChain Pte. Ltd.'s Japan subsidiary. Thao achieved full scholarship from the Japanese government for university and MBA study in Japan and is a CFA (Chartered Financial Analyst) holder.

Thi Truong, CTO

Thi is a blockchain technical expert with in-depth experience in several blockchain projects. Thi started as a Solution Architect then became a Director at FPT Software, the largest IT company in Vietnam. After leaving FPT, he joined Kyber Network, one of the most successful blockchain projects in Asia, as the Product Manager. He is also the Founder of Icetea blockchain, a public blockchain network, and participates as a mentor in several IT researching groups.

James Tran, blockchain developer

A blockchain engineer with comprehensive knowledge and hands-on experience of blockchain technology, especially Ethereum and smart contract development. Researching the technology from 2017, Quan has built up several advanced blockchain-based solutions to solve life problems such as eVoting, traceability, supply chain, self-sovereign identity. He used to work at a startup providing secure blockchain infrastructure across leading Proof-of-Stake protocols and yield solutions for crypto asset investors, where he gained expertise in the DeFi industry and related development.

Hiep Bui, blockchain developer

A blockchain engineer with 3 years of experience in blockchain technology, especially Ethereum and Tron blockchain. When Hiep was a student at FPT University, one of the top universities in Vietnam in the IT area, he achieved Second Prize in Information Technology at the Vietnam National Olympiad and a Silver medal at the ACM-ICPC Asia Manila Regional Contest 2017. He has experience developing ERC20, ERC721 (NFTs), and crypto exchange for Midas Protocol with in-depth knowledge of the smart contract, data structure, and algorithm.

4. Our partners

SotaNext

SOTANEXT

A company that specializes in blockchain development and consulting services. SotaNext is known for its strong and experienced blockchain development team, both in the public and private blockchain areas. The company has been provided blockchain-based systems for customers globally, notably in Japan, the US, Europe, and Vietnam.

TomoChain

TomoChain is a Singapore based company that is running the public blockchain TomoChain and related ecosystems. TomoChain has been used by major partners to build their applications utilizing the system's secure, speedy, and low-cost transactions. Recently, TomoChain has partnered with Vietnam's Ministry of Education and Training to store school qualifications, marking a major step toward mass adoption of blockchain technology to the mainstream business.

AmaZix

Amazix is a leading company in blockchain marketing. The company has been a key player in the blockchain space since the dawn of the golden age of crypto. Amazix provides full-service blockchain consultancy covering everything from PR & Marketing to Legal Advisory to corporate structuring.

CerTik

CertiK leads blockchain security by pioneering the use of cutting-edge Formal Verification technology on smart contracts and blockchains. Unlike traditional security audits, Formal Verification mathematically proves program correctness and hacker-resistance.

SotaTek

SotaTek is a company with 5+ years of experience in software development, Live Streaming, AI, and Blockchain. With a team of 200+ people, the company has been supporting customers all over the world in delivering large scale projects.

VNEXT HOLDINGS

VNEXT HOLDINGS is a software development and consulting company with 400+ employees, with a strong focus on the Japanese market. Its customer base includes large corporations such as Toshiba, Hitachi, etc. VNEXT has escalated its investment in blockchain in recent years considering the strong potential added value of the technology to its customers.

III. ROADMAP

2020 • **Q4** Project introduction landing page, whitepaper, SOTA token issuance

2021 • **Q1** SOTA platform phase 1 with web application and NFT on Ethereum and Binance chains, SOTA token listing

• **Q2** SOTA platform phase 2, adding NFTs on TomoChain, governance features, payment gateways for non-crypto users

2022 • **Q2** SOTA platform phase 3, adding a mobile application, platform extension to other content markets and blockchain networks

2023 • **Q1** A portion of platform transaction fees to be used to support governance purposes

IV. BUSINESS DESIGN SPECIFICATION

1. Phase 1: Ethereum and Binance chain based NFT platform

1.1. User login and connection with other applications

Users can log in via e-mail/password or Google/Facebook IDs. Users will receive email notifications about their activities and news-letters from the platform.

Each user will have a wallet which is provided by the platform. Gas fees paid to the blockchain networks are deducted directly from user wallets. Users' creation or purchases of NFTs are also stored in their wallets.

1.2. NFT creation

Anyone can create NFTs in the SOTA platform using their digital content. At creation, a user will define the number of NFTs created for the selected digital content and the royalty fee of secondary sales (suggested to be 10%, 20%, 30%). Royalty fees are paid directly to the NFT creator as a percentage of profits made in the secondary sales. Users will need to approve payment from their wallet to pay transaction fees to the blockchain network used for the NFT creation.

Creators then can send NFTs to others from their wallets or sell the NFTs in the SOTA marketplace. All NFTs are listed and priced in USDT or BUSD.

As NFTs created in the SOTA platform using Ethereum chain are designed to be compatible with OpenSea, users can also sell their NFTs directly on the OpenSea market. Note that the royalty fee feature will not be carried over to the OpenSea market. When the created NFT is sold for the first time in the SOTA market, the platform will charge a creation fee to the creator (initially set at 15%).

Creators can apply to the platform to earn a verified account that recognizes them as original creators. Verified accounts are granted by the platform administrator considering the profile of the creators. There is also a "report" function for each NFT which allows users to report in case of copyright or other violations.

There is a selected group of creators by the platform team who can contribute their NFTs to the network for farming. Contributed NFTs are shown in the "Farm NFT" page, where SOTA holders can stake their SOTA tokens to earn these NFTs.

1.3. NFT collection

Platform users can buy and sell NFTs in the SOTA market. The blockchain network transaction fee is deducted directly from user wallets. The platform will charge a certain fee to both buyer and seller (initially set at 2.5% to buyer and 2.5% to seller). Though NFTs are listed in USDT (or BUSD), users may buy using other tokens. In case users pay with another token, the equivalent payment amount will be calculated automatically using exchange rates from external trading services (e.g. Uniswap).

If a seller makes a profit from the sales, a predefined royalty fee will be deducted from the profit and be rewarded to the NFT creator.

[Secondary royalty fees] = [(Sold price in USDT/BUSD)*(1- transaction fee%) – (Bought price in USDT/BUSD)*(1+ transaction fee%)] * [NFT's royalty fee rate]

1.4. NFT farming

SOTA token holders will stake SOTA to get Pumpkin points (initially set at 1 Pumpkin / (100SOTA x day)).

The platform has a selected group of collaborating creators. These creators can contribute NFTs to the platform for farming purposes. At NFT creation, a creator who belongs to the selected group can define the number of NFTs for farming purposes from the total NFT copies created. Creators will also set prices in Pumpkin points required for the NFT to be farmed by the community.

The more valuable the NFT, the more Pumpkin points the creator can set. This will result in the creator receiving more SOTA when the NFT is farmed.

Initially, the SOTA reward rate is set as:

- 50 pumpkins -> Creator receives 1 SOTA when minted
- 100 pumpkins -> Creator receives 2 SOTA when minted
- 150 pumpkins -> Creator receives 3 SOTA when minted

Besides, the platform admin may add some special NFT offerings for farming purposes on certain events.

There is only a limited amount of the SOTA pool to reward farming NFT contribution creators. Afterward, separate agreements may need to be arranged by the SOTA team with collaborating creators to secure NFTs for farming.

When the farmed NFT is sold for the first time in the market, the creator will earn a primary royalty fee (initially set at 50% of the sold price). The blockchain network transaction fees to receive the primary royalty fee is paid by the creator.

2. Phase 2: NFT on TomoChain blockchain

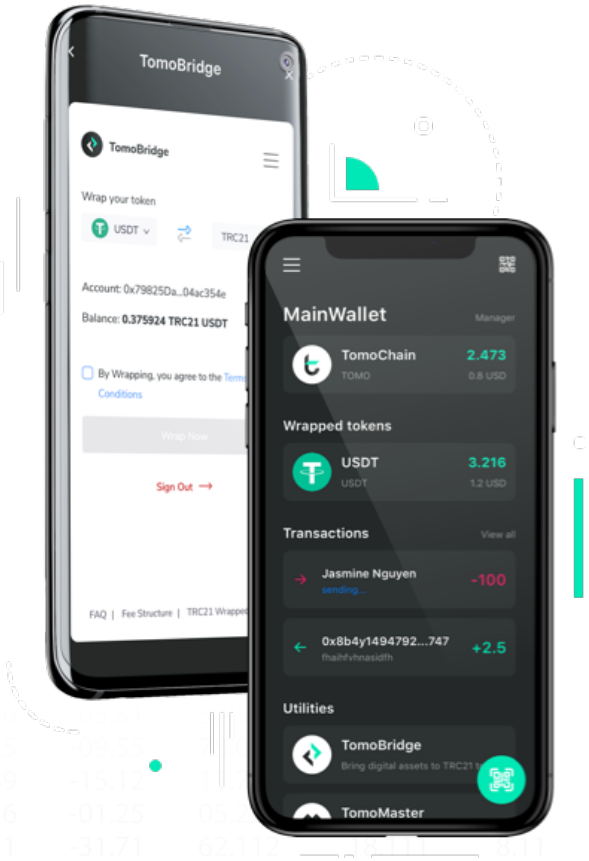
2.1. NFT creation on TomoChain

TomoChain is a scalable blockchain-powered with Proof-of-Stake-Voting consensus and used commercially by companies globally. While being compatible with the Ethereum network, TomoChain is currently a much faster and cheaper blockchain network.

The efficiency of the TomoChain will save costs significantly for creators and collectors to create and transfer NFTs. This will provide easier access to new creators to join the SOTA platform.

2.2. Connection with Tomo wallet

The SOTA development team is in close cooperation with the TomoChain team to ensure smooth access to the SOTA platform for TomoWallet holders, especially the TomoChain community. SOTA will be added directly to the main screen of the TomoWallet so that users can access the platform easily from their smartphones. TomoWallet can store SOTA tokens, USDT, ETH, TOMO, and other tokens issued on Ethereum or TomoChain networks. Moreover, users can store, view, send, and receive NFTs issued on TomoChain using TomoWallet.



TomoChain has more than 34,000 followers globally (@TomoChainANN Twitter 2020 Dec). In parallel with adding the SOTA app to TomoWallet, marketing collaboration will be conducted to introduce the SOTA application to TomoChain communities over the world.

2.3. Payment gateway for non-crypto users

To allow non-crypto users to participate in the platform, we will connect with third party payment service providers such as VISA, MasterCard credit cards, Paypal or other digital payment companies. By adding these payment methods, we expected to bring the platform to mass users who are not familiar with crypto payment.

2.4. Governance feature for SOTA holders

SOTA holders are eligible to vote for new features of the platform. A new governance function will be added to allow SOTA holders to add new proposals, and vote for or against these changes. Users who contribute valuable ideas or participate in voting activities may get rewards from the platform.

3. Phase 3: mobile app and platform extension

3.1. Mobile application

To allow users to access the SOTA platform easily from their smartphones, a new mobile app version will be developed. Users can select digital content from their phones to create their own NFTs. Collectors can trade NFTs at any time, anywhere from the mobile application.

3.2. Extension of NFT contents to other markets

Our vision of the SOTA platform includes several dimensions.

- An NFT creation engine running seamlessly across multiple blockchain networks
- A decentralized digital content market where creators and collectors interact directly
- A channel where entertainers/media influencers and their fans connect

We will keep extending the types of digital contents to be exchanged as NFTs in the market.

3.3. Extension to other blockchain platforms

SOTA platform aims to become a multi-chain NFT engine. We will add other blockchain networks gradually to provide more flexibility to the platform users. Below are examples of blockchain networks in considerations:

- Icetea blockchain

  Icetea (https://icetea.io/) is a blockchain that enables mainstream blockchain apps by offering frictionless UX at scale. Icetea's development team is in close cooperation with the SOTA team on building a friendly UI/UX solution for the SOTA platform's non-crypto users.

- NEO blockchain
- TRON blockchain

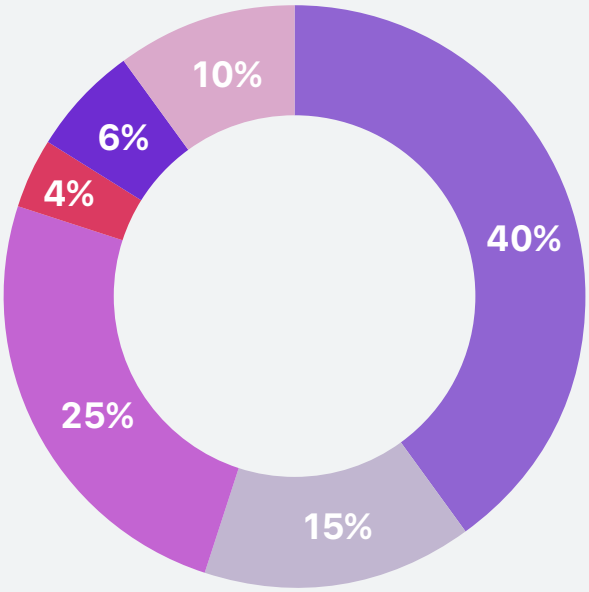
4. SOTA tokenomics

4.1. SOTA token and distribution

SOTA token is the platform's profit sharing and governance token. The total supply is fixed at 100 million coins.

Token Name	SOTA
Token Symbol	SOTA
Token Supply	100,000,000

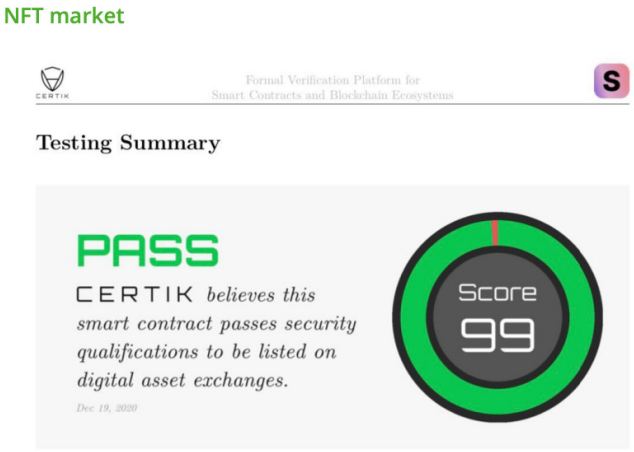
- 40 % for swap
- 15% for team
- 25% Treasury reserve
- 4% Airdrop/bounty to community/users
- 6% rewards to farming NFT creators
- 10% rewards to platform participants over 3 years



SOTA token distribution:

- 40% (40 million) for sale (swap)
- 15% (15 million) for team
- 25% (25 million) treasury reserve for future platform maintenance/enhancement
- 4% (4 million) airdrop/bounty to community
- 6% (6 million) rewards to farming NFT contribution creators
- 10% (10 million) rewards to platform participants over 3 years

The token contract was audited by CertiK, a leading blockchain security company (for the full audit report visit our GitHub).



4.2. Rights of SOTA token holders

a. Stake SOTA to farm selected NFT editions

b. Propose, vote for platform new development features (platform governance)

From phase 2, the governance feature will be provided. Token holders propose/vote for new functionalities or developments on the platform to get rewards. Starting from year 3, a portion (5%) of platform transaction fees will be used for the governance purpose.

4.3. SOTA token liquidity

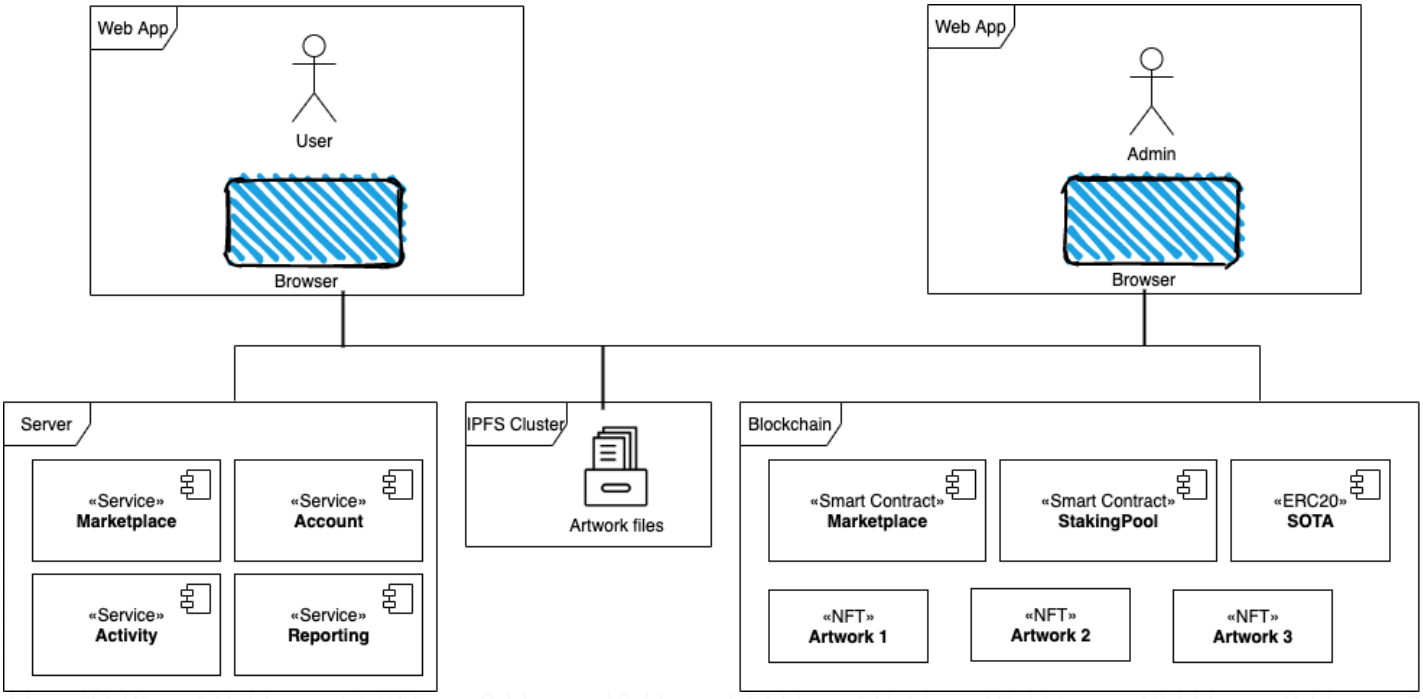
SOTA token will be listed gradually to Uniswap, LuaSwap, TomoDEX, VCC, and other exchanges. As SOTA is an ERC20 token, it can be stored in any Ethereum wallet. Tomo Wallet will also support the token.

V. TECHNICAL SPECIFICATION

1. System Architecture

Overall, the system includes the following components:

- A web application for users to create and trade digital content
- Smart contracts for marketplace functionality
- The list of all NFTs minted by the system. These NFTs can be listed and traded on the SOTA marketplace
- A decentralized storage system to securely stores all of the digital content' files
- A web application for admins to configure the system, monitor status, and view reports
- Server modules for storage of unessential data (those that do not define asset ownerships or transfer assets, and thus do not need to be stored on a blockchain or decentralized storage) and cache blockchain and other frequently used data for the sake of efficiency and performance



In this whitepaper, we mainly focus on the description of technical aspects of the decentralized parts (i.e. smart contracts and decentralized storage) only, since they are the cornerstone of the SOTA system.

2. Account Module

The system contains an account module that supports email and password authentication together with some well-known federated authentication providers including *Login with Google* and *Facebook*. Users can provide essential personal profile information, bookmark the items they are interested in for later review, report illegitimate digital content, etc. The account module makes the web application significantly more useful and user friendly.

3. NFT Specification

SOTA NFT conforms to the ERC1155 specification. Thus, SOTA NFTs should work with all external systems that support the ERC1155 standard.

SOTA NFTs' metadata makes use of the same format and rules specified by OpenSea. As a result, SOTA NFTs work seamlessly on OpenSea.

Each SOTA NFT's metadata contains a signature signed by SOTA system's private key. Thus, one can always identify whether or not an NFT is minted by the SOTA system. The SOTA marketplace supports only NFTs minted on the SOTA platform.

In addition to the above-mentioned signature, a SOTA NFT also contains additional metadata such as the address of the original creator and the royalty fee ratio.

4. Content Storage

The digital content file is the heart of a SOTA NFT. However, due to the high cost of blockchain storage, it is inefficient to store such a large file onchain. Thus, all digital content files will be stored on the IPFS network, which is a decentralized and mature storage protocol.

IPFS identifies files based on their hashes. SOTA stores a digital content's hash into the corresponding NFT's metadata. The metadata itself is stored as a JSON file on IPFS, and the hash of the JSON metadata file is stored onchain as the *tokenURI*. Therefore, the integrity of the NFT as a whole is guaranteed.

Because a file on IPFS exists only as long as at least one node pins it, the SOTA system maintains an IPFS cluster to pin its files. In the future, we may store files on one of the external IPFS service providers like FileCoin, Pinata, Icetea DocuGuard, etc. instead of or in addition to our IPFS cluster.

5. Marketplace

In essence, the marketplace consists of a smart contract which:

- lists all NFTs which are for sale at the moment
- handles the exchange of NFTs

The system also lets the owner of an NFT update price and listing details (name, description, etc.), delist his/her NFT from the SOTA marketplace, or burn his/her NFT.

The marketplace also contains some components and features which are implemented off-chain, for example:

- Add/upload additional promo materials
- Report/Flag/React to/Bookmark digital content
- Rate and review digital content

These features are not essential for asset ownership and thus better put off-chain.

6. Copyright protection and Royalty fees

6.1. Copyright protection

Because the hash of an NFT's digital content file is stored onchain, the system can scan for duplicates and prevent the same content from being submitted again.

The system also includes the *content reporting* functionality so that users can report content that is illegal or in violation of SOTA platform's terms of services. Content that is deemed invalid will be delisted from SOTA's web application.

In the future, we might develop further copyright protection techniques, such as:

- Connect to external copyright registry to check for violation
- Utilize AI to detect similarities between digital content

6.2. Royalty fees

The creator of the NFT can optionally specify a royalty fee ratio for his/her NFT. Whenever the NFT is resold, the marketplace smart contract cuts the corresponding portion from the profit and reserves for the creator. The creator can withdraw this amount at any later time, often when the amount accumulates enough to significantly surpass the withdrawal transaction fees.

Note that these royalty rules are only honored by the SOTA marketplace. If the NFT is sold on an external marketplace, it is very likely that the marketplace will not follow SOTA's royalty rules.

7. Pricing and Payment

NFT's price is set onchain and in USDT. The owner of the NFT can update the price at any time, and he/she pays the price-updating transaction fees. Technically, users could buy the NFT by calling the marketplace smart contract directly via EtherScan or similar tools.

In addition, the SOTA marketplace web application allows users to pay with some other cryptocurrencies via swapping services such as Kyber Network or Uniswap. The list of cryptocurrencies supported and the name of the swapping service will be defined later.

8. SOTA token

The SOTA token is a standard ERC20 token that has the following attributes:

- Symbol: SOTA
- Name: SOTA token
- Decimals: 18
- Total supply: 100,000,000

Users earn a small amount of SOTA each time they trade NFTs. These rewarded SOTA are paid weekly. The system will try to detect malicious users who buy their own NFTs for rewards and blacklist them from receiving rewards.

The primary utilities of the SOTA token are:

- Staking to earn Pumpkin points which can be used for redeeming NFTs
- Staking for Governance of the SOTA platform

Future versions of the SOTA platform may introduce more utility to the SOTA token.

9. Pumpkin Point and NFT Redemption

When users stake SOTA, they earn Pumpkin points. Pumpkin points are *not* ERC20 tokens, they are not transferable. Pumpkin points are used to redeem NFTs. When redeeming, the corresponding Pumpkin points are burned.

A group of creators whitelisted by admins can flag some copies of their NFTs as redeemable. Unflagged copies are not listed as redeemable and cannot be redeemed.

10. Governance

10.1. Staking for Governance

Anyone can stake SOTA to vote for proposals. Token holders can either stake SOTA and vote directly or delegate their votes to a 3rd-party staking service to do it on their behalf.

Note: If you delegate your votes to a 3rd-party staking service, they are responsible for voting on your behalf and distributing your rewards to you. SOTA Platform does not hold your funds or manage the process of delegation.

10.2. Proposals, Voting, and Rewards

There are 2 types of proposals:

- Proposals to change system parameters: this happens on an epoch (2 weeks) basis. In every epoch, all stakeholders vote for the system parameters of the next epoch
- Proposals to change system functionalities: this happens on ad hoc basis, whenever there is someone who raises the proposal and that proposal is endorsed by a sufficient amount of stakeholders (measured by total endorsed amount in SOTA token)

By participating in voting, stakeholders may earn rewards that they can claim in the next epoch.

10.3. Implementation & Bounties

For proposals to change system functionalities, each proposal should include an implementation plan and a bounty. Oftentimes, the SOTA team will be responsible for implementation, but external teams from the SOTA community can also bid for implementation to earn the bounty.

11. Multiple blockchain support

The vision of Sota platform is to become a *multi-chain* digital content NFT platform. We will focus on Ethereum and Binance chains first, but gradually expand to other smart-contract-enabled blockchains in later phases.

Each blockchain's marketplace and NFTs are separate and independent. Users will be able to switch between blockchains easily on the SOTA Application user interface. It is not possible to move an NFT from one blockchain to another. However, the NFT creators own the right of submitting their content to multiple blockchains at the same time.

Initially, the SOTA token is an ERC20 token on Ethereum. When the SOTA platform expands to another platform, 2-way bridges between Ethereum and the target blockchain will be built to move SOTA tokens back and forth.

12. Other future consideration

12.1. Auctions of high-value content

Precious content by renowned creators is often in high demand. An auction can help make it fair between competitive buyers and bring optimal benefits to the artists. In later phases, when high-profile artists join the system, the SOTA platform may introduce a decentralized auction conducted by a smart contract.

12.2. Improved UX for non-crypto users

The vision of the SOTA platform is to reach mass adoption by approaching non-crypto users. Therefore, in the future, we plan to implement some opt-in UX enhancements for normal users. Crypto users can skip these enhancements if they wish to.

- A wallet-free experience by utilizing key-free and password-less technology like *Icetea ID*
- Buying NFTs using credit card or Paypal: the system will connect to 3rd-party services to support payment for non-crypto users.