



superhow.ART

position paper

ART 3.0

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Salary

Glossary

API - the usefulness or value that an asset or product provides to its owners or users. In the case of tokenized art, utility can refer to new ways in which the artwork can be used, such as in virtual reality environments or decentralized finance operations.

Art Foundation - a non-profit organization that supports artists and promotes art education and appreciation.

Art Gallery - a commercial space where artists can exhibit and sell their artwork.

Art Museum - a public institution that collects, preserves, and displays works of art for educational and cultural purposes.

Blockchain - a decentralized digital ledger that records transactions in a secure and transparent manner, using cryptography to ensure integrity and prevent tampering. Incoming information is compiled and validated in blocks, which refer to previously established blocks of data, creating a chain of agreed-upon transaction information.

Decentralization - the design or architecture of a system that distributes power and decision-making across a network of nodes. Decentralized systems, such as blockchain, enable network participants to validate transactions and maintain the integrity of information without the need for a centralized entity.

Decentralized Art Exchange (dAEX) - a blockchain-powered platform that enables the buying and selling of tokenized artworks without the need for intermediaries. It provides a decentralized marketplace for art collectors, artists, and galleries to interact directly.

Decentralized Art Finance (DeArtFi) - a decentralized finance ecosystem that is dedicated to art as an asset class. Blockchain technology is used to remove third parties from art transactions, increasing efficiency and reducing associated costs.

Derivative - a financial contract that derives its value from an underlying asset, with conditions specified for payments between parties. For example, a futures contract obligates the buyer to purchase an underlying asset at a specified price and time in the future. Derivative instruments are often used to insure against or increase exposure to price movements.

Digital Asset - a valuable item that exists in digital form and has distinct usage rights, such as software, artwork, or advertising space. Blockchain technology has redefined digital ownership by providing a way to have provable digital scarcity, as seen in cryptocurrencies and NFTs.

Digital Twin - a detailed digital replica of a physical object or system, used for modeling, simulation, and monitoring real-world performance. In the case of an artwork, it serves as a representative counterpart that can be displayed and interacted with in virtual environments.

Distributed ledger - a type of database that is shared, replicated, and synchronized across multiple nodes or computers, ensuring secure and decentralized record-keeping.

IPFS (InterPlanetary File System) - a decentralized, peer-to-peer protocol that enables the creation of a global, distributed network for storing and sharing files, including digital representations of artworks. By replicating files on multiple storage nodes distributed worldwide, IPFS ensures that the files remain secure and readily available.

Metaverse - a network of immersive and interoperable real-time rendered 3D virtual worlds that allows users to interact with computer-generated environments and other participants, while supporting continuity of identity and ensuring ownership of digital and physical objects.

NFTs (Non-Fungible Tokens) - digital tokens stored and verified on a blockchain that have a unique identifying number and represent ownership of a specific asset, such as a digital collectible or physical piece of art. NFTs provide an entirely digital proof of ownership and can be sold and traded directly on the blockchain.

Phygital Asset - a physical asset that has been digitized and has a one-to-one representation in the virtual world, such as digital twins of real estate, virtual try-on clothing, or tokenized physical artworks.

Provenance - the recorded history of ownership, custody, and storage of a particular asset, especially a piece of art. An artwork with reliable provenance information can be more valuable, as its authenticity and right to sale are assured by tracing its chain of custody to its origin.

Smart Contract - a computer program stored on a blockchain that runs when predetermined conditions are met. It is typically used to automate the execution of an agreement so that all participants can be immediately certain of the outcome, without any intermediary's involvement or time loss.

Tokenization - the process of creating a unique digital token that represents a real-world asset, such as a piece of art. This token is created using the NFT standard and serves as an encrypted seal of authenticity for the digital representation of the piece.

Utility - the usefulness or value that an asset or product provides to its owners or users. In the case of tokenized art, utility can refer to new ways in which the artwork can be used, such as in virtual reality environments or decentralized finance operations.

Web3 - a catch-all term for the next evolution of the internet that aims to be more decentralized and open. Instead of relying on outdated external infrastructure and exploitative economical models, it uses native peer-to-peer payments and blockchainbased digital ownership to give power back to its users.



Highway from Art to Metaverse

We turn to art in search of the daring and exceptional. It allows us to create a precedent all by ourselves, just as technologies offer us a fresh vision of an alternate, futuristic digital reality.

Highway from Art to Metaverse

A look back at history quickly exposes the shifting nature of reality. And yet, when we think of the future, we tend not to imagine any substantial change. Our daily worries almost necessitate a narrow-mindedness, forcing our focus on the problems just in front of us. The bare essentials take priority and so we develop more “realistic” outlooks, coming to expect what we are already familiar with. Having lost sight of how strange and unpredictable the world can be, we turn to art for bold new visions of reality.

The iconic painting “Primavera” by Sandro Botticelli is an illustration of a scene that has never actually taken place in classical mythology. An elaborate allegory of the burgeoning fertility of the world, it allows us to create the precedent of the event by ourselves. In the same way, emerging technologies offer us a fresh vision of an alternative digital reality. We take part in the creation of this lush new landscape, abundant with opportunities for novel and exciting types of social interaction and individual expression. Beyond the painting’s aesthetic value and its power to inspire, “Primavera” holds significant historical value for Western civilization. The artwork has been exhibited at Uffizi gallery since 1919, accessible to a wide and eager public rather than being held at the palaces of Florence rulers. Likewise, with Web3 ideals now taking center stage, digital ecosystems are shifting from monopolist to user-owned economies. As art teaches us, a compelling vision can have shockingly real effects.

The umbrella term of Web3 encompasses futuristic ideas of decentralization, where community-powered and self-monetized content reign supreme. The swift rise and proliferation of NFTs and crypto projects are just a few examples of this force. But even as our world continuously transforms, great art remains eternally fresh. We are using an NFT model and blockchain to protect the link between the sentimental and financial values of art and share it with a wider audience. Most importantly, we are bridging the way for time-tested art to interact with new age Web3 economies and metaverse society, bringing our physical legacy into the digital world.



New Age Economy

Tokenization will usher in a new world of opportunities for investors, entrepreneurs, and businesses. It is the essential step in taking back ownership of the virtual and physical worlds we share.

Dimmy

New Age Economy

The future of markets is tokenization [Link, 2022]. The new generation of value is emerging with the process of representing asset ownership in the form of digital tokens that can be traded directly on a blockchain. Distributed ledgers allow for instantaneous settlement and seamless liquidity of assets without the need for any intermediaries, bringing the physical world up to speed with the digital. With increased security and expanded possibilities for the use of assets as financial instruments, tokenization will usher in a new world of opportunities for investors, entrepreneurs, and businesses.

Blockchain technology also reflects the concerns of a growing number of people who seek greater self-determination in managing their digital lives, which increasingly also make up their actual livelihoods. The current creator economy, based on the model of targeted advertising and accompanying mass data collection in corporate walled gardens, will give way to a democratic ownership economy, where people own and trade digital assets that represent real-life commodities on a blockchain-based internet. Besides ensuring privacy, this future economy will incentivize greater collaboration between producers and consumers, enabling the redistribution of social power and economic rewards among participants. Tokenization is the essential step in taking back ownership of the virtual and physical worlds we share.

Art as an asset class falls within this new economy as well. The tokenized ownership of art assets becomes the only way forward to a freely available decentralized art market. Web3 technology guarantees property rights to digital and phygital art objects, allowing for the emergence of self-sustaining niches of the art world that would contest hegemonic discourses for the proper inclusion of voices that merit our attention, but have thus far been barred from achieving wider appeal. Of course, there is a fine line between blockchain's liberatory potential and the threat of a mere re-inscription of neoliberal financial logics, bringing to mind the historical consequences of irresponsible, undifferentiated privatization. It would be grotesque to tokenize the world to then just sell it off again in pieces. However, protecting the intimate connection between art's critical spirit and its financial value and sharing it collectively could bring us closer to decentralized prosperity. In this way, instead of exacerbating social power disparities, blockchain transparency would force a review of existing exclusionary practices in the art market.

Art 3.0

IMMUTABLE

Track the provenance

UTILE

Create financial utility for art

TRANSPARENT

Ensure transparency in the art field

ACCESSIBLE

Universal access to art through protocol

IMMEDIATE

Uninterrupted relationship between the artist or institution and the buyer

GLOBAL

Wider dissemination of art. No geographical art market barriers



Art Collector



Investor



Value Collector

Web3

Web3 Phygital Assets and Tokeniza-

The Web of the future combines the tangible value of real-world objects with the frictionless efficiency of blockchain, creating an ownership standard for the new age. Phygital assets, such as tokenized art pieces, offer a unique opportunity to get the best of both worlds, enabling secure and seamless exchange of artworks without the need to physically move them. By digitizing physical art pieces on a blockchain, we unlock their liquidity and facilitate easier conversion into monetary flows, bridging the gap between potential earnings and real returns. The tokenized exchange of art assets brings transparent pricing mechanisms and provable provenance, eliminates ongoing costs associated with handling and shipping physical pieces, and gives direct access to a global network of buyers and sellers. The real-time movement of value afforded by peer-to-peer digital transactions opens up new possibilities for art-based lending and investment, while virtual exhibitions in Web3 spaces promise to close the distance between artist and audience. Tokenizing artworks to create phygital assets is a forward-thinking solution that creates a more efficient and cost-effective art market and empowers users to shape the future of the industry.

Every technological advancement brings forth new business opportunities and accompanying challenges that demand unique solutions, and the tokenization of artworks is no exception. While digital collectibles can exist entirely online, the inherent physicality of fine art necessitates a distinct approach to tokenization. As things stand, NFTs are predominantly bought and sold via private companies that provide blockchain asset management services, such as Foundation, OpenSea, or Mintable. However, a careful look at sites' like these well-hidden terms of service may reveal that, contrary to outward claims, NFTs by themselves do not actually embody property rights to the underlying asset in the absence of express legal agreement [Moringiello & Odinet, 2022]. We have developed a comprehensive framework integrates decentralized ownership and trusted institutions to ensure enforceable and valid digital transactions. Our approach relies on established institutions, such as museums, galleries, and art foundations, to ensure asset curation, regulatory compliance, and customer protection. To ensure the integrity of tokenized art assets, we use trust anchors and verifiable credentials to authenticate identity and connect with existing legal frameworks, providing participants with a compliant gateway to an institutional DeFi solution [Oliver Wyman Forum et al., 2022]. This fusion of innovative technology and institutional support creates a solution that embraces the boundless possibilities of the digital age, but remains firmly rooted in the trusted institutions that underpin today's art world.



Financial Stability

Despite a notable increase in art investment during the economic downturn, patronage and support of the arts have decreased significantly. The Decentralized Art Finance ecosystem seeks to deconstruct and reconfigure conventional forms of patronage to rational, sustainable investments.

Financial

Financial Stability

The link between art and finance has been widely debated, with a particular focus on the central role of markets in shaping the cultural, political, and social milieu within which art operates [Wiley, 2018]. The recent history of art tracks the expansion of the global financial sector, with markets largely determining what gets exhibited and where, works not infrequently being used as mere vehicles for channeling capital, superstar artists employing strategies of winking and disdainful self-commodification, or else derivative aesthetics emerging in response to new consumer demand for the avant-garde of old. It's a complicated business, and the singular sphere of artistic production benefits from its ties to the financial sector as much as it is dulled by the monotony it oftentimes selects for. However, as Kopytoff [1986] notes, in a market economy, the "objective" pricelessness of a work of art can only be unambiguously confirmed to us by its immense market price.

The 2008 financial crisis made investing in art an attractive alternative and revealed it as an exceptional tool for insuring against inflation. As the stock market plummeted, the art market remained relatively stable. In fact, some art categories, such as contemporary art, continued to see steady growth in value. For example, the works of artists like Jean-Michel Basquiat and Damien Hirst, which were selling for hundreds of thousands of dollars in the early 2000s, increased in value during the financial crisis. This is because art is often seen as a long-term investment, and collectors who have faith in the market's resilience may be willing to pay a premium for high-quality works, even during times of economic hardship. As ambiguous as the pricing mechanisms of art can be, its resistance to short-term fluctuations in the financial markets makes art a relatively safe and sustainable investment.

The financial crisis of 2008 was also a turning point that dramatically altered public perception of finance. The widespread discontent and emergence of technological alternatives such as cryptocurrencies enabled a new wave of experimentation with socioeconomic forms that leveraged the speculative nature of markets. Artists too mobilized to fight against increasingly unfair conditions and the reduction of welfare and overall funding to the arts sector, employing creative financial strategies, including the possibilities opened up by NFTs. The NFT art market reached 41 billion dollar sales at the end of 2021, according to blockchain data company Chainalysis [2021], while the Financial Times [Murphy & Oliver, 2021] suggests that the total NFT sales would have been even higher if not limited to Ethereum digital collectibles. Despite the drop in crypto values, the art-related NFT market in the first half of 2022 still reached \$610 million [Art Basel, 2022]. The mass interest in investing in art is proving to be durable, sustained by the unequivocal political charge of the current moment.

An investment in cryptocurrencies and decentralized ownership constitutes a bet against the traditional financial system, aiming to destabilize established economic models only to bring a fairer distribution of value and a new sense of stability. Crypto investors do not fit the cliché of aggressive and speculative intraday traders. Instead, they tend to have a rather cautious orientation, investing and holding a position [Cossu, 2022]. Despite a notable increase in art investment during the economic downturn, patronage and support of the arts have decreased significantly in recent years. The Decentralized Art Finance (DeArtFi) ecosystem seeks to deconstruct and reconfigure conventional forms of patronage to rational, sustainable investments. It aims to move beyond crisis economics of market booms and temporary gains towards a new and lasting sense of financial fairness in the art market.



Foundations

It is beneficial for foundations to tokenize their own collections as it provides the possibility to archive the value, track its changes and systemize the art lifecycle tracking processes using immutable recording on the blockchain. NFTs act as an additional validation of the form of equity while improving the liquidity of a private fund and accelerating the logistics of internal and external processes such as movement of the artworks (display, restoration and other processes that affect changes in value).



Galleries

It is beneficial for galleries to sell their art through the platform alongside NFTs as blockchain offers a new extended market and additional buyer groups. Clearly, the emergence of the crypto market has created a new generation of millionaires who follow completely different investment principles than traditional investors. We believe that commercial galleries will easily adapt to new aesthetic expectations, but is it likely that NFTs will sell alongside physical art since that is what the crypto buyer expects? The crypto collector will be more pleased with the representation of the work's value in a digital wallet knowing that he owns the artwork rather than with physical possession of it.



Museums

Fractional ownership provides additional options for the development of museums through blockchain. Collective collecting creates a niche for investment in the development and maintenance of museums. Additionally, blockchain technology creates an opportunity to have a decentralized archive of museums and make changes directly while preserving the entire change history.



Prospective Applications

1 Decentralized Global Archive

Blockchain technology has been instrumental in transforming the way finances operate today by providing the necessary infrastructure to speed up, simplify and ensure the efficiency of monetary transactions. However, tokenization is a technological step that can be used to streamline and safeguard sensitive processes beyond mere profit-seeking. One such crucial application is in providing a secure, decentralized architecture for storing and verifying information, which could greatly improve the efficiency and reliability of our record-keeping systems.

Art is produced as a commodity; it does not become one when it is sold [Enxuto & Love, 2016]. Such is the reality of today's world and of art's place in it. But even as the art world becomes increasingly commercialized, our sights remain set on the lasting value that art is still capable of providing. If anything, it is art that can expand our sense of place beyond the narrow confines of day-to-day market pressures. Indeed, tokenizing an artwork just for a frivolous trade would not only be unsustainable but downright impractical. The tokenization of artworks is not a cleaving art from its cultural value for an increment of profit, but a way of ensuring its maintenance into the coming future.

We are starting a decentralized global archive that will contribute to the development of transparency in the art market, as well as provide wider access to the arts, beyond physical borders. As a comprehensive archive of artworks gets built up, including variables such as purchase, sale, location of the asset, provenance, information of the holders and owners, its value will undoubtedly once again merge with the commercial side of things. But the immutable core of our aims will remain: to preserve our shared cultural heritage for many generations to come.

2 **Collective Collecting**

Art collecting, as it is now, is a domain where a select few hold sway. Not only does it exclude a wider public who are passionate about art but have limited financial means to actively participate; elite collectors tend to favor a narrow selection of artists in a self-perpetuating cycle, with certain art movements and even entire art forms being relegated to the margins. Fractional ownership presents an opportunity to break apart these barriers and bring about more equity and diversity to the field of art collecting.

By allowing multiple individuals to share ownership rights to a single artwork, fractional ownership throws open the gates for smaller investors to flood the art collector market. Moreover, such collective ownership does not end with granting wider access to a few most expensive pieces of art, but expands the field of art collecting into previously unimagined territories. Tokenized ownership creates the possibility of owning and monetizing artworks which were previously thought to non-collectible, such as performance art pieces and installations. Finally, collective collecting enables a mutually beneficial collaborative relationship between sellers and buyers, giving the means for the collection of art based on common social values and the preservation of the cultural heritage of social groups marginalized by the contemporary art world. Fractional ownership, strange as it sounds, opens up a vision of a less partial and fragmented art world, bringing about a long-due renewal to the field.

3 **Through Web3 to Metaverse**

The metaverse is hard to describe; for one, it is not a thing that exists yet. Although certain corners of it are beginning to take shape, the metaverse is a sweeping vision for an interconnected network of real-time rendered 3D virtual worlds, beyond the scope of any one company. It is a new iteration of cyberspace, bolstered by a number of emerging technologies that entail revolutions in their own right, but will compound to create something beyond the bounds of what we currently think likely. Ultimately, it is an ambition for science fiction to become reality. Central to the ideals driving its development is the notion of taking back ownership of our virtual presence and incentivizing passive consumers to become active participants in the creation of spaces that they want to inhabit. The metaverse is an open and shifting bricolage of diverse viewpoints and clashing esthetics, a sprawling network of sites for the constant renegotiation of identity and re-energized enterprise, life-like in its multiplicity and the stakes involved. It is the surrealist coup of the present state of things, or it is not at all.

As the metaverse continues to evolve and become ever more immersive, it is important to consider the role of art in it. While the metaverse can help us create virtual worlds and experiences beyond our dreams, it can also prove useful in constructing an exact representation of physical reality. This parallel reality will work in concert with the material world, but have new space for the display of things worth keeping. Artworks can give a sense of shape and texture to this alternative reality, keeping us in touch with the fundamental questions of perception. In a time when the world becomes increasingly illusory, art can provide an unmistakable sense of substance.

Digital twin technology is the essential link in this new, closer integration of the physical and digital. Art assets are brought into virtual reality through a Web3 framework, ensuring their uniqueness and authenticity in both worlds and providing seamless correspondence between them. Blockchain secures the means of sharing art in both monetary and social senses, allowing for the full benefits of newly available exposition spaces and the possibilities for a wider dissemination of art. The wealth of artistic expression will prove invaluable in making our way forward congruent with past insight and in bringing us into a future that we want to see. Tokenized artworks are a way of ensuring continuity, bridging the value of art from the physical world to the new meta-physical reality.



Framework Design

The Superhow.ART framework aims to merge the traditional art world with the new age economy by creating phygital art objects. The framework allows the owner of the phygital artwork to mint ownership rights tokens and attach legal agreements to them.

work

Framework Design

Superhow.ART is an ambitious framework for digitizing and tracking the provenance of fine art using blockchain technology. It aims to merge the traditional art world with the new age economy by creating phygital art objects, which are physical artworks that have a fully digitized, one-to-one representation in the virtual world.

The process of digitization begins with the creation of a digital twin of the physical artwork. This is done by generating a detailed data model of the artwork that captures all of its physical characteristics. This digital twin is then tokenized using the NFT (non-fungible token) standard, which means that a unique digital token is created to represent the digital twin on the blockchain. This token serves as an encrypted seal of authenticity for the digital representation of the artwork and contains all of the metadata describing the piece, such as its title, artist, dimensions, and other relevant details.

Once the digital twin is created, the framework attaches provenance data to the NFT token. The provenance data includes information about the artwork's history, such as its ownership, exhibition, as well as conservation and restoration history. This data is stored on the blockchain, making it transparent, immutable, and accessible to a wide audience online. The provenance data is important because it can have a substantial impact on the value of the artwork.

Finally, the framework allows the owner of the phygital artwork to issue ownership rights tokens and attach legal agreements to them. These tokens can then be sold to others, effectively transferring ownership of the artwork. By using blockchain technology to mint these tokens, the framework ensures that the ownership rights are transparent, immutable, and verifiable. In addition, the Superhow.ART framework includes a smart-contract-based auction module, providing a secure mechanism for selling ownership rights to phygital artworks.

The superhow.ART framework has several key components which make art digitization possible

Digital Twin Creation Module

The component responsible for creating a detailed data model of the physical artwork, which serves as the digital twin. It is able to capture all of the physical characteristics of the artwork, including its shape, size, color, and other relevant attributes

Securitization Module

The component that allows the owner of the phygital artwork to create ownership rights (or other type of rights) tokens and attach legal agreements to them. These tokens can then be sold to others, effectively transferring ownership of the artwork

Provenance Data Management Module

Allows the tokenized asset to continue its life and works as the key tool in the management of provenance data. This data includes information about the artwork's history, such as its ownership, exhibition, and conservation history. When any relevant changes occur, the module enacts a modification of the art piece's provenance

Tokenization Module

The framework component that uses the NFT (non-fungible token) standard to tokenize the phygital art object. This creates a unique digital token that represents the digital twin on the blockchain

Blockchain Network

A decentralized network that Superhow.ART framework relies on to store and manage the digital twin, metadata, provenance, and ownership rights tokens

Derivative Market Module

The component of the Superhow.ART framework that enables users to issue tokenized derivatives based on the ownership rights tokens for phygital art objects, such as options, futures contracts, and debt market instruments. Essentially, these instruments allow investors to lend money to the owner of the phygital art object in exchange for interest payments and the return of the principal at a future date

Smart-Contract-Based Auction Module

The component that allows for the creation of smart contracts for auctioning the ownership rights to phygital artworks. It is designed to facilitate bidding for ownership rights tokens and to execute the transfer of ownership once the auction is completed

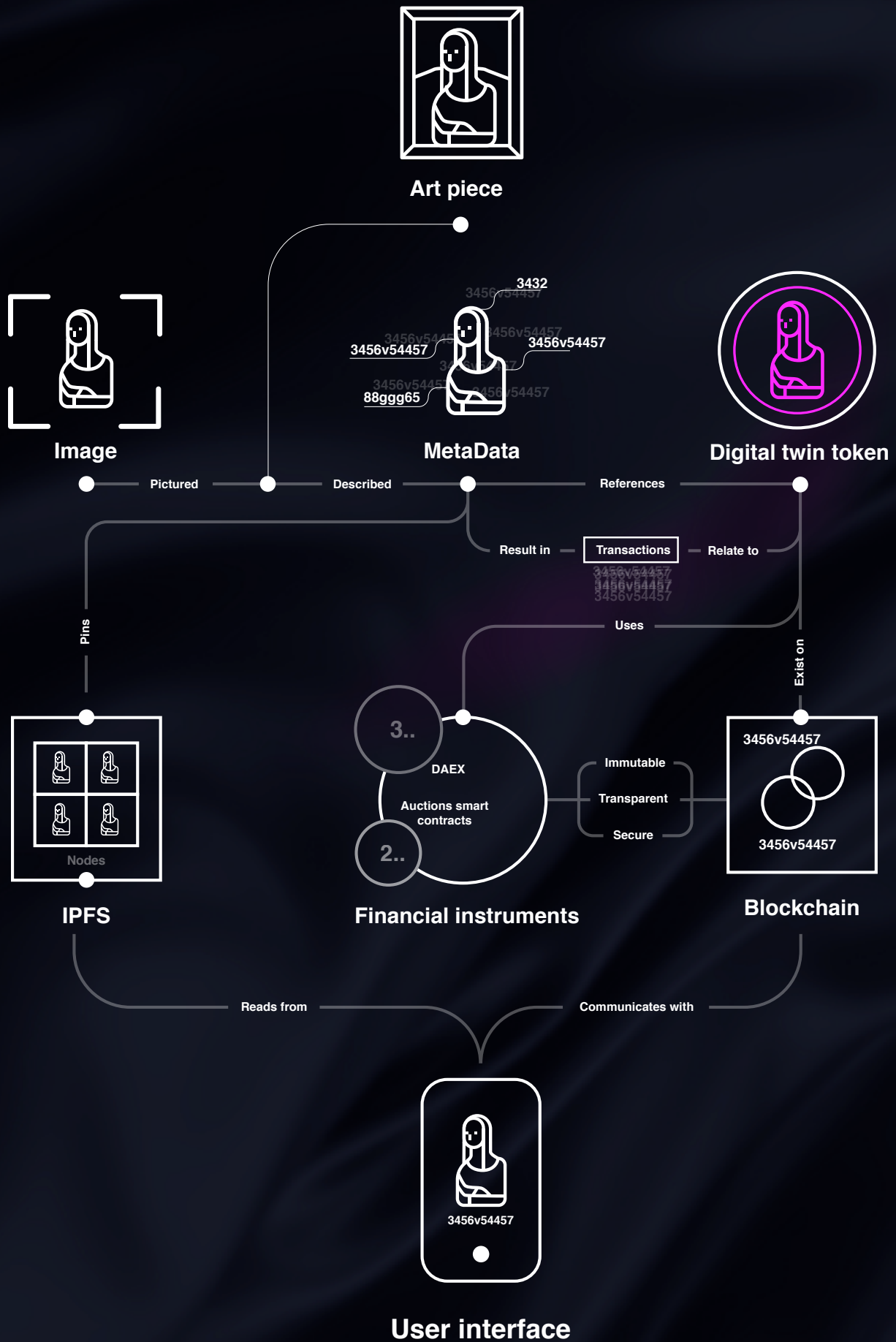
Decentralized Art Exchange (dAEX)

a platform that enables users to trade digital assets in a decentralized manner, without the need for a centralized intermediary

Front-End Interface Module

the final component we offer allows users interact with the system. This could include a web-based portal that allows users to view and search for artworks, access provenance data, and mint or transfer ownership rights tokens. The digital twin data is publicly accessible, so there could be multiple independent access points that all refer to the same underlying entity

The Superhow.ART framework allows for physical art pieces to be digitized and then tokenized as NFTs, ensuring their accessibility in an increasingly virtual economy. By creating a detailed digital representation of the artwork and pairing it with a unique and interference-resistant token on a blockchain network, we aim to bring transparency and traceability to the art market. Distributed ledger technology provides a secure way to hold and transfer the ownership of art assets digitally, without relying on intermediaries. This lowers associated transaction costs and unleashes liquidity of the underlying asset. Furthermore, the digital trail of a tokenized artwork creates an immutable and verifiable ownership history, resulting in a tamper-proof provenance record of the piece. The Superhow.ART framework combines an appreciation of art's timeless relevance and stable value with expertise in the dynamic world of blockchain-based finance, creating a decentralized art finance (DeArtFi) ecosystem. We offer a forward-thinking solution to amplify the value of your collection and bring physical art into the new era.





Technology

Superhow.ART creates a futuristic approach to preserving art that uses emerging and well-matched technologies: a digital twin data model of the artwork, decentralized file storage, and blockchain-powered smart contracts.

Technology

Superhow.ART creates a futuristic approach to preserving art that uses high-tech solutions and financial instruments. The Web3 concept dictates characteristics like asset digitization, community involvement and incentivization, decentralization, and end-to-end automation. We approach this using emerging and well-matched technologies: a digital twin data model of the artwork, decentralized file storage, and blockchain-powered smart contracts. These are complementary instruments used for their precise advantages, and we are empowering them to bring art into the new era.

Digital twin technology is an emerging concept that has become the center of attention for the tech industry and, in more recent years, a focal point for academic research. A digital twin is a representation of an object or process on the internet that serves as a real-time digital counterpart of the physical entity, responsive to any changes that might occur. In other words, it takes a real-life object and creates a unique high-fidelity copy of that object in the digital world. The concept is now starting to be applied in fields from aerospace engineering to biomedical science, and we are using this model to bring granular precision to the digitization and lifecycle tracking of fine art.

In the Superhow.ART framework, the digital twin is a structured major data set about the artwork, containing information describing it down to the smallest details. A wide range of established art information management and provenance record keeping practices were combined, expanded, and elevated to the next level, bringing us to this new art metadata standard. This structured data is stored on IPFS, a peer-to-peer distributed file system that ensures the immutability and security of the stored files and data. It creates copies on multiple storage nodes spread around the world, guaranteeing persistent access to the digital twin if any one node should become unavailable. Additionally, the network safeguards against tampering by not allowing to change as much as a pixel of the file without it being treated as a completely different object. Safely storing the digital twin online is crucial, but not enough to achieve functionality of its application in digital collecting or financial instruments. This is where blockchain comes into the picture.

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No one needs to
know or directly
trust the other
party...

A blockchain is a distributed ledger that keeps track of constantly growing record blocks. These transaction blocks are securely linked together via cryptographic hashes and each of them contains a link to the previous block, a timestamp, and transaction data. This is a foundational technology of the next-generation Web, also known as Web3, that moves the world away from centralized appli-

cations to decentralized ones and provides a way to have digital proof of ownership. On blockchain networks based on the Ethereum Virtual Machine, the key information and action management point is the smart contract.

A smart contract is a self-executing programmed agreement that operates via blockchain and tends to eliminate the need for any third parties. Automated contracts have been around for longer than one might think. In fact, an early example of a smart contract from the 1880 is the vending machine, which calculated the money, gave out change, and delivered the product all by itself, without the need for a cashier to oversee the process. Today, blockchain technology has changed everything for contracts. Firstly, the contract is executed not on one, but on thousands of computers, making it extremely safe. Secondly, the contract is immutable, meaning it cannot be altered after the block has been completed. Additionally, it is public and transparent, providing a complete record of transactions at any time. This automation and third-party exclusion allow for the creation of a trustworthy network where one does not need to know or directly trust the other party but instead trusts the transparent exchange system itself. We apply this technology to ensure timeless digital twin record keeping and create innovative financial tools to not only collect but also use the art you purchase. These applications are unlocked by tokenizing the digital twin.

The ERC token standard is one of the fundamental concepts, especially relevant to smart contracts and smart property. It stands for “Ethereum request for comments” and was created to communicate important technical comments and requirements to a group of developers and users. Superhow.ART has adopted

the ERC-1155 and ERC-721 NFT token smart contract standards to represent the digital twin on the blockchain. These standards allow us to link the tokenized representation to the hash of the digital twin file stored in IPFS. Any change or addition to the data made on the decentralized storage causes the change of hash and must be recorded on the smart contract as a transaction for the update to be tracked and valid. Over time, this process results in a verified chain of transactions that form an immutable, transparent, and publicly accessible history of the artwork itself.

...but instead trusts
the transparent
exchange system
itself.”

The digital twin, represented on a distributed file system and blockchain, can then be used in different ways, including being collected, sold, or even applied in various financial instruments based on other smart contract types. Several of these uses have already been thought-through and implemented at the proof-of-concept level by Superhow.ART. Firstly, digital twins can be sold, traded or gifted through ownership rights tokens that have an immutable link with the digital twin via smart contracts. These ownership tokens can further be used in smart contracts of derivative market instruments, such as options, futures, and debt control tools. The possibilities of ownership tokens and smart contracts unlock a range of financial opportunities, allowing digital twins to be a valuable asset class in the future economy.

“Ownership tokens and smart contracts unlock a range of financial opportunities, allowing digital twins to be a valuable asset class in the future economy.”

Another way to apply ownership tokens is to sell or buy them through a decentralized art exchange (dAEX) or digital auction smart contracts. Auction smart contracts control the bidding mechanism and automatically transfer ownership when the auction is completed. They also include features such as automatic price escalation and bid cancellation, creating a transparent and verifiable process for buying and selling ownership rights of phygital artworks. Furthermore, they have a built-in escrow feature, which secures payments and ensures that both the buyer and the seller are satisfied with the outcome. On the other hand, dAEX smart contracts facilitate trading without third-party intermediaries, allowing users to buy and sell tokens using cryptocurrency or other digital assets. All trade transactions on dAEX are immutably and securely recorded on the blockchain network. This exchange has the potential to increase the liquidity and value of the ownership rights tokens, as it makes it easier for users to buy and sell them in an open marketplace.



Business

Our framework enables physical art pieces to be digitized and then tokenized as NFTs, ensuring their accessibility in an increasingly virtual economy. The digital trail of a tokenized artwork creates an immutable and verifiable ownership history, resulting in a tamper-proof provenance record of the piece.

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Business

Superhow.ART will operate as a decentralized art finance ecosystem, enabling the digitization and tracking of fine art using blockchain technology. Our framework merges traditional art with the new age economy, creating phygital art objects that have a fully digitized, one-to-one representation in the virtual world.

The Superhow.ART business model includes several key components that make art digitization and trading possible. These components include a digital twin creation, tokenization, provenance data management, securitization, derivative market, smart-contract-based auction, decentralized art exchange (dAEX), blockchain network, and front-end interface modules.

Our framework enables physical art pieces to be digitized and then tokenized as NFTs, ensuring their accessibility in an increasingly virtual economy. By creating a detailed digital representation of the artwork and pairing it with a unique and interference-resistant token on a blockchain network, we aim to bring transparency and traceability to the art market. The distributed ledger technology provides a secure way to hold and transfer the ownership of art assets digitally, without relying on intermediaries.

The Superhow.ART business model offers a forward-thinking solution to amplify the value of art collections and bring physical art into the new era. Our platform lowers transaction costs and unleashes liquidity of the underlying asset. Furthermore, the digital trail of a tokenized artwork creates an immutable and verifiable ownership history, resulting in a tamper-proof provenance record of the piece.

Superhow.ART will generate revenue by charging transaction fees for the trading of ownership rights tokens and other tokenized derivatives on our platform. Additionally, we will charge fees for the creation and management of NFT tokens and provenance data. We will also offer consulting services to art collectors and institutions who want to digitize their collections and manage their provenance data.

Busin

ArtTech Ecosystem

As technology continues to evolve and permeate every aspect of our lives, artists and entrepreneurs are finding new and innovative ways to harness its power to create, promote, and sell art and to make it accessible to wider audiences. In recent years, we have seen a proliferation of emerging ArtTech startups and art industry leaders entering this field. From blockchain-based marketplaces for digital and phygital art to virtual and augmented reality experiences, the possibilities for experimentation and cross-disciplinary collaboration in artTech are seemingly endless. Some market entrants are just stepping into the market, while others are successfully raising funds and generating revenue.

LaCollection is one of the most prominent players of the ArtTech ecosystem, collaborating with museums such as the British Museum and institutions such as AFP to create digital collectibles and NFTs. In 2022 they completed their seed funding round of \$10M. ArtèQ has also undertaken an impressive project with the Belvedere Museum, transforming Gustav Klimt's world-famous artwork "The Kiss" into a digital form and offering 10,000 unique NFTs for sale on Valentine's Day in 2022. Since then, artèQ has continued to release numerous interesting projects and has established its own certified auction house. Another ecosystem member worth mentioning is Artory and their Artory/ Winston art fund. They offer a wide range of services, ranging from tokenization to sophisticated data insights on the art market. Verisart, who entered the market in 2015, offers a more creatorfriendly experience with their Shopify app which allows artists to create and sell NFTs in their own Shopify store. Portion has also launched an online marketplace connecting artists and collectors using blockchain technology. They have forged compelling collaborations with Decentraland, bringing physical exhibitions to the virtual world. Another prominent unicorn connecting art and a new type of investment is Masterworks. Though their main focus is to sell shares representing an investment in artworks, not selling them as NFTs as such, their influence on the whole art market and enabling people to invest in art as in shares was very noticeable. Even the most prominent players in the art field, like Sotheby's, are broadening their focus and exploring the opportunities that the metaverse and NFTs offer.

The ArtTech landscape is a rapidly expanding field with limitless potential for collaboration and innovation. For example, Arius has developed proprietary ultra-high-resolution art capture technology, which accurately records the surface color and geometry of paintings and art objects. This technology enables art experts to analyze the condition of a work of art, create digital restorations, and generate textured reproductions. We believe its capabilities extend beyond conservation and restoration, as the technology can also be utilized, for example, to create extra quality digital scans for digital twins, thereby providing a means of recreating an artwork if it was destroyed.

Superhow.ART is focusing on creating new models of art ownership and distribution, art asset management and archiving, but is proud to be a part of a rapidly expanding field with limitless potential for innovation and cross-disciplinary collaboration. The boundaries of what was once thought possible in the world of art and the preservation of its value are being pushed further, opening up vast opportunities for artists, collectors, and investors alike. Indeed, the possibilities are limited only by the scope of the human imagination. As the ArtTech ecosystem continues to evolve and mature, we can expect to see even more exciting developments and collaborations in the years to come.



Team

Superhow.ART was founded by a team of ArtTech researchers, blockchain experts, and fine art lovers. This team is dedicated to encapsulating history with the help of emerging technologies.

Ieva Gražytė

Co-Founder & CEO

Digital culture researcher with a solid background in art, philosophy and interest in blockchain.

Linas Būtėnas

CTO

Blockchain technology expert, data analysis and artificial intelligence researcher with more than 20 years of IT experience.

Jovita Šneiderienė

Co-Founder & CMO

Communication and marketing professional with more than 10 years of experience in the field.

Rimantė Andrijauskaitė

Business Analyst

Business analyst with great attention to details in the both visual and technical sides of the project.

Andrius Bartminas

Executive Advisor

Web3 visionary and outstanding international business development professional with a deep passion for new technologies and innovations. Andrius has proven experience working on complex and large-scale projects.

Vytautas Kašėta

COO

Blockchain expert, distributed systems architect, entrepreneur, and community builder. DeepTech enthusiast and visionary in tokenomics and the crypto economy.

Tomas Aliukas

Art Director

Experienced designer and creative director with the ability to translate innovative visions into visually unique concepts.

Monika Gornostajūtė

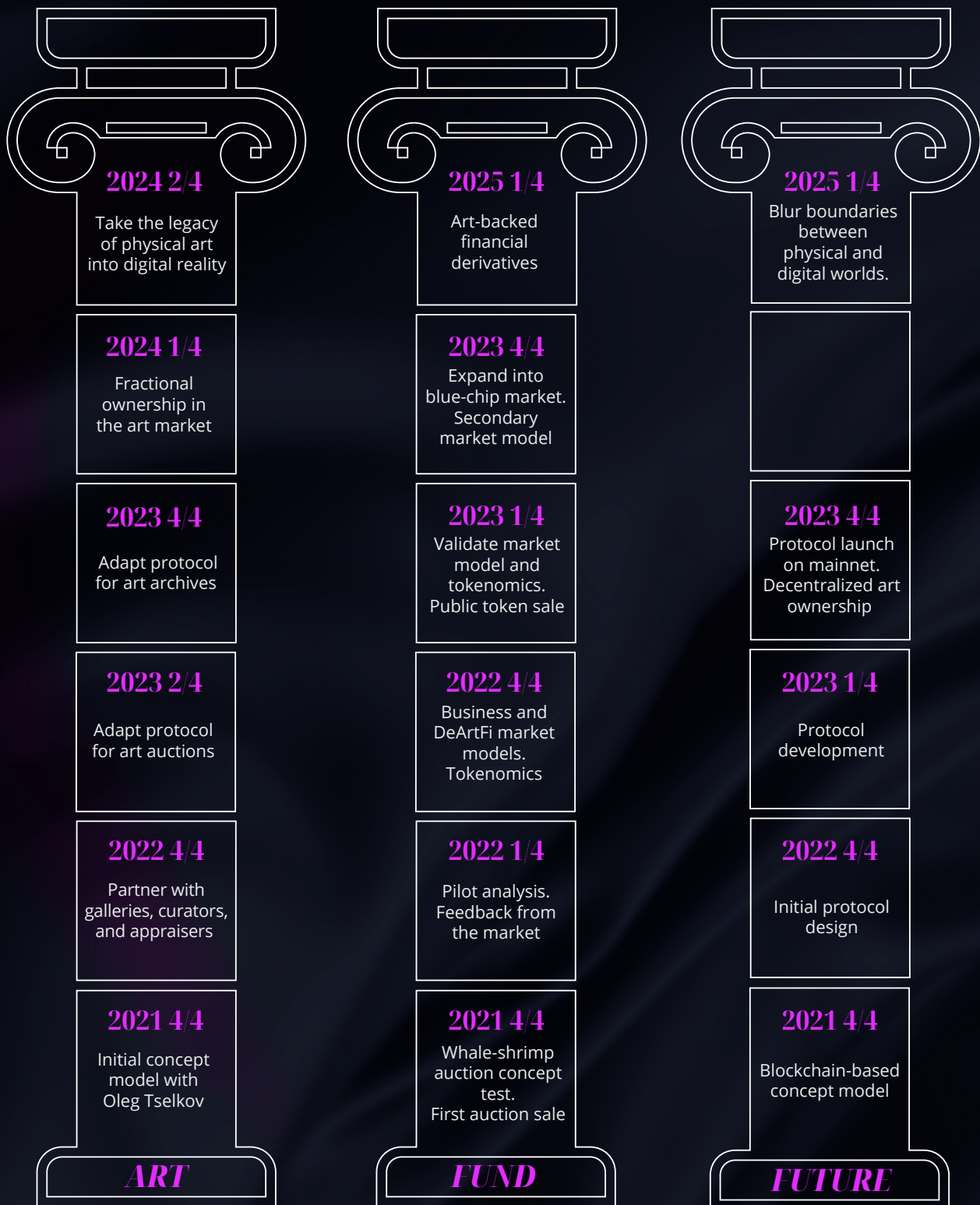
Tech Lead

IT specialist with extraordinary capability to manage both people and multifaceted infrastructures.

Neringa Dereškevičiūtė

Digital Designer

Digital designer with a strong background in information technology and blockchain knowledge.



Contributors

For Contributors

The integration of emerging technologies into the realm of fine art has the potential to revolutionize the preservation and dissemination of cultural heritage. Our project aims to harness these cutting-edge tools to create a more dynamic and accessible future for the art world.

We welcome collaboration and participation from a wide range of stakeholders in the fine art ecosystem, including individual art holders and owners, institutions such as museums and foundations, and investors interested in contributing to the growth of the Art 3.0 market. Tokenization of assets and the creation of digital twins can provide a multitude of benefits, such as increased transparency and security in art transactions, and the ability to easily access and share information about works of art.

Furthermore, we are constantly seeking the input and expertise of innovators, art experts, and blockchain specialists to contribute to the development and implementation of our project. Together, we can work towards fulfilling our mission of creating a more inclusive and technologically advanced future for the fine art industry.

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This Superhow.ART White Paper is for informative purposes only. It aims to introduce the Superhow.ART project, technology, and the team.

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