

SPHEROID UNIVERSE

YOUR SPACE RULES

White Paper for the decentralized business, advertising and
entertainment platform in the integrated augmented reality
space of the planet Earth

v3.0.2

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Project summary

New cycle of the technological revolution

Spheroid Universe is the actual beginning of a new cycle of the technological revolution that will change our understanding of real estate and of every person's right to practically manageable and controlled useful property on integrated Earth surface unregulated by the states.

This revolution in property and investment spheres was made possible and is developing in the digital era, when augmented reality technologies and distributed ledger smart contracts (blockchain) have emerged.

Where are these revolutionary events unfolding?

All over the surface of the planet Earth, wherever there's internet. In the digital space of our smartphones. In the planet Earth's augmented reality, which is aligned with the material reality, split up into private plots independently of 'traditional' property to material objects.

In the world of new opportunities for business, creativity and entertainment, which used to be science fiction in the very recent past.

In the world of open access to reward, property and cost management, where intermediaries may exist, but are not required.

Short description of Spheroid Universe

Spheroid Universe is a functioning augmented reality (AR) platform that superimposes a continuous layer of augmented reality onto the Earth surface, which is split up into Spaces - plots with precise geographic coordinates.

AR objects can be published within Space(s) for aesthetic, entertaining and advertising purposes. These objects can be observed through smartphones, glasses and AR helmets with the Spheroid Universe app.

The platform's main user product is the augmented reality social network. It uses Spaces as the foundation for its business model.

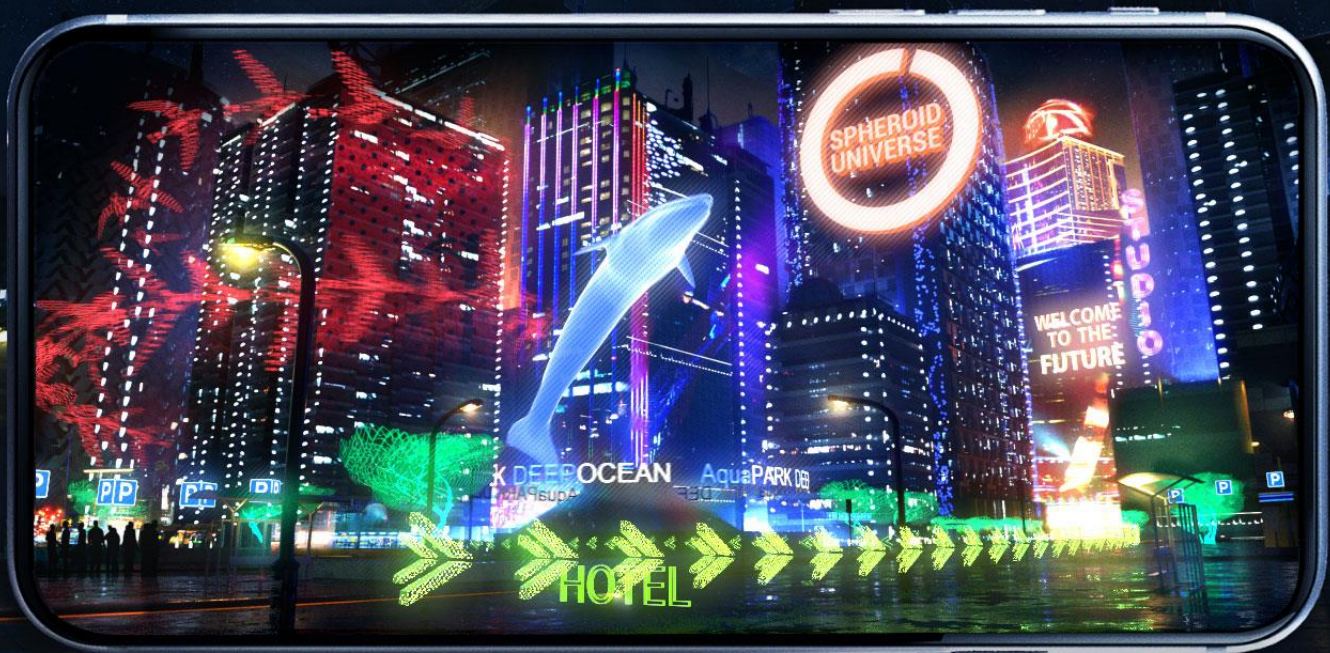
Spheroid Universe users can express themselves, create and render objects, interact with them, evaluate them, communicate with each other, leave messages and traces of their presence in this new world.

They can create their own worlds, combine them into communities, fill them with important and interesting content, invite their friends, play, meet each other and have fun.

Business gains an opportunity to advertise itself in unprecedented ways in the best places that were previously inaccessible to them.

The world of giant holograms that we observed in Blade Runner 2049 and Ghost in the Shell is currently coming to life on smartphone screens and in augmented reality glasses.

Augmented reality objects are unlimited in the possibilities of user interaction, size, artistic expression and lifespan.



For this purpose, Spheroid Universe and third-party developers are creating instruments, plugins and apps, continuously expanding the space's set of AR functions for the platform audience, creating AR games, holding AR exhibits, filling up AR stores and offering their projects to the project audience, earning money on it.

Spheroid Universe is an open decentralized augmented reality platform that creates the conditions for participation and earning for an unlimited number of participants: developers, artists and regular users. It is a platform where the platform users (Space owners), rather than an IT corporation, receive the earnings from advertising.

Spaces, just like any property, have value. They can be bought or sold. This asset can be leased out for 3D advertising object placement.

Spheroid Universe is based on an advertising business model. The platform creates and develops AR advertising services, connecting advertisers and Space owners, receiving transaction revenue when advertisers publish content in the Spaces.

Advertising within the Spheroid Universe is an alternative to outdoor advertising in the real world. Both Enterprise companies and small businesses use its advertising opportunities. According to conservative estimates, the international market capacity today already exceeds \$246 million annually.

Space owners' rights are already protected by traditional laws.

Space is a digital asset that has been created, registered and protected on the basis and in compliance with the laws of the European Union.

A Space owner has a right to resell it, lease it out, give it as a gift, transfer it as inheritance, use it as collateral, contribute it to company charter capital.

Project mission

The mission of the Spheroid Universe is to create the best AR services in the world for individuals and commercial organizations.

We realize that in 3 to 5 years augmented reality will become a part of everyday routine in the same manner that the use of navigators, messengers or streaming video on smartphones has. In the scale, functionality and grandeur it is only comparable to the emergence of the smartphone itself, since life will acquire an entirely new dimension in the digital world. A dimension with its own formats, instruments, communication methods, material and non-material asset exchange algorithms.

The first goal of the Spheroid, namely, to establish a platform, has been attained. The platform has been created as the entry point into this new dimension.

We see the following as our primary goals:

- Create the instruments for creative self-expression in augmented reality and provide a platform (Spaces) for this self-expression.
- Create a new type of AR-social network and attract millions of users
- Create a new advertising market and new mechanisms for companies' communications with their target audiences
- Create the market for augmented digital real estate and investments

Market analysis

AR evolution

Augmented reality (AR) is the superimposition of layers onto the existing reality, as the result of which the existing reality acquires new capabilities.

The first augmented reality instruments were attempted as early as in the 15th century by the Italian architect Filippo Brunelleschi. He would draw an object that augmented another, real-world object, and proposed to look at it through a mirror with a hole in it.

Virtual reality has undergone several cycles of development. We are seeing a new one now, where virtual reality is making a mass impact for the first time. The revolution we're witnessing now is the consequence of the emergence of the so-called fourth platform.

The first platform encompasses personal computers, which emerged in the late 1980s – early 1990s, then came the internet, and the next stage was mobile technology. Mobile consumption currently exceeds that occurring via personal computers. Virtual and augmented reality is the next, fourth platform, for which new markets, proposals and businesses will be established. Now is the perfect time to invest in VR/AR and develop related technologies.



PLATFORM WAVES



Source: Digi-Capital

Graphs by PREMO

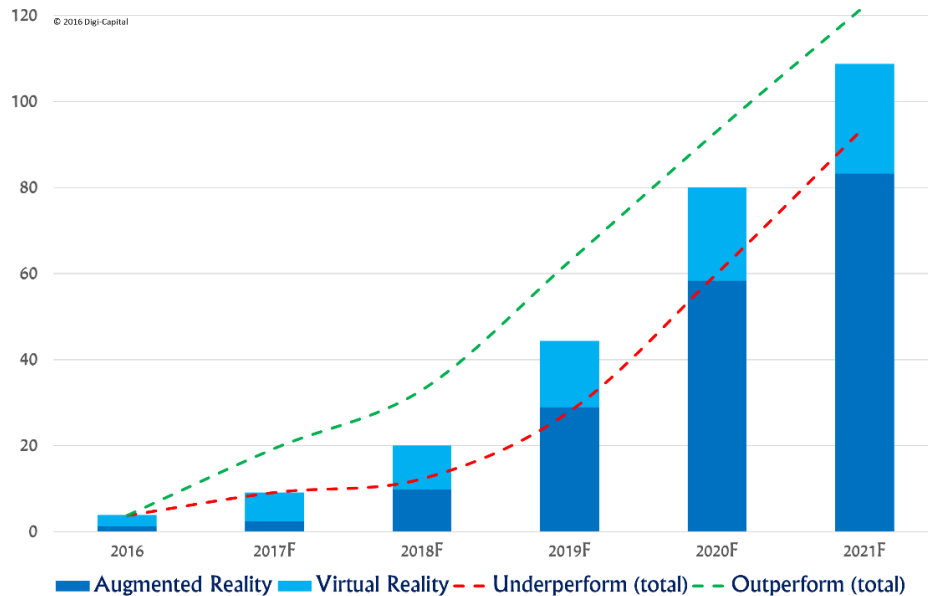
Cycles of platform development



Current market condition and forecasts

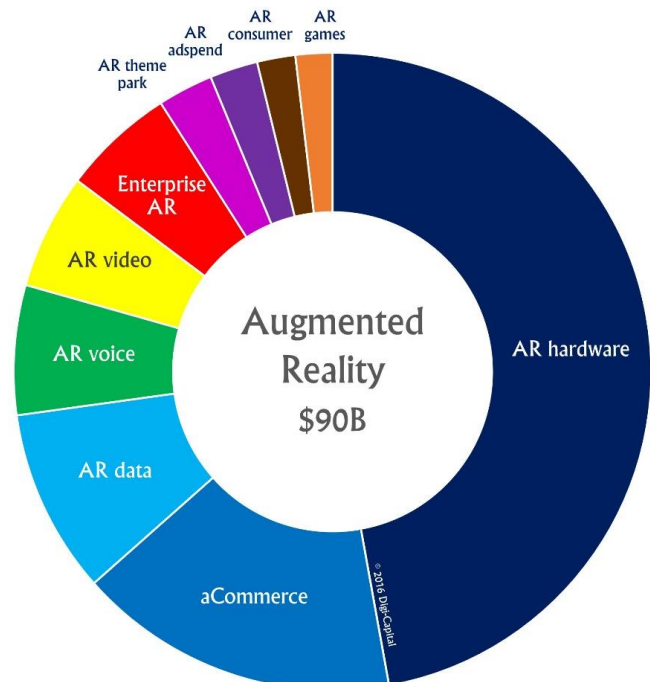
According to the forecasts of the Digi-Capital consulting company, in the next five years AR apps will be installed on 3.5 billion mobile devices, with the market revenue totaling \$90 billion. [\(Source\)](#)

Digi-Capital™ VR/AR revenue (\$B)



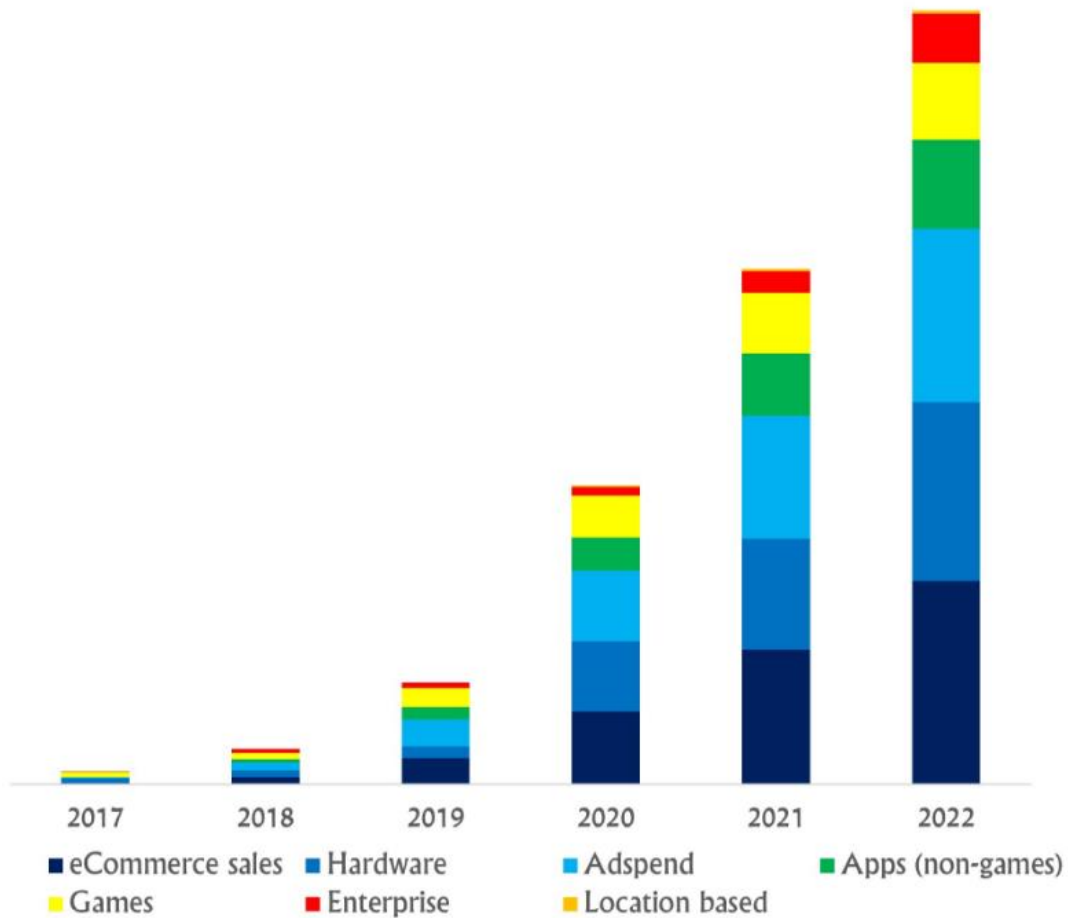
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Digi-Capital divided the AR-market into 10 sectors. The Spheroid Universe platform is active in 6 of them: [\(Source\)](#)



An analysis of various sectors' growth dynamics demonstrates that the primary monetization vectors for Spheroid Universe are AR advertising and AR games, the two most promising and fast-growing segments of the industry.

AR Sector Revenue

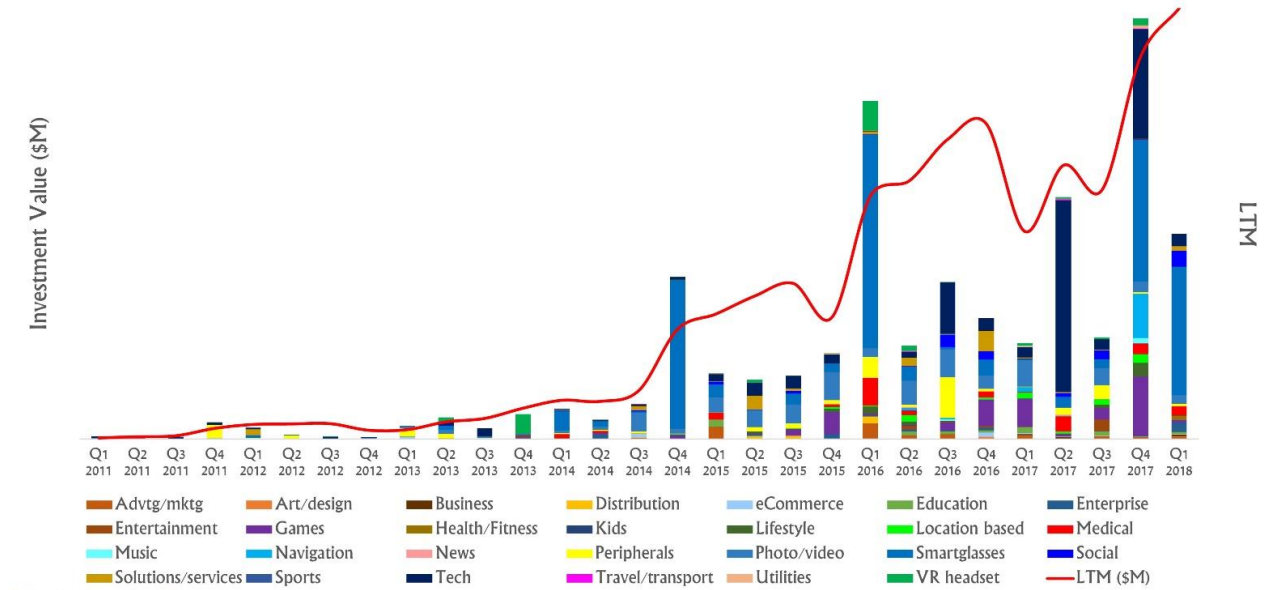


Investment conditions on the AR market

Between April 2017 and April 2018, AR / VR and XR startups have attracted over \$3.6 billion in [venture investments](#). Over \$1.5 billion of this amount was collected in Q4 2017.



AR/VR Category Investments (\$M)



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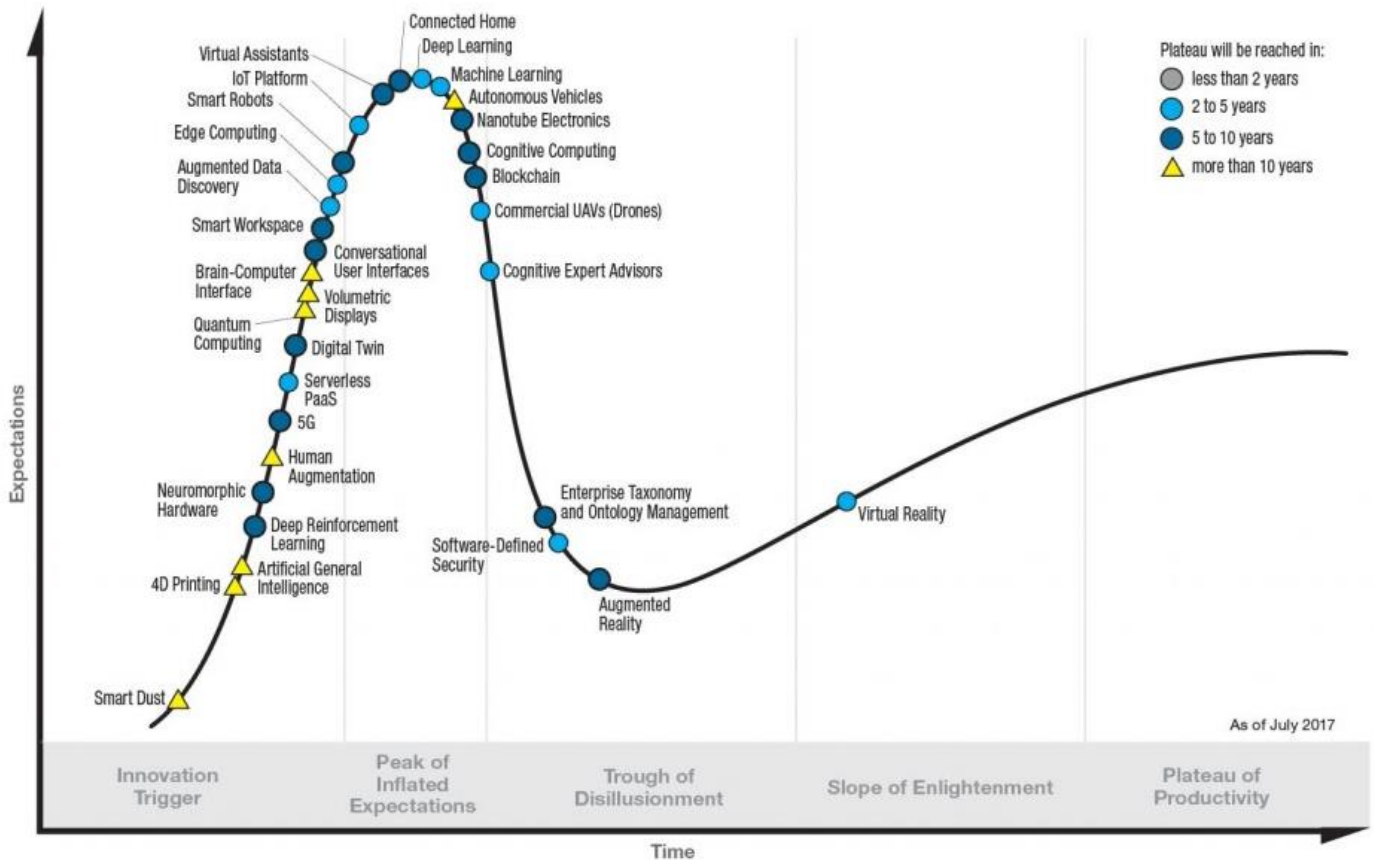
All of the major IT players, such as Google, Apple, Samsung, Facebook, have been investing in the AR sphere for a long time. It is no longer an issue of hype, with the market players and analysts convinced that this technology will take off. The only issue is - who will be there to benefit from it.

According to the Hype Cycle model developed by Gartner, AR technology has entered the perfect investment phase. It is no longer surrounded by crazy initial hype. It has passed the R&D investment and first prototype stage, with vendors creating sustainable platforms and instruments for AR product manufacture.

AR is about to lunge upwards to a productivity plateau. During this upswing, the companies will come out with second and third generation products, while AR market penetration will rise from the current 5% to 30%.

Today is the time when technologically aggressive companies, such as Google and Apple, are actively implementing pilot products. Moderately aggressive technological companies are joining them enthusiastically.

Gartner Hype Cycle for Emerging Technologies, 2017



Spheroid Universe market volume evaluation

The Spheroid platform utilizes an advertising business model.

What does AR-reality advertising entail? What type does it belong to?

It's a fact that when one creates something entirely new, the foundation is still provided by the already existing analogies and meanings. 3D advertising objects in AR fall at the juncture of classic outdoor advertising and new media format interactive advertising. It provides the opportunity for the advertisers to familiarize themselves with new advertising spaces in the real world via augmented reality. Interactivity and creative freedom in the creation of 3D AR-art, and, most of all, the chance to change the familiar surrounding space beyond recognition and a method of fresh interaction with the traditional create a WOW-effect comparable only to the emergence of the Internet.

AR advertising will compete with outdoor advertising and new experimental advertising formats in the advertising budgets of enterprise companies. This becomes entirely clear from the research conducted by eMarketer.com, the main marketing research aggregator, which annually surveys over 1500 enterprise-companies' marketing specialists all over the world.

According to research, over the course of one year the priority of augmented reality use in advertising has grown 6 percentage points in comparison with out experimental advertising IT-technologies, having reached 24%. This is a high figure, especially against the background of the majority of marketing instruments.

At the same time, we are seeing the major operators of the outdoor advertising market and international creative agencies actively experiment with augmented reality.

Technology Priorities According to Marketers Worldwide, 2016 & 2017

% of respondents

| | 2016 | 2017 |
|------------------------------|-------------|-------------|
| Power of mobile devices | 66% | 63% |
| Big data | 53% | 53% |
| Mobile app development | 56% | 48% |
| Social media software | 57% | 46% |
| Security and data protection | 35% | 37% |
| Internet of things | 51% | 35% |
| Artificial intelligence | 13% | 30% |
| Cloud technology | 31% | 27% |
| Virtual reality | 26% | 26% |
| Mcommerce | 60% | 26% |
| Augmented reality | 18% | 24% |
| Voice assistants | - | 22% |
| Wearable technology | 21% | 13% |
| 3-D printing | 7% | 7% |
| Drones | - | 6% |
| Blockchains | - | 5% |
| Robotics | - | 5% |

*Note: in the next 12 months; respondents chose their top 5
Source: NewBase, "Marketing Priorities 2017," June 14, 2017*

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www.eMarketer.com

Augmented reality advertising market capacity

We estimate the AR market capacity at no less than 0.5% of the entire outdoor advertising market volume. The latter is the most similar advertising format with a similar business model and communication mechanisms.

First and foremost, Spheroid Universe will enter the major international outdoor advertising markets.

TOP 10 outdoor advertising markets

1. USA
2. China
3. Japan
4. UK
5. France
6. Germany
7. Russia
8. South Korea

9. Australia
10. Brazil

In 2016, the international outdoor advertising market has grown by the maximum of 6.2% and obtained revenue in the amount of \$49.3 billion. ([Source: PQ Media® Global Out-of-Home Media Forecast 2017™](#))

The capacity of the international augmented reality advertising market, pegged at 0.5% of the entire outdoor advertising market, constitutes \$246 million.

Competitive environment

The emergence of an increasingly greater number of companies that enter the AR market is a positive factor:

- It testifies to the beginning of the market's explosive growth and its investment attractiveness
- Our joint efforts popularize the new technology and further the growth of demand for it.
- The market is far from saturation, and it needs new technologies, new ideas, new professionals. Joint efforts accelerate their emergence.

Meanwhile, IT giants, such as Microsoft, Google, Apple, Facebook, etc., are likely to provide the greatest competition.

IT corporations, committed to developing their own platforms, possess huge financial, human and marketing resources. The giants are capable of focusing a significant part of these resources on the areas of interest to them, they have access to an audience of hundreds of millions of people, control the software, and often the hardware, segments.

Despite all this, the world knows plenty of cases when a startup, using its strengths to its advantages, created a product that took the lead, won the competitive struggle and later determined the rules of the game on the market.

Strategy

Risks, competitive position and competitive strengths

- How can one win in a competition with the rivals who have infinitely greater capabilities? What can a startup set against the IT giants?
- How can the audience be quickly engaged and retained?

- How do we manage to make the standard offered by the platform recognizable and universal? How do we assume leadership in this sector?

The answers to these questions lie in the domain of decentralization.

Problem #1: IT giants' substantial domination in resources

No independent team of developers working on a project can compete with the giants in keeping up the development pace, at least in the domain of the corporations' visible priorities.

But, just as any startup is infinitely small compared to an IT corporation, any IT corporation is infinitely small compared to the number of developers outside of it.

The aim of outperforming growth rates can be efficiently resolved by establishing the conditions under which independent developers from around the world will obtain the opportunity to work on the platform project and earn money on it. Focusing the developers' interests will support the product that will allow them, rather than an IT corporation, to earn money.

The world knows successful examples of open-source software competing successfully with commercial products. The best-known example is the Linux-based OS family. Linux systems are the server market leaders, they prevail in the data centers of enterprises and organizations, occupy half of the embedded system market and hold a significant share of the netbook market. All in all, according to data provided by Goldman Sachs, Linux's market share among all electronic devices constitutes 42%.

Moreover, some projects are basically impossible and unattainable for corporations. Wikipedia is the most vivid example, with audience in the billions and hundreds of thousands of volunteers supporting it and filling it with new content. The project has become the largest in history structured knowledge archive on all areas of human life.

The very opportunity to create complex products, which requires the participation of hundreds and thousands of volunteers from all over the world, emerged with the rise of the internet. Prior to the emergence of blockchain technologies and smart contracts, the developer community could create products and develop them, but could not reliably expect to earn money on their success.

The world today has changed, and making a profit has become feasible. The humankind has found the technological solutions to ensure the scalability of this project, and, starting with the launch of Ethereum, which opened up the era of practical decentralization, it is now the IT corporations that are experiencing a shortage of resources in comparison with the huge open world that's infinitely greater than they are. While it has not become apparent just yet, the industry is growing

spectacularly and becoming self-aware, and in the very near future it will be manifested in a multitude of different spheres and types of human activity.

Problem #2: Engaging and retaining an audience under resource shortage conditions

Corporations already possess access to their audience, comprised of hundreds of millions of people, they have their points of contact with it, and can engage the audience in the new services they offer. Corporations are capable of investing hundreds of millions of dollars in the promotion of their products.

What can a startup set against that?

The keys to taking the lead under the conditions of an aggressive competitive environment are:

- Ensuring the intensive growth of the number of platform users and its daily audience
- Efficient audience retention – implementation of conditions under which users will remain loyal to a specific platform, and will be motivated to remain within its digital space.

Without the audience growth to tens of millions of people, there's no way to successfully implement monetization models, to concentrate the specialists' attention and resources, or to assume a global leadership position.

How can audience growth be induced?

It is apparent that the platform has to create a product (service), which will be both interesting and useful to the target audience, becoming the first driver of platform growth. The platform must create a product that will satisfy the daily needs of this user group. The main user product of the Spheroid Universe is the AR social network. For more details, please see the Product section.

How can audience be retained?

The Nobel Prize in 2017 was awarded to the American economist Richard Thaler, who demonstrated in his work how human characteristics systematically affect people's decision-making process and market results.

Economists have traditionally proceeded from the premise that people and organizations act rationally. Thaler has demonstrated the opposite: investor behavior is determined by “allegedly insignificant factors” linked to emotions and mood, far more so than they would like to admit. In his work Thaler had introduced more realistic assumptions regarding human behavior, limited rationality and social preferences.

One of the practical consequences of the experiments conducted by Thaler postulates that **people value things that they possess more than the same things that they do not own.**

In traditional corporate projects, it is the IT corporation that owns accounts and is the beneficiary of user activity.

What is the alternative offered by a decentralized platform?

Transfer accounts into user ownership. Give the users a significant share of the revenue obtained from their activity. Make the users perceive the project as their own. Actually make the project their property.

In order to implement this strategy, the concept of Spaces was developed.

- Space is the private property right to an augmented reality lot.
- Space is the power of private initiative. The power of the community that chooses how, where and on what terms it realizes its rights to the content it creates.
- Space is an instrument in the fight with corporations for global leadership.
- Spheroid Universe is a project for monetization of Spaces by platform participants.
- Spheroid Universe is the Space where developers from all over the world create apps and services for an integrated expanding project audience and earn money, while the users earn on the content they generate.

Corporations are unable to give the revenue from their operations to the user community while keeping their services free of charge. In this case, their business model will be destroyed. A decentralized system, on the other hand, is capable of doing just that. It is precisely the unique advantage that is fundamentally unavailable to corporations – the very possibility provided by blockchain.

How can we ensure quick audience growth to tens and hundreds of million users in the absence of required financial resources?

The platform cannot spend tens of millions of dollars on popularizing itself, yet it does possess a unique resource, which will, along with the platform expansion and emergence of life within it, be perceived as very valuable by an increasingly large number of its participants. We mean Space(s), which the platform will give to its users as payment for work aimed at its popularization and technological enhancement.

Thus, **from the very outset, the platform has the resources** for organizing a potentially unlimited number of people with the aim of self-development.

For more details on the resolution of this problem, please see the Community organization technology section.

Problem #3: Efficient priority management

As they compete with each other, the giants are motivated to create the best products, have the resource to research user needs and the methods of getting their products across to the end consumers, embedding them into the product ecosystems they are creating.

What can decentralization offer in countering this approach?
How can platform development be focused on key directions?
How can priorities be efficiently identified and determined?

An important and mandatory condition is preserving the chance to manage the platform's development vector via targeted financing of ideas and projects, which the platform will implement through the use of revenue from Space sales.

How is it possible to organize a quick and efficient signal transmission from the market to developer teams?

For this purpose, the platform is creating a system where platform users will be able to:

- Propose ideas for platform function development and vote for those that will receive financing
- Vote for teams that implement ideas
- Receive rewards for ideas and their successful implementation

With the emergence of the blockchain technology, the corporations have lost their main advantage – the monopoly of efficiently organizing the joint activity of numerous people, expressed as the opportunity to focus, record and guarantee payment for these activities.

Speed and dynamics, lack of bureaucratic barriers, developer team competition, platform users' readiness to spend a lot of time to attain success – these are all drivers of the platform's exponential growth and maintenance of the market positions.

Problem #4: Control of software and hardware platforms by the IT giants

Corporations control the software and hardware platforms and are committed to promoting their products. How can a community of platform users counter that? How can the standard established by the platform become recognizable and accepted?

The community has a powerful resource – the right to monetize its content.

Content is the asset that we seek in the corporate product space. Corporations create and promote their platforms and services and maintain their functioning. They lead the users there to create content, which is then used by corporations to make profits.

The users' chance to use the services for free in exchange for corporations monetizing the content created by the users –this formula is the foundation of most corporate projects.

- The value of Youtube.com for users is the content that users create and publish. The leading position ensures the attraction and concentration of interests of various user groups – content suppliers, viewers and advertisers.
- The value of Instagram.com is in your friends, who share the space with you, and with whom you're sharing your life stories. They are the reason you are there.
- The value of Yelp.com is in the chance to find the best cafes and restaurants based on reviews of users from around the world, which we perceive as objective rather than promotional.

IT giants today are creating and buying services that we use every day, they are consolidating and monopolizing the market.

Projects that were still independent recently, such as Skype, LinkedIn, Instagram, WhatsApp, YouTube, have been bought out and are now managed by corporations. Still recently GitHub was the largest independent platform for storing and jointly working on programming code, which united 27 million developers from around the world, and today GitHub is property of Microsoft.

By using the services that corporations offer, we agree with the rules that they set. We can essentially stop using these services if we don't agree with the rules, **but can we really do without these services in the modern world?** Do we still have a choice?

Can we give up the need to search online for the information we need?

Can we give up communicating with our friends, loved ones and colleagues?

Can we give up the need to find a suitable job?

The benefits that these services manage to provide cannot be underestimated. However, in the digital era any global service is a bit more than just a product. It starts out discreetly at first, and then begins to manage and influence our lives in an increasingly apparent manner. A vivid example are the Facebook scandals and the obvious role of the corporation's user data management standards in the alteration of the vector of entire global politics for the next several years.

Corporate services have begun to replace certain state institutions or functionally merge with them. An interesting example is provided by the social rating system in China, which was

established and developed with the support of national corporations and the Communist party. This system monitors and automatically rates the actions of citizens according to a number of pre-set criteria. The rating increases or decreases based on hundreds of various parameters – from complying with traffic regulations to facts of criticizing the state. In the absence of the right of the citizens to influence these parameters, the state has obtained a unilateral opportunity to manage the society's behavior more efficiently.

Contemporary societies are based on the presence of efficient feedback mechanisms in relation to the managing structures, be it the state or the corporations.

The difference between the corporate and the state structure is that the profit maximization principle is always at the core of a commercial organization. Will corporate management ethics prevail over profit maximization goals? The example of the respectable Volkswagen AG, which installed automobile software that falsified data on harmful emissions to the atmosphere, understating their volumes dozens of times in order to efficiently sell the autos on European and US markets, testifies to the contrary.

Is it important to retain control in the new global digital world, where a significant share of daily needs is satisfied by corporate services, whose actions cannot be controlled effectively or directly?

Spheroid Universe is proposing an approach where the users, rather than the developers of product platforms, are the subjects with legal rights to accounts, who determine the rules of their content's monetization. Users are the owners of the resource that allows to obtain profits, thus, they retain the influence over the decisions and politics of the teams that depend on content monetization.

This is the basis for the restructuring of the market from the dominant state of 'software supplier market,' where users are in an apparently dependent state, to 'product user market' state.

Corporations can offer their services to the community within this model. In our case, these can be any advertising publishing services, AR object storage services, or any others. Any developer can offer his solution to the community, and the users will be able to choose the one to use.

What is the basis for accepting platform products as one of the industry standards?

At the time when the number of platform users reaches a critical value, the platform will become a subject of the digital space. IT giants will be interested in interacting with the platform, creating their monetization chains and models in this space, therefore, they will begin supporting and developing platform standards.

Summary:

A startup that's aiming for global leadership should rethink and transform itself. The approach based on the idea of a project that concentrates resources within itself, and is subsequently

transformed into a corporation, does not correspond to the demands and spirit of the time. The basis for global success today and tomorrow are decentralization and efficient management, founded on market principles with a consensus of the participants, quick and efficient feedback, inclusion of the maximum number of participants in the results (revenue) of the project's economic activity.

Short-term strategy focus: development speed and product implementation

In the short-term, our strategy is built on coming up with unorthodox solutions for traditional demand, by transferring some of this demand into a new market niche. The products assume new characteristics, and the demand continues to be augmented by new audiences, which did not previously have any reasons to be interested in AR products. During this period, the business model focuses on the supply of useful AR-industry products for mass consumers, whose interests are clear and have the potential for being transferred to AR from other markets without significant additional expenses.

Key criteria in platform's product development

- The products are implemented, improved and augmented based on consumer feedback as quickly as possible, without long-term developments invisible to the consumer.
- Main product efforts and expenses target consumers who are not critical of the absence of a mass audience, but act as catalysts and the basis for the formation of a future mass audience.

Mid-term strategy: business model transformation

Via its instruments, the platform acts as the coordinator of the entire value creation chain in the supplier and contractor network that's being formed, focusing its own efforts on several key chain segments, thus acquiring a great revenue generation potential.

Long-term strategy focus: decentralized economy

The long-term strategy is aimed at the evolutionary development of the Spheroid Universe ecosystem as a decentralized network based on the p2p economic relations of its participants that emerge and develop within the platform.

Technologies

AR problems and limitations

There is a number of technological issues that limit user capabilities and impressions, thus slowing down the introduction of augmented reality into daily life.

Problem #1: Precise positioning during app initialization

The problem can be presented in the following manner:

1. The device that renders augmented reality (smartphone, headphones) is located in the real world.
2. Augmented reality that the device should superimpose over the real world is located in the virtual world
3. For precise superimposition and synchronization of the two worlds, the device should precisely determine where it is in the real world, where the camera is aiming, and transmit the data to the virtual world, positioning itself in it. This allows to render the virtual world on its screen with precise correspondence to the real world.

In the world of consumer-grade devices that we use today (smartphones, tablets, headphones) there are no sensors capable of ensuring adequate measurement precision, and the technologies today do not yet allow to create devices that combine high measurement precision, miniature size and a price acceptable for mass market.

- Errors in measuring geographic coordinates by GPS receivers do not give a proper impression of the precise device location. Out in an open space, the data is measured with relative precision, while in restrained urban conditions the satellite signal reflection from the buildings introduce an error sufficient for creating miscalculations of dozens of meters.
- Errors in measuring the magnetic field by a magnetometer (compass) do not give an accurate representation of the direction where the device camera is pointed. The imperfection of the technology and the interference generated by the environment are responsible for imprecise measurements with errors of up to tens of degrees.

Problem #2: Device movement tracking

The problem of device movement tracking is similar to the problem of precise initial positioning, but there is a chance of using additional tools for resolving this task. Therefore, for the convenience of presenting the approaches to its resolution, it seems sensible to isolate it and examine it separately.

The problem of device movement tracking is resolved through using the data provided by the accelerometer, gyroscope, barometer and camera video stream, processed by the internal ARKit by Apple and ARCore by Google, which, after finding natural surfaces in space, are capable of tracking the movement and determine the distance covered with reasonable preciseness, however:

- This method only works during daylight time, when ArKit/ArCore algorithms are capable of finding surfaces.



- The method allows to monitor device movement, but is still incapable of providing precise information on the direction of movement according to cardinal directions.
- In the absence of precise data on the initial device position and precise data on the direction of its movement, all subsequent precise measurements of the distance and movement trajectory provide an erroneous superimposition of the virtual world over the real world.

Problem #3: Realistic embedding of AR objects into the urban environment

In the absence of sensors that scan the space in front of them, modern devices are unable to determine the geometry of the surrounding space, cannot locate the augmented reality objects beyond the real-world objects, or conceal them in case when the AR objects are behind buildings that are in front of the viewer.

The resolution of this issue depends directly on the resolution of the first two problems – the opportunity to precisely determine the device location and the direction of its viewing at any point in time allows to download the information on the buildings around it into the virtual world, and use the data on their geometry for the correct superimposition and rendering of augmented reality objects onto the real world.

Existing approaches to the resolution of this issue

There are two directions of work on improving the device positioning precision that is conducted by the industry participants.

- Increasing measurement preciseness through hardware
- Using the aggregate of corrective software

Everything today testifies to the fact that sufficiently precise hardware is not about to appear on the market in the near future. The situation will be partly improved by the new GPS receivers that manufacturers will begin installing on smartphones in 2018. These GPS receivers will allow to receive supplementary L5 signals from the satellites, which will allow to take a leap in improving precision, however, in the context of very high-density city centers this technology will still be unable to provide the required precision.

The solution thus lies with implementing programming algorithms that refine sensor data.

There are currently several main approaches to the resolution of this task.

- Using markers: the method allows to precisely position AR objects using the data on the location of the objects in relation to the marker, and the assumptions made by the program regarding the angle and the distance at which the marker is observed. Meanwhile, users can create their own markers, downloading them into the cloud and opening up the



possibility of precise rendering of the AR space by devices that do not initially contain any information on these markers. This method is most appropriate and works best for smaller spaces, enclosed locations, such as rooms, exhibition halls, etc.

- Usage of mapping service data / street photos / lidar (active optical ranging devices) in various combinations. These methods use the information from the device camera, its comparison with the models stored on the servers, which are linked to geographical coordinates, and position calculation. This approach is capable of providing an acceptable result, and has the potential for further improvement of adjusted result quality. Meanwhile, it may currently refine device positioning only on certain limited territories, on which humankind has aggregated enough data.

Without an innovative solution, the aggregate of the issues in question does not allow to render AR objects all over the world with geographical precision and in a convincing manner or, in other words, in a way that we dream to see them. An amazing world, filled with futuristic objects, holograms, navigational, advertising and entertaining compositions, requires the resolution of issues of precise location determination and device orientation in real time, during different times of the day, on different devices with different sets of sensors, on the scale of the entire planet rather than districts, streets or cities.

Whoever resolves this issue and proposes a simple scalable solution, will open up the road to fast AR introduction into daily life.

The Spheroid Universe platform has developed such a solution

Solution

Approach summary

The Spheroid Universe technological solution contains 2 components:

- Software component
- Organizational component

From the programming point of view, Spheroid Universe uses data recorded by user device cameras to search and select area features and to construct a 3D map of the recorded space. These maps, superimposed onto the Earth's coordinate network, allow to refine the position and the orientation of user devices within them. For more on this approach, please see the "Mapping methods and machine learning technologies."

From the organizational viewpoint, Spheroid Universe proposes the technology that engages an unlimited number of people in the global project of creating a digital model of the planet Earth.

Their motivation is ensured by recording their contribution to the work and transferring the digitized Spaces – puzzle pieces of the future digital Earth image – into their property.

Millions of people around the world will be able to join this grandiose project and invest efforts in bringing the augmented reality era closer, becoming its co-creators. The project will allow to form a new class of property owners and a new source of revenue for people around the world.

A vast mass of aggregated data will require significant memory volumes for its storage and computational capacities for its processing. This data will be stored and processed in a decentralized manner.

Integrated in a single technology, the aggregate of organizational and programming methods creates unique value, allowing the platform to:

- Create a detailed digital version of the planet Earth, including its remote parts, which will not be integrated by corporations for a long time to come, but will be able to leap into the new digital era.
- Become the owner of the largest structured video dataset, supplemented by data from device sensors, which have independent commercial value for the purposes of subsequent improvement of 3D models, learning and processing by neural networks.
- Teach and improve the Spheroid Universe neural network based on this dataset.
- Form an active and loyal global platform user network
- Take the lead in the AR world

Mapping methods and machine learning technologies

In recent years, machine learning methods based on deep neural network implementation have become widespread. The implementation of these methods allowed to attain breakthrough results in many spheres of human knowledge.

Today, the programs that utilize neural networks manage to establish medical diagnosis better than doctors, read lips, identify speech better than professionals, search for new molecules, allow to generate real-time video sequences, whose creation still recently required efforts by numerous computer graphics specialists and significant time and financial expenditures.

However, such networks are currently most widely used in image recognition. Their use allows to construct models capable of categorizing an image as belonging one of the thousands of classes. Today they can actually attain greater precision than that of a human without specialized equipment.

Success in all of these areas has become possible as a result of a number of factors:

- Emergence of new neural network architectures and training methods
- Increased performance of computational equipment

- Emergence of a large number of labeled data sets (training sets)

Preliminary training is required for neural network functioning. At input, the dataset is accompanied by the information on its contents, which is the result that the neural network is expected to attain as the result of independent data processing.

For instance:

- Photographs and information regarding its content is uploaded to train a neural network in image recognition.
- When patient health parameter data is uploaded to the neural network, along with the data on established diagnoses, the neural network is trained to establish diagnoses independently.
- The famous Alpha Go program used the recording of moves by the leading Go players, aggregated as the result of the games they played among themselves. The moves by the winning players were considered correct.

The program demonstrated extraordinary results in 2015, the very first year following its creation; in its subsequent versions, having played millions of games against itself, reached a level that didn't leave a single chance to humans. The mysterious player, nicknamed Master, appeared on Go servers in 2017, winning every game against every decorated champion. Subsequently, it came to light that the player is the new version of the Alpha Go program, and there were no people left capable of defeating it.

What seemed unattainable only yesterday, became reality today.

To resolve the problem of precise user device positioning, we at Spheroid Universe are using neural networks and machine learning methods.

From the programming point of view, Spheroid Universe technology is an aggregate of methods:

- Site classification is conducted for each Space according to the video records: water, land, buildings, trees, animate objects, transport, etc., with the assistance of the pre-trained neural network.
- Based on a cloud of points that are classified as static objects (permanently present on-site), a 3D-model and textures are created.
- A set of features is identified (the aggregate of unique image elements and their location in relation to each other), based on which the platform subsequently conducts a search to determine device position and orientation.
- The resulting 3D model is linked to the surrounding space and the map, which provides precise geographic coordinates for each of the model's points.

While in the app use mode, we upload image features and location models to the user's device, based on the approximate user location determined by the device's GPS data. Subsequently, with the assistance from the neural network, we identify the set of features that corresponds to the image from the device camera, and search for a similar set in the platform data. Thus, we determine which part of the model and from which side the device camera is aimed at. Then, comparing the image with the 3D model, we determine the precise location of the device in relation to the model. This information allows to ensure seamless interaction of virtual objects with reality on the device display.

Organizing data storage and processing

Data collection, storage and processing is conducted by the platform in a decentralized manner.

Spheroid.Earth is a decentralized network where the nodes use fog computing and IPFS for digitalizing our world into a 3D space with reference to geographical coordinates and its storage, essentially creating the **Spheroid.Space**

Network participants are rewarded through smart contracts. The network's aim is the independent and self-sustained construction of the **Geo3DAR** reality.

The technology is based on:

- **Smart contracts** – manage profits
- **Fog computing** – virtual machine node mining, where incoming video processing requests are executed
- **Docker Container** – containerization, which allows to quickly launch our environment on any server or computer
- **Kubernetes** – Docker
- **AMQR** task queue – task storage in network clusters
- **Open Source** – set of programs for analyzing Spheroid network tasks
- **IPFS** – **Spheroid.Space** storage nodes (3D Space models)

IPFS – is an 'interplanetary' file system, a decentralized Spheroid.Space storage of 3D Space models. It allows to implement reliable content storage and delivery. IPFS is used as the primary means of 3D model storage and delivery to the right spot at the right time. Models are stored at different nodes in close geographic proximity to corresponding territories. IPFS itself guarantees that the data will always be available via the permanent hashed link. The data is securely protected and continuously available as long as at least one node with this data is functional.

Fog computing – a decentralized pool of online devices

The roles in the decentralized **Spheroid.Earth**

- **Miners** are FOG nodes holders, who use their machines for computing
- **Keepers** are IPFS nodes holders, who aggregate Spheroid.Spaces
- **Scouts** create a content stream from their smartphones for subsequent processing by miners

Community organization technologies

There are billions of Spaces in different, even the most remote places on Earth's surface. For some of them people have the data to construct 3D maps (street photos, lidar data), but for most of these territories, the required structured data is missing.

Certain startups digitize specific areas, resolving this issue on a small scale, yet these areas are infinitely small in comparison with territories developed by humankind and the requirements for the presence of a digital space.

How can the task of digitizing Earth be resolved today? How can millions of people be organized to undertake this work?

The Spheroid Universe solution:

Allow community members to benefit from the work conducted

People are engaged in the digitalization of Earth surface and get a chance to obtain the digitized and new territories as their property.

The Spheroid Universe app allows anyone to collect the required data easily, in a game format. The app will utilize process gamification mechanics.

The role of blockchain

Advantages of blockchain technology for the platform

The project of creating the Spheroid Universe AR-ecosystem as a universal environment for creative and economic activities for millions of users was impossible prior to the emergence of the blockchain technology and the development of smart contracts.

Blockchain technology allows the platform to effectively resolve a number of practical tasks:

1. Create a secure digital real estate ledger, which guarantees users the retention and management of their property rights

2. Organize a potentially infinite number of people to work on platform tasks and take their efforts and interests into account.
3. Create instruments in a competitive struggle with IT giants, whose aggregated resources and capabilities exceed those of the platform. Create a space where developers, artists and users will jointly create and develop products, making a profit in the process.

Limitations of the blockchain technology for the platform

At the same time, despite the unique benefits that blockchain has brought with it, crypto-technologies today are still in the development stage, where making it mandatory for all users would create significant barriers for audience growth.

The complexity of the blockchain concept, the underdevelopment of interfaces, current technical limitations make the world of cryptocurrencies an area primarily for specialists and advanced users. It's impossible to create a global project with a focus on the mass market leaning entirely on the technically advanced audience.

The same is true for the development process.

Platform products should be user-friendly, simple for the user to master, and emerge fast. At each stage of its development the platform should select a set of technologies that ensures the maximum development speed, and the greatest rate of introduction of new functions.

Just like a person, who is born and develops through various phases of growth and maturity, the platform that aims to assume the leading position on the market should consecutively pass through various stages of technical development, moving step-by-step from centralized and partly decentralized solutions to a truly decentralized architecture.

Thus, the limitations that exist in the cryptocurrency world today, the underdevelopment of environments and developing tools in comparison with traditional approaches, should not become limiting factors that decelerate the development of the platform products.

Platform's technical architecture

Platform development stages

The technology stack is aimed from the outset at fast prototyping and launching of new products. Partial centralization intends to ensure the manageability of the platform project development trajectory in the early stages, development of API, gateways, standards under real-life conditions, and audience engagement.

- Data is stored on cloud servers with geo-replication

- Azure Cosmos DB database
- Ethereum-powered blockchain infrastructure
- Unity-based AR app, ARKit and ARCore frameworks.
- Support of exclusively native Spheroid Universe client apps
- 3D reconstruction, CNN, SIFT-like algorithms

Transformation:

- Launch of the decentralized **Spheroid.Earth** for storing **Spheroid.Space** and AR content
- Marketplace switch to ERC721 or analogous standard on the EOS platform
- Formation and publishing data exchange protocols and standards, beginning to support third-party and white-label client AR
- Switch to proprietary open AR content standard

Existing solutions, tendencies and problems in AR app development

- Advanced AR solutions by Google or Apple are not cross-platform, thus, they do not allow to construct ecosystems beyond manufacturer's hardware platforms.
- The primary cross-platform solution on the AR market today is the Unity development build. It supports various low-level API, has a high-level visual material editor, skeleton animation, engines that calculate objects' physics. Unity supports an immense number of formats, and is integrated with all popular 3D-model editors, however:
 - Unity is an old-generation platform. It was not initially intended for tasks relevant to AR app creation. It launches rather slowly on mobile devices, and has stringent requirements for the battery charge.
 - The concept of Unity engages high-level experienced developers, which contradicts the global tendency towards lowering the entry level to development builds, and slows down the fast engagement of numerous users with the platform. The market demands the emergence of instruments that allow non-professionals to create professional and functional products quickly and relatively easily.

The emergence of high-level AR editors, such as Facebook AR Studio, Adobe Project Aero and Amazon Sumerian can serve as examples of this trend on the AR market.

Unity is capable of efficiently solving Spheroid Universe tasks today, however, as the platform grows, the Unity environment will no longer be able to satisfy its growing demands.

Premises for creating a modern AR content standard

AR apps are currently at a very early development stage, but even relatively simple apps, which render simple objects, create a WOW-effect. Meanwhile, it's clear that in the years to come, the complexity of AR apps and the requirements for them will grow very quickly.

The existing paradigm of 3D-app creation involves a complete preliminary upload of 3D-content to the device. It is the consequence of the fact that the engines that are now used for developing AR apps were created as engines for game creation, which are characterized by the presence of all uploaded resources from the outset (all of a game's files are already on a user's device at launch time). The world of augmented reality, the world we're all dreaming of seeing, requires an entirely different approach. It requires continuous interaction with the surrounding space, the scale of which is unlimited.

The revolutionary nature of the Spheroid Universe platform is in the capability of infinitely streaming AR content to mobile devices.

Technically, the streaming quality (AR content detail elaboration) will be determined by the internet connection bandwidth, as well as processor power and the mobile phone's graphic subsystem. AR streaming works via the progressive upload of AR content and its immediate rendering in the first seconds, without waiting for the entire scene to download, while managing its quality parameters (detail elaboration, use of textures, objects of various polygonal complexity) depending on the conditions under which this AR content is rendered.

As a fundamental feature of an AR app, AR streaming should be implemented on the platform level. This is the premise for the creation of a new type of 3D models, and one of the reasons to design and develop the proprietary Spheroid Universe environment.

Other crucial factors that require a proprietary programming environment include:

From the technical viewpoint:

- The environment should combine maximum ease for novices, and full low-level control for professional programmers
- The products created on the platform should possess the following characteristics:
 - Cross-platform characteristics
 - Energy efficiency
 - High performance rate, close to native
 - Quick launch, minimal time from launch to beginning of AR content rendering

From the conceptual point of view:

The platform has a need to resolve the issues of protection of the AR product developers' intellectual property rights.

For that purpose, the platform is integrating a developing environment, a worker marketplace and an advertising subsystem into a unified space. As a result, it will obtain synergetic results unavailable to other platforms. For instance, it will be possible to create unique models of AR content distribution – automatic calculation of payouts to all AR content creators, depending on its commercial success.

The specifications for platform protocols will be published, supported and backward compatibility will be ensured.

The software development environment will have open source code and will be available to any company or developer to use for the purpose of creating independent products and participating in the advancement of the existing ones.

Platform products

AR social network

Spheroid Universe social network is an innovative space for business, communications and entertainment. Access to and interaction with this space occurs via the Spheroid Universe mobile app.

Any person, community or company can create their own universe, their world within the Spheroid Universe space. This world reflects their interests, passions and values.

Space owners make AR-publications to fill up their universes. AR-publications are connected to objects or places in the real world. They emerge and are rendered in augmented reality that's superimposed on the real world.

Users can create AR-publications from graphic objects, photo, video, audio or text notes. They are designed using platform tools or the tools offered by the developer community (plugins).

Users can invite other users to their worlds, present and share the content of their worlds.

AR publications are different from regular social media posts, since in addition to the infinitely abundant opportunities of visual design, which emerged with the augmented reality technology, they can be a complex programming product that interacts with the user according to pre-set algorithms or those modifiable in the update process.

For instance, a brand can inhabit its universe with characters who will be able to escort people to the storefront, while informing them about new products. Or these characters can transform into a store themselves – display the product that a person is interested in, tell him or her about it, and take the order.

The Spheroid Universe world is a context-based world. It contains a potentially infinite number of universes. Users can choose the worlds they observe by managing visibility settings. Owing to that, different users can stand on the same spot, and see different worlds with different content, important and interesting to them specifically at that point in time. They can switch between the worlds that broadcast information to their own world at will.

User or subject categories on the Spheroid Universe platform

A certain set of functions is intended for each user type, catering to the needs of the target audience. The platform currently identifies the following user categories:

- **Users:** use the platform for entertainment and communications
- **Advertisers:** advertise and sell their products and services to Users, engage Artists' and Developers' services, pay Space Owners for AR-publications
- **Space Owners:** earn on publishing commercial content within the Space(s) they own
- **Artists:** express themselves, create and sell unique content
- **Developers:** develop the plugins used by Advertisers and Users, and make a profit on it

The same subject can be present in different categories simultaneously. For instance, an advertising agency can be an Advertiser and Space Owner at once.

Platform capabilities for users

For users, Spheroid Universe is primarily a space for self-expression and interaction, a social network with a WOW-effect.

Users install a mobile app for free and enjoy free access to the platform. Users are attracted to the exclusivity and novelty of self-expression, the chance to surprise, to create unique messages. Hang a huge animated heart in front of your loved one's window, place your favorite team's huge flag and slogan, mark a café you like by five stars floating in the air, and send a lightning bolt and roaring thunder to the one whose service didn't impress you.

Users create their personal Universes in the Spheroid Universe space, while the Spheroid Universe is comprised of an infinite number of personal and thematic user Universes, or Parallel Worlds.

A Universe is the world that belongs only to its creator

A world is what a person wants to see.

A world that he controls.

Every Universe embraces and includes the entire space of the Earth

People can invite friends to their Universe, which allows them to see each other's Universes. As they travel, they see the memories and impressions of their friends from the same sites, they see photos, videos and audio recordings, text and graphic objects, implemented in the augmented reality space as AR publications. They share the places they like to visit, their life stories and events, interact, meet each other and find new friends.

People can comment and 'like' content, and create AR publications in each other's worlds. They can subscribe to thematic Universes and brand Universes, find out about time and place of various events. People can create and become authors of thematic Universes, launch them and make a profit on them.

For instance, travelers can create Universes and mark the best spots within them, report on them, mark their routes that other users may follow. They can acquire a Space on sites that their Universe subscribers will visit, and sell the chance to make AR publications to hotels and tour organizers.

AR publications can be rendered without the need to be present on the event site. For that purpose, an AR publication is automatically recorded and published in 2D social media feed at the time of its installation, in order for the other Users to render it at any time anywhere.

Platform capabilities for Advertisers

Advertisers use the Spheroid Universe as a sales channel for their products and services, or the goods and services of the brand they represent.

Advertisers develop and implement their advertising strategies within the Spheroid Universe. Depending on the strategy and script complexity of audience interaction, Advertisers implement them using existing platform capabilities or turn to Developers for the creation of new types of AR publications.

For instance, an Advertiser can inhabit an area with creatures from faraway planets and worlds, fill it with magical artefacts, organize an interactive platform to display the brand's products, create AR publications next to the points of product sale, crowded areas, conduct excursions to their worlds, organize games and quests.

New and unprecedented communication opportunities and deep levels of user engagement with the advertising content are opening up for the Advertisers.



- **Unique advertising formats:** there are no physical limits on the size and appearance of advertising, advertising that exists in the real world, but is not limited by the limitations of the material world, complete freedom of creativity.
- **Target audience engagement:** the time of audience contact with the advertisement can be ensured via the interactive engagement with the target audience.

The Spheroid Universe platform resolves the currently existing problem of low ROI, while using augmented reality technologies.

Problem on the market:

Spheroid Universe solution:

Absence of aggregated audience:

The need for each Advertiser to spend money on engaging and retaining the audience of proprietary apps, instead of resolving direct tasks faced by their business – product and services sales

Global audience:

Every Advertiser addresses the project's global audience, additionally expanding it, creating and augmenting their activities on the platform.

Low efficiency of AR implementation:

Advertiser invests considerable time and funds into developing and promoting their own AR apps, which often have single-use mechanics, and resulting high entry barriers, impossibility of using the advantages of breakthrough technologies on the mass market.

Efficient tools and services:

The platform allows to publish information quickly and affordably using platform tools, with no need to invest considerable time and funds into the development and promotion of proprietary apps.

Absence of advanced analytical solutions:

Data required for raising efficiency of advertising and business activities cannot be collected due to the local nature of proprietary products

Advanced analytical instruments:

The platform provides professional instruments for the analysis and adjustments of one's business activities on the basis of a large set of aggregated data.

Spheroid Universe platform advantages:

- Advertisers gain access to a young and active audience
- The platform provides a unique advertising communication instrument that was previously unavailable to the audience and will engage it.
- There are unlimited opportunities for implementing new brand interaction strategies and methods of creative audience engagement in brand spaces.

Advantages of augmented reality technologies are becoming available not only to major companies, but also to small and medium-sized business.

AR publication tariffs are determined for each Space by its owner. The main revenue from advertising campaigns is received by the owner of the Space where the communication with the User is taking place. The platform receives a commission from the Advertiser's payment the Space Owner.

Advertisers will be able to create their own branded AR apps, link them up to the platform space, managing the type of information that will be available to their users (i.e. display only the brand Universe).

Platform capabilities for Artists

For artists, Spheroid is a platform for creativity, recognition and monetization of their experience.

- **Creative freedom.** The platform heeds much attention to the development of tools for Artists. Developers are also involved in this process, making apps, plugins and tools for creative people.
- **Monetization of experience.** Having created a 3D object once, an artist can sell the rights to its utilization all over the world multiple times.

Example of practical interactions and use of Spheroid Universe by the Artists:

- Artists can be invited to create virtual structures, historical reconstructions, their work can allow to see the Colosseum or the Acropolis the way they used to be in the times of antiquity, become participants of historical events, take part in rituals or ceremonies.
- Artists may be invited to create advertising structures in the city centers, similar to physical banners, as well as expositions for various occasions, sporting events, etc.

Platform capabilities for Developers

Developers can create their apps and plugins for the platform, while Users and Advertisers can use them.

Advertisers use the plugins to work with the project audience, and for the Users the plugins provide an opportunity to publish and uniquely design their AR content.

Two monetization models for Developers:

- The first monetization model entails the creation of instruments, plugins and apps for the marketplace
- The second monetization model entails the creation of individual solutions for Enterprise companies.

Platform capabilities for Space Owners

Spheroid Universe is an immense new advertising market, where the main share of advertising profits is received by Space Owners rather than IT corporations.

The purchase of Spaces entails, first and foremost, the acquisition of rights to obtain revenue from advertising within the purchased Spaces, acquisition of rights to control all the terms of Advertisers' AR publications.

The platform had already implemented and is testing the functions that allow to publish advertising information at any point in the world within any selected Space. The public demo version of the service, which will allow advertisers from around the world to test the platform's capabilities, will appear in Q3-Q4 2018. From the outset, the service will work on all types of Spaces (both those with a 3D virtual map of the Spheroid.Space real world, and those that do not yet contain it yet). The service's demo version will allow the Advertisers to upload their own AR objects, select geographic, time and quality parameters of their rendering.

The infinite advertising capacity of each Space is an important factor.

The virtual world doesn't have the limitations of the physical world.

Each Space can simultaneously contain the ads of an unlimited number of Advertisers. For instance, commercial AR publications, presented on a pay-per-view basis, will be rendered only when a User is interested in something that can be offered by the Advertiser.

As the platform develops further, the capability of Space Owners to select various models of commercial AR publication demonstration in their Spaces will emerge and expand, allowing to conclude transactions with the Advertiser automatically if the Space Owner's and Advertiser's cost parameters coincide.

The saturation of a Space by contracts with various Advertisers, which statistically brings in a regular revenue, will be a powerful factor for the growth of Space price on the secondary market, if sold by the Space Owner.

The total number of Spaces is initially limited by the size of the Earth itself

Factors of Space price growth:

As the project develops, and the number of Spaces on the primary market in each of the regions is depleted, as the project audience grows and Advertiser activity increases, the price of Spaces will also increase.

In striving to maximize profits, a Space Owner will make an effort to keep the 3D virtual map of real-world **Spheroid.Space** objects current.

A Space Owner can initiate the **Spheroid.Space** process on the Spaces belonging to him, which may be required in case of significant changes that occur to static objects in the real-world area that coincides with his Space, i.e. a new building or a bench, felling of trees, etc.

For that purpose, the Space Owner creates a request within the **Spheroid.Earth** network and indicates the terms of its fulfilment, the request is accepted and fulfilled by Scouts, who transmit it for subsequent digitization by FOG-nodes.

As **Spheroid.Earth** develops, precision, detail elaboration and quality of the created **Spheroid.Space** will increase.

The relevance of the 3D **Spheroid.Space** model of real-world data, filling it with information on the internal space of commercially attractive facilities within it (shopping, business, exposition centers, etc.) will act as supplementary factors that affect the value of Spaces.

Purchasing and integration of Spaces, lease, creation of advertising platforms, digitalization and resale – the Space Owner selects the monetization method, while the platform assists with strategy implementation.

This is the reason why the platform creates and develops services.

Platform's infrastructural services

Advertising network

Allows Space Owners to open their Spaces up to direct advertisers and advertising agencies from all over the world. Allows to find Advertisers' most lucrative bids and automatically conclude contracts on preliminarily mutually acceptable terms.

Allows Advertisers to select the geography and time of publication, terms of demonstration manage budgets and strategies of AR publications.

In order to ensure the convenience and speed of transaction conclusion, the platform provides the sides with the information on the price of commercial AR publications in the region, allows to select advertising models (CPA, CPV, CPM, etc.), adjust the parameters for automatic conclusion of transactions, implementing various marketing and economic strategies that protect the sides' interests and guaranteeing their fulfillment of assumed obligation.

Communication system

A quick and easy way for the Advertisers to contact the owner of the Spaces of interest, discuss joint project options and adjust the default terms set by the Space Owner. A way for Space Owners to contact each other and make arrangements for the rules and conditions of work.

Space Marketplace

Buy and sell promising Spaces on the secondary marketplace, resell Spaces and make a profit.

AR designer/ developer exchange

Allows to quickly find a suitable person to visualize your ideas, products or services and exhibit them anywhere in the world just a few days after the project idea came up.

AR marketplace

Allows Artists to earn money and exhibit their work for sale, allows Users, Advertisers and Developers to acquire the works they like and use them for their AR-publications.

Platform API

Allows to create interactive AR scenes that alter their appearance and contents in real-time using the platforms API.

Analytical services

Aggregate and provide information on Space traffic and their commercial potential, quantitative and qualitative metrics of interaction with AR content.

Products and services store

Allows to sell your products to the clients all over the world, visualizing them in AR in the most modern and striking manner.

App marketplace

Allows Developers to present their plugins, solutions and services, offering them to the platform audience and making a profit.

Voting system

Allows each platform user to propose new platform functions, vote for new functions, participate in the creation of instruments that realize their interests, receive rewards for the proposed, supported and implemented ideas.

Business model

The Spheroid Universe platform business model provides for two revenue sources:

- Revenue from the sale of Spaces on the primary market
- Advertising monetization

The sale of Spaces on the primary market by the platform allows it to generate profits and develop at the initial stages.

As the platform products develop and the audience is engaged, the platform will obtain an additional revenue source, namely, commissions on transactions between Advertisers and Space Owners.

The Spheroid Universe economic system is structured upon an integrated cryptocurrency/fiat model. It's important for the engagement of a mass audience, the majority of which is yet to figure out how and why to participate in crypto-projects.

Why is it impossible, or just not feasible, to build the Spheroid Universe ecosystem upon cryptocurrency alone, excluding traditional currencies from the use within the system?

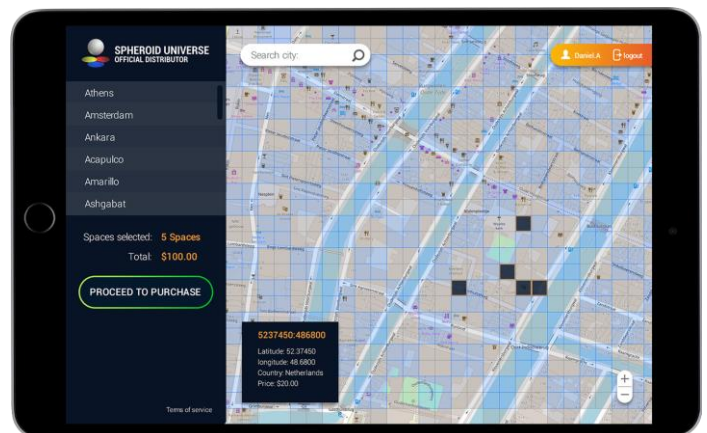
- There is no legal basis (or methods) that would allow to prevent property owners from using traditional currencies in transactions with their digital Space assets. A Space owner has the right to manage them as he sees fit in accordance with international law, just as any other property.

- In the short-term, fiat transactions allow to engage the audience and expand the ecosystem economy at an outperforming rate, making it competitive. Using traditional currencies is a particularly important driver for B2B and C2B relations, since there are currently **legal difficulties of various degrees in organizations' operations with cryptocurrencies** in most countries.
- Under the current conditions of the absence of clear-cut international cryptocurrency regulations, the potential risk of limits and prohibitions of cryptocurrency operations in certain countries has to be taken into account. **The fact that Spaces can be sold for fiat money is the inherent quality that protects them from this risk –**

Space sale

The property rights to digital real estate of Spheroid Universe are recorded in the distributed public ledger (blockchain). The Ethereum blockchain is currently used.

The primary Space marketplace has been operational since Q4 2017, implementing Space purchase mechanisms and recording purchase data in the Ethereum public blockchain. As of now, the set of functions related to the registration of property rights has been implemented from both technological and legal viewpoint.



The most important factor in raising the attractiveness of Spaces as assets is the possibility of selling them. The secondary Space marketplace, which allows platform participants to resell Spaces on the open secondary market will be launched in Q3 2018.

Legal nature of Spaces

Spaces are intellectual property created, circulating and protected on the basis of and in accordance with the European Union laws.

As a commodity, a Space is a Digital Asset.

A Space owner has the right to resell it, lease it out, give it as a gift, transfer it as inheritance, use it as collateral, deposit it in a company's charter capital.

Space ownership is permanent.

One person can own an unlimited number of Spaces. Both physical and juridical persons can purchase Spaces.

Space price formation

- The initial Space price is based on the data on the economic level of regional development, smartphone availability to the population, evaluation of market capacity and regional development rate.
- As the Spaces are sold in certain localities and a deficit of Spaces in the primary marketplace emerges, the price of nearby Spaces will automatically increase.
- As the platform accumulates an audience, and its interactions with the Spheroid Universe world are analyzed, the algorithm of Space price formation will begin to take into account the economic parameters of user interactions with the platform: actual secondary marketplace prices, demand and sales dynamics, traffic data, forms of user interaction with the content, efficiency of advertising formats in the territories being evaluated.

Advertising monetization

Two stages of platform development

Within its advertising model, Spheroid Universe provides services for communications between advertisers and Space Universe owners in the advertising network, and receives a commission on the advertising budget turnover that passes through the network.

Advertisers will come to the platform at the point when they see a sufficient quantity and appropriate quality of the User audience.

Thus, platform development strategy entails two stages:

- The first stage focuses on User engagement
- The second stage focuses on Advertisers and Space Owners, meeting their needs in conducting promo campaigns on the platform

Stage One. Engaging Users

The goal of the first stage is engaging a User audience, with a figure of at least several million people monthly. For this purpose, the platform will focus on creating User infrastructure.

Starting with the launch of the social network in 2018, participants will be able to fully interact with the platform, meanwhile, as increasingly more territories are digitalized, the number of options and complexity of interaction with the platform's AR space will grow.

Stage two. Engaging Advertisers

The active phase of the second stage will begin as soon as the audience reaches several million people.

This is when the platform will become attractive to Advertisers. The goal of the second stage is the engagement and expansion of the Advertiser audience.

Advertiser needs:

- Obtain access to target audience.
- Minimize advertising budgets
- Maximize time and depth of interaction with a brand
- Collect analytics, settings via advertiser's personal profile

Sales marketing

Sales volumes

Advertising business model

The advertising model will be launched in Q4 2018 and will focus on local events, but, according to our estimates, a full-scale rollout will happen when there is total of over 2 million people on the platform.

The advertisers from the traditional outdoor advertising market are slated to most intensely manifest in the 10 largest world cities (without taking into account the switchover of digital advertising specialists):

1. New York
2. London
3. Berlin
4. Paris
5. Beijing
6. Tokyo
7. Seoul
8. Singapore

9. Hong Kong
10. Moscow

Minimum annual turnover of outdoor advertising in 2017 in each of these megapolises comprised an average of \$280 million. Spheroid Universe plans to engage Advertisers in each of these cities, with an average budget of \$700,000 and above, which amounts to 0.25% of the market.

Price formation

Self-regulation via market demand, supply and competition mechanisms.

- The price of Spaces and the cost of commercial AR publications is determined via the aggregate of market mechanisms
- The prices for development and customization of commercial AR publications is set by Developers and Artists on the marketplace, or in a personal discussion with the client.

Sales channels

- The app is installed for free
- Sale of Spaces and AR publications by developers is conducted via the Spheroid Universe marketplace
- Advertising sales are conducted via the advertising network's services in the personal profile of Advertisers and Space Owners

Sales model

From our point of view, the most efficient AR advertising sales model entails partnering with companies that are involved in marketing:

- Creative agencies
- International networking agencies
- Event agencies
- Major outdoor advertising market operators

These partners will introduce a large number of potential advertisers with the Spheroid Universe world, taking it upon themselves to establish brand presence and development within the platform.

Pilot projects

Advertising in augmented reality during sports events

The Spheroid Universe platform and BETCONSTRUCT, one of the world leaders in the development of programming solutions for the gaming industry, have agreed on strategic partnership.

The partnership entails cooperation in the context of sports events advertising.

Stadiums and sites of mass sports events are among the most promising facilities from the viewpoint of advertising monetization. We've chosen the stadiums with the greatest traffic, the most popular and well-known, for a total of 1500 sports arenas (Wembley, Juventus Stadium Melbourne Cricket Ground, etc.), and have reserved the corresponding Spaces.

Plugin and AR publication developers will be able to receive real-time data on all the key events happening at a sports event from BETCONSTRUCT via Spheroid Platform API.

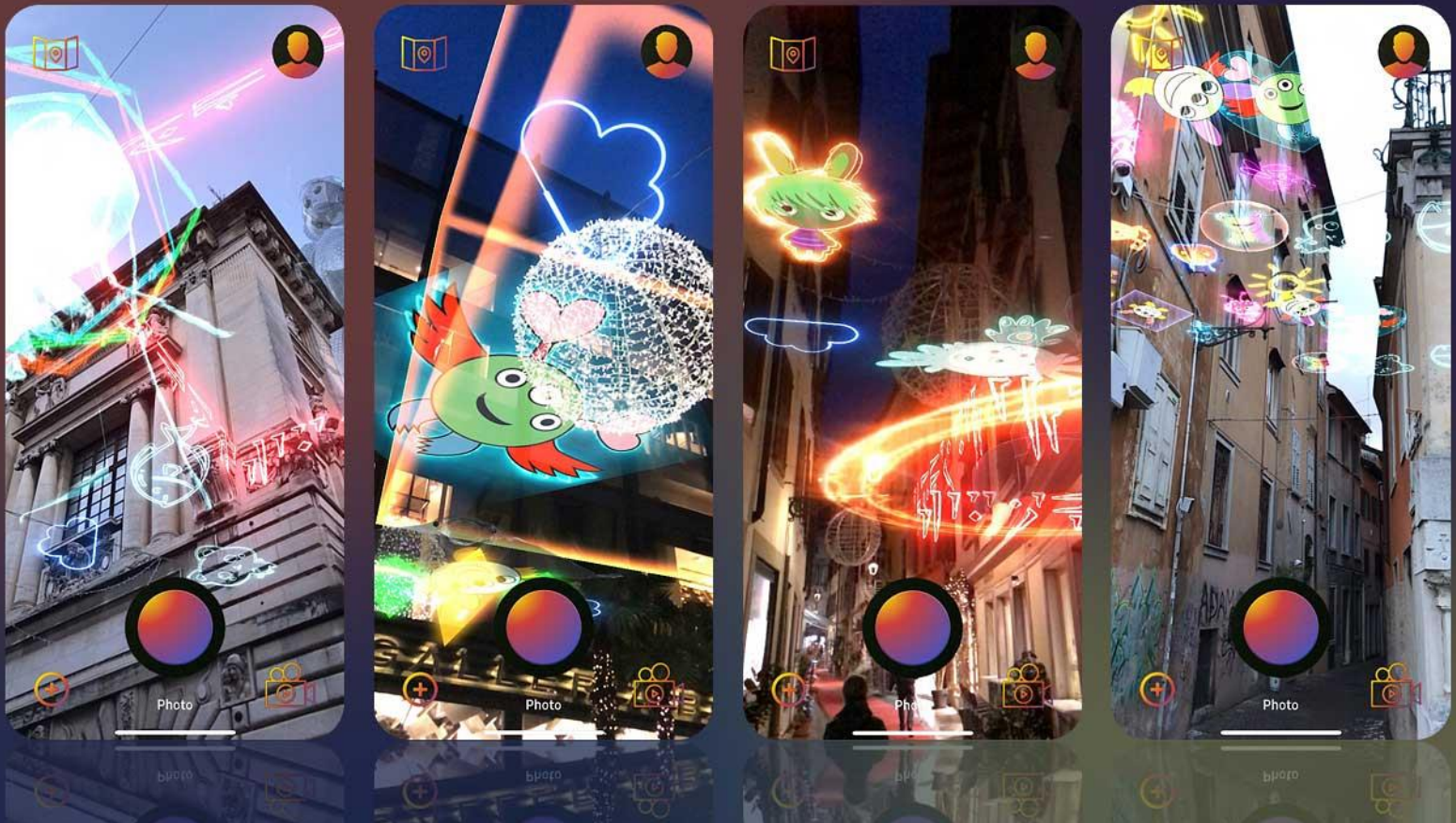
Developers will be able to create AR publications that use expanded information on the events at the competition (i.e., a racer's lap time compared to the competitors), while the Advertisers will implement interactive advertising messages that adapt to the events of the sporting competition.

Spaces located at stadiums will be integrated into thematic lots (Spaces at one stadium will be unified into one lot). Lots will be sold at the open market in a special series of auctions.

Augmented reality arcades

In 2019, as well as in the context of the partnership with BETCONSTRUCT, a programming product will be presented. It will allow to install gaming arcades and virtual casinos in the augmented reality space, which use the blockchain technology to ensure game transparency and fairness, as well as mandatory, complete and precise payouts to the participants and owners.

Apps



Spheroid Universe augmented reality MVP apps are already working on iOS and Android devices. As new popular augmented reality headsets, glasses and headphones come out on the market, the Spheroid Universe app will be compatible with those devices as well.



Token

Spheroid tokens (SPH)

Spheroid tokens (SPH) are Ethereum blockchain-based ERC20-standard tokens issued by the Spheroid Universe in the amount of 10,000,000,000 SPH.

- SPH were issued by and are used for the purposes of developing the Spheroid Universe. SPH tokens are not intended for public sale during the ICO.
- SPH is accepted without limitations at the Spheroid Universe primary market Marketplace to be exchanged for any Spaces available for sale for cryptocurrency.
- SPH token owners may use SPH tokens beyond the Spheroid Universe ecosystem as they deem fit, and as the ERC standard allows for similar tokens.