Whitepaper: Sharing AR content using the Bubbled Framework

bubbled.io

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This paper describes bubbled.io and its first set of decentralised applications.

Bubbled will enable multiple industries to explore and leverage the opportunities of advancements made in immersive technologies, specifically augmented reality, as a new means of interactive communications in real-time, real-world locations. It discusses the offering of a platform to buy and rent virtual spaces for the purpose of sharing and monetizing AR content and also discusses the infrastructure needed to establish an economy of assets.

Bubbled is a platform powered by the Ethereum blockchain for registering virtual land ownership for the placement of assets in an augmented reality. Brands, business owners and content creators can create, experience and monetize content and applications in real-world geographical locations which is viewable via the Bubbled app or as a result of downloading the Bubbled SDK to an existing 'locations-enabled' application; as an augmented reality landscape permanently owned by the Bubbled community, allowing full control over creations and purchases.

Bubbled enables a holistic and authentic journey to sharing and monetizing AR content for brands and individuals wishing to communicate themselves to their target market using a combination of native and location-based ad insertion technologies.

This paper describes the technical thoughts and solutions behind Bubbled, a decentralised platform, enabling brands, organisations and individuals a way to monetise and share content created in augmented reality.

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1 Introduction

1.1 merging virtual and physical advertising spaces

Immersive Reality presents a new and exciting medium for people to be entertained and educated, either through interactive games, movies or lifestyle applications. Due to the total immersive environment of VR, brands wishing to communicate with potential or existing customers need to discover innovative ways to do so in a practical and non-intrusive way. Due to the explosion in growth of AR technological advancements, borders between the physical and virtual world will become more and more blurred, leading us towards a seamless compound of both worlds.

1.2 the need for new technologies

Organisations who use adverts to communicate to new and existing audiences need to capitalise on the advancements made in immersive technologies, such as augmented reality and the shift towards decentralized financial systems free of trusted third parties. For instance, for the advertising industry whose value chain consists of a high amount of intermediaries a decentral solution can help to making businesses between advertisers and publishers more efficient. Blockchain technology will help to move away from a highly complex chain of middlemen and entangled software solutions.

Bubbled will provide the groundwork to manage ownership or virtual spaces, create assets and build solutions around it to create a new economy.

1.3 building trust without authority

The digital advertising industry faces a lot of challenges which all boil down to a lack of transparency resulting in a lack of trust. This can be solved by a blockchain based solution. Using a distributed ledger platform can solve the most challenging problems:

Fraud
Transparency
Tracking & Reporting
Governance

Various companies are working to future-proof their solutions in web 3.0 by developing decentralized products. Bubbled will provide a way to facilitate ownership of virtual spaces in real-world locations, including a decentralised methodology in gathering meta-data for reporting and meeting transparency needs.

[1]http://rtb-buch.de/rtb_fibel.pdf
[2]https://www.adpushup.com/blog/can-blockchain-fix-the-problems-of-digital-advertising-industry/

2 Background: traditional digital advertising

Traditional digital advertisers will start being confronted with new, decentralized solutions. This new technology is a direct threat to the business model of all third parties involved in the process of creating and serving digital advertisements. It has the power not only to solve current problems (see 1.3) but also to make the whole value chain more efficient and advertisers and publishers have to consider how to utilise these new opportunities to improve their existing business models. We identified four main problems traditional business have to solve:

2.1 advertising spaces

Unlike web 2.0 the next generation of AR applications will not have clear guidelines as to who owns what by way of advertising space. The question of ownership is not defined in the augmented reality space nor are any steps being taken toward a consensus-based system of governance to tackle the inevitable 'bad actors' that will appear in this space. Whereas; in the traditional online space, the owner of a website, app or other content displaying entity are on boarded via a DNS, with domain service providers managing the recording of ownership and enabling legal recourse in any matters of dispute, as is not currently the case in an augmented reality. Technically, immersive reality is another layer on top of the real world. As it stands though this layer is not physically connected to the real-world land entity, meaning any content placed in AR is not automatically owned or controlled by the real-world land owner.

In the future several parties will be involved in deciding, what AR content should be placed on physical locations.

Example:

"A content creator creates a piece of digital art or is commissioned to create an advert by a business owner or brand who wants to present in an AR environment, a call to action from their target audience. However, the digital AR space is owned by a third party who is paid by the business owner or brand for rental rights."

This example shows that several parties are involved and will have certain expectations about ownerships and rights in AR. To resolve this, blockchain consensus mechanisms can be used which will form the basis of the Bubbled Protocol which this paper will later discuss.

2.2 targeting

Typical online advertising and RTB platforms are unable to accurately provide information on the effectiveness of a given ad insertion and the price is usually based on estimating the needs of different user groups. How they generally decide 'which' ads to serve is based on cookie tracking and the type of content the viewer is consuming.

However, the 'when' to serve is missing altogether. Ads are often served at inappropriate times within the buying journey, often post purchase, causing irritation and in turn, apathy towards the brand serving the ad. This also results in wasteful ad spend.

Globally programmatic ad spend rose to $39bn in 2016 and has been growing at an eye-catching 71% year on year since 2012.

According to forecasts, programmatic advertising was predicted to grow by a further 31% in 2017, outpacing other forms of digital content such as social media and online video.
With unprecedented quantities of data at the fingertips of marketers the promise of serving
the right ad to the right person at the right time has seduced brands to plough millions into online programmatic advertising.

Despite advances in efficiencies and automation however, brands are still facing challenges which adversely impact their return on investment.

Intrusive ad experiences has led to an unprecedented rise of ad-blockers. According to Playfair, in 2016 over 420 million people installed ad blocking software on their smartphone. According to Hubspot mobile ad blocking has increased 90% year over year and it's no surprise with 64% of ad-blocker users doing so because they believe ads are annoying and intrusive. The proliferation of ad-blockers has led to a predicted loss of online ad revenue of $41.4 billion in 2016.

Brand safety is also a concern for major brands, with key players calling for greater control over the placement of their ads. Channel 4, L'Oréal and others have pulled advertising from YouTube and Google after their ads were shown alongside unsavory content highlighting one of the drawbacks of automation within programmatic.

Native content insertion driven by user preferences and contextual insertion of relevant content based on real-world location rather than pages visited as is often the case for online-based advertising is the value proposition of the Adland platform.

2.3 reports

Currently, purchasing advertising units for serving via website and mobile browsers are open to unprecedented levels of fraudulent use by bots and random hits with only a percentage of advertising reaching an actual person.

[3] *https://www.hubspot.com/marketing-statistics*
[4] *https://econsultancy.com/blog/67076-the-rise-and-rise-of-ad-blockers-stats/*
[5] *The Ad Tech Explainer 2017 (BI Intelligence)*
[6] *World Federation of Advertisers (Compendium_Of_Ad_Fraud_Knowledge.pdf)*

2.4 governance

When it comes to regulating augmented reality a number of different questions arise. When is a piece of content appropriate or not? Who is entitled to own what spaces and are they obligated to serve free space to real-world land owners seeking areas to place their ads or branded content for monetisation? Who is in charge of enforcing the code of conduct? What does the code of conduct even look like?

All of these questions form the case for a need of governance. Smart Contracts, specifically those built on the Ethereum platform are capable of building decentralized Apps (dApps) and organizations which can provide governance tools and frameworks free from corruption, fraud and absent of the autocracy often present in central organizations where scandals are often viewed as 'business as usual'.

3 Solution

This section describes the underlying technologies used to build the Bubbled platform. We believe that a mix of traditional web technologies and decentralised solutions can solve the problems the AR ad industry will start facing.

3.1 tech stack

Our solution consists of different technologies and layers which contains:

Ethereum blockchain and smart contracts
BigchainDB
IPFS
Traditional web technologies (JavaScript, Node.js)

Ethereum

Ethereum is a blockchain based protocol. It allows the exchange of value such as, physical assets, rights and properties to name a few use cases. Most importantly is its ability to run programs on a decentralized infrastructure. The term 'smart contract' refers to a piece of code deployed on this blockchain. Our decision to use this solution provides the following advantages:

1. Due to its decentralized nature and virtually endless calculation power it ensures availability of the service and scalability.

2. 'Trust-less' systems can still validate ownership of assets and verify transactions without going through a trusted third party, resulting in lower user fees.

3. The widely accepted Ethereum tech stack offers a large pool of knowledge resources and attracts tech professionals around the globe to validate and contribute to builds on top of the Bubbled framework.

BigchainDB

The costs of writing to and reading from the Ethereum blockchain grows with the amount of data to be written/read. To avoid these costs and be able to manage a blockchain database with the ease of traditional solutions we have chosen to utilise BigchainDB:

Excerpt from the BigchainDB technical documents:

"BigchainDB is a scalable blockchain database. It's designed to merge the best of two worlds: the 'traditional' distributed database world and the 'traditional' blockchain world. BigchainDB starts with a traditional distributed database (initially RethinkDB), whose characteristics include:

scale (throughput, capacity, low latency)
query-ability

As well as this, they engineered in blockchain characteristics such as:

decentralized (no single entity owns or controls it),
immutable (tamper-resistance), and
assets (you own the asset if you own the private key via a blockchain-style permission).

BigchainDB supports both public and private deployments. Writes take less than a second because validation is based on federation of voting nodes. bigchainDB querying isn't in place yet, but will directly leverage the underlying database query functionality. From experiments so far, the BigchainDB architecture points towards 1 million writes per second throughput and storing petabytes of data (via sharding).

Being a decentralized database, BigchainDB is complementary to decentralized processing technologies like Ethereum Virtual Machine, and decentralized file systems like IPFS. It can be used within decentralized computing platforms like BlockApps-Stratos or Eris-Tendermint."

IPFS

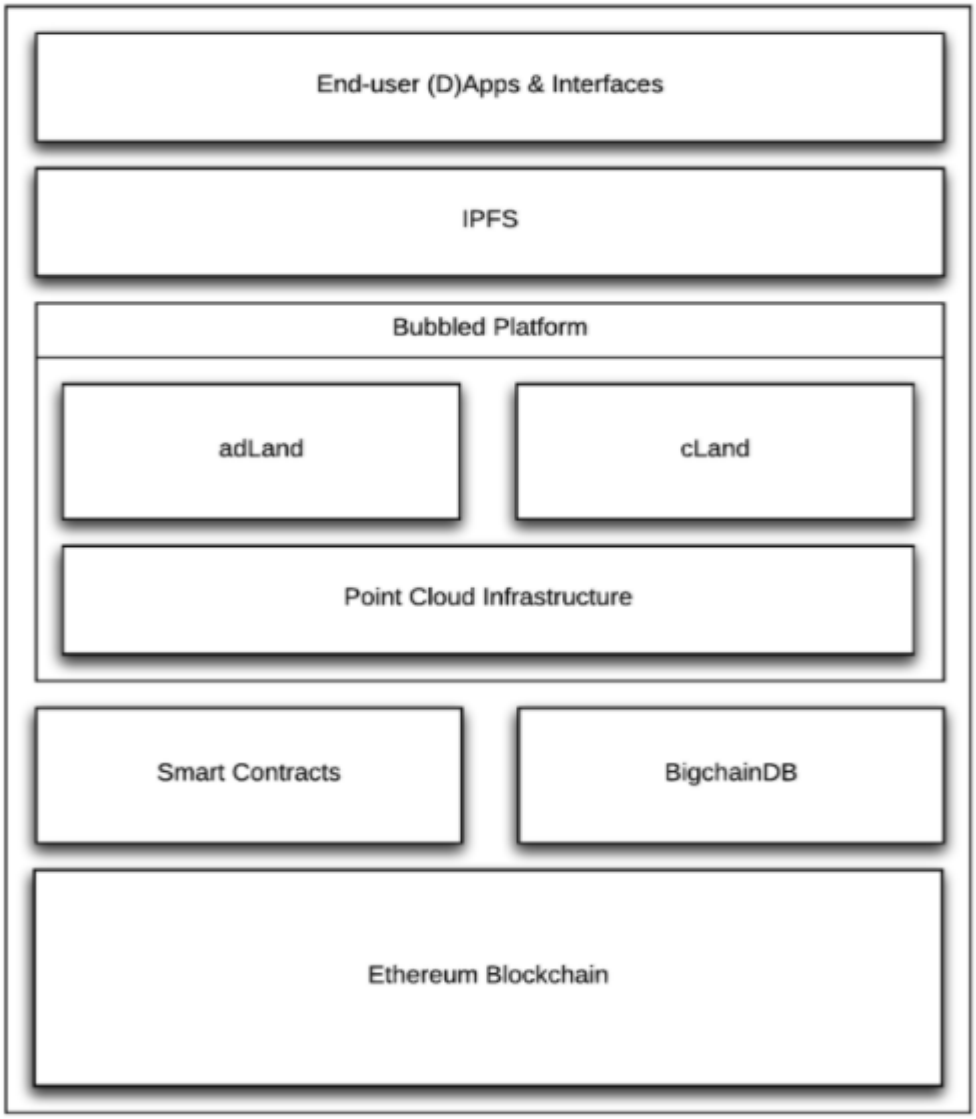
The IPFS protocol is our preferred solution to achieve peer-to-peer, high performance and secure content delivery.

Due to the restricted amount of data a block on Ethereum can have and the inability of a database (like bigchainDB) to store large files, Bubbled requires another blockchain based protocol to serve (large) files. Wherein traditional web services the http protocol regulates the transmission of data between 2 parties, in a decentralized approach, the IPFS protocol is our preferred solution to achieve peer-to-peer, high performance and secure content delivery.

[7] *https://blog.bigchaindb.com/what-is-bigchaindb-38aff031bf51*

IPFS defines a content-addressed file system and coordinates content delivery. It has directories and files and can be used as a mountable file system. Files can also be accessed by HTTP. These features makes it the preferred solution when it comes to serving content.

Because every piece of content is uniquely identified by a hash-value, it fits the required need to prove ownership and track content origination for content served.



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[8] *image of basic components*

3.2 adland - creating advertising spaces from real world places

Bubbled is the decentralised platform for dApps which provides a framework for sharing content in real-world locations in augmented reality.

AdLand is the first dApp on the Bubbled platform. It enables individuals to buy real-world locations on the blockchain and advertise on these locations in AR via a demand-side portal.

3.2.1 land registration

Smart contracts will keep track of land ownership and the acquisition process. Deployed on the Ethereum blockchain they will be able to receive tokens and run KYC checks based on needed parameters to determine whether the user is qualified to purchase land or not.

The end-user will use the Bubbled web-app to claim land and start the process of sending tokens to the smart contract using a browser add-on. This connects the end-user to the Ethereum network via a tool like MetaMask or for more advanced users they can follow instructions on how to send the token from a wallet like MEW (www.myetherwallet.com).

The smart contract receives information such as, user-id, claimed blocks of land, wallet address and additional metadata. After running necessary checks (valid address, sufficient funds) the smart contract processes the transaction and starts populating the transaction together with the information about land ownership to the network. There, it is written into a block and appended to the chain.

3.2.2 user data storage (database)

User data is stored in bigchainDB and synchronised with the transactions happening on the Ethereum blockchain. To avoid the costs and waiting times of the Ethereum blockchain we will store user information into bigchainDB. Reading and writing information at a expedient rate is needed to satisfy reaction times on the client side without losing the advantages of the blockchain.

3.3 cLand - content creation and exchange platform

This is the second dApp built upon Bubbled. It will provide all functionalities to handle content properly. It can be split into three main features:

3.3.1 creating assets

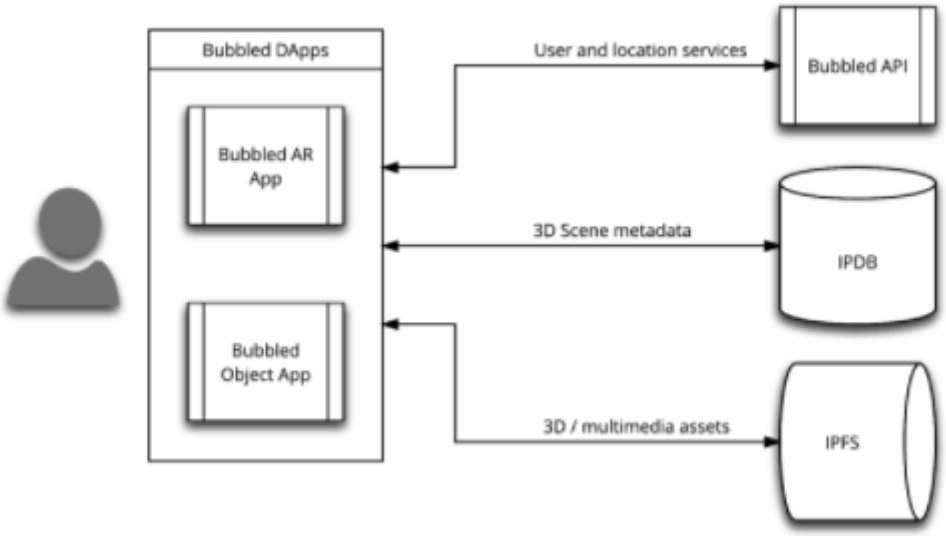
Simple 3D objects and text tethered to physical locations can be created by the cLand dApp, and content creators will also be able to create complex 3D assets which can be placed via a complementary web application.

3.3.2 placing assets

3D assets that have been placed in the 'Bubbleverse' will be stored in decentralised storage, such as IPFS, or partnering 3D asset repositories. Metadata relating to the 3D assets will be stored on Blockchain via bigchainDB (IPDB) allowing the cLand dApp to quickly reference data before loading the 3D assets into the dApp.

3.3.3 serving assets

When a 3D asset needs to be loaded, the app looks up the IPFS storage reference from the metadata in IPDB then dynamically loads the asset into the app depending on the user's location.



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3.4 Point Cloud Database

The point cloud database is a collection of geo-located point cloud data stored on the Blockchain. The point cloud data can be used to provide AR / Mixed Reality (MR) applications a better understanding of the physical space by mapping the environment to a 3D coordinate system allowing for more accurate placement and interaction of 3D objects.

By building a publicly available database of geo-located point cloud data, AR / MR applications, including third party apps beyond the Bubbled platform, will be able to benefit by having access to a pre-mapped point cloud of geographic locations, saving time and resources to map physical environments on local hardware. Furthermore, whilst GIS and Remote Sensing systems can provide point cloud data for external environments, the Bubbled point cloud system will also build a point cloud database which includes indoor locations.

[9]high level illustration of data sources

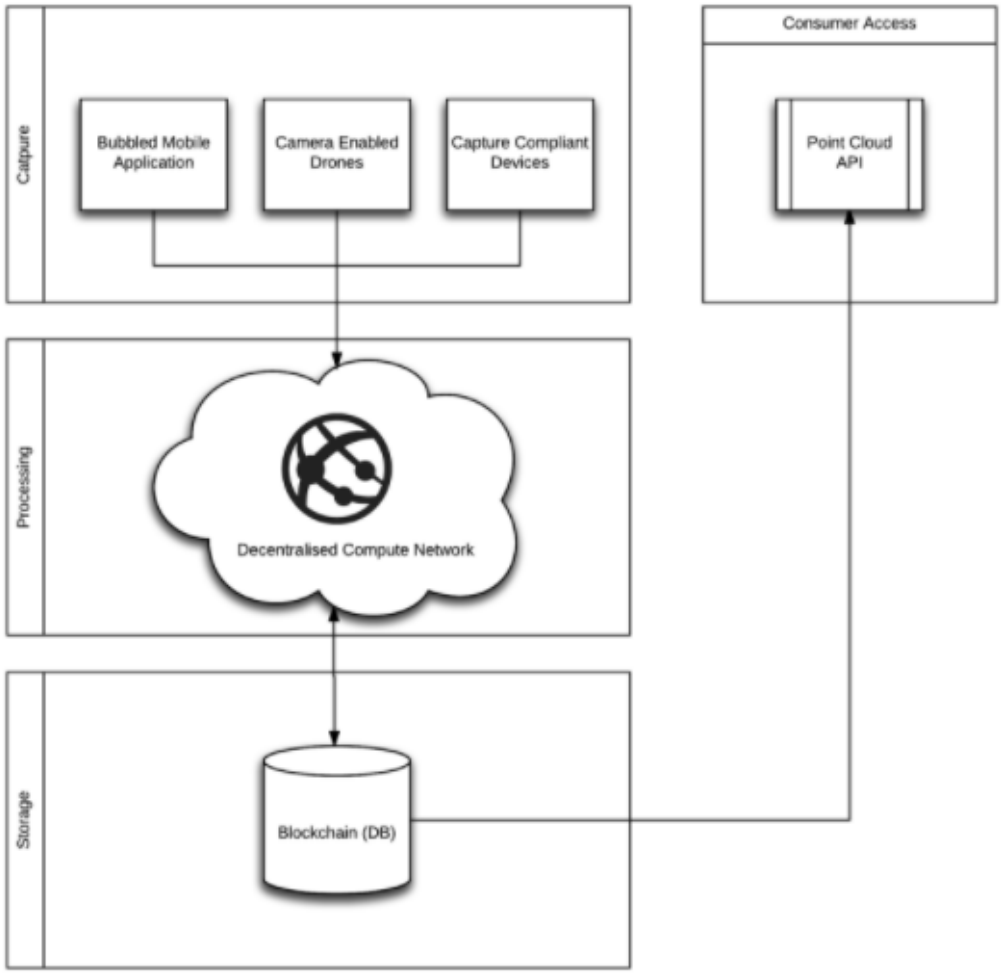
The system will be comprised of three main processes:

Capture / Collection of image data.
Image processing and aggregation.
Storage onto the decentralised network and/or Blockchain DB.

The capture and collection system will allow contribution from the public, plus an opt-in mechanism via the Bubbled mobile app. This will allow for a crowdsourced data collection model which could optionally be incentivized by paying collection agents with tokens or another cryptocurrency.

The Image processing phase will build a point cloud from new images submitted to the platform, then attempt to aggregate the new data with the existing point cloud from the Blockchain.

Once the aggregation phase is complete, and there is updated point cloud data to store, data will be pushed to a decentralised storage mechanism, like IPFS, and all relevant metadata objects updated on the Blockchain.



[10]*High Level Overview of Point Cloud Database*

3.5 End User Application

End-user applications can be run off several devices such as smartphones, VR/AR headsets and smart-glasses to name a few. One of Bubbled's goals is to provide an infrastructure for developers to enable them to build applications on an existing service rather than duplicating effort and building different solutions for various platforms. Ideally, developers should be able to focus on the AR experience, UI/UX and performance instead of dealing with governance or other issues that the Bubbled Protocol already solves.

3.5.1 Mobile App

We will develop a smartphone app to demonstrate the functions and capabilities of the Bubbled platform. Using Unity3d we will create a native Android and iOS App, showing a variety of functions such as:

seeing a 3D Map of your environment
showing points of interest
showing availability of land
displaying other Bubbled owners including positioning and social media content above their position
display of content on land blocks

3.5.2 Desktop App (land block picker)

We will also develop a browser app to provide a User Interface to buy, sell and rent land blocks. Every one of the 3x3m blocks the world consists of can be managed. In the long term this functionality will also be part of the mobile app and other solutions. Some features of this browser app will be:

seeing a 2D-Map in your browser and be able to navigate with scroll/drag
showing free blocks
selecting land blocks for acquisition
provide a convenient checkout process
display land blocks you own

To prevent buyers from purchasing huge amounts of land and building monopolies we will us a Bubbled land multiplier. Its specific rules and logic will be part of the product development process.

We limit land block purchase to 100 at one go if the blocks are interconnected. For every 50 additional blocks pass the quota, the price is multiplied by 10 i.e. 100 (no multiplier), 101-150 (price goes up x10) 151-200 (price goes up x 20) 201-250 (price goes up x30) which continues upwards in multiples of 10.

Any interconnected blocks bought past the quota can only be purchased in batches of 50
To avoid activating the land multiplier there must be a diameter of 100 blocks between land purchased and any subsequent land bought within the same 24 hour period
The land multiplier is reset every 24 hours

3.6 Bubbled Wallet

To access the services on Bubbled a wallet is required which is compatible with the ERC20 Token Standard.

To offer the most convenient user experience, Bubbled will offer an integrated light multisig wallet. A 12-word seed phrase will be associated with the user's wallet. We will offer a solution which is fully compatible with wallets like MEW or MetaMask. Details of the wallet implementation and security actions will be developed together with subject matter experts. As this topic is sensitive it will not be described in more detail within the white paper.

3.7 Economy (currency & market)

3.7.1 Available Land blocks

There are 57 trillion blocks of land available for purchase in 3 metres by 3 metres measurements. A significant number of blocks are located on oceans and non-habitable areas. Usually these locations are less interesting for advertising purposes but they can hold values for people outside of monetary interests. It is possible to purchase any block which is available.

3.7.2 Land price

Each land block is available for first time purchase at a price fixed to the real-time £/ETH value of £2.16 (0.00824501 ETH). This is the initial offering as long as land blocks aren't already sold. Once a land block is bought, the new owner can set the price he is willing to sell it again.

Our goal is to make this process as accessible as possible and not subject to your location, race or fortune. This should enable all parts of society to purchase virtual land blocks and do business with them either by selling or renting them.

3.7.3 Token amount minted

There will be 400.000.000 (million) tokens.

3.7.4 how the economy works

BBL is used to purchase each block of available land at the standard price of £2.16 (0.00824501 ETH). Each block purchased is recorded by a smart contract and viewable on the blockchain (Ethereum network or bigchainDB).

Once land is purchased the land owner decides on its price for resale or renting price.

BBL from transactions for first-time land buys or asset sales is paid into a decentralised reserve where it remains locked before it is available again for re-purchase. It remains 'locked' until a trigger event.

There also will be a small fee on every transaction, 50% of which will pay into the buying wallet of the decentral reserve which is controlled by a smart contract and used to buy any inflated BBL on exchanges to be stored in the reserve until it is available at a trigger event.

3.7.5 role of the decentral reserve

Whenever a non-P2P transaction occurs on the Bubbled platform in BBL, the tokens used are paid to the decentralised reserve where it remains locked before it is available again for re-purchase. It remains 'locked' until a trigger event. A trigger event occurs when the decentral reserve holds more than 200,000,000 of total supply. This causes it to be re-available for purchase and helps prevent inflation of the BBL token in times of scarcity.

For example, when a user buys land for the first time i.e. the first registration on the bigchainDB - They are buying from the 'state' i.e. the Bubbled platform's supply of 57 trillion land blocks. The BBL used in exchange for the virtual land then flows out of circulation into the reserve, creating scarcity as a byproduct. In order to get more BBL a user needs to purchase some or get paid for

a. renting
b. selling their land
c. creating content

For the purpose of the token generation event in which we will be offering 220m BBL, which breaches the trigger event rule, all trigger events will be frozen for the first 6 months post completion of the contribution period to encourage users to purchase BBL.

A portion of the revenue from the transaction fees will be used for several events in augmented reality which benefits the community:

organizing events in a certain location. e.g. art conventions, concerts, sponsoring events sponsoring artists or stimulating unattractive areas
covering the ongoing operational costs of the infrastructure itself

3.8 enabling fraud prevention

KYC gateways preceding the registration of content creators and ad buyers that are stored on the Ethereum network and bigchainDB enables accountability and a legal recourse for brands and organisations that are subject to breaches of copyright and defamation cases of 'guilt by association' allowing for better control of AR content placement. Outdoor advertising also better enables brands to control what and who they are affiliated with as it is not inserted 'alongside' online content but rather, is inserted native into real-world environments. The prospect of the ads being subject to 'bot-calls' rather than actual human eyeballs doesn't exist in outdoor advertising and robust human verification tests prior to entering the AR world via the Bubbled app ensures this remains the case.

4 BBL token

The BBL token will serve as the currency for buying virtual spaces in the Bubbled ecosystem and for transactions taking place on both Adland and cLand. BBL is based on the ERC20 Token standard and lives on the Ethereum network. To participate in the markets of the ecosystem one needs BBL. This can be achieved by taking part in the token re-issue events (TRE) which will be held at trigger events. Participants of the initial token generation event can expect discounts and early adopter benefits.

The BBL is a utility token and not a security. No voting rights, shares or other obligations comes with it. Another way of accessing BBL is to buy them on exchanges or from the reserve during a trigger event.

Although BBL is used for purchasing virtual spaces on the Bubbled platform, new dApps that join the ecosystem can introduce their own currency for transactions taking place within that dApp, however BBL is the only currency with which they can buy, rent or sell land holdings with.

4.1 Utility of the token

The main functions the BBL Token will provide are:

Buying land blocks
BBL is spent to purchase land blocks and gain ownership of them.

Renting land blocks
BBL is used to rent land and gain the rights to place content on it.

Buying content to display on land blocks
BBL is used to pay content creators for the right to use their products or hiring artists to build unique pieces of content.

Presenting content on the creator content wall
BBL is used to present content in content markets and make them available for purchase. For content creators, they are given access to our "Creator Content Wall" where they can post their creations for purchase or their services for hire. BBL buys listing

time which counts down upon posting and once time is used up content is removed from the wall.

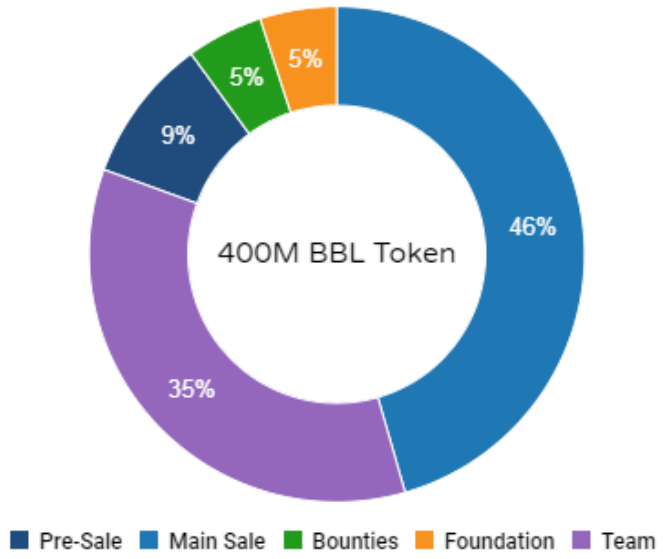
transporter feature

The transporter is the premium tool offered after the TGE to monthly subscribers of our data management platform (DMP) which allows them to purchase land blocks globally without having to be in that location physically.

Participants of the TGE do not have to spend tokens for the transporter feature for the first 3 months after the TGE and participants in the presale have access to pre-register claims to land which will be honored post token distribution.

Tokens can be exchanged for "Transporter Time." You enter the location you want to travel to, pay for time and you receive a temporary access code to the premium data management platform (DMP). Once time is finished, the system locks you out.

4.2 token allocation



4.3 bubbled foundation

A Decentralised Autonomous Organisation (DAO) will be integral to the formation of governing bodies to determine the use and management of public interest spaces by locale.

For example, to ensure individuals of a particular area or country do not have their public areas monopolised by outside interests or large local monolithic private companies, 20m BBL will form the first tranche of funds from the Bubbled Foundation to award individuals as bounties for nominating places of interest that need protection.

Competitions designed to create a democratic voting process for decisions of use of these areas, using voting mechanisms via platforms such as District0x.io, will be sponsored by the Foundation. A percentage of fee's raised via transactions on the Bubbled platform will go toward the maintenance of the Foundation to enable its ongoing work.

Decentralised based systems must give consumers the option to switch on or off their experience. In its purest sense, adverts are merely social interaction tools used by brands and businesses to inform a consumer of something that may be of interest to them. We generically use the term 'advert' but in reality it encompasses 'any form of content that is used to convey the message of one party to another.' This cascades down into various forms; games, applications and artwork to name a few.

The phenomenal growth of social network platforms allowing the communications, images and videos shared by normal individuals, collectively labelled 'social media' means that we now have people becoming 'brand ambassadors' and 'influencers', their voices amplified a thousand-fold by the popularity of these platforms. It means, as participants of social media, we are constantly being advertised something by someone. At its core, there is nothing wrong with adverts but left unchecked and with no 'off' switch it becomes invasive and annoying when your online experience is constantly interrupted at inappropriate times in your journey. Akin to entering a shop and being asked every 30 seconds 'can I interest you in this', you would eventually leave or as many do online, purchase ad blocking technology.

In its simplest form, Adland is a decentralised app (dAPP) that gives individuals the ability to switch their AR ad exposure on and off. Users can tailor their outdoor AR experience to suit them. Time their exposure to ads, only allow ads to be visible by physical proximity to a location, control what type of content they see and from whom. These are only a few control features the Adland dAPP will offer to end users.

4.4 adland – using the Bubbled Framework

Organisations and individuals that purchase virtual land spaces will be able to govern these spaces as they see fit and according to any consensus they may or may not, choose to form with visitors on their land.

Bubbled will seek to form a steering committee to develop a voluntary code of conduct for all virtual land purchased on Bubbled, including that owned by Bubbled and other unaffiliated virtual land owners on Adland, whose advertisers will agree to adhere to as a prerequisite for sharing content on these land blocks. However, this type of a decentralised regulatory body is not obligatory or in any way compulsory but rather it's an opportunity for responsible businesses' seeking to communicate to audiences in this new arena to be part of the conversation in forming a charter of standards that enhances the experience of individuals consuming their ads.

The end result will be the formation of the 'Bubbled Framework', an AR communications standard in which end users can opt to only accept content from brands and organisations that are signees to the charter based on the understanding they will be following a consensus-based consideration of best practice to deter the abhorrent and intrusive advertising tactics currently swamping online markets. Alternatively, they can also choose to accept content from non-signatories or a combination of both. The point is, left ungoverned and unchecked the same intrusive advertising standards that exist on the internet will find its way into the real-world via augmented reality.

5 Conclusion

Bubbled will solve several problems the advertising and AR industry will be facing in the future. AR-ready devices are emerging and as more software projects mature there will be a need to provide developers access to AR frameworks to create content and user experiences. Bubbled will fill the gap between the creation of content and its monetization via the provision of the AR cloud.

By providing an AR land registrar on the blockchain, we create a solution that organizes virtual land spaces and manages their hosting of AR communications efficiently without following the same patterns which caused the problems the traditional digital advertising industry are still dealing with.

Our cryptographic currency BBL will fulfil the needs of a decentral economy and eliminate the need for third parties when it comes to trades which require trust amongst the participants.

Primary advantages of this currency is a much higher fraud tolerance than conventional currencies have, lower fees, immediate settlement and accessibility for everyone.

The other pillar that makes Bubbled unique among its competitors is the use of blockchain technology not just for land registration but also for storing user data and serving content from a decentralized network. This provides a secure and solid way of dealing with data and provides a software architecture which is both scalable and reliable.

The "AdLand" and "cLand" solutions will open the bubbled infrastructure to developers and partners enabling them to use Bubbled's land registrar and content distribution infrastructure to improve their own solutions or push their creations into the wider #bubbleverse. This solution provides a platform which (decentralized) apps can interact with.