OWLSTAND

A tokenized, decentralized and multidimensional online art platform

Abstract. Owlstand is an online platform project for art. It aims to set up a modern workflow for the art industry. Its main products are the software applications tailored for artist, curator, gallery and art organization, thus to create an ecosystem.

There are three core characters for the ecosystem: tokenization, decentralization and multidimensional, means that this platform 1. uses tokens on blockchain to represent shares and rights of the ecosystem; 2. uses various decentralised infrastructures to utilize the application; 3. creates multidimensional viewing experience for its users.

1. Introduction

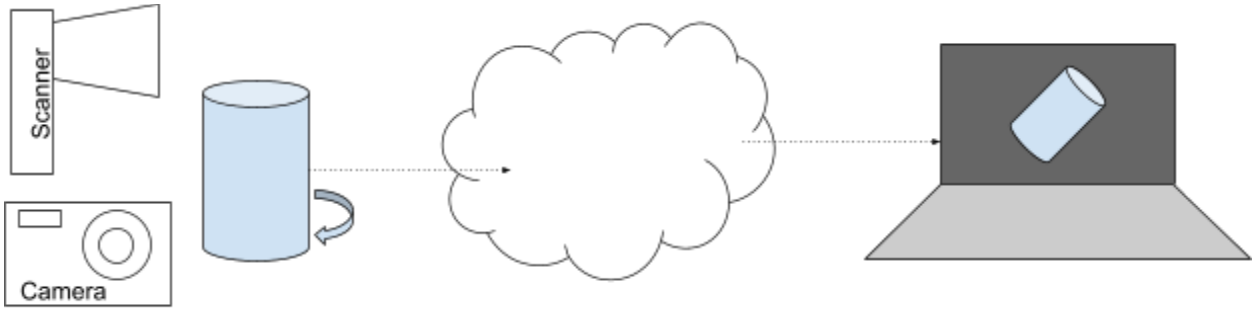
This paper elaborates three characters for an online platform for art: tokenization, decentralisation and multi-dimensional. These characters haven't been seen in any existing ecommerce platforms. We will discuss what is the platform, why we need the token, why decentralisation is important and why multi-dimensional is the next generation technology for enjoy art online. Then we will discuss how we are going to implement it, and what it takes to build this.

2. The online workflow for art industry

What this paper propose to build is an online workflow for the modern art industry. The workflow is the way of getting art objects online.

Tasks, job opportunities can be created around this system, such as

- Photographer: scan and photograph high-resolution artworks
- Curator: create online exhibition
- Delivery company: deliver artworks globally
- Designer: provide themes and props for the online exhibition
- Artist, gallery owner: sell art globally
- Museum: share art with the world



3. Tokenization

> In order to serve the society for a long time, the ownership of Owlstand shall not rely on one or two entities. By tokenizing itself, Owlstand's value is transferable since beginning. Each token represents some usage rights on the platform. This is being developed on some DAO platforms[1] with the notion of creating a better governance system [2].

3.1 Token

228,000,000 tokens are issued. The token has 8 decimals. Token ticker is tentatively named: OWD.

3.2 Token as a utility

3.2.1 Token used as transaction fees

On Owlstand platform, users do peer-to-peer transaction with each other, and the platform shall not (be able to) take commission. The peer-to-peer transaction fee is only paid to the network. To maintain the platform, Owlstand sells tokens to its users. So users need to have Owlstand tokens to enter the site to conduct business activities.

Owlstand can be a third party signature signer for approving transactions. For example, buyer Alice decides to buy a painting from artist Bob. Alice sends 1 BTC to a multisig wallet, Bob sends the painting to Alice, and Owlstand will sign the transaction. If Bob fails to send the painting to Alice, Owlstand will disapprove the transaction, and that 1 BTC will be returned to Alice. Owlstand can be a trusted escrow, however, Owlstand doesn't hold any of its users' fund, nor need to ask for users' identity.

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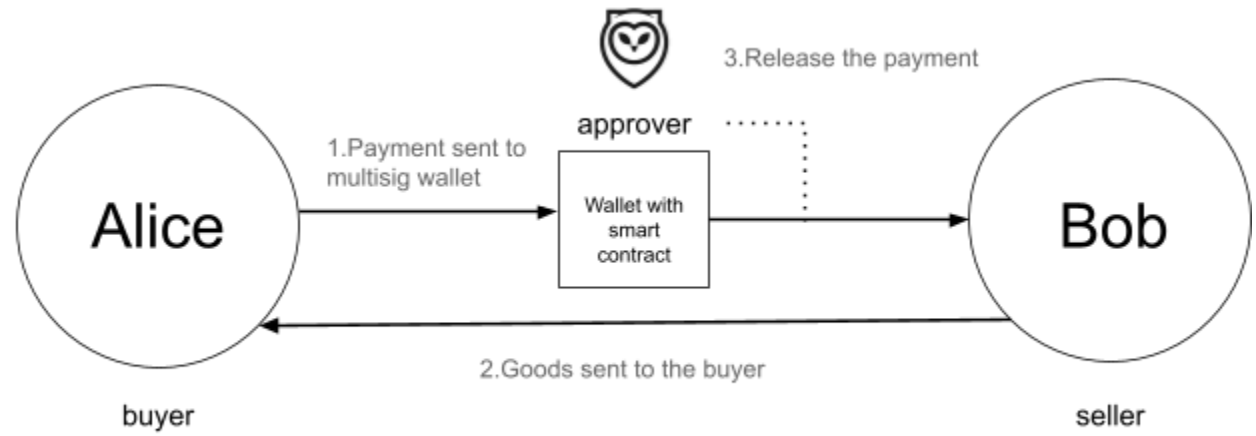
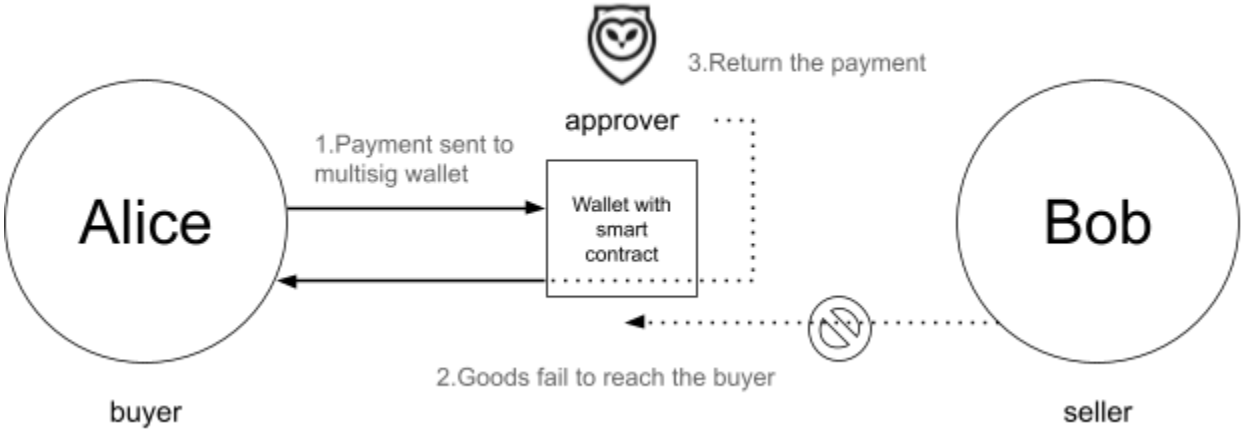
[1] https://aragon.org/
[2] https://www.youtube.com/watch?time_continue=338&v=AqjIWmiAidw





3.2.2 Token used as ticket

OWD can be used as an entry barrier. Visitors may need to pay OWD in order to enter some exhibitions.

3.2.3 Token used for service upgrade

Visitors may need to pay OWD to update some services, such as bigger storage space, special information and trading report summary.

3.3 Token as a security

Tokens can be used as security for some holders if their countries' security law don't contradict with the token's smart contract definition. By utilizing smart contract, a token can be semi-utility and semi-security, means that if a country doesn't allow its citizen to purchase "security" token, then the security feature will be removed for that country's citizen, meaning that they can't enjoy the benefit of gaining dividends like other countries' citizens.

By holding OWD tokens as security, users shall receive passive income. However, this can be only delivered when the smart contract is written and reviewed. And three-party reviewers, regulators and law enforcements shall read closely on the smart contract contents. Until then, OWD token remains as a utility token.

3.4 Token as a voting right

The voting right section is described here: #heading=h.22dcptlb42t6. The voting procedure draws lessons from Aragon's whitepaper[3].

3.5 Token history

Owlstand had one ICO attempt in a Dutch auction. That ICO didn't reach the minimum number so no investments were accepted.

3.6 Token on exchanges

Owlstand is currently listed on Joyso, Token.store and Stex.com. (October 2018)

3.7 How to earn OWD token

Owlstand is essentially a content platform for art. Users gain OWD tokens from the reserved pool by contributing contents to the site. The exhibitions got most of the interactions and favourites from our algorithm will be rewarded most of the OWD tokens.

The undefined algorithm shall be established and polished by the community in a period of time. We are referring Steemit in the chapter below for our readers' reference.

[3] https://github.com/aragon/whitepaper

3.7.1 Direct selling model. Case study: SALT

In this model, users need to purchase the token to use the service, means, to use the service, users must buy tokens from the platform.

SALT is a project using Direct selling model. To get the loan, users must purchase SALT and pay back to the platform. The platform could adjust the price to make it affordable for most of their users.[4]

3.7.2 Content-rewarding model. Case study: Steemit

In this model, users' contribution brings token rewards directly, means, if users set up an exhibition to Owlstand, they will get OWD token as a reward for them.

Steemit is a project using Content-rewarding model. Users can use Steemit for free, and thus they will be rewarded Steem coins by contributing contents[5].

One bad aspect of content-rewarding model is that not all the contents are good contents. Some contents are just occupying storage space. Rewarding all contents will bring only more and more bad contents. Therefore, we need to reward good contents by using a series of algorithms.

This model is NOT contradicted with the direct selling model, but a complement. By rewarding only good exhibitions, more users will pay to join the platform.

[4] https://membership.saltlending.com/files/abstract.pdf
[5] https://steem.io/steem-whitepaper.pdf

4. Decentralization

Owlstand is mainly artechitually and politically decentralised according to Vitalik Buterin's definition of Decentralization[6]:

- Architectural (de)centralization—how many physical computers is a system made up of? How many of those computers can it tolerate breaking down at any single time?
- Political (de)centralization—how many individuals or organizations ultimately control the computers that the system is made up of?
- Logical (de)centralization— does the interface and data structures that the system presents and maintains look more like a single monolithic object, or an amorphous swarm? One simple heuristic is: if you cut the system in half, including both providers and users, will both halves continue to fully operate as independent units?

The decentralised setups, such as storage, database and computing will enable the system to be fault tolerated. Users with the token can also vote on particular issues, that makes Owlstand political decentralised. However, the system is built by the founding team, with a centralised execution and design method. To improve that, we aim to renew the team with a tenure policy.

[6] https://medium.com/@VitalikButerin/the-meaning-of-decentralization-a0c92b76a274

4.1 Architectural Decentralisation

This chapter is to reassure our customers (the art industry) that their data will be safe and the tools we select to use are sustainable. Users use Owlstand platform shall not pay attention to the technical choices. However, our method is listed here for the developer community to evaluate.

4.1.1 Decentralised database

There are a few decentralised database projects: Bluzelle[7], Orbitdb[8], Ocean protocol[9], Bigchain [10] and Fluence[11].

Our criterias on these databases are:

1. The size of the swarm network (attack resistance)
2. Geographically widespread (avoid single point failure)
3. Friendly development environment

4.1.2 Decentralised storage

There are a few decentralised storage projects in our research: Sia[12], Storj[13] and IPFS[14]. Sia has an active network[15]. Storj and IPFS has their beta versions.

Our criterias on these storages are:

1. File security
2. File redundancy[16]
3. Speed of CDN

Owlstand platform is net of these infrastructures, and organized together for the art industry. The resource it fetches is from all the miners. Everybody in the computational swarm provides a bit of the effort to the network. Therefore, the value of OWD ties closely with the computer resource this platform owns.

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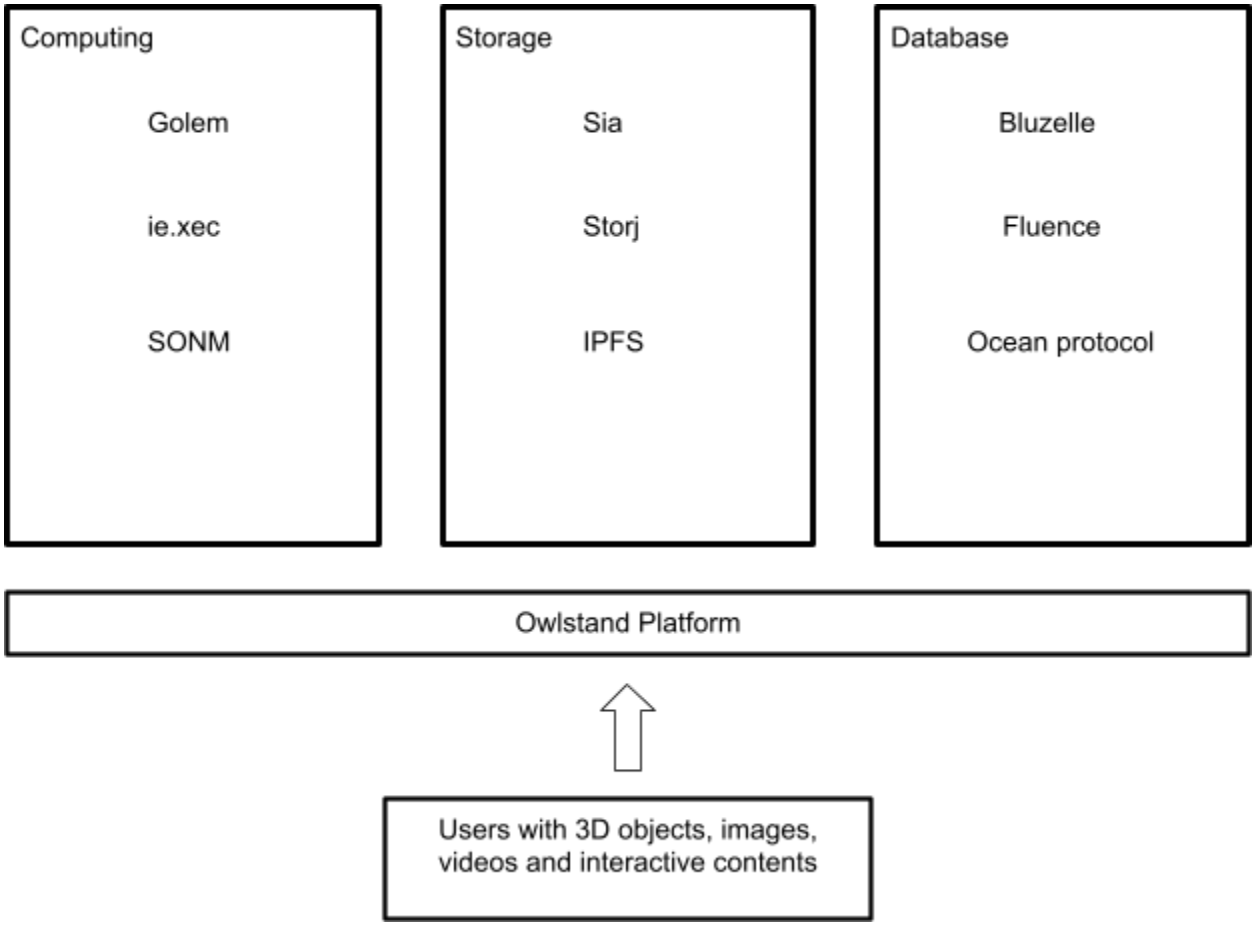
[7] https://bluzelle.com/
[8] https://github.com/orbitdb/orbit-db
[9] https://oceanprotocol.com/
[10] https://www.bigchaindb.com/
[11] https://fluence.one/
[12] http://sia.tech/
[13] https://storj.io/
[14] https://ipfs.io/
[15] http://siapulse.com/page/network
[16] https://filecoin.io/proof-of-replication.pdf

4.1.3 Decentralised computing

There are a few decentralised computing projects: SONM[17], ie.xec[18], Golem[19].
Our criterias on these computing providers are:

1. Cost
2. Developer environment

The idea is to storage data and fetch computational resource from all different providers. In that case, the network is distributed safely on all different networks, unless all systems go down, the computation works continues.



[17] https://sonm.com/
[18] https://iex.ec/
[19] https://golem.network/

4.2 Political Decentralisation

4.2.1 Voting right

Owlstand token grants its holders voting rights. Here is a demo voting procedure on Aragon: http://aragon.aragonpm.com/#/owlstand.aragonid.eth/0x90968fe1f634fa1f318f7c5a8185f448ad2af684

4.3 Logical decentralisation

4.3.1 Team tenure

Each team shall leave office after a period of time. The time slot is currently drafted as 8 years. The team's mission to build the dapp and cultivate a community.

5. Multidimensional

> Owlstand creates a multidimensional online space for artists to display their works. The first team created a zoomable interface. And the upcoming task is to develop a 3D viewer which can host image, 3D file, video and interactive content.

5.1 DOPING system

5.1.1 The system

In the first version, we build DOPING (Displaying & Organising Platform for Integrated Numerous Graphics) system, which combines images together with background layers to compose deepzoom[20] layers for users to interact.

Unlike most of the ecommerce websites, DOPING's structure is similar interactive mapping sites. This structure aims to enable scene construction like real life exhibitions.

In the early discussion, there were three routes:

1. Normal web page style (example, Google Open Gallery[21])
2. Deepzoom layer style (example, Owlstand[22])
3. 3D space style (example, Sketchfab[23])

Layer style was a mechanism can be run on computers and mobile devices now. 3D space style or 3D web could arrive when the overall performance for computer raises.

5.1.2 Advantages

Loading speed: the system provides a better loading speed for big images because the tile structure.

Environment setting: designer can design certain themes for the platform.

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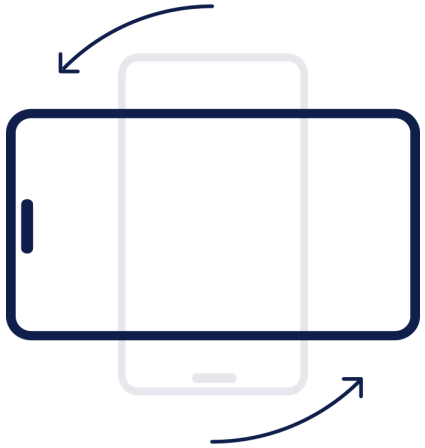
[20] https://en.wikipedia.org/wiki/Deep_Zoom
[21] https://opengallery.culturalspot.org/
[22] https://owlstand.com/
[23] https://sketchfab.com/

Information layering: information can be inserted into different layers. When users zoom closer, the information can be revealed.

5.1.3 Usability

The design of the system requires a horizontal viewing experience. To interact, the platform needs perform better on touch screens. The architecture limits the usability for some devices, such as old computers or small mobile phones.



5.2 3D scanning

Collected 3D data is useful for a wide variety of applications. These devices are used extensively by the entertainment industry in the production of movies and video games, including virtual reality. Other common applications of this technology include augmented reality, motion capture, gesture recognition, industrial design, orthotics and prosthetics, reverse engineering and prototyping, quality control/inspection and the digitization of cultural artifacts[24].

The file formats generated by 3D scanning are abundant[25]. Lots of researchers are working on digitalization of historic artifacts. [26] [27] [28] [29] We will have more and more 3D artifacts scanned from the real world from the end of the decade. The platform needs to fetch and display these data effectively.

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[24] https://en.wikipedia.org/wiki/3D_scanning
[25] http://edutechwiki.unige.ch/en/3D_file_format
[26] https://pdfs.semanticscholar.org/5794/619bc0000f9d11123f3f4c2f4e3ee459a31a.pdf
[27] https://sha.org/documents/VirtualArtifacts.pdf
[28] http://graphics.cs.yale.edu/site/sites/files/rushmeierh_webdisplay.pdf
[29] http://www.cs.huji.ac.il/~werman/Papers/Extracting.pdf

5.3 Multimedia viewer

The growth of 3D objects and many other multimedia assets drive us to develop our next generation of displaying product, an interactive viewing room that supports various formats: images, videos, 3D objects and interactive contents.

5.3.1 Supporting Deepzoom images

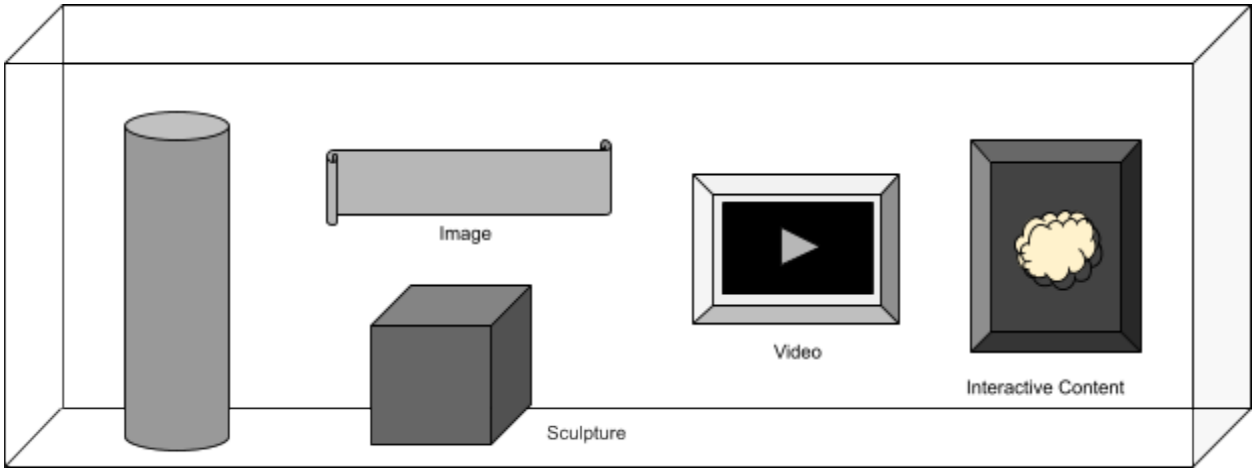
The multimedia viewer needs to support Deepzoom images, the probable technology to be deployed is OpenSeadragon.

5.3.2 Supporting 3D objects, videos and interactive contents

The framework to support these contents could be Three.js[30] or OSG.js[31].

5.3.3 The viewer

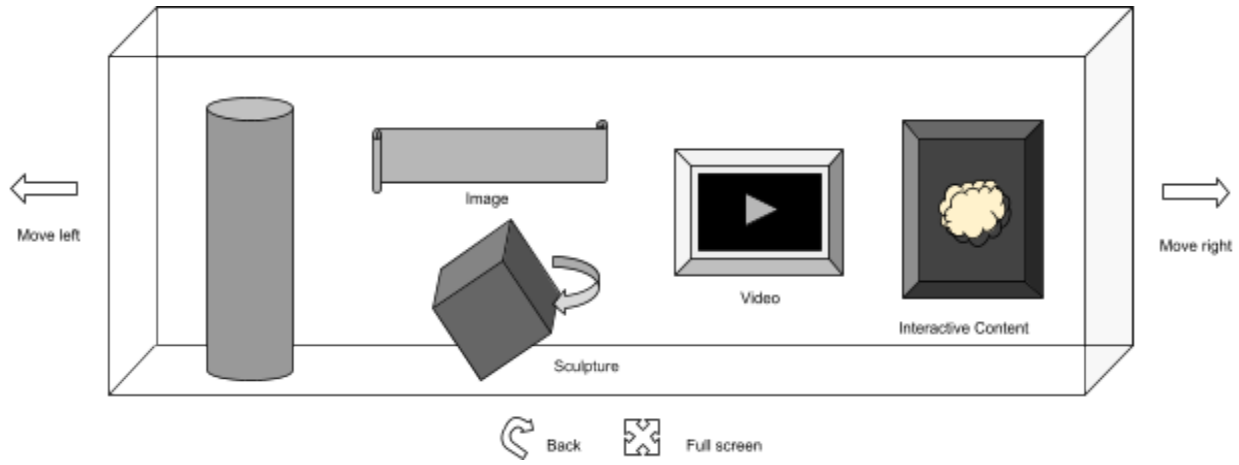
The viewer is designed to be a 30m (width) * 3.5m (height) * 1m (depth) box. This is an initial standard for the viewer and enable online viewing experience.



5.3.4 The interaction

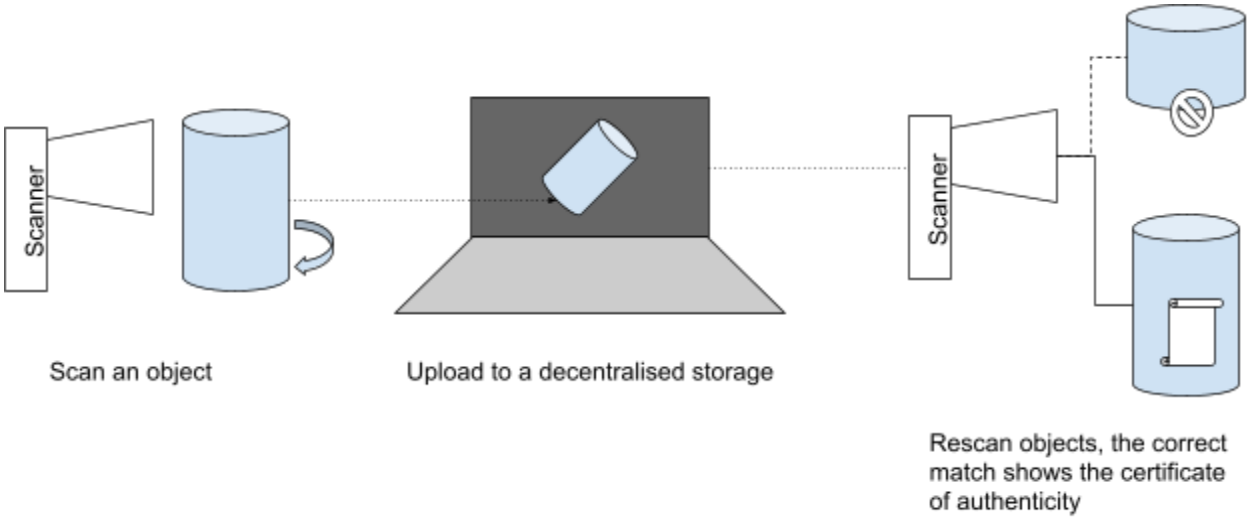
Users should need minimum effort to navigate in the viewing room. Avoiding turning and entering could be a good way to enable smooth viewing. Individual objects can be selected and controlled by users, and at the backend individual objects can be arranged.

[30] https://en.wikipedia.org/wiki/Three.js
[31] https://en.wikipedia.org/wiki/OSG.JS



5.4 Digital copyright

Users can verify an object's authenticity by using encrypted model match. One example is DUST identity[32]. This method can be used with different scanning devices.

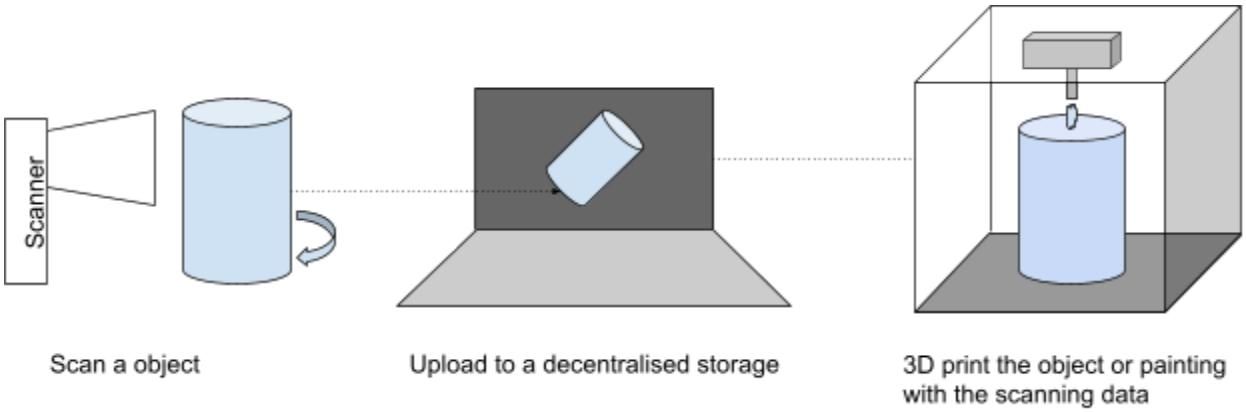


The platform doesn't product these verification services. The platform is for other parties to use, upload their content in a secure way, and verify their products without using a trusted party. The platform itself can't read users' data.

5.5 Bits to atoms

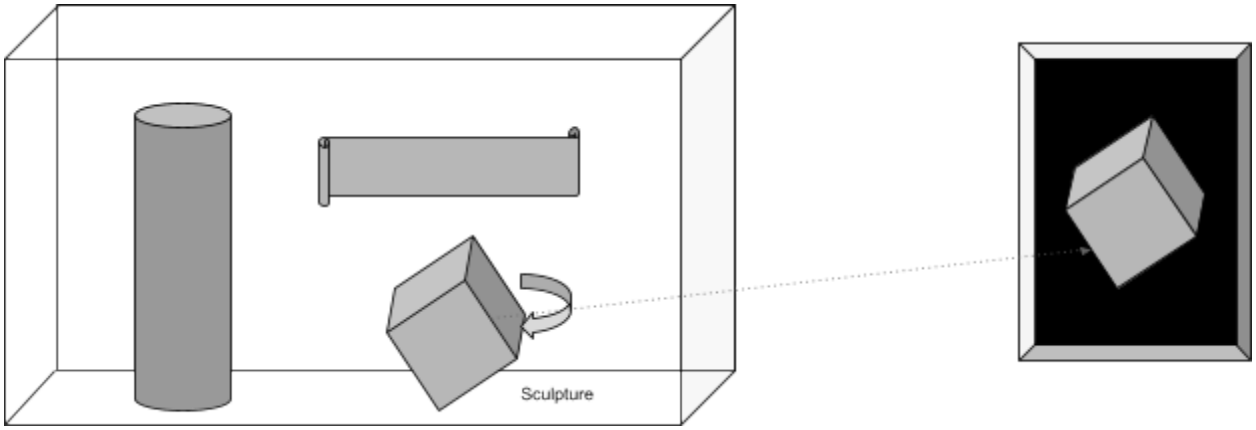
The data on the platform can be fetched by users for 3D printing to recreate a replica of the object. An example is VerusArt[33].

[32] https://dustidentity.com/
[33] https://verusart.com/



5.6 Hardware for art

The data on the platform can be used by various display devices, such as these platforms can be the users of the data: BOE iGallery[34], Samsung Art Frame[35] and e-INK ACep[36].



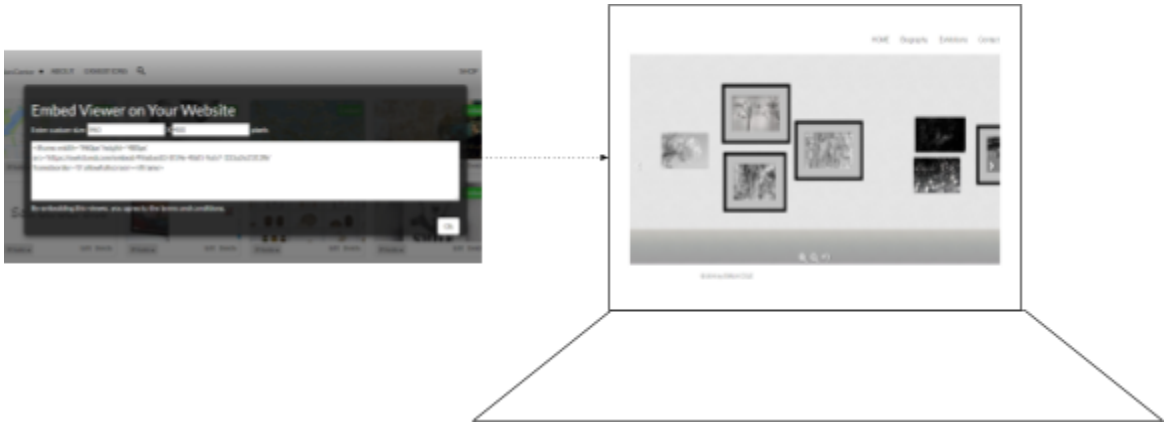
6. Other features

Each of these sections can be voted on its changes and updates. These are the existing features we have or aim to build.

[34] https://www.boe.com/en/product/zhxt/zhls/iGallery/
[35] https://www.samsung.com/us/explore/the-frame
[36] https://www.eink.com/color-technology.html

6.1 Embedding services

The Owlstand viewer, as a standalone feature, can be embedded to other websites owned by users.

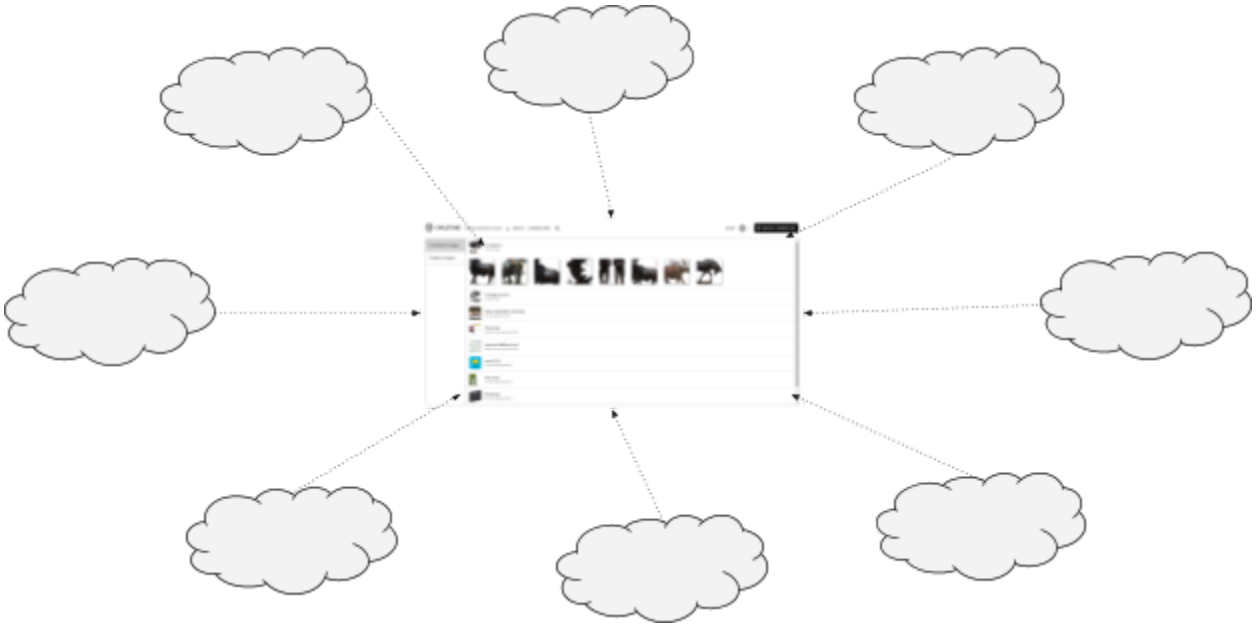


6.2 Printing service

The platform can use printing companies' API to print products.

6.3 Inventory Management

Inventory system used to be a standalone software[37]. The data is on gallery's local computers. But in the decentralised world, ownership and trade's record can be shared safely without giving away its privacy. Transferring data is simply provide a private key to the new owner.



6.4 Fiat payment and logistics

Owlstand is currently using Stripe as its Fiat payment solution and the logistic is integrated with UPS, Hermes and DHL.

6.5 Cryptocurrency payment for art

> The world of cryptocurrency is rapidly changing and evolving. Innovators and entrepreneurs are constantly introducing new cryptocurrencies, each promising new and varying characteristics to attract investors and users.[38]
>
> *Cryptocurrency as a Payment Method* by Department of the US Treasury

[37] https://en.wikipedia.org/wiki/Collections_management_system
[38] https://www.dni.gov/files/PE/Documents/9---2017-AEP_Risks-and-Vulnerabilities-of-Virtual-Currency.pdf

By accepting cryptocurrency payment, OWD token holders can gain dividends. OWD token is not designed to be a payment method. The ideal payment cryptocurrencies are Bitcoin, Litecoin and other Proof-of-work coins. The platform can act as a payment approver.

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6.6 Multimedia supports

6.6.1 Video interview

Video interview can be embedded by exhibitors.

6.6.2 Sound embedding

Exhibition curator can embed sound(background music) into an exhibition.

6.6.3 Case study: Unit London

The platform's user can be a modern gallery like Unit London. The gallery gained a reputation through the use of social media, which distinguished it from the marketing strategies of other art galleries. Through the use of videos and web content. Unit London has attracted interest from art lovers, artists, art collectors, and important figures from all creative industries, such as Jude Law, Bob Geldof, and Jean Paul Gautier, who have rallied around the cause and expressed their support for the approach by following, liking, commenting, and sharing the gallery's posts. [39]

[39] https://en.wikipedia.org/wiki/Unit_London

7. Community structure

7.1 Team

7.1.1 Team working proposal

Each team shall submit their improvement proposal, and work on it during their tenure.

7.1.2 Team token allotment

Each team shall receive certain token allotment. Voting shall be used to determine what percentage of the token can be released.

7.2 Team structure

7.2.1 Tech team

The tech team is composed by project managers and developers.

7.2.2 Content team

The content team is composed by Curators, Operators of Cinematography, Photography and 3D scan cams, and Video/Photo/3D editors.

7.2.3 Content team

CEO, CFO (responsible for token trading, accountancy, HR, police and law)

7.2.4 Hardware team

Hardware manager and designer

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8. Tezos blockchain

Owlstand will use Tezos as its smart contract solution[40].

[40] https://tezos.com/static/papers/position_paper.pdf

9. Technology

The platform is a software built with existing software technologies. Like any other websites, no matter it’s centralised or decentralised, the web software is composed by its frontend logic, backend logic, computing server, storage, database etc and programming languages. The platform has payment options like other ecommerce sites. The platform also provides other functions for its users, such as inventory management, printing and communication.