



**viarium**  
WHITE PAPER



DECENTRALIZED

**VRWORLD** FOR REAL LIFE  
& BUSINESS

# TABLE OF CONTENTS

Introduction .....	4
1 Overview of global VR solutions market .....	5
2 Description of the viarium platform .....	7
3 Viarium in the real sector .....	8
4 Viarium platform advantages .....	9
5 The role of blockchain in the viarium platform architecture .....	10
6 Particular features of VR platforms' economic models .....	13
7 Viarium platform's economic mode .....	16
8 VRX token value and functionality .....	25
9 Development strategy and roadmap .....	27
10 Token sale, token distribution and VRX initial airdrop .....	29
11 Future, or how we plan to decentralize .....	31
Conclusion .....	34
Disclaimer .....	34



[viarium.io](http://viarium.io)



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# VIARIUM

**VIARIUM** is a virtual reality platform for selling goods and services using internal tokens and traditional fiat money\*.

Sell your goods, create trading floors, launch showrooms and displays, build your own universe. Earn money and share new opportunities with the world.

**VIARIUM** - a future that has already happened!

\* fiat money can be deposited into platform accounts through third-party exchange services. In-platform settlements are solely conducted using VRX tokens.



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# INTRODUCTION

We are willing to share our vision of the future, one that will capitalize on virtual reality (**VR**) technologies and blockchain.

Today it is obvious to everyone how **VR-related** technologies are set for a rebirth, with the new and yet unexplored reality being built on their basis.

We believe that VR technologies of the future will not only be used to create and develop worlds within virtual space but will also enable us to visit exhibitions and galleries in any part of the world, test-drive cars of our choice, tour around villas and inside yachts, enroll at best universities around the globe and even go beyond all that.

Our firm belief in the great future of VR technology has led us to create the **VIARIUM Platform** - a virtual universe in which participants can create their own worlds. Thanks to a plethora of specially tailored solutions, any company, brand and an ordinary user will feel free to create virtual points of sale, right off the bat. Wherever in the world they are, a client will simply need to put on their virtual glasses and immediately find themselves in a shopping mall, inside a show room, at a construction site, etc., without leaving the comfort of their home.

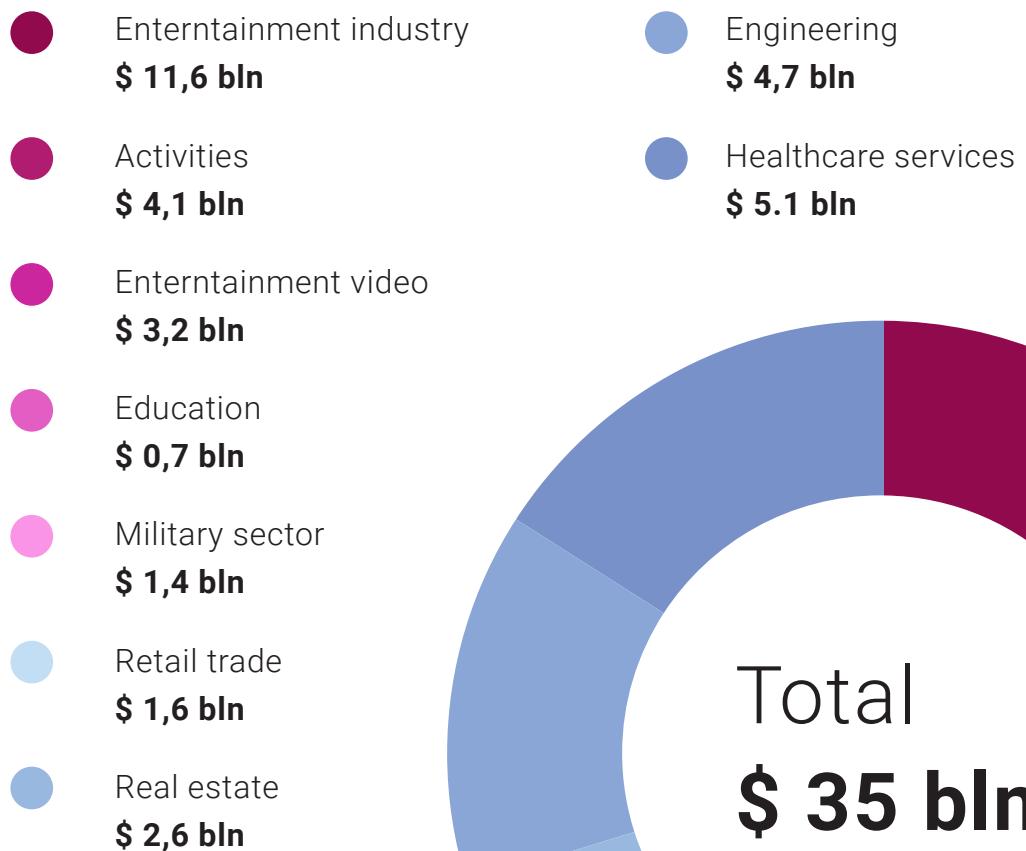
Although **VR technology** is still in its relative infancy, just as the Internet was in the late 80s or mobile communications were in the mid-90s, major corporations do extensive R&D work in this field and it is just the matter of time now before they seize the market. However, we believe this technology must become accessible to all and, therefore, we have decided that VR technology and blockchain would be a perfect marriage.

We are confident that a greater wealth of opportunities will be afforded if VR technology meets the world of blockchain. The VIARIUM platform is based on a decentralized structure with an open source and its own internal crypto currency, thus creating an open economic system and a decentralized environment for the community of a new world. A list of extensive capabilities available to VRX token holders will drive incentive to participate in the project.

# 1. OVERVIEW OF GLOBAL VR SOLUTIONS MARKET

The number of players in the virtual and augmented reality market is constantly growing. Global statistical forecasts suggest a growth in the number of VR sites from 300 thousand in 2016 to 2 million in 2018. According to forecasts, the number of those using VR solutions will increase from 10 million people in 2016 to 171 million in 2018.

According to Goldman Sachs, the industry is predicted to top \$80 billion by 2025. The bank analysts forecast retail business, real estate and healthcare services to be the key fields of application for VR and AR products (the diagram below outlines distribution of investment in VR software by sector).



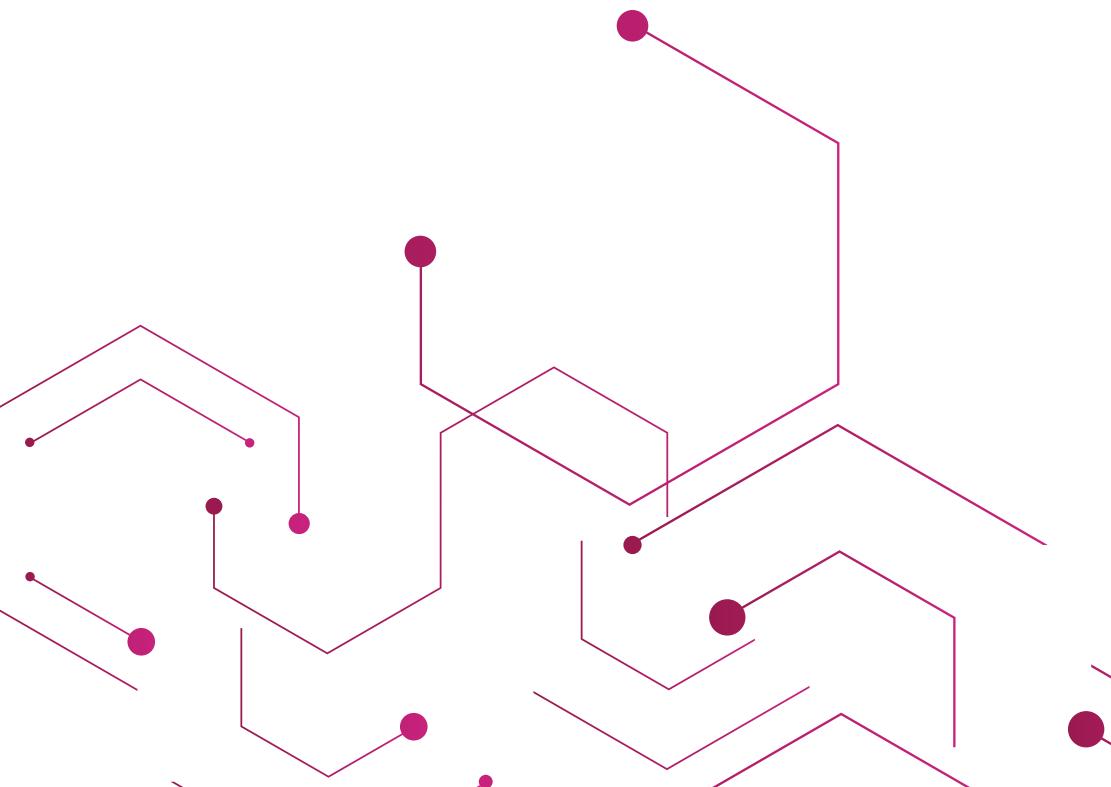
Virtual reality gadgets will turn as popular and handy as today's mobile phones. With their help, users will watch movies and TV shows, attend public events and go shopping. As virtual reality devices (*glasses, helmets, computers, etc.*) gain wider recognition with consumers, **VR and AR** technology is profoundly penetrating our lives and become something familiar. The emerging opportunities are boundless for small and medium-sized businesses to build on.

Presently, no single company is active on the market that would be ready and able to serve business and consumer needs across all available segments: **B2B, B2C and P2P** (person 2 person). While major corporations engaged in developing **VR and AR** solutions tend to overlook the **P2P** sector, small business turns a blind eye on the **B2C** services market and VR market players ignore the **B2B** segment altogether.

At VIARIUM, we are set to bring together whatever work opportunities and scenarios there are. Our end-product is primarily focused on the **P2P market**; however, the other segments will be covered, too. In our opinion, it would be a narrow-minded approach if we disregard a certain market part.

We are equally committed to work with large, medium, small businesses as well as ordinary consumers. **VIARIUM's** key objective is to provide each and every one with the opportunity to use VR-technologies when sharing information about their product or service. **VIARIUM** is going to become a new social network where people will communicate, play and buy goods.

**VIARIUM** will be a venue for creating sales outlets and networks with zero borders and limits on traffic and reducing costs.



## 2. DESCRIPTION OF THE VIARIUM PLATFORM

**Viarium** offers a new concept of a virtual decentralised space with a set of tools for creating your own **VR-world**. In its early stages, the platform is being developed by the worlds' owners, holders of computing power and our team.

All project participants get a unique opportunity to create:

- their own **VR** worlds,
- new cult **VR** games,
- multiplayer quests,
- training courses
- presentation materials
- their own avatars,
- retail outlets (business centres, showrooms).

In addition to profit from sales, the participants get a chance to generate some extra income through the usage of **VRX** tokens (described in Chapter 7).

Blockchain technology underlies the economic architecture within the created virtual reality. The use of a decentralized ledger allows one to keep records of property rights, ensure transparency of server capacity payments and easily execute smart contracts and other processes.

The platform is designed to reach the widest possible audience: investors, developers of **VR-content**; small business owners; science fiction and art fans; real estate development firms, healthcare and shipbuilding companies as well as individual buyers. Exhibitions, galleries and even whole cities will be readily available for users to create and attend.

Whereas previously it was believed that **VR** was a way to get away from reality, now **VR** is considered a next step in the development of social networks. Social **VR** blurs the borders of countries and continents allowing us to communicate, play and share creativity with the world.

With your own avatar, you can chat with new people in **VR** worlds, go shopping with friends and hold business meetings with your colleagues. You can also hold a conference in Burj Khalifa, the highest skyscraper in the world, or even in a forest lake that would be a great place to enter into partnership agreements.

### 3. VIARIUM IN THE REAL SECTOR

**VIARIUM** offers brands, business owners, companies and individuals to sell their products using **VR** technologies. The areas where the platform can be applied is almost unlimited: Internet business solutions, **VR-online** games, sports events, the creation of any art objects, the restoration of historical monuments and/or retracing historical events, advertising, collecting, education, tourism, medicine, social communication, non-profit events, mass events, concerts, to name but a few.

**VIARIUM** is literally a copy of the real world in which far fewer restrictions and more opportunities are offered to develop business and implement projects the community might find interesting.

If you've got your own **VR** glasses, you will have even more opportunities. Viarium creates a social network of a new generation. To begin, you create your own avatar by scanning your face through computer vision. Then, the neural network processes your image, providing maximum similarity with reality, taking into account mimic and emotions. The third stage of the process is one of the most important as it involves the protection of your avatar for further identification in Viarium. For this, the biometric data of your avatar is entered into blockchain so that the information that the generated avatar belongs to you can be stored safely. In the future, you can use your avatar every time you enter one of Viarium's virtual worlds. Avatar becomes an improved copy of you in virtual reality, where you can make friends, communicate, attend corporate events, go shopping or participate in any other daily activities.

\* fiat money can be deposited into platform accounts through third-party exchange services. In-platform settlements are solely conducted using VRX tokens.

## 4. VIARIUM PLATFORM ADVANTAGES

### Business of the future

In the future, **VR-technologies** will allow you to get a sense of tactility in virtual space, that will undoubtedly increase the audience of virtual worlds. And already today, **Viarium** visitors get instant access to hundreds of thousands of products and services around the world. In this case, our clients can pay for goods with both internal tokens of the **VRX** platform and fiat money \*.

Thanks to this approach, businesses optimise their costs on attracting potential clients, renting demonstration halls and cuts expenses on salaries and logistics. At the same time, the amount of potential visitors and clients increases several times, helping you to reach a wider audience.

### Social VR

Viarium represents a social network in virtual reality. Using social **VR** platforms, businesses can create personalized environments for promoting their products to different target groups of customers.

And with personalized avatars, people can participate in social shopping where retailers would encourage members of the shopping community to communicate through avatars and stimulate them to get a "social reward".

Social shopping is what unites people with similar interests into a community, where they can share their opinions, discuss reviews and buy products. At the same time, everything looks as if a group of friends were shopping in their favourite store.

### Gamification

Virtual reality allows you to engage potential customers by game elements. For example, a luxury auto salon can offer you and your friends to test drive a car in the deserts of Namibia or organize a contest on a Formula 1 track.

In **VR**, you can organize a corporate competition instead of a classic team building technique. People are all fed up with traditional corporate parties, so instead of having traditional "table-meetings", many employers now organize "corporate quests". In this case, the team can complete quests, that improves the interaction between all participants in the workflow.

## 5. THE ROLE OF BLOCKCHAIN IN THE VIARIUM PLATFORM ARCHITECTURE

Our team has elaborated the main blocks on which **VIARIUM** worlds can be created:

- Genesis Land – the first world initially based on the **VIARIUM** team's server capacity, but, like all subsequent worlds, promoted to the **Viarium** project's decentralized protocol. Land plots in Genesis Land are available for purchase.
- Software shell for incorporating new worlds.
- An economic model of interaction among participants in the project and its basic unit – **VRX token**.

A virtual space of this magnitude requires the use of a high-quality technological infrastructure for creating virtual analogues of real property registers and other essential internal services of the platform.

Ownership rights on the platform are determined by consensus mechanisms. The content will be entered into the protocol as a hash mark to the file that contains this content. Such files will be stored in blockchain using IPFS technologies (<https://ipfs.io/>). The protocol provides for availability and use of various ethereum tokens in the network, such as **ERC 20** and **ERC 721**, for attaining the required objectives set forth hereby.

The Viarium platform's basic token is an **ERC 20 – VRX token** that not only ensures entrance to and exit from the platform, but also allows all kinds of settlements among platform participants. Apart from other things, this token makes it possible to acquire ownership of lands. The token that describes land possession is written according to the ERC 721 standard. Each token unit corresponds to a certain land plot. It means that in order to acquire lands in the Viarium universe, participants must first acquire the basic token - **VRX**, and only then buy land for **VRX**.

Initially, 10,000 land possession tokens are created with each token corresponding to a certain land plot in Genesis Land. Subsequently, they will be issued when a new world is created. In this process, new tokens will be created in a number equal to the number of created land plots, and each token will be linked to a certain plot.

When an ERC 721 token is acquired on the platform, a smart contract with required details written therein by the contract's author based on the standard original contract is created.

Tokens used for the creation of any objects and avatars are realized similarly to the **ERC 721** standard. All objects have different hashes. A created token incorporates details of the object's hash.

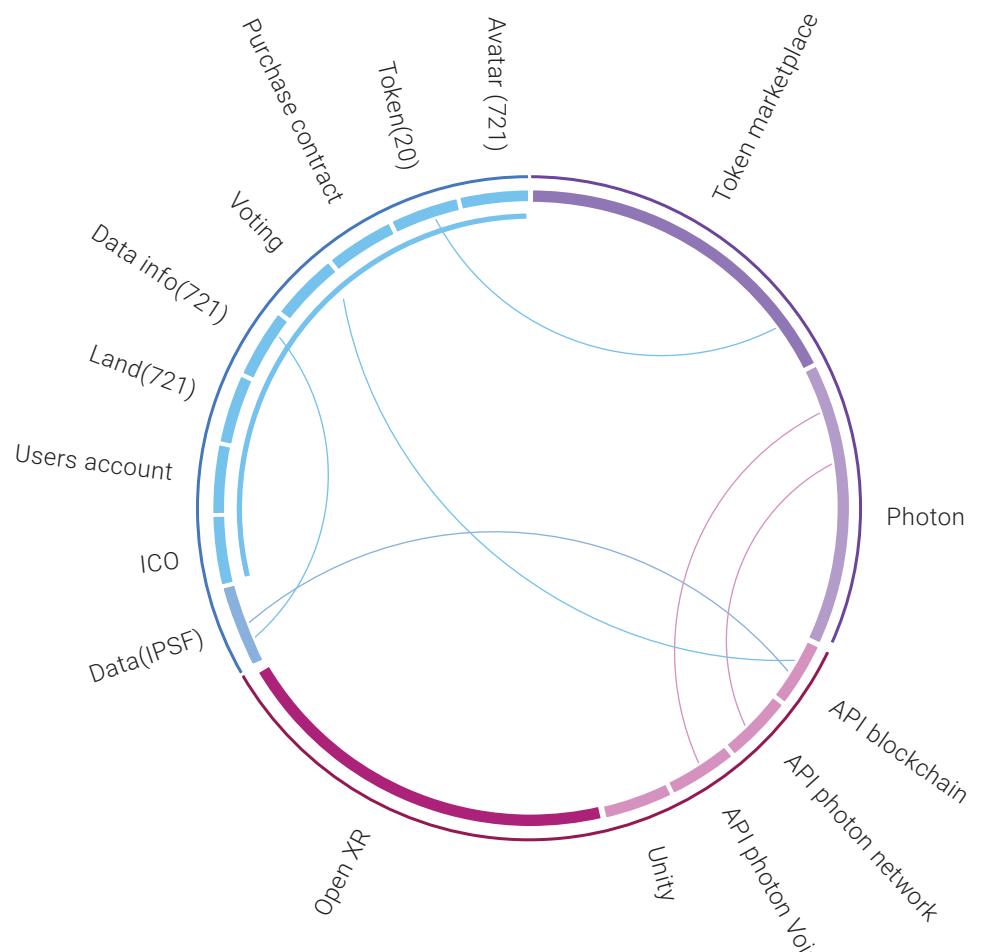
The belonging of a token to a user indicates, in particular, the possibility of placing this object on one's land. The issue of new tokens for objects is associated with the uploading of new objects by users (*when a new object is uploaded, the user gets a new token of possession for this object*). This subject is described in more details in the project's git hub. Each project participant is supposed to have his/her own avatar with a particular set of skills, capabilities, remote gamification, etc. The tokens associated with the avatar and other gamification elements will also be created in accordance with the **ERC 721** standard. Such use of this standard may be exemplified by various cryptopets, for instance, cryptokitties (<https://www.cryptokitties.co/>) or Etheremon (<https://www.etheremon.com/>).

The **VRX** token is also used by participants to create additional worlds, including those created exclusively for one's personal purposes.

In the **VIARIUM** project, the blockchain technology is used primarily for ensuring the following system functions:

- Accounting for the rights of ownership to real property in the distributed register.
- Consummation of safe, transparent and fast transactions of sale of virtual real property by means of smart contract settlements.
- Creation of unique virtual objects existing in the **VR** space with concurrent recording of all particular features of the object and history of possession.
- Copyright protection for the content.
- Automatic billing.
- Transparent and fair voting on various issues facing the community: spending of resources of foundations, blocking plots with unacceptable content upon request of other system participants, creation of new territories, etc.

- Blockchain
- Ethereum
- Data(IPSF)
- Cli
- Backend
- Frontend
- External services
- Token marketplace
- Photon



## 6. PARTICULAR FEATURES OF VR PLATFORMS' ECONOMIC MODELS

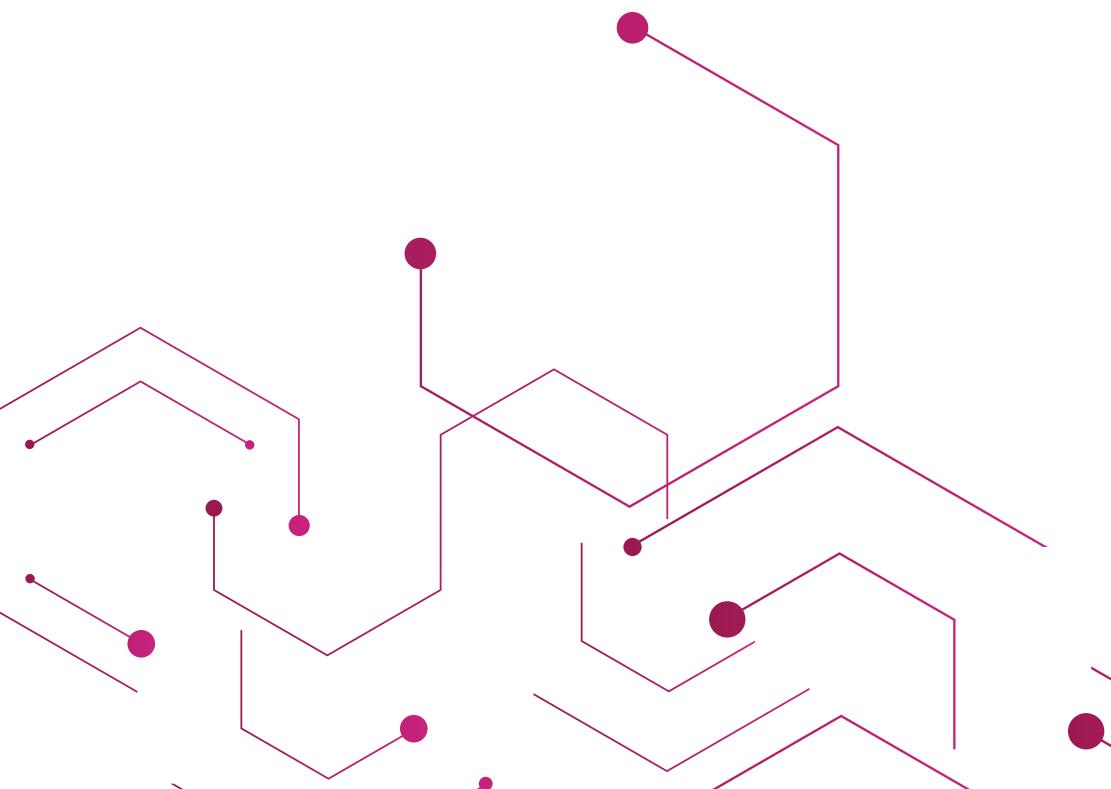
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The main objective of the **VIARIUM** project is to develop virtual space for efficient implementation of various projects and finding solutions to the tasks facing the contemporary society. This list includes, but is not limited to, the following: business-oriented, information, entertainment, charity and other projects.

Any society, including a society that exists within a virtual space, has a propensity for economically advantageous exchange-based interrelations. Organization of an exchange gives rise to a local economic system inextricably intertwined with the global economy and flows of information and resources (in this case, in the form of digital currencies). In this connection, the development of an efficient economic system is among the vital factors of the project's success.

The primary global idea of the virtual reality is to create a world without limitations. Removing limitations by introducing new technologies entails the risk of facing a number of other challenges, including those associated with the need of maintaining the working capacity of the technological base used to create the new reality.

Relying on many years of our own experience in the development of and technical support to **VR**, and also having reviewed the economic systems of various societies, we have identified the following basic resources of the space being created:



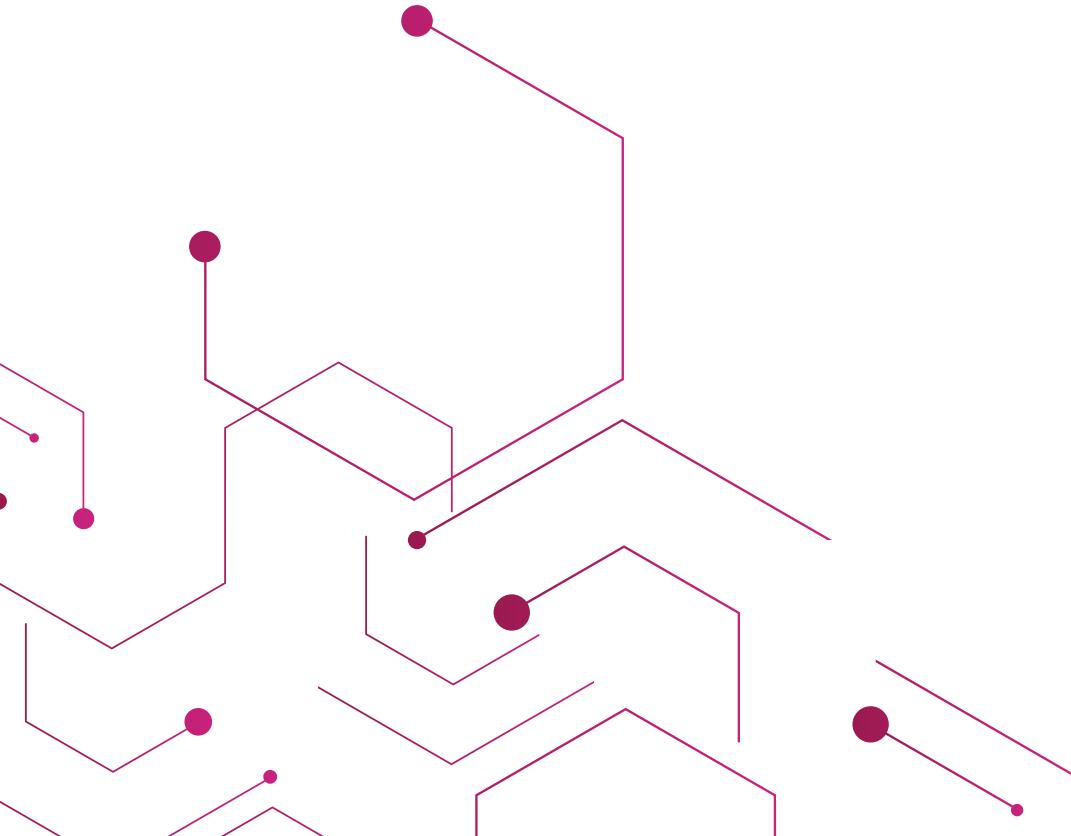
Resource	Reason of limitation
<b>Computer power</b>	VR exists only if supported by highly loaded software and hardware (servers, graphical rendering, etc.). Accordingly, spaces and number of objects and interactions among them are limited by the existing server capacity and disc space.
<b>Virtual space units</b>	1. Limitation of computer power. 2. Economic reasons: only an economically feasible amount of spaces makes sense in the world. Economic feasibility arises with the emergence of a group of users interested in the creation of a new world and its continuous development. If the available space is sufficient, there is no need to create "dead" or dummy zones.
<b>Graphical objects, design</b>	Graphics and design (especially those unique) are an essential resource in a VR world as they have a direct impact on the attractiveness and uniqueness of objects and business. They directly affect the degree of interest in and attention to the product on the part of the virtual world users and visitors. This is why unique graphical materials and design are among the most valuable and limited resources.
<b>Qualified citizens</b>	VR means not only passive participation, but also active involvement in virtual projects and business. Qualified citizens capable of working in a virtual world will be much in demand and, undoubtedly, deemed a limited resource.
<b>VR-real world connection services</b>	Services that connect VR and the rest of the world are also a valuable and limited resource.

The list of limited resources goes beyond the above objects and competences. Mentioned here are only the basic items that are most important for understanding the VIARIUM platform's economic model.

In a resource-constrained environment, it is essential to build an efficient economic system for sustainable development of the virtual world.

## **Basic requirements to the VIARIUM platform's economic model**

- Efficient solutions to the problems of limitations and balancing of the system. Adjustment of the system balancing mechanisms in tune with the changing environment of the internal markets of limited resources.
- Ease of use of mechanisms of mutual settlements with product end users in a virtual space.
- Technological and economic safety. Immunity from attacks both in terms of technology and economy.
- VIARIUM's integration in the global economy and enabling the creation of an additional value for business and society.
- Availability of mechanisms that protect the internal economy from external shocks or level down their negative impact.



## 7. ECONOMIC MODEL OF THE VIARIUM PLATFORM

**VIARIUM's** virtual space is created from void at "a certain point of time". Initially, there is only Genesis Land, or "initial land". At this point, **VIARIUM's** space is limited by an area of circa 2,850 sq. km and will be expanded with the passage of time.



The world available for use right after the launch of the platform is called **Genesis Land** and supported by the main developer team. As stated earlier, this world contains N plots, of which n plots will be used for infrastructural facilities (roads, streets, decorations).

**VIARIUM Land Unit (VLU)** (x,y,owner address)

User World 1

User World 2

VIARIUM Main Land

Figure 2

Platform participants will get a priority right for plots in the world being created.

## Main economic agents of the VIARIUM platform

- **Plot owners.** Owners create virtual space plots at their discretion. They may be end users (for example, self-employed persons or noncommercial project organizers) or intermediaries, who use the plots for business purposes (for example, leasing **VR** space out to end users of **VR** showroom services).
- **VR** infrastructure direct users. Individuals or corporations using plot infrastructure on a contractual or gratuitous basis for various purposes (for example, creation of a showroom for own business, holding a festivity in a **VR** park, etc.).
- **Viewers and buyers.** Individuals, who are present in the virtual reality as viewers not using the **VR** world for creation of own business or project, but making purchases inside the platform.
- **Service providers** (for example, individuals who render content digitization services, painters, etc.).
- **Designers.** Individuals or corporations offering the development of graphical models and other art content, such as advertising, development, writing of audio compositions, etc.
- **Employees.** Employees hired within the **VR** world. Recruitment offers and applications for jobs are published on the internal notice board.

This list includes only those economic agents, who are economically active within the virtual space.

## Pattern of interaction among the main economic agents on the VIARIUM platform

N VRX tokens

### Basic User Categories

- Service providers
- Workers
- Land owners
- Commercial business users
- Land owners
- Viewers

### Foundations

- Viarium Development Foundation
- New World Development Foundation (separately for each world being created)

### Basic Services

- Virtual art marketplace
- Service provider marketplace
- P2P exchange

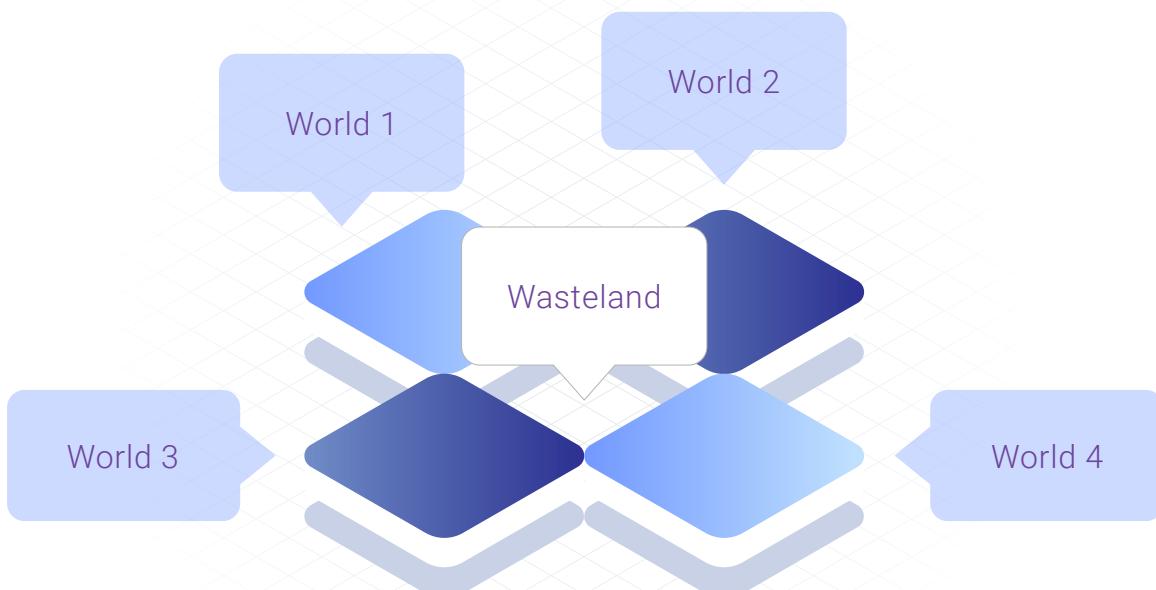
**Basic parameters of VIARIUM protocol plots & universes being created.** The offer and dimensions of land plots should be limited in order to achieve a higher demand and to prevent their devaluation caused by endless creation.

Since the early days of economic relations, limited resources have been valued much higher than those of an inflationary nature. This is exemplified by such valuables as **gold, diamonds, bitcoin, etc.**

By restricting the endless inflation of land plots we can boost the initial demand, add a competitive touch to the plot development in general and give an additional impulse to participation in the auctions. At the same time, it will help to prevent land plot devaluation caused by appearance of new ones. Any plot in any **VIARIUM** protocol universe will be limited by 10 m x 10 m, but will not be limited in height. Any universe may not contain more than 10,000 plots with a total area of 1,000,000 sq. m.

Total lands in a universe will be limited by the fact that the cost of creating each new land will grow pro rata with total lands in the existing world (see the formula below). Accordingly, at a certain moment the cost of creating a new world will exceed the overall money stock (**VRX**) in the system.

Proceeds of the auction for creating new lands (universes) will be frozen and, by decision of the future owners of land plots in the corresponding universe, automatically distributed among the owners (1\2 to the **Viarium Development Foundation** and 1\2 to the foundations of lands created previously) or burnt (if the community decides accordingly). The worlds "cling" to each other's boundaries along X and Y axes. Creation of lands that intersect with each other is prohibited. If a so-called "wasteland" develops, a desert is created thereon.



Subsequently, this space can be filled in using a resource from the **Viarium Development Foundation**, if the community decides accordingly.

When any world is created, plots are initially offered to potential owners. Plot owners are determined by auction. The auction procedure is described in an annex.

Example: N plots will be created in a new world, and total proceeds for all plots will be:

$$\text{Price} = k * N * W$$

where N is the number of new plots,

W - the average cost of creating one plot.

k is the complexity factor for increasing the value of subsequent plots.

In this context, the following formula is used for calculation of the k:

$$k = \frac{\left( \left( \frac{N}{M} \right)^q \times N \times L + N_0 \right)}{N_{genesis}} \times \left( 1 + \frac{N_{cr}}{N} \right)^p$$

where **N** is the number of new plots,

**N<sub>0</sub>** is the number of plots in the whole universe prior to the creation of the world,

**N<sub>genesis</sub>** is the number of plots in **Genesis Land**

**M** is the optimal (i.e. minimal) size of a world

**q** is the power indicator of increasing a new world's value at increasing its size in excess of the optimal level.

**L** - the linear factor of increasing a new world's value at increasing its size in excess of the optimal level

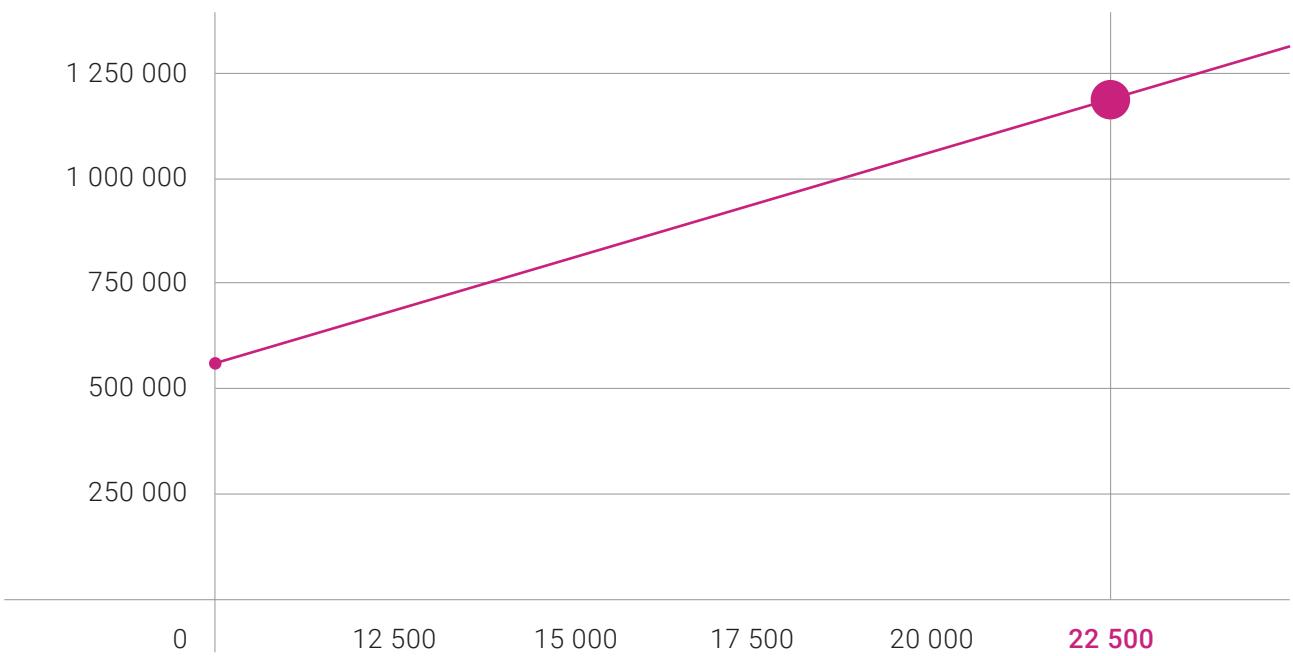
**N<sub>cr</sub>** is the number of plots a user gets into possession following formation of the world

**p** is the power indicator of increasing a new world's value at increasing the world's share that will immediately come into possession of the creator.

Our analysts have selected an optimal number of plots for a world equal to **M=1,000**.

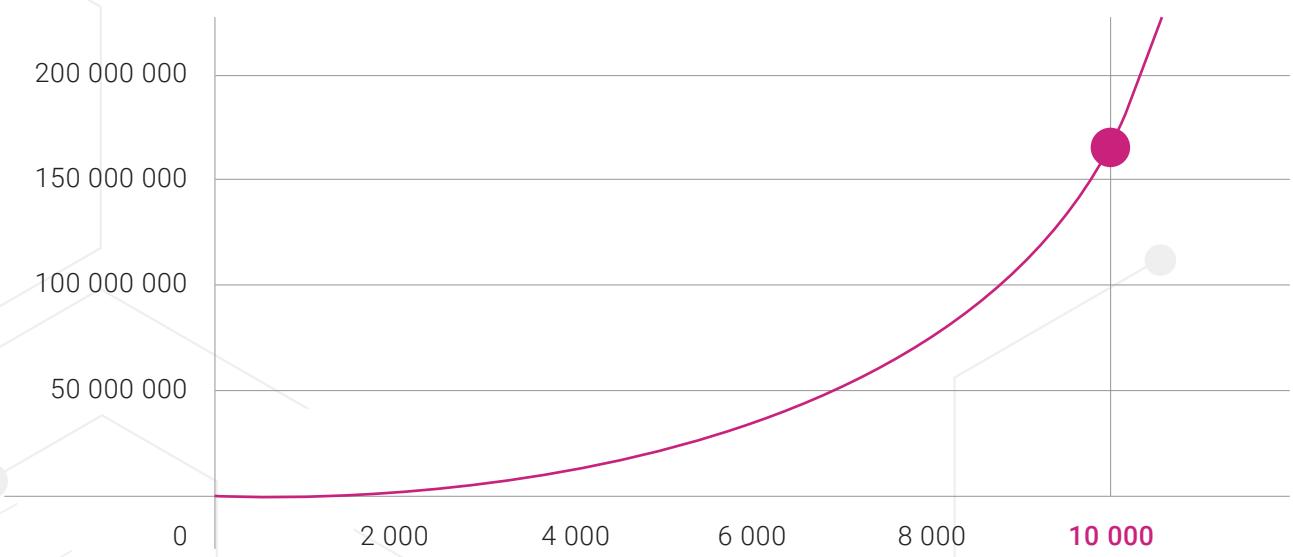
The power indicator is **q = 1,5**. Power factor **q = 1,5**, linear **L = 0.76** **Genesis Land** has been selected as the maximal world and its size is **N<sub>genesis</sub> = 10,000**. The power complexity indicator has been selected equal to **p=4**

Thus, this formula describes three factors that have an impact on the price: an excess of the world's size over the minimal level, the size of the existing world, and the share of the plot converted to personal use of the buyer. As it is clear from the chart below, the growth of a world's value by the number of existing plots will be linear.



Value growth with regular creation of worlds sized 1000

At the same time, a new world's value growth with the increasing of its size is described by a power function (see below)



A new world's value growth with the increasing of its size

## Value Distribution within the VIARIUM platform

Payment by results  
of the auction for i plot

n.VRX

Virtual Jurisdiction  
Development Foundation

Funds are spent according to decisions taken by voting of community members. Remuneration for the territory creators

Remuneration for new territory creators

Funds are transferred to the wallets of community members, who have contributed to the creation of an additional territory, pro rata their contribution.  
Future operating expenses deposit

Frozen funds to pay for computer power and other required expenses

Funds are frozen for ensuring payment for computer power and other required expenses associated with operations on the plot

### Value distribution within the VIARIUM platform

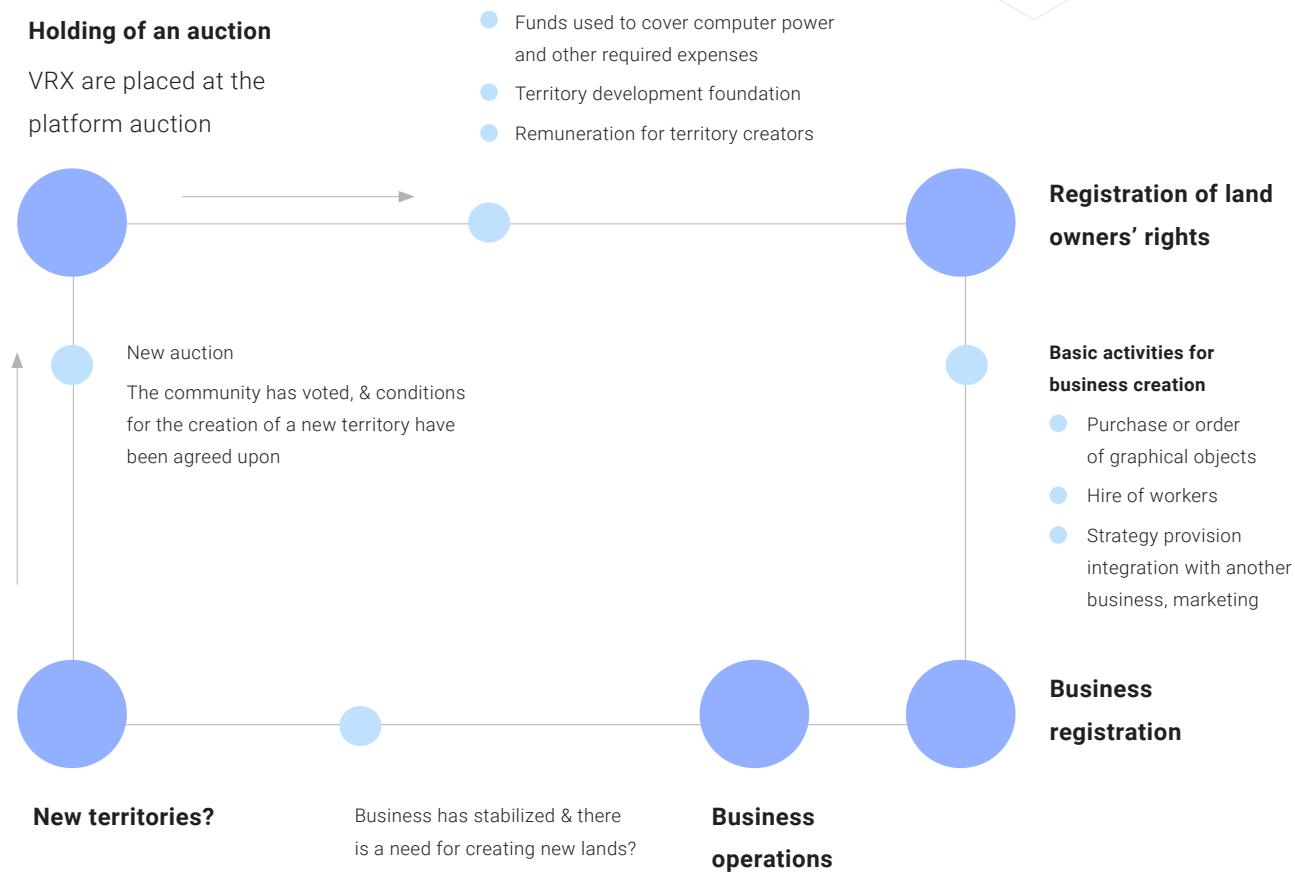
Auction proceeds are distributed among three foundations:



Payment by results of the auction for i plot (ARROW) n VRX (THREE ARROWS) Viarium Development Foundation, Remuneration for the territory creators, Frozen funds on a particular account in relation to the plot for payment for Etherium computer power.

Based on auction results, the ownership rights to virtual space units are registered in an unalterable register using blockchain technologies. **VR** plot content is limited by the author's fantasy only. We strongly recommend that the owners of territories on the **VIARIUM** platform check their content for compliance with the corresponding legal requirements of the jurisdiction of their registration. However, we recognize that compliance with laws of any jurisdiction is a sovereign right of the virtual content's author. If a majority of owners of other plots vote against acceptability of certain content for the community, the plot will be closed. The owner of a plot with unacceptable content will be deprived of the possibility to advertise and somehow make others aware of his/her project within the world of the **VIARIUM** system, in which the plot was located. Access to the plot will be possible only for users upon the owner's invitation or by a unique link. The project provides for the possibility of a diverse use of one's plot, i.e. it may be used for any purpose: business, entertainment, noncommercial, educational project, social investment, etc.

Basic processes and their significance for the project's economy at the creation of new territories in the **VIARIUM** virtual world.



## Objectives of the proposed economic model

Determination of the initial owners of virtual elements (plots) of each created world. This process is based similarly to traditional auctions for land plots.

- Access to limited infrastructural capacities (servers) with a priority focus on safety and consistency of the system's operations.
- Involvement of a professional community of designers and other service providers in the project.
- Creation of mechanisms of commercial operations and implementation of noncommercial projects on the platform with maximal simplification of all commercial interactions and their withdrawal outside the scope of the platform.
- Possibility of expanding the world's territory subject to demand for new plots. Absence of risks of creating excessive territories, devaluation of **VR** assets, and collapse of the **VIARIUM** economy.

The main objective of the **Viarium** protocol is ensuring maximum protection for the user against unfair practices of other users (such as 51% attacks) and other possible attacks while minimizing the chances of project centralization. The simplest way to achieve this objective is to make such attack economically disadvantageous.

For example, each land has a development foundation managed by voting of the land owners in this world. If an unscrupulous owner wants to derive some benefit by collecting 51% of votes and withdrawing money from the foundation, the expenses of getting 51% of votes (lands) must be higher than the amount of the development foundation.

In particular, it is possible thanks to a dynamic minimal price of the plot.

$$Price = \frac{Price_{AllWorld}}{N_{max}} + \frac{FondMoney}{N_w}$$

where **Price<sub>AllWorld</sub>** is the aggregate cost of creation of all currently existing worlds, **N<sub>max</sub>** is the number of plots in the whole universe, **FondMoney** is the amount of money in this world's fund, **N<sub>w</sub>** is the number of plots in this world.

This pricing is also logical, because a plot in a world with a small development fund is less attractive than a plot in a world with a large fund, and apart from the plot the user also gets the right to manage these resources. Valuation of the main resource (lands) is among the essential objectives of the **Viarium** economic model.

The ultimate value of a land plot on the Viarium platform is determined by auctions and bidding. However, there is the initial price of a plot described by the above-mentioned formula. For a Genesis with a **100,000 VRX** development fund, the initial price of one plot is around **12,000 VRX**. This price is determined by putting data for the Genesis world in the formula given above and fixing the development fund in the amount of **100,000 VRX**.

## 8. VRX TOKEN VALUE AND FUNCTIONALITY

The **VRX token (VIARIUM)** is the project's key component and the internal economic unit of the platform. The token is needed for settlements among platform participants.

**VRX** is used in the following intra-platform transactions:

- Payment of a contribution when creating a new territory;
- In the auctions of determining the ownership of plots when creating virtual territories and in transactions of change of the owner (sale) of plots;
- Payment of fees (if any) for creation and monetization of unique objects, marketplace fees and other payments;
- Payment for server capacity that supports operations of the whole virtual space;
- Payment for licenses for the use of content, if the authors have availed themselves of this alternative of monetizing their intellectual property;
- Payment for the services of employees and various service providers of the platform.

The VIARIUM token's value is ensured by the following characteristics of the virtual world functioning:

- The more territories and plots thereon are actively used, the higher the market demand.
- Growth of the sale market of graphical objects and licenses therefor.
- Development of the market of unique virtual objects and sales thereof.
- Growth of the trading volumes in the virtual plot and property market.

According to the equation of exchange,  $MV = PQ$  or  $MV = T$ , where  $T$  is the total volume of the token transaction market expressed in USD (for ease of calculation).

Taking into account that the token circulation velocity is constant ( $V = \text{const}$ ), then  $M \sim T$ , where  $M$  is the monetary base volume, or, in fact, the project's capitalization (as the project's capitalization is expressed in the value of tokens). This paragraph refers exclusively to the required size of the monetary base sufficient for all economic settlements in the system.

Besides the volume of the token transaction market, key elements of token valuation are the number of tokens frozen in various contracts and funds and the actual demand in exchanges and trading platforms, associated, among other things, with consumer activities of external users.

Thus the **VRX** tokens' value and cost depend on an aggregate of various factors, of which the main one is the size of the project's internal market expressed in **USD\***, supplemented with an actual demand in the exchange resulting from user activity. Important: any user in the **VIARIUM** world has the opportunity for economic interaction with any virtual space business or project in any convenient form. It means that we don't put restrictions on the use of any currencies and means of settlements by territory owners and users selling goods \*\*.

Example: The owner of an Internet store selling exotic flowers creates a virtual representative office in a section of the **VIARIUM** space. For this purpose, he orders a turn-key showroom from the plot's owner. The latter integrates it into his landscape and orders all graphical models in accordance with the customer's technical assignment with all settlements made under a fiat currency contract (with due regard to the laws of the customer's and user's jurisdiction). The store is launched, and the owner pays monthly lease fees in **VRX** tokens. The payment covers all computer power consumed by the whole plot with regard to all objects located thereon. The Internet store owner gets easy access to the creation of his business in the **VR**, and pays for this advertising service under a contract without any interaction with the cryptocurrency world\*\*\*.

The plot owner gets the lease fees for the plot and conducts business in the legal framework of the jurisdiction he refers himself to in the real world, while providing the services of business placement in the Internet by innovative means.

\* For ease of perception by the platform users.

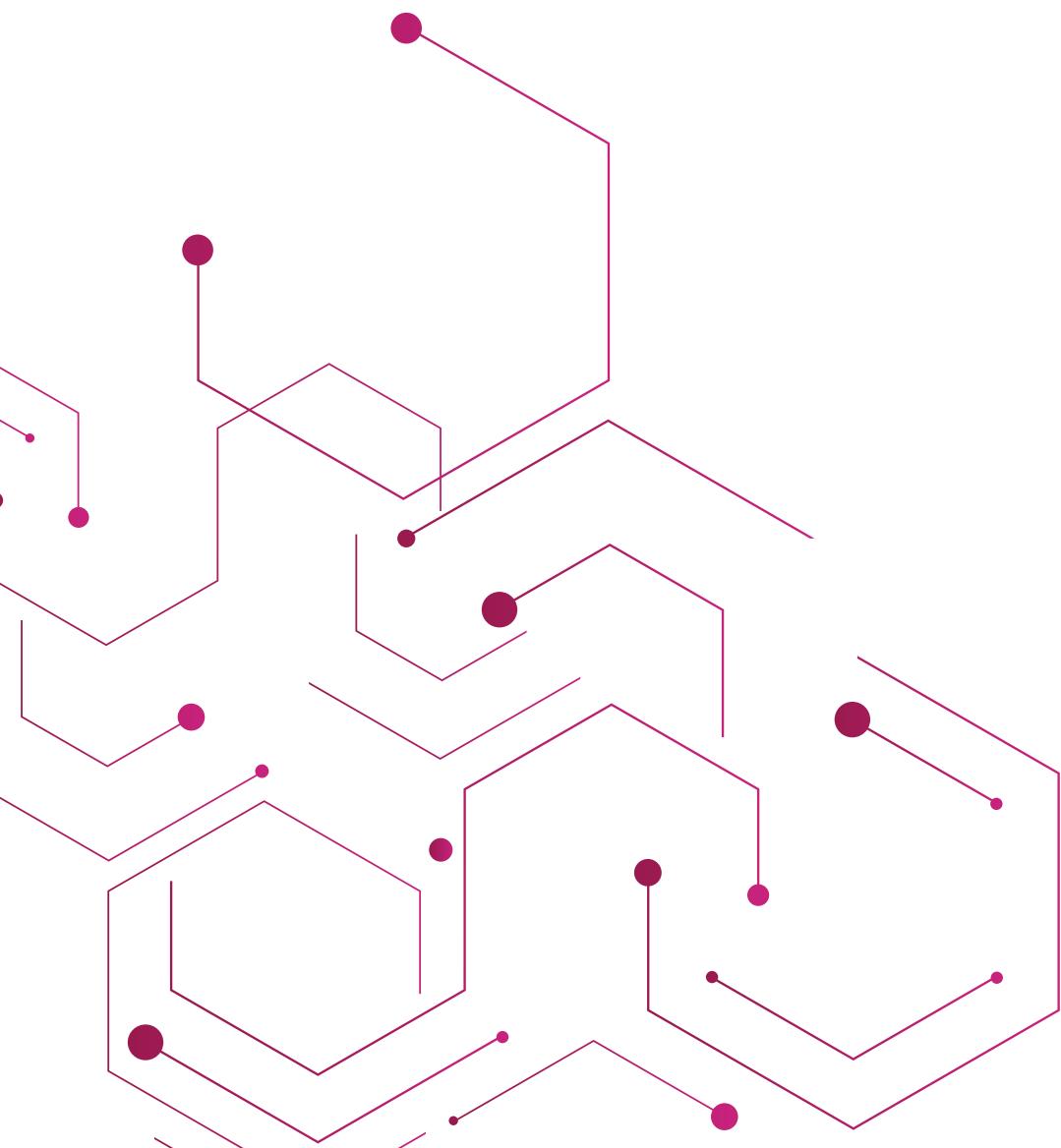
\*\* Fiat money can be brought into the platform via third party exchange gateways. Settlements within the platform are in **VRX** tokens only.

\*\*\* By using exchange gateways.

## 9. DEVELOPMENT STRATEGY AND ROADMAP

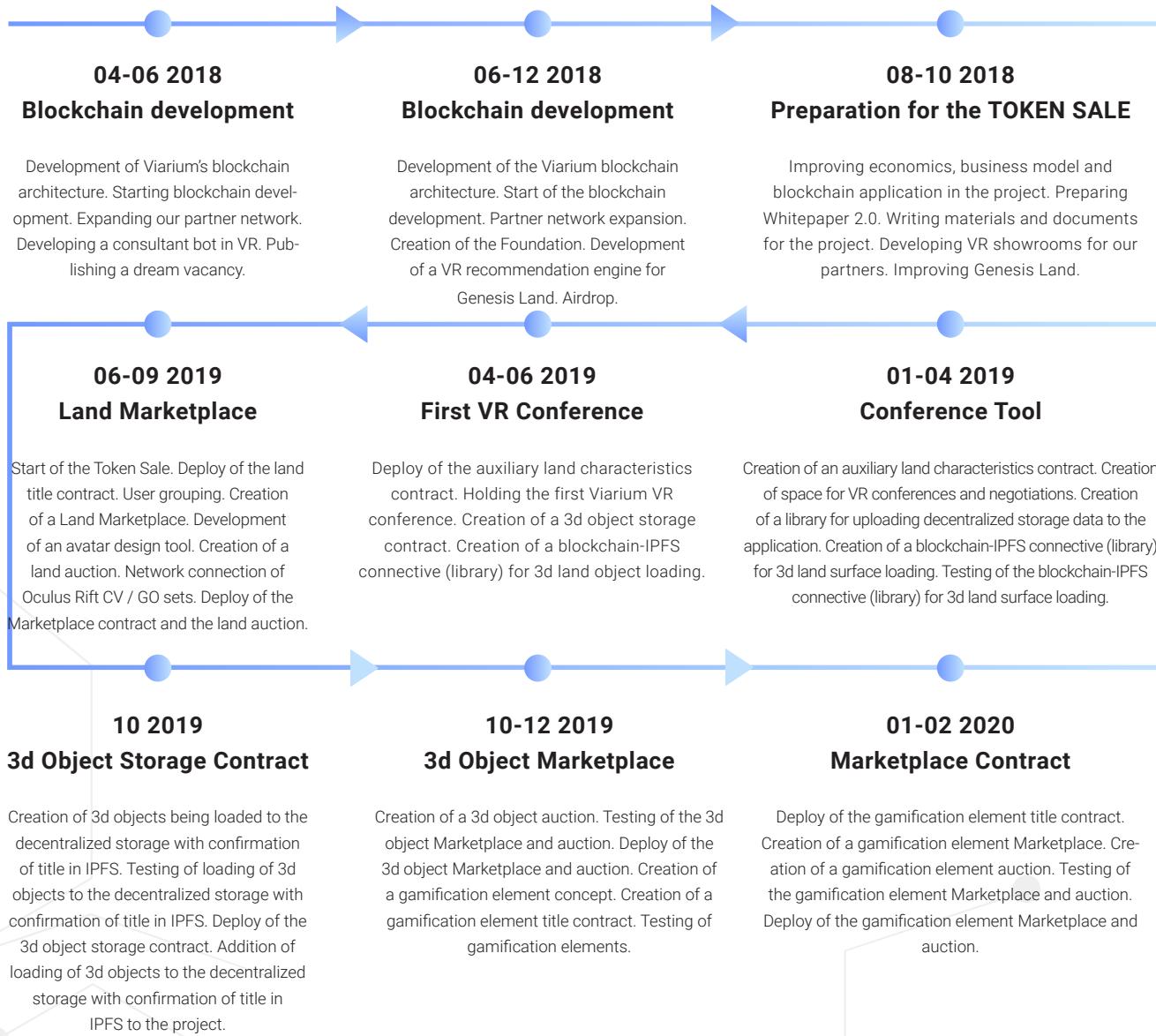
The concept of the **VIARIUM** project encompasses quite a wide range of various issues, and its engineering implementation will take up time.

At an early stage of the project development, the **VIARIUM** company will provide services of organizing **VR** showrooms and spaces for business, exhibitions, art industry and other projects in the **B2C and B2B** segments. It will ensure brand development and the company's presence in the market while creating an organic demand for the token.



# ROADMAP

Basic scheduled stages of the project development indicating approximate duration



## 10. TOKEN SALE, TOKEN DISTRIBUTION AND VRX TOKEN INITIAL AIRDROP

The **VIARIUM** team will hold **TOKEN SALE** with the purpose of the project implementation and further promotion of the platform throughout the world. The **VIARIUM** platform tokens will be issued under **ERC20** standard on Ethereum blockchain. The issuing volume will be limited, and no new tokens are scheduled for issue after completion of the placement. The **VIARIUM** platform will also issue **ERC 721** tokens to be used in trading with **VIARIUM** universe virtual objects (plots of land, avatars, real property, etc.).

### PRE-SALE and TOKEN SALE conditions

**Total Supply:** 250 000 000 **VRX**

**Token Name:** **VIARIUM (VRX)**

**Token price:** 1 VRX = \$0,05

**Soft-cap:** \$1 000 000

**Hard-cap:** \$5 000 000

### Token distribution

During **PRE-SALE** and **TOKEN SALE**, 52% of all **VRX tokens** will be sold. 36% of **VRX** tokens will be frozen with an incremental unfreezing being possible within **36 months**. These funds will be used to further develop and scale up the **VIARIUM** platform. Team tokens (5%) will also be blocked for 12 months. The reward of Advisors and Contributors will account for 5% of VRX. The costs on project's PR and Bounty will be 2% of VRX.



<b>4%</b>	Founders
<b>52%</b>	Token sale
<b>3%</b>	Team
<b>36%</b>	VIARIUM Foundation
<b>3%</b>	Advisors
<b>2%</b>	Bounty

## Whitelist

Anyone can apply for participation in Whitelist and do so by filling out a registration form on the **VIARIUM** website.

Everyone, apart from American citizens, can participate in the token sale. Please make sure that you are not a resident / citizen of countries that are prohibited from participating in Token sale.

## PRE-SALE

Dates: 16.07 - 09.09.2018

"Participants included in Whitelist will be able to purchase **VRX** tokens at a price of \$ 0.05 and get bonuses of up to 50% in tokens.

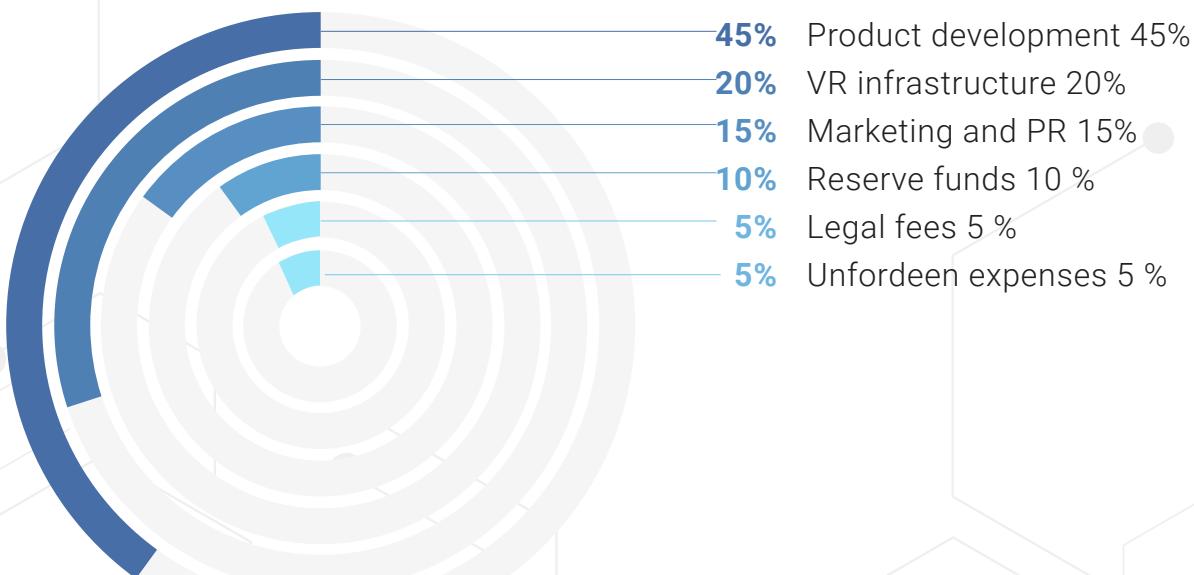
## TOKEN SALE

Dates: 10.10 - 10.11.2018

"Anyone can buy VRX tokens on the **VIARIUM** website.

## Spending structure

The funds received within the framework of PRE-SALE and TOKEN SALE will be used to develop the project in the following proportion:



## Vrx token initial airdrop

In order to draw attention to the platform, we have decided to hold the so-called airdrop of **VRX** tokens. The airdrop will be held prior to the initial closed placement (**Pre-Sale**). VRX tokens will be mailed out. Following receipt, they should be countersigned with a simple signature in your **ETH** wallet. More detailed instructions will be available at en.viarium.io in advance of the airdrop start. The airdrop is meant to incite interest in the platform on the part of **VR** developers, who can be involved in the development of worlds for our virtual space and directly for plot holders and hosts. A portion of the airdropped tokens will be distributed among major brands. In this way, we would like to boost their interest in the project and **VR** technologies by encouraging them to develop their own infrastructure for selling their goods in the **VIARIUM** universe.

It should be noted that the airdropped tokens may not be offered at the exchange. This restriction is introduced to prevent possible speculations. Tokens may only be used for creating virtual content on **VIARIUM** land plots or for acquiring **VIARIUM** land.

## 11. FUTURE, OR HOW WE PLAN TO DECENTRALIZE

At the early stages of the project, its structure is quite centralized, while the project itself is exposed to higher security risks due to possible limitation of server capacity.

The main feature of a decentralized system should be deemed equal opportunities of all network participants for interaction with the public register.

The decentralization process in a wider sense started in various economic fields several decades ago. The Internet offers a greater freedom of speech and an easier access to information. Apart from traditional mass media such as publishing houses and new agencies, we now have blogs, video channels, and messenger channels, where content and information distribution are handled by bloggers rather than journalists.

A free market encourages all its participants to be independent and free of censorship. A content generating system (in our case – the virtual space and its universe) can become truly decentralized only if a large number of network participants receive, record and, most importantly, compare each entry in the register.

It means that decentralization should be measured by the number of information recipients, not by the number of people who record such information. It is much more difficult to deceive a network with an extensive number of decentralized nodes that compare entries in the register, as opposed to a centralized register. It means that the more the so-called entry validators exist in the network, the greater the extent to which the network is decentralized.

In the future, the **VIARIUM** platform's blockchain will use the delegated proof of stake (DPOS) algorithm. This algorithm is an advanced tool that enables networks to select a more reliable record validator. Another not less important feature of this algorithm is that it provides an easier way for ensuring network scalability and the speed of transactions being recorded.

The **VIARIUM** platform's transition from a centralized structure (initially characteristic of actually any organization) to a decentralized one will be gradual. At the early development stages, the system's centralized architecture will be instrumental in countering unscrupulous participants, preventing their attacks on the networks and protecting the interests of bona fide participants. As the network grows and virtual spaces expand, the system will gradually adopt decentralized management and functioning.

The advantages of such structure can be exemplified by transaction interrelations among individuals and organizations. Human interrelations are based on economic benefits with regard to each other expressed by a quantitative or qualitative equivalent. Private systems have, from ancient times, shown their incapacity for scaling and expensiveness of transaction relations. In other words, they fail to ensure proper services for resources entrusted to them. Instead of reducing transaction costs when adjusting their operations in accordance with the regime, institutions increase such costs thus "putting spokes in their own wheels" and preventing further growth. A typical solution is exemplified by the world's first **DAO**, i.e. bitcoin. An open source decentralized system solves these problems by recording transactions in an accessible public register thus demonstrating the advantages of decentralized systems.

We believe that projects like **EOS** and other registers that are distributed more reasonably can save virtually any project from centralization.

The **DPOS** algorithm applied in the **VIARIUM** project will allow for a more secured, but at the same time decentralized market to be created. This will have an impact in the first instance on interactions with capacity representatives. Virtual worlds will be controlled by the whole network, rather than a single representative of capacities. In this context, capacity representatives must have an additional impetus for participation in the system besides collecting lease payments for their land.

Such additional impetus may be a new, more integrated economic model. For example, a new capacity market can be created with each node capable of releasing the remaining capacity to the market automatically thus making extra profit and unloading the network. Node holders will also be able to get an additional impetus from the network in the form of remuneration for fairer operations and to be selected by the system more often for work performance by world hosts.

A new economy will not only make it possible to boost security in the whole network, but also to build a large-scale decentralized ecosystem, in which every node can be selected by world hosts and other world participants depending on their stake in the network.

This will lead not only to an offer of a large number of "strong hands", but also to the advent of additional economic entities to advent new economic stimuli for network participants in the territory of their universes.

The **VIARIUM** project and company are also developing other virtual space products. Products in which we believe, products that will change the world and expand areas for VR technology application.

Taking into account the possibility of large-scale changes in the **VIARIUM** platform's system, we realize that they will require a new or supplementary program document that would fully describe in detail all new interaction processes, economy, architecture, etc. We will be ready to publish this document no earlier than **Q3 2019**.

## CONCLUSION

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We invite all those interested to take part in the creation of a world of the future using the **VIARIUM** platform and **VRX** tokens. We are creating a working economic model in the real sector, not only in the virtual future.

Having an operating business with an operating economic model will enable the **VIARIUM** company to create conditions for product development in the **P2P** and other directions for many years to come.

The **VR** technologies are in their infancy, but they will become an integral part of our life in the next few years. VR is actively used in gaming and this is where the most ardent fans of the technology are. Therefore we offer social VR. Yes, there are already games and competitions in VR, but with the tools we offer you can create a whole world with games, shopping malls, business trainings and meetings - all in virtual reality. You may deny this or join this new world right now. Right now we already have everything that is needed for creation of virtual space. The technological development level enables corporations and brands to sell their goods to customers without any geographical or spatial boundaries while cutting down their costs. We believe that this technology will help us make our

## DISCLAIMER

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The **VRX** token is acquired at all stages of **Pre-Sale** and Token Sale "as is". The **VIARIUM** network users should be aware that this project is one-of-a-kind, unique experiment unable to guarantee to **VRX** token buyers any return or rights or be liable for any other obligations.

The **VIARIUM** network users should be aware that the project's source code may contain critical errors with unpredictable consequences.

The **VIARIUM** platform does not guarantee any results of the use of **VRX** tokens or continuous and uninterrupted operations of the virtual world. It also disclaims any liability for any loss of goodwill; any direct, indirect, incidental, special, consequential or exemplary damages (including, but not limited to) whatsoever; loss of profit due to errors in the operation of **VR** technologies or restrictions of access to the virtual space in the territory of any jurisdictions; damages caused by the use of **VRX** tokens; damages due to impossibility of the use of **VRX** tokens or errors in the operation of the blockchain that the project is based on.

# Team



**Aleksey Mashkeev**  
CEO

Expert in 3D visualization since 2006, has created several companies in different spheres: construction business, interior design, sale of finishing materials, IT. VR evangelist.



**Matt Coleman**  
Adviser

Over 20 years experience in entertainment & technology sectors & launched the augmented & virtual reality company Magnify World in 2014 & Sports innovation company Arival. Worked for Warner & Sony entertainment for 12 years & then founded the sports mobile company Txtstation (interactive TV mobile marketing company) & raised over 6 million in venture capital.



**Anastasia Miron**  
Adviser

Co-Founder of Globelhand TEKEDU. Founder of Child Proof Yourself. Interested in leveraging VR and AR to address human centered problems like parenting and provide new approaches to prevent stress and anxiety in children, through immersive experiences that create awareness & trigger empathy.



**Igor Razin**  
CTO

Development of multi-user interaction and designing scenes on the Unity platform. Has been engaged in VR development since 2014. Developer of one of the world's first multiplayer quests.



**Sergey Simanovskiy**  
Blockchain consultant

- More than 6 years of experience in blockchain projects, including successful ICOs. Leader and mastermind of the Golos. Fund project (blockchain-based venture investments and management of the group of projects "Golos").



**Darya Kolivanova**  
PM

Project management in the financial sector and IT-technology. Implementation of projects from scratch to introduction of products to the market. Believes that the next few years will be critical for introducing the VR/AR into our lives.



**Denis Yarovy**  
CBDO

Youtube Evangelist. 11 years of productive experience in the PR industry. Worked as a PR director at Valga Games Studio.



**Dmitry Zaharov**  
3D graphic designer

3D designer/modeller, CG project management, visual content design, professional photography, aerial photography of architectural objects.



**Pavel Salas**  
Business Development  
Consultant

CEO Tokenbox. Prior to joining Tokenbox, Pavel had been working in the forex industry since 2009. He served as head of Russia&CIS department at eToro, the leading social trading network, was VP for Business Development at Alfa Bank and Alfa Forex and for many years worked as top manager, sales and marketing specialist in Latin America.



**Nikolay Lobzov**  
Art director / Leading  
artist / 2D artist

Worked in Akella, Nival Interactive, Vogster Entertainment, Renovatio ent, Extreme Gamma, Do Do Games, Creara and Wizart Series. Conceptual and illustrative development of characters, locations, scenery, technique, style, the surrounding world. Interface development. Creation of illustrations, posters and posters, promo-art. Experience in the CG industry for 15 years.



**Vsevolod Korol**  
Analyst

Analysis of decentralized exchanges in the market, as well as methods of BTC/ETH/graphene exchange. Analysis of Bitshares clients to develop as autotraders. As a result, a team was formed for implementation of a decentralized exchange with its own external registration key. He participated in the development of an automated system of flight profile computation for aircraft from scratch up to the operating version.



**Denis Babaev**  
Unity - developer

He has over 15 years of experience in developing 2D\3D applications in Unity3D for PC and Android. During the last three years, he has been involved in developing VR mobile projects (GearVR, Oculus Go, Google Cardboard, Daydream) as well as 360 panoramas and VR video. He has extensive experience creating projects from prototypes and training applications for children to database-backed stores, etc.



**Titov Artem**

3D Artist / 3D Environment Artist / Sound designer

Skills: PBR Texturing, 3D Modeling, Sculpting, Creating Textures, Lighting, Environment Design. His operating techniques include Maya, Photoshop, Substance Designer, Marmoset Toolbag, Substance Painter, ZBrush, Substance B2M, and Affinity Designer. His portfolio includes large-scale game scenes. In the Viarium project he handles background music production from his relevant experience in other projects.