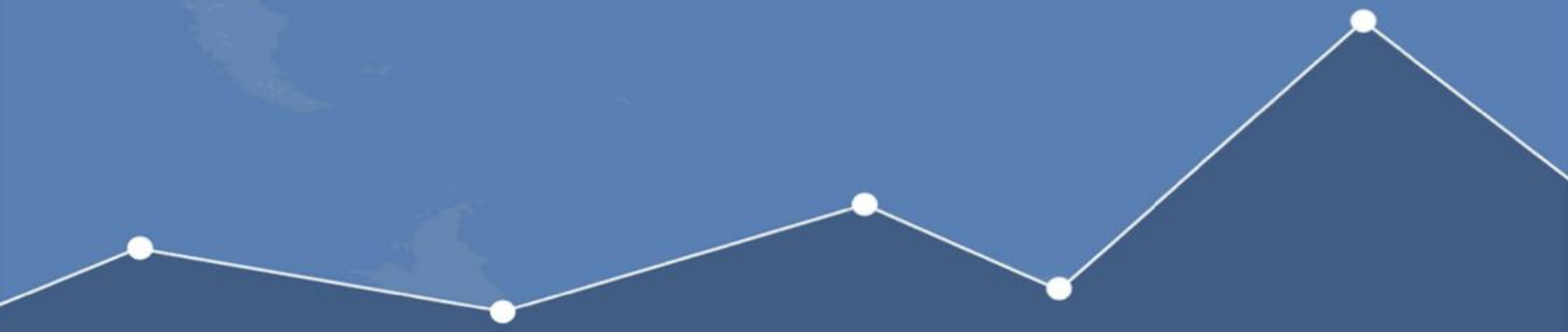
vreo

A New Way to Present, Measure and Monetize Ads in Games, Secured Through Blockchain Technology

version 2.0



lumberyard Beta CRYENGINE unity UNREAL ENGINE

vreo.io is a product of Project: Gateway VR Studios GmbH and currently in a beta phase

Important notice

This Document is a detailed overview of the Vreo Platform (hereinafter "Vreo") to be set up by Shaping Games AG, Switzerland that is intended to democratize in-game advertising, and contains information related to the initial Token Sale of MeritCoins (VREO).

This Document introduces the Platform's technical innovations, use cases, business strategy, and development roadmap. This Document is provided to you for your information and discussion only. It has not been reviewed by any authority nor is it a solicitation or an offer to buy or sell any Platform Token(s) independent of what the legal and regulatory qualification will be at the time of the Token Sale.

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1 Executive Summary

Electronic gaming is bigger than most people realize. The gaming industry has surpassed film and music in revenues,[1] generating $116 Billion USD in 2017. In 2020, gaming should reach close to $150 Billion USD.[2] Games are huge on mobile devices, accounting for almost one-quarter of the iTunes App Store.[3]

In-game advertising (IGA) is growing too. IGA covers any ad placed in any game on any device: mobile, console, or PC. IGA exists where two worlds meet: **digital advertising** and **gaming**. Both are young, growing quickly, and on the lookout for innovation. Advertisers need better ways to reach a young, global audience, while game developers need new revenue streams to cover their growing costs.

But serious problems stand in the way of IGA's growth, from ad blockers and fraud to the poor user experience when ads interrupt gameplay. With billions of dollars at risk, both industries are desperate for solutions.

This white paper describes a new and improved way to deliver, measure, and monetise in-game advertising. A B2B marketplace brings together game developers/ publishers with advertisers/ major brands, and rewards the gamers who drive the entire industry. The platform is driven by clear token economics and secured by an immutable blockchain. We call this next-generation technology **embedded in-game advertising or EIGA**.

Figure 1: Embedded In-Game Ad, Created with Vreo Technology

Simple and predictable for developers

The platform has been designed to provide developers with a shallow learning curve that makes it simple to offer ads in their games.

Using Vreo's **plug-ins with the most popular game engines**, including Unity 3D and Unreal Engine, developers can allocate any surface in any game on any platform for advertising in a flexible range of formats—audio, banners, billboards, posters, signage, videos—all embedded directly in the gaming environment so they won't interrupt gameplay.

Then the developer registers the game in the B2B marketplace, where it's easy for potential advertisers anywhere in the world to find and evaluate. Developers benefit from a new way to monetize games, a much larger pool of potential advertisers, and a more predictable revenue stream that flows in faster.

While Vreo's prime focus is on the under-developed market for in-game advertising, the same technology can be used to place ads in mobile apps—a market that is already booming.

Cost-effective and less risky for advertisers

The platform also offers profound benefits to advertisers. In the marketplace, advertisers and brand managers can quickly find gamers who match the exact profile they seek, especially attractive younger demographics.

Precise targeting enables advertisers to roll out campaigns aimed at specific ages, countries, interests, or psychographics. The programmatic bidding system, aided by machine learning, helps advertisers buy and place ads within seconds.

Once a campaign is running, Vreo's **unique Cost-Per-Quality-View** means advertisers only pay full price for ads that gamers view in a meaningful way. Lower-quality impressions are discounted based on precise metrics such as how long the ad was on-screen, what proportion of the screen it filled, and whether the ad was cropped or obscured in any way.

Data for every impression is recorded as an immutable transaction on a blockchain, which means that tampering with ad performance results is no longer possible. Ad blockers have no effect on ads embedded in game software.

And detailed analytics for all current and past campaigns are available to every advertiser from the marketplace.

The role of tokens

To power the marketplace, Vreo will provide two types of tokens:

- **ViewToken (VIT)** is the unit of scoring to store the metadata of every ad impression immutably within the blockchain.
- **MeritCoins (VREO)** a utility token that grants access to the use of Vreo and provides benefits when using Vreo

The scoring of VIT enables advertisers and developers to forecast their costs and revenues without any changes in value. The utility of VREO provides ways to enhance the value of the VIT-scores. Having two tokens gives the ecosystem more scope for further innovation.

During the Token Sale, Shaping Games AG, Switzerland, will issue VREO.

Every payment is accounted for in scores stored through VIT.

How Vreo earns revenues

In return for providing the game engine plug-ins and the marketplace—including big data, billing, cloud hosting, content delivery, detailed analytics, filtering software, and so on—Vreo receives a commission on all embedded in-game advertising (EIGA) budgets.

Vreo envisions a thriving ecosystem where game developers/publishers, advertisers/brands, and gamers all come together in a new way. This ecosystem will encourage new business models, new companies, and new partnerships to empower in-game advertising, with Vreo at the heart of it all.

What's in this white paper

The rest of this white paper explains these ideas in more detail, with 19 figures and tables, and 50+ sources that validate these concepts. This paper sums up the EIGA market potential, the new business model and technology to tap that potential, and the upcoming Token Sale from Vreo that will generate the funds to implement these developments.

Welcome to the next generation in in-game advertising.

2 The Market for In-Game Advertising

This section describes the digital advertising market, the gaming market, where they overlap as IGA, the problems with each, and how Vreo's unique technology solves these problems.

In-game advertising (IGA) refers to any ad placed in any game on any device: mobile, console, or desktop PC. IGA exists where digital advertising meets gaming. Advertisers need to reach a young, global audience, while game developers need new revenue streams.

Unfortunately, serious problems stand in the way of IGA's growth, from ad blockers and fraud to the poor user experience. With billions of dollars at risk, both industries are desperate for solutions.

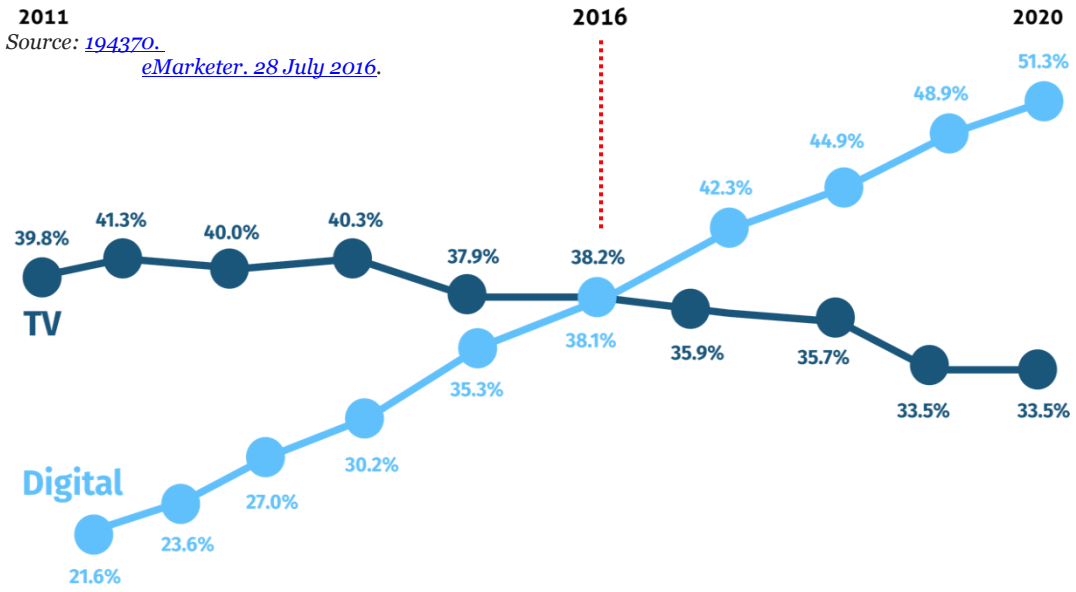
2.1 Digital Advertising Market Analysis

The rise of the web created a completely new industry: digital advertising. This includes ads seen in search results, on websites, in apps, and of course, in games played on any device.

Since the late 1990s, digital advertising has been steadily eating into budgets for traditional offline advertising (newspapers, magazines, and billboards) and traditional broadcast media (radio and TV).[4] What many people don't yet grasp, as shown in Figure 2, is that digital advertising passed TV advertising in 2016—and there's no turning back.[5,6]

Figure 2: U.S. TV vs. Digital Ad Spending, 2011–2020

Note: Based on net media owner revenues. Does not include political and Olympic ad spending.



Source: [194370. eMarketer. 28 July 2016.]

Similarly, from a tiny slice of the digital market five years ago, **mobile advertising** has exploded. Mobile ad spending jumped almost 10X from $19.2 Billion USD in 2013 to a projected $195.5 Billion in 2019. That means as soon as next year, mobile will likely command more than two-thirds of all digital ad spending.[7]

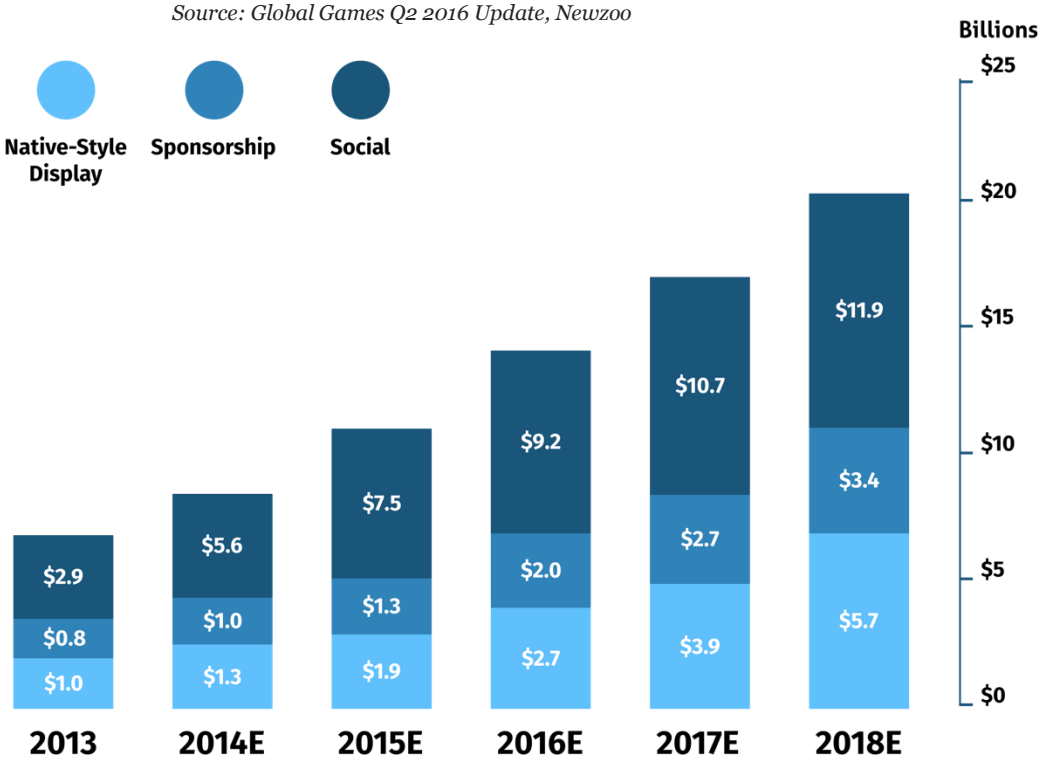
Another fast-growing area of this market is **native advertising**. This is defined as a format where the 'ad experience follows the natural form and function of the user experience in which it is placed.'[8] As shown in Figure 3, native advertising can be segmented into display, sponsored content, and social media.

Whatever the format, native ads are designed to match the look, feel, and function of their environment, instead of sticking out like sore thumbs. Because of this, viewers pay more attention and find native ads less irritating. Native advertising was expected to reach $20 Billion USD in 2018, but later projections call for $32.9 Billion USD—up 30+% from 2017.[9]

Advertisers who combine these trends—moving from traditional ads to digital, using native formats on mobile devices—will undoubtedly create some of the most powerful and engaging campaigns of the coming years.

Figure 3: U.S. Native Advertising Spending, 2013–2018

Source: Global Games Q2 2016 Update, Newzoo



Problems in digital advertising

But two major problems are limiting the prospects for digital advertising: ad blockers and ad fraud. Both are draining billions of dollars out of the industry every year.

Ad blockers

Ad blockers are a growing problem that account for multi-billion dollar losses. If current trends continue, publishers stand to lose $35 Billion USD by 2020.[10] Losing so much revenue is driving the industry to search intensely for solutions.

Ad blocking has become such a huge problem that some websites have banned ad blockers. This is a temporary fix not favored by anyone. It's inconvenient for visitors. And it's a potential disaster for websites that can lose up to 70% of their traffic.[11]

Use of ad blockers multiplied nearly 10X between 2009 and 2015, and it's still growing about 40% a year.[12] Most ad blockers are deployed on PCs, but mobile ad blockers are on the rise, only increasing the problem of lost revenue.

Ad fraud

There's another big problem for the industry: ad fraud. This means faking the reach of certain ad placements, or falsifying the response to an ad that's been bought.

Ad fraud can be achieved by creating fake websites that look like real ones. Bots can generate fraudulent traffic reports to attract advertisers. After an ad is placed, bots or click farms can fake a response so it looks like the ad is performing well. On mobile, device IDs can be reset to simulate 'new' users.

Ad fraud is a global problem affecting every major country, with rates of up to 80% fraudulent impressions in Japan.[13] In 2016, advertisers lost $12.5 Billion USD to so-called 'invalid' traffic, and this number climbed about $4 Billion USD higher in 2017.[14] Mobile advertising suffers the most, accounting for 50–65% of all fraud.[15]

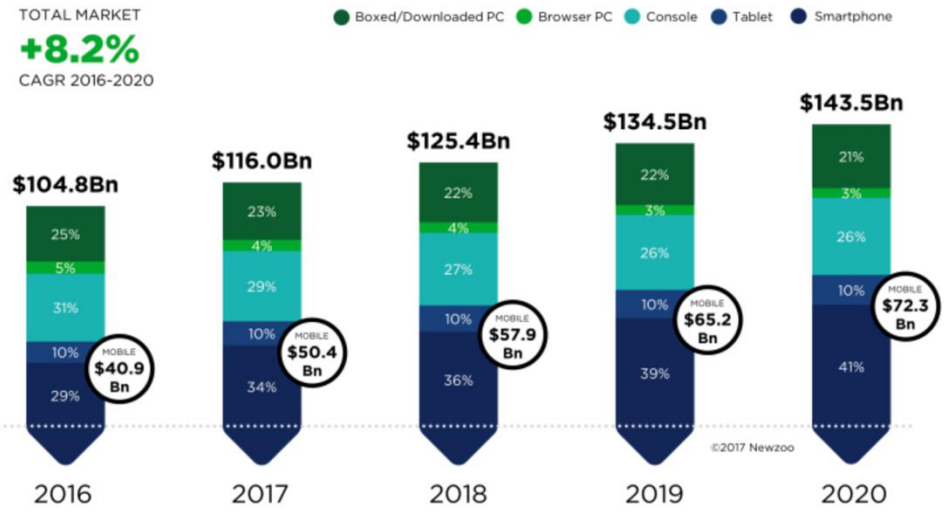
It's no surprise that marketers see ad fraud as their #1 concern for 2018.[16] Some advertisers are already putting the brakes on digital ads until a solution can be found. For digital advertising to flourish, the flagging confidence of marketers must be renewed.[17]

Despite all that, digital and mobile ad spending is still growing, which only builds the pressure to find a solution.

2.2 Gaming Market Analysis

Gaming is a global phenomenon with a firm hold in nearly every country. As shown in Figure 4, the industry broke through $100 Billion USD in revenues in 2016—well ahead of reported sales for film at $62 Billion USD and music at $18 Billion USD.[18] Between 2016 and 2020, gaming is projected to grow 8.2% a year—reaching close to revenues of $150 Billion USD.[19]

Figure 4: Global Market for Games, 2016–2020



Source: [2016–2020 Global Games Market Per Segment, Newzoo]

Table 1 on the next page is based on statistics from the United Nations[20] and Newzoo, the leading provider of marketing intelligence for the gaming industry. This table shows that the top 20 gaming countries represent 1.5 Billion gamers and generated more than $1 Billion USD in revenues in 2017.[21] It all adds up to a booming business.

Who are today's gamers?

Gamers can be anyone. In Germany, almost half the population are gamers: 34+ million people averaging 35 years old, divided evenly between genders.[22] In the U.S., 160 million gamers[23] have the same average age: 35.[24] Men outnumber women about 60:40. And more than one-third of Americans gamers play on all three platforms: mobile, console, and PC.[25] Demographics like these make gamers a highly attractive market.

For their part, gamers constantly demand better quality and more complexity, so that developing each new game takes a higher budget. Higher costs push up selling prices for commercial games in a continuing spiral.

Table 1: Top 20 Markets for Games, 2017

Rank	Country	Total Population	Gamer Population	Total Revenue from Games in 2017 (USD)
1	China	1,409 Million	565 Million	$27.5 Billion
2	U.S.A.	325 Million	160 Million	$25.1 Billion
3	Japan	127 Million	65 Million	$12.5 Billion
4	Germany	82 Million	37.2 Million	$4.4 Billion
5	United Kingdom	66 Million	32.4 Million	$4.23 Billion
6	South Korea	51 Million	25.6 Million	$4.2 Billion
7	France	65 Million	31.6 Million	$3 Billion
8	Canada	37 Million	20 Million	$1.97 Billion
9	Spain	46 Million	24 Million	$1.92 Billion
10	Italy	60 Million	24.5 Million	$1.88 Billion
11	Russian Federation	144 Million	71.3 Million	$1.5 Billion
12	Mexico	129 Million	49 Million	$1.4 Billion
13	Brazil	209 Million	66 Million	$1.32 Billion
14	Australia	25 Million	10.6 Million	$1.24 Billion
15	Taiwan	24 Million	13 Million	$1 Billion
16	Indonesia	264 Million	43.7 Million	$882 Million
17	India	1,339 Million	264 Million	$819 Million
18	Turkey	81 Million	30.8 Million	$774 Million
19	Saudi Arabia	33 Million	11 Million*	$645 Million
20	Thailand	69 Million	18 Million	$600 Million
	TOTALS	**4.58 Billion People**	**1.55 Billion Gamers**	**$103.9 Billion USD Revenues**

*Notes: Revenues given in USD. * Estimated gamer population.*
Sources: Newzoo, United Nations

Another model is Free2Play games, which are especially popular in less developed markets in Asia. Developers often monetise these through in-game micro-transactions using real money or purchased tokens. Ads can be sold in Free2Play games as well.

But in-game purchases that provide an advantage (Pay2Win) or conventional ads like pop-ups and interstitials are met with disapproval.[26] Recently Belgium and the Netherlands banned loot boxes from games because they resemble illegal gambling.[27]

Problems in the gaming market

For developers and publishers, the industry is fraught with problems: technical, creative, and financial. The largest game publishers have many resources to commit to solving these problems. The smallest do not. Yet indie games now have a growing market share.[28] Here are the main problems that plague the gaming industry, especially the smaller studios.

Rising development costs

As touched on above, the costs to create a video game are constantly rising.[29] But customers are more and more unwilling—and in some regions unable–to pay ever-higher prices. To increase their incomes, even AAA game publishers sometimes resort to Pay2Win mechanics or loot boxes in full-priced titles. Few publishers enjoy any ongoing monetization from models like a monthly subscription.

Threat from Free2Play

Free games are constantly trending upward. Regions with lower per-capita income such as China, Eastern Europe, the Russian federation, South East Asia, or South America are seeing a strong increase in F2P. Of course, a free game delivers no upfront revenue. This often leads a developer to use irritating advertising and pesky in-game sales that hurt gameplay.

Little market intelligence

There is next-to-no market intelligence available for smaller game studios, a problem that sometimes leads to mistakes that could have been avoided. This also makes choosing the theme or genre for a project more difficult. And this means that calculating possible costs and revenues becomes little more than a guessing game.

Difficult to extend reach

Especially for smaller developers, it can be very hard to publish, market, or distribute their game in other regions. An indie developer working alone seldom has the resources, contacts, or knowledge to reach a broader market. For example, an indie leader with limited time may never develop a clear understanding of in-game advertising. Meanwhile, a brand in another country perfectly suited to that indie game may never discover it. This disconnect leaves money on the table.

Labor-intensive APIs

Even if an indie developer decides to include advertising, many ad solutions (especially for mobile) require a lengthy process to integrate SDKs into the game software. But many indie studios only think about monetization after a game is published. Retrofitting an API soaks up lots of labor and can create confusion or a heavy impact on gameplay.

Slow ad revenue payouts

Payouts for ad revenues can be critical, especially for smaller developers. But it sometimes takes months until the ad revenue generated by a game is paid out. This slow and uncertain payout can lead to budget shortfalls or even bankruptcy.

Saturation of impressions

Many advertising models show the same ad over and over to gamers. This can be highly irritating, and can even lead to a negative impression of the brand—the one thing advertising is not supposed to do.

2.3 In-Game Advertising Market Analysis

Marketers are constantly looking for new places to advertise. And with 2+ Billion gamers worldwide spending more than 3 Billion hours a week, gaming is a highly attractive space to place ads, a space that continues to grow.[30]

In-game advertising (IGA) and in-app advertising are relatively new formats that have profited from the rapid growth of online and mobile games. Both formats occur mainly on handheld devices, with the markets in PCs and consoles slowly opening up.

For brands, ads placed in game software open up new opportunities for creative interactions with potential customers.[31] Many brands have now identified the gaming market as a channel to pursue; some have made investments or sponsorships for millions of dollars.[32]

Sports clubs like Schalke 04 and Paris Saint Germain have expanded their brands with esport teams, which points to the professionalization of the gaming scene. Global brands in tech (Intel, Nvidia) and beverages (RedBull, CocaCola) have been active for years. It's logical to expect many more brands to follow these pioneers into the growing market for gaming.

Studies prove that IGA can be accepted by gamers. The best formats are native and immersive ads[33] that adapt to the game's environment and help boost realism.[34] In fact, native advertising is on the rise in both popularity and revenues.[35]

Of the three gaming platforms—PC, console, and mobile—advertising is now common in mobile apps, with around $100 Billion USD spent in 2016. This number is expected to double by 2020.[36] A certain slice of that will be used to place IGA in mobile games.

Today's publishers who sell IGA for mobile games tend to focus on formats like banners, interstitials, and offerwalls, using payment models like cost-per-action, cost-per-click, cost-per-install, cost-per-mile, or cost-per-video-view. Mobile IGA providers include AdMob, Airpush, Chartboost, lnMobi, Mobvista, minimob, Tapjoy, and Unity Ads.

The general trend in digital advertising is towards auctioning and marketplaces, which can also be seen in the mobile market. For example, Appnext, the provider of an auction system for cost-per-install advertising, more than tripled its annual sales in 2016 and continues to expand rapidly.[37]

Problems with In-Game Advertising

With a young and growing audience that advertisers are keen to reach, IGA has a vast potential to grow. But three main problems are limiting its growth: lack of precise targeting and analytics, a poor user experience, and no incentives for gamers.

Lack of targeting and analytics

A major obstacle for IGA on PCs and consoles is the lack of detailed targeting and evaluation.[38] Verifiable audience numbers seldom exist. Many IGA models only estimate the possible number of ad impressions. Before a game is released, a developer guesses how many players will likely see an ad in it. And after the ad is placed, there is seldom any way to deliver any analytics on the ad's actual performance.

Despite this lack of targeting and follow-up, most game developers cling to their pricing models of cost-per-click, cost-per-impression, or cost-per-install. This makes pricing and evaluation extremely difficult for both game publishers and advertisers. Advertisers accustomed to the precise targeting and analytics of pay-per-click or mobile ads can be uncomfortable with the imprecise nature of IGA.

Poor user experience

Of course, many gamers are annoyed by advertising.[39] With good reason: Most of today's in-game ads consist of banners, screenshots, or videos that pop up or otherwise interrupt the gameplay. Many are mandatory for making progress in the game, with no benefit for the captive viewer. Meanwhile, jolting the player out of the game can easily ruin the user experience.[40] In fact, this can destroy the suspension of disbelief that is the heart of all entertainment.

Thanks to the negative opinion of IGA, the use of ad blockers has spread fast, making pop-up ads less effective and creating an urgent need for a new format.

No incentives for gamers

Even the best-designed ads still miss out. In-game ads flow from a transaction between only two parties: a brand and a developer. Those who fuel the whole industry—the gamers themselves—are usually left out of the transaction, receiving no recognition and no incentives. It's no wonder so many of them dislike ads. Why should they want any brand to hijack the action in the game they're playing, just to serve them up a commercial?

2.4 Vreo's Approach Solves Many Problems

Vreo has designed and begun to develop unique technology for IGA that goes beyond anything yet seen. This new technology can dynamically embed non-intrusive native advertising into games on any platform: mobile, desktop, or console. Ads can be shown in a flexible, non-intrusive way on flat surfaces, on signage and storefronts, and potentially as product placements.

Another striking feature is the innovative business model for a transparent marketplace that benefits everyone. Developers gain a new revenue stream and ongoing monetization of their games. Advertisers reach an attractive younger demographic and pay only for verified quality views when gamers engage with an ad. And gamers are rewarded with a modest commission on all ads they view in their games: another industry first for Vreo.

In a nutshell, Vreo's technology includes:

- **Plug-ins to popular game engines** that developers use to create ad spaces
- **An automated marketplace** that matches these spaces with brands keen to advertise and provides programmatic buying that can scale to a global scope
- **An analytics engine** that captures rich data about every ad impression for later analysis and reporting
- **A blockchain** to record the details of every impression as an immutable record, virtually eliminating ad fraud on the platform
- **A backend system** to account and bill for all ads and related commissions
- **Two tokens that work together** to reduce risk and deliver benefits, one as a stable store of value that can be banked to gain discounts, the other as a license to unlock further benefits in the marketplace
- **A new ecosystem** that brings together people in three key roles: game developers, advertisers, and gamers themselves

Table 2 sums up the problems noted in the previous sections, and notes briefly how Vreo's unique technology for EIGA solves each one.

Table 2: Industry Problems and How Vreo Solves Them

Industry Problem	Vreo Solution (in Brief)
Ad blockers	Ads are embedded directly in game software and presented in native formats, so that ad blockers do not work
Ad fraud	Detailed, verifiable analytics track ad performance, with an unalterable history of each impression recorded on the blockchain
Rising development costs	New revenue streams from embedded in-game advertising (EIGA) and platform commissions for using Vreo
Threat from F2P	EIGA can be placed in Free2Play games
Little market intelligence	Vreo's ecosystem will bring together a community of like-minded game developers, publishers, and brand advertisers who can share market advice and insights
Difficult to extend reach	Global marketplace for EIGA will extend reach of smaller studios at minimal cost and effort
Labor-intensive APIs	Purpose-designed APIs can be used from the start of any project, no need to retrofit later
Predictable Price	Prices can be immediately calculated based on the scores stored throughViewToken (VIT) and pre-agreed rates.
Slow ad revenue payouts	Ad revenue payouts will flow quickly through liquid tokens
Saturation of impressions	Frequency caps can be set for any campaign to limit repetitive ad impressions and avoid creating irritations
Lack of targeting and analytics	Marketplace provides verifiable metrics for any game and detailed analytics for any ad's performance, with an unalterable history of each impression recorded on the blockchain
Poor user experience	Native, embedded ads will not interrupt the gameplay or force mandatory viewing on any gamer
No incentives for gamers	Gamers receive a commission for interacting with ads

Source: Various, Vreo internal

2.5 Vreo Global Market Analysis

Vreo brings together people in three distinct roles:

- Game developers and publishers
- National or global brands seeking to advertise
- Gamers themselves

As shown in Table 3, the potential market for Vreo is vast. The Serviceable Obtainable Market includes some portion of the estimated 1.8 million game studios in the world,[41] and any national or global brand targeting a younger audience, and some portion of the 1.5+ Billion gamers in the top 20 countries that Vreo will eventually cover.

Table 3: Vreo Global Market Potential

	Game Developers	Brands	Gamers
Total Addressable Market (TAM)	Estimated at 1.8 million, almost all small businesses[42]	Any brand seeking to raise brand awareness / recognition	Any gamer in any country, total about 2.2 Billion
Serviceable Addressable Market (SAM)	Any developer using a licensed game engine in the top 20 countries for gamers and game revenues in the EU, North America or Asia	Any brand targeting gamers, or with a technical affinity and digital ad budget from sectors such as beverages, cars, fashion, sports, tech	1.5+ Billion total gamers in the top 20 countries*
Serviceable Obtainable Market (SOM)	Small to mid-sized studios looking for new revenue streams, especially F2P from Eastern Europe, Asia or U.S.	Any brand active on a national level or larger, already invested in gaming, or targeting audiences aged 12–45	Most gamers are younger than 45, and many play F2P

** See Table 1 for details. Sources: Entertainment Software Association, Newzoo, Vreo internal*

For brands, Vreo's unique way of presenting ads can become their preferred way to place IGA. For developers, Vreo's EIGA approach can be added to any current ad formats to help maximize revenues. In other words, **adopting Vreo does not have to mean dropping existing revenue streams** from other forms of in-game advertising; both can coexist.

Since no other form of advertising uses blockchain technology, we plan to adopt other ad formats mentioned above into the blockchain in the future.

3 Vreo's History, Key Features, and Team

This section describes how the company began, some key benefits of Vreo's technology, the powerful team assembled to date, and the company's trusted advisors and strategic partners.

3.1 How It All Began

The idea for Vreo emerged in the summer of 2015 when some of the core team—Alfred Steiof, Kai Nitsche, and Andreas Schemm—met to discuss opportunities in virtual reality (VR). We noted that the popular game engines used for VR are also the most popular engines used throughout the gaming industry.

Soon after, we started working on the first applications with a focus on the gaming market. Our goal is to be part of the gaming industry, but also to improve and disrupt it. We found two main problems:

1. Despite the enormous growth of gaming in recent years, the industry is still quite fragmented and immature. This means no one has come close to harvesting the potential of in-game advertising.
2. The Free2Play trend jeopardizes the industry by lowering sales, downloads, and revenues even while development costs rise. This means game developers have a keen interest in finding new revenue streams and monetization options.

After analyzing, investigating, and receiving positive feedback from market participants, we have created the solution to both problems:

Vreo is an automated, self-serve advertising marketplace for placing, delivering, tracking, and paying for embedded in-game ads (EIGA) on multiple platforms.

This approach recognizes and works with the decentralized nature of the gaming industry.

Vreo brings together developers eager to find a new revenue stream—even from Free2Play games—with brands keen to extend their reach into the key demographic of gamers. Gamers have not been forgotten since the Vreo platform gives them a modest way to monetise their ad viewing in the games they play.

3.2 Key Features and Benefits

This section highlights some of the key features and benefits of the Vreo platform, especially:

- Next-generation embedded in-game advertising
- Cross-platform delivery
- Unique Cost-Per-Quality-View
- Immunity to ad blockers and ad fraud
- Dynamic ad placement
- Participation of gamers

Table 4 at the end of this section sums up many features of the Vreo technology and the benefits for both game developers/publishers and advertisers/brands.

Next-generation embedded in-game advertising (EIGA): The Vreo technology provides the next generation of in-game advertising: native ads embedded directly into game software. Unlike irritating pop-ups and unwelcome interruptions, these non-intrusive ads blend beautifully into the game environment. But seeing is believing. Figures 5 and 6 show two examples of embedded in-game advertising (EIGA) created with the Vreo technology.

Cross-platform delivery: Vreo can deliver ads to games on any platform: mobile, console, or PC. This enables advertisers to benefit from the flourishing market for ads in mobile apps and tap into the developing market for IGA on PCs and consoles.

Figure 5: EIGA in Street Scene, Created with Vreo

Note: Did you notice the ad hanging over the street from the airship? Native embedded ads can be so well-integrated into the game that they heighten the realism of the environment.

Cost-Per-Quality-View: This unique model means that an advertiser only pays for an ad that appears in a meaningful way. The platform accounts for how much of the screen the ad covered; how long it appeared; whether it was cropped, distorted, or interrupted; and whether the gamer approached and engaged with the ad. Advertisers pay only the appropriate fraction of a top-quality view.

Immune to ad blockers and ad fraud: EIGA bypasses today's ad blockers by integrating ads directly into the surrounding software. There are no pop-ups or display ads to block.

As for ad fraud, botters and click farms go where they can generate the most revenue with the least effort. Our games do not fit the bill. Ads aren't in the same space in every game, they are not clickable, and they have a frequency cap. Even running a click farm 24/7 on a game with our EIGA will not generate income for a fraudster.

Dynamic ad placement: Any device with an always-on connection to the internet can support dynamic IGA (DIGA) where ads can be swapped out at any time, even after a boxed game is shipped or installed.

Participation of gamers: Gamers fuel the whole industry. Vreo incentivises gamers by giving them a slice of the profits generated from the ads they view.

We encourage gamers to register with us, using either their self-determined profiles or self-sovereign IDs from services like uPort. Gamers can give access to their data so we can reward them for their contribution to the Vreo economy.

Figure 6: EIGA in Exterior Signage, Created with Vreo

Note: Embedded ads can appear in signage as shown here, as digital billboards, or in media like radio or TV shows

As gamers fill in their profiles with their interests, advertisers can send them better targeted ads that will engage them better. When gamers log into their Vreo profile, they can claim their rewards. **They may see a follow-up offer to be forwarded to an advertiser's site, combining the best of two worlds: uninterrupted gameplay plus followup/ clickthrough.** Based on bilateral agreements, advertisers can reward gamers more with further discounts or bonuses.

To sum up, everybody wins with Vreo's technology. Developers win because they can monetise games better and faster. Advertisers win because they can use the most acceptable ways to show in-game ads and they pay only for quality views. And gamers win because they can participate in advertising revenues without having their gaming experience interrupted.

Table 4: Vreo Notable Features and Benefits

Feature	Benefits to Game Developers and Publishers	Benefits to Advertisers and Brands
Online ad marketplace	One-stop shopping for ad revenue; more professionalism for indie studios	One-stop shopping for in-game ad placement; deeper reach into indie market
Programmatic ad buying	Sells more ads faster; lowers costs and saves time; easily scales up	Places more ads faster; lowers costs and saves time; easily scales up
Plug-ins for major game engines	Minimal effort without long, costly learning curve; faster time to revenue	More choice in ad placements; faster time to revenue
New revenue stream from advertising	New monetization option, even for Free2Play games	Not applicable
Unique cost-per-quality-view	Less concern about ad fraud	Less concern about ad fraud
Frequency cap per unique gamer	Avoids gamer irritation	Avoids wasted impressions and damage to brands
Precise ad targeting	Gamers see more relevant ads	ROI on campaign improves
Detailed analytics on campaigns	Gain insights into gamer behavior and preferences	Gain insights into gamer behavior and preferences
Blockchain for immutable records	Less concern about ad fraud	Less concern about ad fraud

3.3 Vreo Team

Vreo's team includes a mix of people from different backgrounds with impressive credentials. Some are young professionals keen to make their mark. Some are industry veterans with decades of experience. With a mix of enthusiasm and patience, careful planning and bold action, Vreo's team is ready to establish this innovative approach to gaming.

Andreas Schemm, CEO and Co-Founder

A serial entrepreneur with solid experience in marketing and community building. Since 2004, Andreas has helped grow tech and entertainment startups. He established LaserTag in Germany and oversaw HR and marketing for 14 sites. He founded Project: Gateway to develop virtual reality (VR) demos: one helped unveil the Razer OSVR headset at the E3 show. With funding from Hessen Kapital, Andreas is now devoted to establishing Vreo. LinkedIn profile

Alfred Steiof, Managing Partner and Co-Founder

A seasoned entrepreneur with strong focus on sales and finance. In the mid-1990s, as Assistant VP of BHF Bank AG in Frankfurt Alfred oversaw the financing of many international projects. In 1998, he founded Ensys AG, an energy wholesaler and retailer he grew into a $500+ million business before exiting in 2011. Alfred brings to Vreo his vast experience in financial management, investments, and digital transformation. LinkedIn profile

Egor Malychev, Head of Partnerships

A skilled executive in international sales, project manage–ment, and cultural diversity. Working for a worldwide tech company, Egor gained broad experience managing IT teams and projects. He speaks several languages and has travelled and worked for many years in other cultures. Egor has an existing network in Europe, and will establish an international network of partners to help implement Vreo's vision. LinkedIn profile

Kai Nitsche, Head of Design

An experienced designer and social media marketing specialist. For more than a decade, Kai has worked as a media designer for startups and mid-sized firms in gaming and marketing. He has designed, developed, and managed content for marketing, social media, and many websites using his creativity and great imagination. LinkedIn profile

Ali Pasha Foroughi, CTO

A versatile technologist and development project manager. Ali Pasha has worked on many projects, both for blue chip companies like Deutsche Bank and Vodaphone, and for small startups that need infrastructure from the ground up. He is very experienced in the latest software architecture and development processes. Vreo will benefit from Ali's close to 20 years of experience with a wide range of technologies and projects. LinkedIn profile

Katerina Koicheva, Marketing

A marketing and communication expert with years of experience in global companies. In 2015, Katerina founded her own social marketing agency. Katerina has keen insight into business, and served eight years as senior economist with Raiffeisen Bank Aval in Ukraine. An enthusiastic person driven to succeed at whatever project she's engaged in, Katerina will help create strong positioning for Vreo in the advertising and gaming communities. LinkedIn profile

Tino Kügler, Analysis and Accounting

A team player with extensive knowledge of accounting and business systems. From his academic studies in economic science, Tino is adept at market analysis. He especially enjoys figuring out the math behind a given algorithm. He previously worked in a helpdesk setting, where he saw firsthand the need for strong customer support. He will also help build Vreo's online communities through social media and channels like Telegram and Reddit. LinkedIn profile

Christian Jungen, Senior Developer

A games engine and C# specialist with strong knowledge of plug-in development. Christian has worked for 20+ years in the games industry with languages including C#, C++, C, Java, Javascript, and LHSL shader language. He has worked with the Unity 3D engine for three years for Android, IOS, and WP8. His detailed knowledge of the game environment will help Vreo develop effective plug-ins. LinkedIn profile

Roman Pivtoranis, 3D Artist

A 3D artist with more than 8 years' professional experience in computer design and visualization, including hands-on work with VR and game development. Roman will focus on creating engaging tech demos and stunning product designs for the cutting-edge technology from Vreo. LinkedIn profile

Beyond these team members, we will use our worldwide network of Agile developers. Each of them is an expert in their field, recruited individually by Vreo. Our Agile development process will help ensure that we deliver the highest-possible quality while keeping costs at bay.

3.4 Advisors

In addition to our own team, Vreo relies on the guidance of our trusted advisors. Here are the most important individuals, shown in alphabetical order.

Volker Dressel, Gaming and Marketing Advisor

Co-founder and CEO of MediaPlier, Volker is a true veteran of the gaming industry. For the past 20 years, he has held numerous management positions in publishing, media, and gaming companies. With his vast knowledge of brand and performance marketing, he has helped many startups. Volker is a well-known speaker at gaming and marketing conferences, an author of many e-books, and a seasoned professional in marketing and PR. LinkedIn profile

Ralf Heim, Technology Entrepreneur

Ralf Heim is a German technology entrepreneur and Founder of Fincite and Fincite Ventures. As a pioneer in digital investment solutions, Fincite helps provide asset management for a connected world. Earlier Ralf headed up business development for a business intelligence/big data company. Starting as a freelancer at 16, Ralf has spent his career building analytical systems for companies as well as central banks. LinkedIn profile

Samater 'Sam' Liban, Blockchain Consultant

Sam has more than 20 years of versatile business experience in sales, marketing, and consulting. He launched his first crypto project in 1999. Today his focus is on business models that go beyond coin speculation. For example, he is actively developing solar power in Africa driven by a new token. Sam is helping Vreo build a successful ecosystem by understanding the unique aspects of distributed systems like the blockchain. LinkedIn Profile

Lukasz Musialski, Investment Advisor

Lukasz is a co-founder and Portfolio Director at Iconiq Lab, a decentralized VC club and ICO accelerator. After getting his BA in Economic Relations and his MS in Finance, he worked as an investment manager where he gained valuable experience in finance, private equity, and venture capital. Lukasz is also a technology enthusiast and podcaster, making him a perfect link between Vreo and the investment community. LinkedIn Profile

Josef Salcman, Investment Advisor

For the past 12 years, Josef has been a technology-driven business developer. Josef speaks five languages and has a strong track record in technology sales across Europe. He has considerable experience in the distributed ledger investment space and has co-founded three successful startups. One of these, Cryptoinvest.es, is the world's largest Spanish-speaking crypto-network. Josef will help Vreo find investors and build recognition. LinkedIn profile

Professor Philipp Sandner, Blockchain Advisor

Dr. Philipp Sandner is head of the Blockchain Center at the Frankfurt School of Finance & Management, where he has taught since 2015. Prof. Sandner's expertise includes blockchain technology, cryptocurrencies, digital transformation, and entrepreneurship. Prof. Sandner is also a member of the FinTechRat of the Federal Ministry of Finance, and he acts as a strategic advisor to Vreo on various matters. LinkedIn profile

Fryderyk Ovcaric,
Director of Business Development at Skillz

Fryd is the Director of Business development at Skillz, the leading mobile eSports platform. Prior to Skillz, Fryd lead business development for 8i and Omnivirt, two VR focused companies. Fryd also founded Instapray and was the US General Manager of Social Media Interactive
LinkedIn profile

KEYNESS CHENG,
GM of Global Development in Merculet

Mr. Keyness Cheng is working as GM of Global Development in Merculet, focusing on bridging China and overseas, including mobile apps & blockchain projects. He has 8+ years experiences in global business and successfully brought several China products & apps to overseas as well as establishing a China office and building a local team for the US based platform Taboola, signing 100+ partners in 1 year

LinkedIn profile

Barış Özistek,
CEO of Netmarble

Barış Özistek led the sale of two successful internet companies in the SHR Group, which he joined as CEO in early 2011, to foreign investors. Since 2013, he has been serving as the CEO at Netmarble EMEA. Mr. Özistek is one of the founders and a board member of “StartersHub”, the largest venture building program that supports startups in Turkey

LinkedIn profile

3.5 Strategic Partners

Vreo also benefits from relationships with trusted strategic partners. Here are the most important ones, shown in alphabetical order.

CROC, Blockchain IT Experts

CROC has been active in IT since 1992 and is now one of the top 10 IT companies in Russia, as well as one of the top three consulting businesses in the country. CROC has extensive knowledge of blockchain development. For more information, see https://www.croc.ru/eng/

DLT Capital (DLTC), Blockchain Startup Partners

DLT Capital has built a strong network of blockchain companies, experts, investors, lawyers, and mentors that can help Vreo grow quickly and sustainably. DLTC helps Vreo manage investor relations, presenting its business plans to both crypto and traditional investors. For more information, see https://dlt-capital.com/

Hill & Knowlton, Worldwide PR

Part of one of the largest media groups in the world, Hill & Knowlton specializes in public relations. With access to offices all over the world, they can help generate interest in every key market Vreo needs to reach. They will also act as a strategic partner for the media industry. For more information, see http://www.hkstrategies.com/germany/en/about/

Iconiq Labs, Launch Accelerator

Iconiq Lab is an ICO and token launch accelerator and a decentralized VC club. They help launch tokens supported by real-world, sustainable business solutions and match them to potential investors. For more information, see https://iconiqlab.com/

Netpeak, SEO and PPC Specialists

A specialist in analysis and strategy development for a business web presence, especially SEO, SEA, and social media. The company provides Vreo with valuable market insights and ever-changing strategies for the best approach to the market, saving money by using only the most efficient tools. For more information, see https://netpeak.net/

PROKSART, Web Developers and Design

A versatile web developer that handles Vreo's marketplaces and web design. Their team includes a mix of developers with various skillsets who can handle any web-related task or challenge. In addition to excellent coding skills, they also draw on a huge business network across Eastern Europe. For more information, see https://proksart.studio/

SICOS, Strategic Advisor

SICOS guides startups through the process of conceiving, planning, and implementing ICOs. SICOS is primarily responsible for connecting Vreo with relevant partners for developing a token sale platform and drafting a workable business model. The SICOS team helped Vreo in compiling token-sale whitepaper, framing the token economic model and other relevant communication documents, with the best practice in place. For more information, see https://sicos.io/

IBM, Business partner

As a business partner, Vreo will work with IBM on end-to-end programmatic approaches, tap into the Cloud capabilities and aligne the business with world-class expertise.
https://www.ibm.com/

3.6 Launch Partners

Thanks to our vast network of Launch Partners we have already garned a potential reach of 230Mil. Gamers and 140Mil. USD in advertisement budget, which is growing continuously. We are constantly working on further developing and establishing our solution in the Gaming and Ad Industries

Daniel Gäbler, Crenetic Publishing

https://www.crenetic-publishing.com

«This innovation and the easy-to-handle plugin convinced us to use the solution as soon as possible in our games. In times of a steadily growing freetoplay games market VREO has the potential to revolutionize the games advertising market and open up new ways to generate revenue.»

Michael Reichert, Sviper

https://sviper.com

«The biggest benefits we see are the embedded integration of ads as well as the trust&transparency the Vreo solution provides. We are looking forward to toying around with the possbilities Vreo provides and can't wait to see where the journey takes us!»

Pedro Pereira, eBonus Token

https://ebonus.io

«Embedded in-game advertisement, a concept so simple yet so powerful - Vreo will greatly improve the way games are monetized!»

Playit Show, Xbox One

https://playit.hu

«We welcome every initiative that benefits both gamers and advertisers. There's a huge amount of potential still untapped in video games, but this solution helps to shrink the gap.»

Virágh Márton, PROJECT029

https://www.project029.com

«We wholeheartedly support a solution that enhance gaming experience and help developers retain profitability at the same time.»

Sergey Eremenko, O.S.A Game

«The mobile games are full of pop-ups and we are no fans of it. However, a marketplace and a Plug-In from Vreo provides us developers finally a great alternative, which is also widely accepted by our community.»

4 Vreo Technology and Tokens

This section describes Vreo's business model, the technology in brief, and the Vreo tokens. It also discusses some technical matters such as future use cases and the best blockchain infrastructure to pick for the company's purposes.

4.1 Business Model

Vreo creates a B2B marketplace brings people in three distinct roles together:

1. **Game developers** who offer to sell virtual advertising space in their games to advertisers.
2. **Advertisers** who buy space in games and provide the media content (videos, images, soundtracks) for the ads.
3. **Gamers** who play games and engage with ads if they wish; no ads are mandatory for advancing the gameplay.

Vreo's technology provides a marketplace with clear benefits to all three roles.

The benefits for game developers

Vreo's unique marketplace enables developers to easily support embedded in-game advertising (EIGA) in native formats. This solution addresses the booming mobile market, as well as the less developed markets for PCs and consoles. Covering every possible gaming device taps into a huge potential market and opens the door to profound new revenue streams for game developers. This new source of ongoing monetization is the chief benefit to game developers.

The benefits for advertisers

Vreo's business model is based on our purpose-written, cost-per-quality-view (CPQV) algorithm. Brands only pay for ads that are actually seen by gamers, and pay fees according to the quality of the view. This minimizes an advertiser's financial risk and provides them with more accurate, in-depth data.

Using our customizable auction and bidding system, aided by machine learning, advertisers can find suitable matches for their brands within seconds. And instead of relying on human salespeople and manual processing, the entire process can be done electronically in an automated and scalable way.

The benefits for gamers

Gamers can finally benefit from viewing ads. This will further reduce fraud and create a better advertising experience for everyone, while rewarding the players who drive the whole industry. Registration is free to attract the largest possible community of gamers.

System billing, tokens, and commissions

All system billing can be done in either traditional fiat or cryptocurrency, which enables faster and cheaper international money transfers. Every payment will be billed through invoice based on the scores accumulated through ViewToken (VIT).

During the ICO, Vreo will issue VREO. As a utility token, VREOs will provide various benefits for using our services, such as preferential ad delivery, or preferential matching.

In return for providing the marketplace and plugs-ins—as well as cloud hosting, content exchange/delivery, and detailed analytics—Vreo receives a small commission from each brand's advertising budget. Other providers take a much higher cut, such as Appnext (30%+) and Facebook (45%+). And unlike in an agency model, there are no extra costs for research, acquisition, or execution of an insertion order. The system's streamlined automation for suggesting, placing, and tracking ads enables Vreo to offer superior results for a lower cut.

Displaying an embedded in-game ad

The algorithm that matches a brand with a suitable game considers all the parameters set in the filtering system, such as:

- CPQV (cost-per-quality-view)
- Country (for geotargeting)
- Game or product age restrictions (if any)
- Genre (specified by the developer)
- Media type (banner, video, sound)
- Platforms (handheld, pc, console)
- Sector (specified by the brand)
- Total campaign budget

When these parameters are sorted, an advertiser is matched to a game, or vice versa. Depending on the user settings, the ad can either be discussed by both parties to reach an agreement or automatically delivered to the software.

The ad is then shown to unique daily gamers until the agreed budget is used up. If a gamer

starts the software multiple times or multiple ad spaces are available, a different ad can be shown every time they restart or come by another ad space. There is no need to update or download a patch.

Depending on the user settings, more information on each impression may become available to developers and advertisers.

Calculating ad costs

Calculating the exact cost-per-view is done by various algorithms. For example, the system measures whether the ad is shown for at least three seconds. Then it calculates the screen area occupied by the ad; the bigger the ad, the higher the cost (up to the negotiated limit). A score is calculated and converted to a fraction of the maximum CPQV budget for the campaign (at the highest screen percentage of 10%+).

Every unique gamer is counted only once per day, with the sum of all these values accounted for at the end of each month. A detailed breakdown can be viewed in the analytics dashboard of the marketplace.

4.2 Vreo Technology Overview

This section describes how Vreo offers unique embedded in-game advertising (EIGA) services through two core technologies:

- The Vreo plug-ins, which enable game developers to create ad spaces at suitable locations within a game
- The Vreo marketplace, which enables developers and advertisers to match brands or campaigns with games, and handles backend processing for analytics, billing, commissions, and so on

4.2.1 Vreo Plug-ins

Plug-ins are available for the most popular graphical engines in the world, including Unity 3D and Unreal Engine 4.[43] These plug-ins retrieve, show, and evaluate ads by communicating with a web backend, where the ads are provided and statistical data is rehashed for the analytics part of the marketplace.

The communication between the plug-in and the backend happens through JSON over HTTP(s), using request and response bodies as shown in the following code samples.

Example: Request with explanation

```
Request JSON Body
{
'developer_id':5,  <-Provided by the developer, ID generated by the backend

'developer_access_token':'FEWJGCtgYkns7RAzLTBHb0mcsjJFewQTb7MDRo78mrvPynq79kJ',  <-Provided by the developer, ID generated by the backend

  'developer_game_id':17,  <-Provided by the developer, ID generated by the backend

      'type_media_format_ids':'2', // 1 = Image, 2 = Video, 3 = Sound only.
   'deVITe_id':'b16c578d94aa7c91251615d94104a51d',  <- MD5 Hash representing this device
}
```

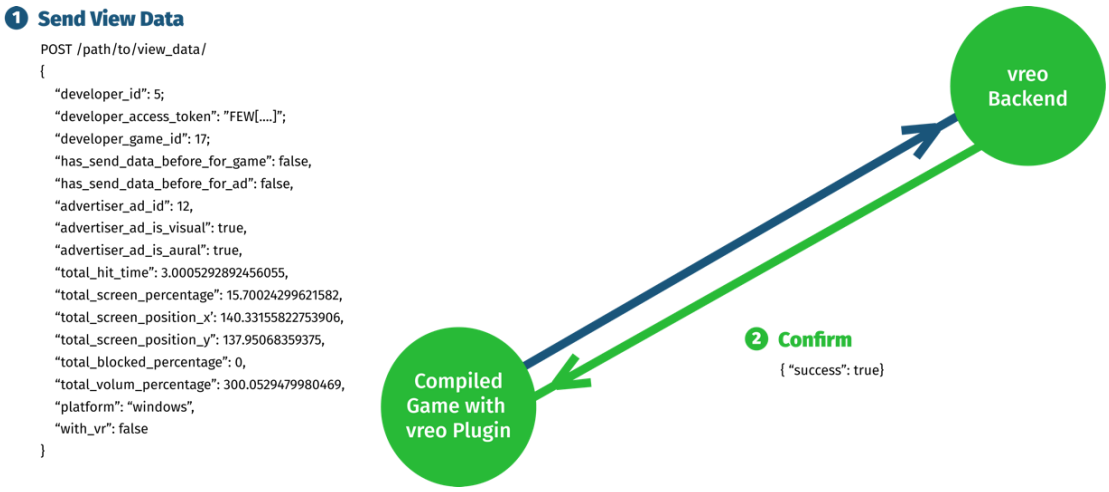
Example: Response with explanation

```
Response JSON Body
{
  'success':'true',
  'result':
  {
       'advertiser_ad_id':12,  <-ID was generated when the advertiser created the ad
       'type_media_id':2,  <- The ad type as in type_media_format_ids
            'media_url':'http://Vreo.io/downloads/adname.mp4'  <-The link to the media asset
  }
}
```

The plug-in then downloads the asset provided via media_url and renders it within the game. That media is cached for future use to minimise data transfers. After the ad is rendered and viewed by the gamer, the plug-in sends back View Data. The plug-in provides information about the user experience, such as how long the gamer looked at the ad, and the overall visibility during that time. This information is sent at regular intervals.

The plug-in sends a POST request to ApiUrl + ApiSendViewDataPath with a JSON body.

Plug-in to Backend Communication with Send View Data



The plug-ins for Vreo are written in C# and C++ and now available for the two most popular graphical engines in the world, Unity3D and Unreal Engine 4.[40] To cover as much as of the market as possible, Vreo will create plug-ins for additional engines such as Cocos2d-x, CRYENGINE, Lumberyard, and Marmalade SDK.

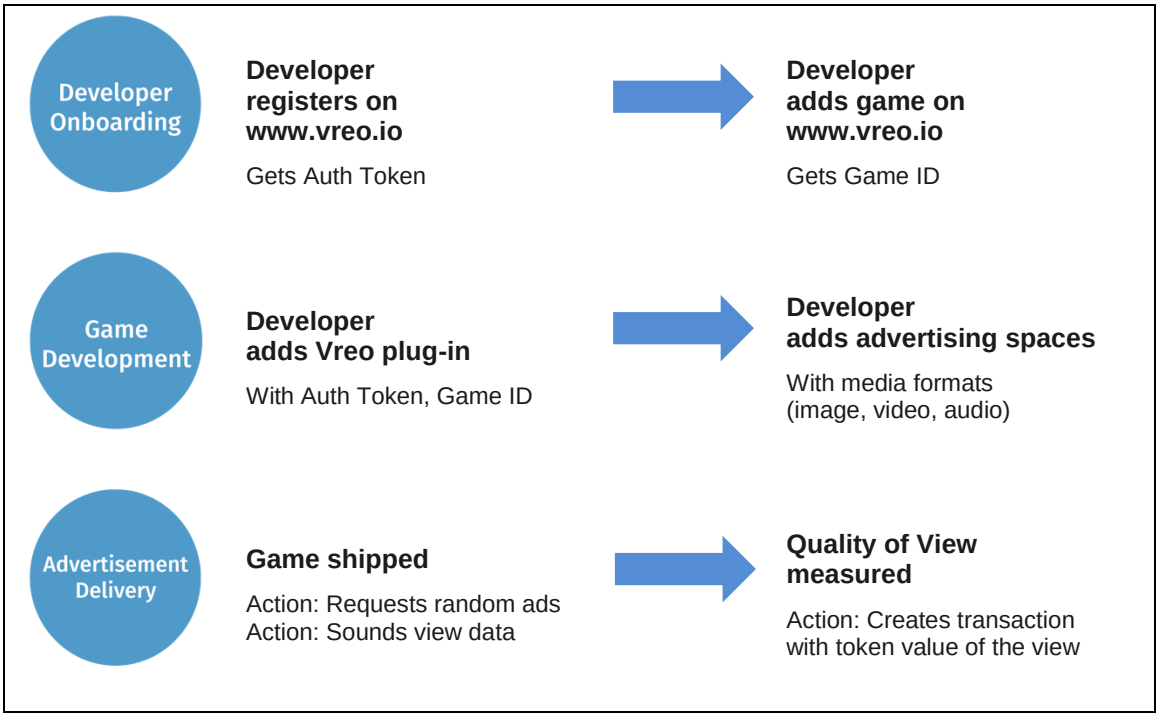
Thanks to our intuitive plug-in mechanisms, game developers can create surfaces for ads in their software and find suitable advertisers in the Vreo marketplace quickly and easily, all within a few seconds.

Another positive aspect of ads embedded in a game is that—unlike more intrusive formats—ad blockers have no effect. Since gamers are rewarded for viewing ads, they no longer want to block ads. And a gamer can't put down the device or walk away for a break while an ad is running. The ads are available only when a gamer is focused on the game.

From the developer's view

Figure 7 shows the basic process for a developer to work with the Vreo platform. Whether a developer is just starting out with Vreo (onboarding), in the middle of developing a game, or about to ship a game, only a few basic steps and minimal data exchanges are required.

Figure 7: Simplified Process Flow for Games Developers



The plug-in enables a developer to sell advertising space in a game. To identify themselves, developers provide the plug-in with their developer_id, developer_access_token, and developer_game_id, as shown in Table 5.

Table 5: Information Required by Vreo Plug-In

Type	Name	Description
Int32	developer_id	A developer's numerical ID, which is generated when they first register with Vreo
String	developer_access_token	A text string used to identify a developer, which is generated when they register with Vreo
Int32	developer_game_id	The numerical ID for a game, which is generated when a developer adds that game to the marketplace. (As long as it's an integer, the game's primary key can be used here.)

At runtime, when a level contains advertising space, the game requests random ads from the backend. When a gamer sees an ad, the plug-in returns information about the time and visibility to the backend. The plug-in creates an anonymized hash based on the hardware it was executed on, used to identify the gamer across sessions and games.

The field device_id is sent with every request. This ID contains three components, with one responsible for managing the other two:

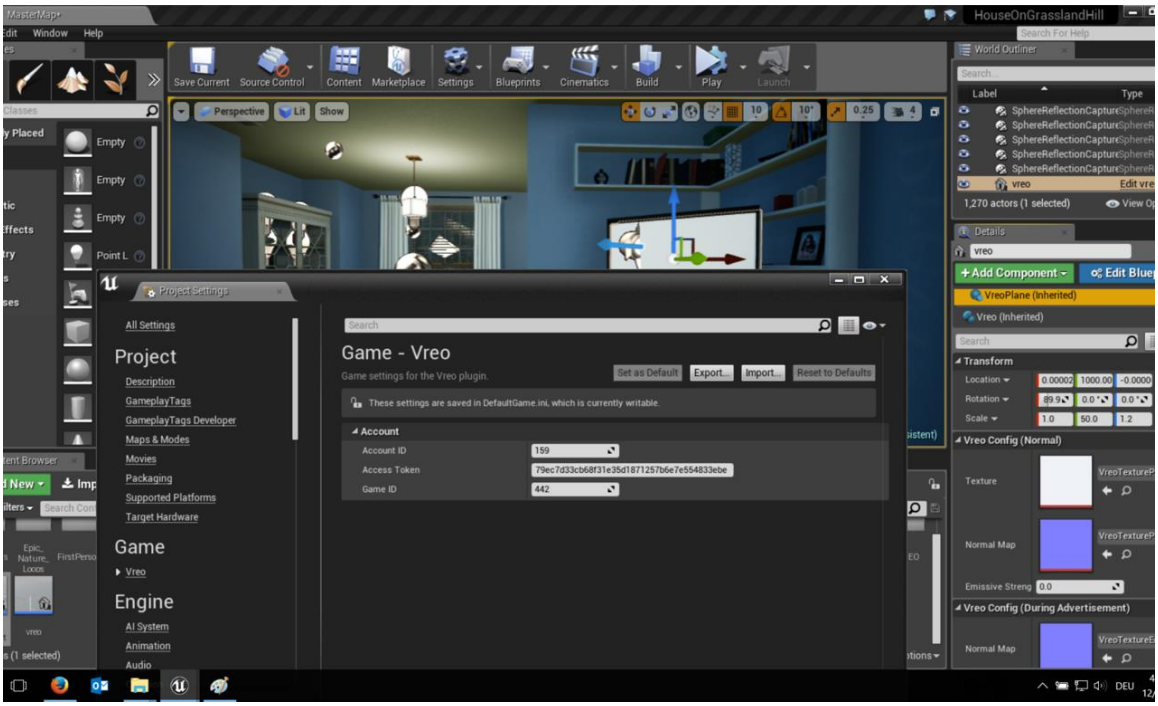
Vreo component: This is the core component that implements the logic for every ad space. This component accumulates view data and sends it to the backend whenever sufficient new data has been collected. This component is also responsible for managing ad planes and audio components, requesting random ads, loading the media assets from the Content Delivery Network (CDN), and managing the other two components of field device_id.

Vreo plane component: This represents the visible ad and its textures, which are set here.

Vreo audio component: This is a thin layer to control the ad's audio. This can be used to add audio effects, such as scaling the volume with the gamer's distance from the ad.

Figure 8 shows the actual user interface of the Vreo plug-in for Unreal Engine. Developers already working with a popular game engine to create their software will have a very gentle learning curve. The plug-in enables a developer to create ad spaces quickly and easily and make those advertising opportunities available through the Vreo marketplace. This opens the door to a new revenue stream.

Figure 8: Using Vreo Plug-in with Unreal Engine



4.2.2 Vreo Marketplace

The second key part of the Vreo platform is the marketplace that enables developers and advertisers to match brands or campaigns with games, and handles backend processing for analytics, billing, commissions, and so on. A user can register for free on the Vreo marketplace either as a:

- Developer/ Publisher, with developer_id created and bound when they register
- Advertiser/Brand, with advertiser_id created and bound when they register

Developers and advertisers have different features available to them in the marketplace, appropriate to their different roles.

Developers can download the plug-in for their game engine through the marketplace and then begin to create ad spaces within their games. Once developers have ad spaces set up, advertisers can start campaigns, using parameters and a filtering system. Once a campaign is set up, in addition to having the developer_id and developer_access_token, a developer_game_id is also created.

When a gamer starts a level with an activated ad space, these three metrics are used to identify the developer and their game.

Both developers and advertisers have access to the analytics section where they can look up statistics for past and current ad campaigns.

Marketplace participants in both roles have access to all the following features.

ID identification and matching

Every ad, game, company, gamer, and digital billboard has its own ID to help evaluate its performance. These IDs are assigned on registration or creation. The programmatic advertising system matches supply and demand based on the best predicted match computed by an AI that uses machine learning.

Factoring in statistical data like ad length and size, as well as combinations of brand sector, game setting, and game genre, the matching algorithm will use machine learning to predict the best matches.

Programmatic ad buying

Programmatic ad buying means using algorithms to buy ad impressions, instead of manually sorting through placements and negotiating for each one. The main benefit is scalability, since a machine can complete this whole process in milliseconds.

Programmatic ad buying reduces the need for salespeople, saves costs, and enables ads to be dynamically served to gamers in real-time. This also enables ad delivery to be optimized with statistical and user data.

There are many forms of programmatic advertising. The best for Vreo is 'automated guaranteed' or 'programmatic direct' where a guaranteed number of ad impressions are negotiated in advance. This fits our solution best due to our blockchain integration. Generating another smart contract for every ad impression would severely clog any network.

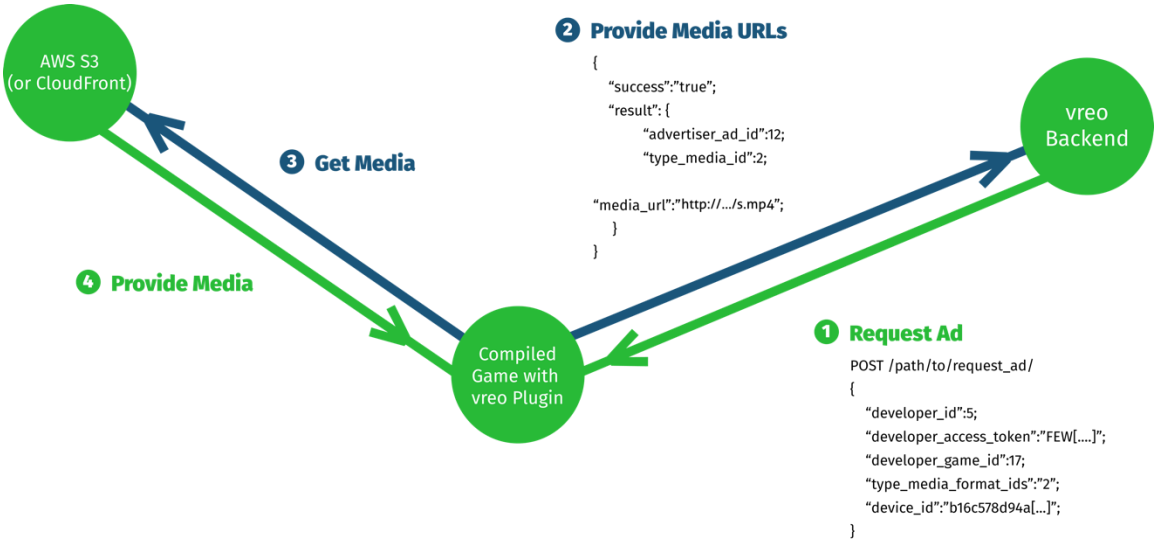
Filtering system

Both developers and brands can choose to narrow down their possible partners for the best fit. The filtering parameters can include age, country, genre, maximum CPQV, media types, minimum campaign budget, number of ad spaces, preferred sector, and more.

Although Vreo tracks where the 'view' is coming from, all information regarding location/IP is anonymized and the user's personal data is protected.

The plug-ins communicate with the web backend of the Vreo marketplace. Once a gamer starts a level where the plug-in is active, it retrieves a random ad bound to the game in the marketplace. Using a CDN for faster delivery, the ad is streamed into the software and shown to the gamer. The plug-in tracks all the gamer behavior regarding the ad, such as view time, screen percentage, operating system, and so on. Then the plug-in reports that data to the backend, where the data is processed and graphically formatted to be shown to the Vreo user.

Plug-in to Backend Communication with Request RandomAds



4.3 Future Options

This section describes some future options for Vreo which are not yet core features, but are closely allied with our current roadmap.

4.3.1 Market Intelligence

The Vreo platform will provide market intelligence on current trends and preferences in gaming and IGA as well as insights into the best combinations of ads, genres, and sectors. Since this kind of data is currently lacking, Vreo will be happy to share this data with interested parties for a subscription fee.

4.3.2 Machine Learning / Artificial Intelligence

Machine learning uses artificial intelligence to provide services such as diagnosing problems, planning, and predicting—with no need to explicitly program a computer to do those things. For machine learning to work, an organisation requires smart algorithms that can teach themselves and grow from fresh input, with the goal of applying new approaches to future scenarios.

For Vreo, machine learning can use the performance data captured by our plug-ins and the parameters set by participants of our marketplace to refine our programmatic buying. Machine learning can especially help to optimize revenues and target ads more precisely.

4.3.3 Product Placement

The next logical step after banners and videos is product placement, as seen in films and TV. Since CAD or 360° recordings can now be converted into mesh that's usable in game engines, producing the required textures to place objects in games is becoming easier and cheaper. A smart technological strategy is to develop a way to exchange meshes of different sizes and forms dynamically. Vreo's plug-ins can already do this with banners, sounds, and videos.

4.3.4 Virtual Reality (VR)

Virtual Reality, Augmented Reality, and Mixed Reality all have special requirements for advertising. Immersion is even more important than in established digital formats. Interrupting ads or pop-ups are out of the question, so a more immersive format is needed. Vreo's technology will likely work well with VR by embedding ads directly into virtual surroundings to further strengthen the realism of the software.

4.4 Vreo Tokens

The Vreo network uses two different tokens, which were designed in collaboration with the token experts from SICOS:

- **ViewToken (VIT)** is the unit of scoring to store the metadata of every ad impression immutably within the blockchain.
- **MeritCoins (VREO)** a utility token that grants access to the marketplace and provides benefits when using Vreo, such as added features

The rest of this section describes each token in more detail.

4.4.1 ViewToken, a System Token

Game developers and advertisers need to foresee their future expenses and income accurately. Therefore, ViewToken (VIT) will be used as a system token that represents a countable quality ad impression that will be stored immutably on a blockchain. The score represented by VIT will be the basis for the calculation of the price to be paid between the game developer and the advertiser.

Vreo as a company will decide which currencies (and at what rate) can be used among platform participants in order to pay for services rendered and which price is to be paid for a certain score represented by VIT. This enables Game developers and gamers to validate that they have been paid correctly based on the metadata stored within VIT.

At the start, developers or advertisers can pay the bills in USD/EUR according to the scores stored by the VIT multiplied with the maximum cost-per-quality-view, generating a billable value based on the agreed upon contract by the parties in our marketplace. Later, Vreo intends to enable payments by the use of cryptocurrencies, such as Bitcoin, or Ether. Vreo will issue the bill, but will, at the start, not be involved in the payment process. At a later stage, Vreo may consider to expand its services.

VIT cannot be transferred to any third party. VIT is neither a means of payment, nor a cryptocurrency and hence cannot be exchanged on secondary markets.

We furthermore generate a Gamerscore based on the total score stored within the VIT a gamer has earned throughout his career. In polls created by a game developer, the gamer's voting power will be weighted higher for scores earned by playing the games developed by the same developer, as long as the gamer holds sufficient VREO to participate in the voting process.

4.4.2 MeritCoin, a Multi-Utility Token

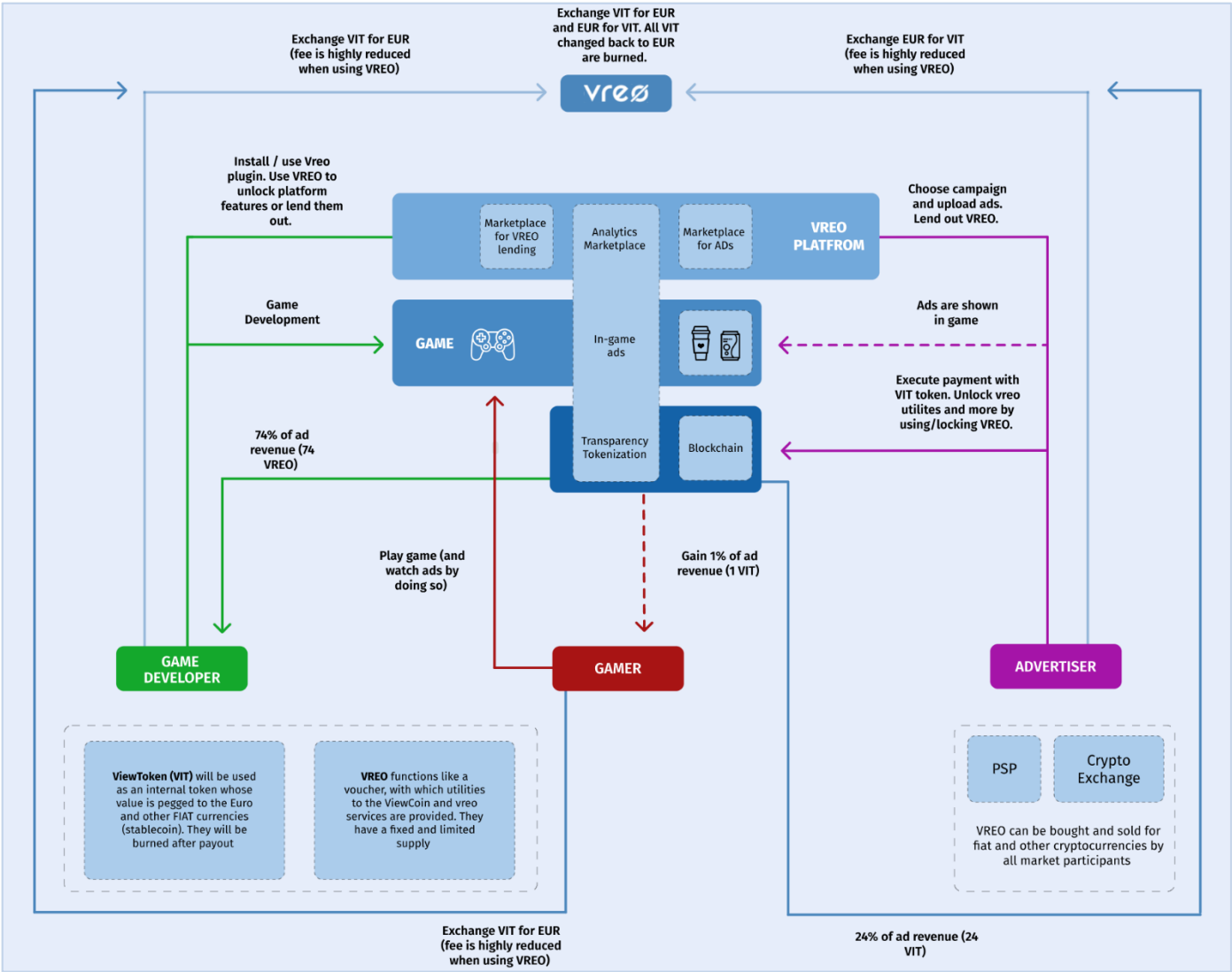
Vreo will use another token as a utility or form of software license: VREO.

[Vreo users can choose between paying with EUR (or other fiat currencies) based on the scores stored through VIT at a rate of 1 to 0.97 or using the utility tokens to gain a discount that eliminates network fees. A combination of EUR and VREO allows advertisers and developers to eliminate any deposit or withdrawal fees through what we call 'proof-of-merit.']

VREOs will be sold in the Initial Token Sale. They have a fixed and limited supply in the Vreo platform.

For more details on these interactions, along with precise percentages, Figure 9 shows the Vreo token economics for each of our key roles: game developer, advertiser, and gamer.

Figure 9: Vreo Token Economics



4.4.3 Some uses cases for these tokens

VREO is like a software license used to access certain benefits from the Vreo marketplace.

For example, companies can get a discount on the fees they owe to Vreo if they hold at least 1,000 units of VREO. In other words, the benefit of holding VREO is only granted when those VREOs are locked in a smart contract until an ad campaign is over.

Those who hold certain amounts of VREO gain other add-on benefits. For example, they can store more messages and multiple ads and graphics in their Vreo account; they would otherwise have to pay to upgrade their storage.

Holding VREO also grants discounted access to the market intelligence gathered by Vreo.

Advertisers can lock up additional VREOs to ensure that their ad is picked first from the pool of ads to increase their daily outreach. If numerous advertisers all hold VREOs, ads are shown in order by the total number of tokens locked up. Once the ad campaign is done, the VREOs return to the original holder.

Developers and advertisers can also use VREO to promote a game to gamers registered with Vreo. Each VREO grants the right to advertise to one Vreo gamer a month. Once used, the tokens are locked up for a month; after that, they can be used to create a new promotion.

Example (real numbers will vary)

A developer has a game with one ad space. Three gamers (G1, G2, G3) are playing the level where the ad space is located. One advertiser (A) is showing his ad for a maximum of 7 EUR per quality view.

- G1 plays through the level and stumbles on the ad. He finds it interesting, so he comes closer and watches it for a while. Since G1 watched the ad for some time from close up, this creates a transaction for 7 VIT.
- G2 sees the ad, but is not interested and turns away after a quick look. This brief impression creates a transaction for only 3 VIT.
- G3 sees the ad from a huge distance, but doesn't come any closer. This does not create a transaction, since the ad never appeared large enough on his screen.

No other players see the ad. After a week, Vreo bills the advertiser for 10 VIT, which means 10 EUR + 0,30 EUR transaction fee. He locked VREO worth 0,15 EUR for this campaign, eliminating his transaction fees and saving 0,15 EUR. So the advertiser pays only 10,15 EUR.

Future use cases

If advertisers don't want to purchase VREO, they can rent tokens from any VREO holders who offer to lend at a lower price. Rates can be set by each VREO holder willing to lend.

And participants holding a certain number of VREO will gain an early access to campaigns before they are released to the public.

4.5 Tokens Call for Blockchain

Why use blockchain technology for Vreo? Clearly, when there is a token, there must be a blockchain. Perhaps when there are two tokens, there is even more need for a blockchain.

Two tokens for two purposes

The Vreo ecosystem has two use cases for two tokens. One token—ViewToken (VIT)—can be exchanged publicly at a fixed rate, holding what we call proof-of-merit.

The other token—VREO—can only be attained by Vreo customers, and helps our unique EIGA solution remain as transparent as possible. To achieve this goal, we break in-game impressions into fractions if the view is not as favorable as it could be for an advertiser. This solves a big challenge of IGA: the grey area around impressions of doubtful quality.
Is that ad fraud? Should those impressions be discounted? By how much? By what formula?

As well, VIT enables game developers and advertisers to distribute tokens directly to gamers, and enables gamers to earn scores by doing certain actions—even engaging with ads.

Last but not least, these tokens enable participants in all three roles to take the first small step into an open and transparent economy of gaming. Having two tokens gives the Vreo ecosystem more scope for further innovation in terms of new business models, new companies, and new partnerships to further empower EIGA.

Each view of an ad is a unique transaction

With Vreo's holistic approach, each view of an ad is a three-way transaction between a game developer who offers space, an advertiser who buys the space and places an ad, and a gamer who gives their attention to the ad. Anyone who issues, places, or views our EIGA can track those transactions. This creates a marketplace with the utmost openness and transparency.

By making each view a unique transaction between three parties, and adding more data to the transaction as a signature where needed, we lay the ground for a fully automated and fraud-free accounting for all parties involved.

ViewToken (VIT) reflects the gamer's attention to an ad

We designed the VIT to reflect a gamer's attention to an in-game ad. Through our unique Cost-Per-Quality-View algorithms, we can build fractions of a view to ensure a fair deal between advertisers and game developers. Therefore, we need fractions of a ViewToken (VIT) to account for these.

The Vreo platform measures the percentage of the screen an ad occupied, the quality of a specific ad space in a game, the time span during which an ad was viewed; the platform also notes the frequency cap for unique users. All these parameters, and more, are rolled up into our unique Quality View.

The Vreo plug-in reports these parameters from the game to the Vreo marketplace. All this data is then saved as an immutable transaction on the blockchain. Therefore, each game has a specified PublicKey for an adSpace that it sends to the gamer, who has their own PublicKey. The signature of the transaction holds a hash of campaignID+ adID+ accountID + gamerID to ensure that the Quality View data can be precisely retrieved and analyzed later.

Benefits of using blockchain

A blockchain is clearly a superior technology to record transactions that cannot be tampered with. Vreo will use blockchain technology to record data about every impression.

The blockchain technology will remove any doubts about whether ads will run and payments will be made between partners. This will build trust between developers/ publishers and advertisers/brands from opposite sides of the globe who meet in the marketplace.

4.6 Which Blockchain is Best for Vreo?

For some time, Vreo's team has researched and debated which blockchain can best fulfil our needs. Our requirements for a blockchain include:

- High throughput to support many clients
- Supports obscuring sensitive transactions for privacy
- Complies with the jurisdictions where we want to start operations
- Can peg ViewToken (VIT) to a steady value in fiat currency (Euros)
- Highly secure
- Supports high trust between participants

The VIT needs to be held at a steady value, since most advertisers have not yet joined the crypto movement. No one wants to risk funding ad campaigns with a token whose value is so volatile it could change midway through a campaign.

Unfortunately, at the moment, there does not seem to be a blockchain that meets all our requirements. Table 6 shows the pros and cons of different types of blockchains, including Proof-of-Work, Proof-of-Stake/Delegated PoS, Permissioned with Byzantine Fault Tolerance /Practical BFT). The notes cover some concepts for higher throughput (sidechains, channels) and possible new developments (DAGs) and new projects like Cardano and EOS.

A permissioned blockchain could meet most of our criteria, but these lack in security (with a single or just a few points of failure), a rather low distribution level, and very low trust level. Still, permissioned systems like Hashgraph, Hyperledger Fabric or Hyperledger Sawtooth from the Linux Foundation offer certain advantages, and perhaps some way to solve these downsides. At publication time, we have decided to hold off on choosing a platform.

We currently view the PoS/DPOS systems as best-suited to our scope of operations and our three-part community of game developers, advertisers, and gamers. Vreo will continue to monitor blockchain developments to pick the one that meets our requirements best.

Table 6: Vreo Blockchain Requirements

What Vreo Requires	Main Types of Blockchains			
	Proof-of-Work	**Proof-of-Stake or Delegated Proof-of-Stake**	**Graphs (DAG)**	**Permissioned (Byzantine Fault Tolerance or Practical BFT)**
High throughput	No (without Channels)[1]	Yes	Yes	Yes
Opaque transactions	Depends (ETH+zkSNARKS, XMR, ZEC)	No[2]	Not currently (Hashgraph unclear)	Yes[3]
Legal compliance	No	No	No	Yes
Pegged to fiat price	No	No	No (Hashgraph unclear)	Yes
Highly secure	Yes	Yes	Unclear	No
Trust between participants	High	High	Medium	Low

1: PoW channels include Raiden Network and Plasma (planned) on Ethereum and Lightning Network on Bitcoin.
2: Sidechain solutions such as Lisk could enable secure transactions between two trusting parties.
3: BFT/PBFT solutions like Hyperledger enable communication between trusted parties (unfortunately also called 'channels'). With very flexible setup, permissioned chains can be adjusted to fit legal needs (e.g. NEO).

Source: Vreo internal

4.6.1 Developments coming in 2018

In 2018, two major developments are expected to affect the blockchain space: EOS and Cardano. In our view, EOS (DPoS) is likely the best candidate. This is the work of a highly respected and well-known developer (Dan Larimer), who has earlier created solutions with different teams such as BitShares and Steem. We look forward to testing our platform with EOS version 1.5.

Cardano (PoS) provides an unmatched scientific review of the technology. The developers, IOHK, have a good reputation in the industry, since working on Ethereum Classic and the core of other projects. If neither EOS and Cardano turn out to be a good fit, we will experiment with Lisk (DPoS) and Graphene (underlying code of BitShares and Steem).

5 Phase II: Funding Gateway

This section describes another exciting project that will benefit from the Vreo ecosystem of game developers, advertisers, and gamers. Funding Gateway will enable game developers to raise money through ICOs completed with Vreo's help.

5.1 Problems Funding Game Development

Despite the fact that apps and gaming are large and fast-growing sectors of the economy, it is never easy for small game developers to attract funding.

Consider the traditional ways of financing a business: bank loans, venture capital, or government startup funding. Then try any of those for something as unpredictable as developing a new game:

- Bank loans are usually out of the question, except for established AAA firms
- Few venture capital companies invest in gaming
- Government subsidies are barely enough to get rolling and not available in every country

Even though the success of any new game is very unpredictable, all monetization is usually tied to sales.

A more attractive option for software developers may be crowdfunding through sites like Kickstarter or Indiegogo. While there are some success stories, many projects have flopped, making some people wary about crowdfunding.

Crowdfunding took a major hit in 2016 due to some projects failures, plunging Kickstarter from $41 to $17 million dollars pledged for game developers.[44]

Crowdfunding is blocked in some countries, and for some projects such as games aimed at ages 18+. Other problems are the high fees extracted by crowdfunding sites—at least 5% to 9% commission plus 3% to 5% processing fees for credit cards or PayPal—as well as the question of taxes.

Financing remains difficult for any newer or smaller games studios that rely on crowdfunding as their only source of investors.

5.2 Game Developer Market Analysis

No one seems to have precise statistics on the number of game developers in the world. One estimate derived from claims about Unity's installed base plus a developer survey pointed to a total of about 1.8 million studios in the world, with an average team size of five to six members.[45]

We know that the number of small and independent development teams that can't afford AAA financing continues to grow.

About 13,000 people worked directly in the gaming industry in Germany in 2016,[46] 12,000+ in the UK in 2013,[47] and about 66,000 in U.S. in 2015.[48] These statistics lag behind recent industry growth, and do not include indirect employment in related fields such as journalists, researchers, retail salespeople, and employees of government agencies and NGOs.

On the biggest game developer portals 600,000 to 1.4 million users are registered. All these numbers point to a sizeable and growing market of game developers around the world.

5.3 Vreo Funding Gateway

After a developer publishes a game that finds an audience, the Vreo platform as presented in this Whitepaper helps to solve the unpredictable revenue problem by converting the game's user base into an ongoing revenue stream. But this revenue only arrives after a game is finished.

Many indie developers use their own time, money, and resources to finish their projects. During the pre-revenue stage, just a small amount of money could help propel a game to new heights.

As the Vreo ecosystem becomes established, we have many more exciting plans to improve the monetization and funding of the gaming industry. In the future, we will evaluate the plans to complement our EIGA services with funding services for the game developers, who play one of the three fundamental roles in our marketplace, further.

We call this concept **Funding Gateway**, which would give game developers the opportunity to create an ICO campaign on our platform. We would evaluate and filter those campaigns before releasing them to our marketplace. Developers would provide the community with an overview of their experience, references, current project, and funding goal. Funding Gateway would help to create their token model, blockchain integration, and estimated revenues, drawing on our own data from comparable apps from Vreo.

As more game developers turn to ICOs, some are experiencing great success. In our opinion, ICOs are a perfect way to enable a broad audience to participate.

But small, independent companies don't usually have the resources to start their own ICO from scratch, hence the need for Funding Gateway.

A few platforms for software ICOs are on the drawing board now. One example is KICKICO, which is like Kickstarter but for ICOs. With its first ICO running in April 2018, KICKICO has only a small start on Vreo. And it doesn't specialize in gaming nor provide any way to generate revenue from an ongoing project through EIGA. This is the biggest strength of our model: the synergy of Vreo and Funding Gateway, which makes it an easy choice for any game developer seeking funding.

Every Funding Gateway campaign can be cross-referenced to actual data from existing games to provide forecasts based on empirical data.

6 Business and Development Roadmaps

This section describes the business plans for the expansion of Vreo's operations and the development plans for the company's technology.

6.1 Business Roadmap

Our first public unveiling took place when our prototype was presented at GDC 2017 in San Francisco. The GDC is the biggest B2B trade show in the gaming industry, attracting 30,000+ visitors. Project: Gateway had a booth and managed to connect with various game developers, marketing agencies, and tech companies.

The idea of embedded in-game advertising (EIGA) was highly praised and deemed more user-friendly than the current intrusive models for IGA. These contacts will be used to generate the company's first revenues and case studies.

To maximize revenues, Vreo must acquire a continuous stream of game developers who seek new revenue streams and brands who want to place ads. And we must address those in each role using different channels and approaches as described below.

6.1.1 The Game Engine Market

Vreo's business model caters to a growing market that is constantly providing new apps. Most games are developed using game engines which our plug-ins and software must be tethered to. The more engines we support, the greater our market coverage.

Four to six game engines have captured relevant market share per platform. Some popular engines support multiple platforms. These are Vreo's prime targets.

The remainder of the market is divided between niche engines and in-house engines never licensed to any other developer. If the developer of a less popular engine wants to use Vreo's technology, our plug-ins can be adapted to support them.

6.1.2 Acquiring Game Developers and Publishers

To attract the attention of game developers and publishers and sign them onto our platform, we will use a combination of the following tactics.

Strong focus on gamer industry trade shows and events, such as Casual Connect, gamescon, GDC, and Pocket Gamer Connects. We will attend and exhibit at these trade shows, and sponsor after-events with partners.

Direct acquisition of game developers by our business development sales force using cold calls, roadshows, studio visits, and workshops.

Strong presence at developer portals like Gamasutra (3+ million page visits per month)[49] and GameDev.net (2 million page visits per month)[50], GDC, and PAX Dev.

Ongoing PR to gain mentions in articles in professional outlets like Gamespot, GameStar, IndieGames, IGN, Kotaku, Maingames, and Rock, Paper, Shotgun.

Social media presence in developer groups on Facebook, Reddit, and Twitter and in the professional forums for various game engines, like Unity3D.com (25+ million page visits per month)[51] and Unreal Engine (10+ million page visits per month).[52]

Contact database development with support from tools like apptopia and App Annie for mobile app market intelligence, top data sources like SteamSpy and Indie DB for desktop and console market intelligence, and funding websites like Indiegogo.com and Kickstarter.com to identify suitable developers for early integration of Vreo's plug-ins.

We believe these tactics will generate ongoing recognition for Vreo among game developers.

6.1.3 Acquiring Brands as Advertisers

To attract the attention of brands seeking in-game advertising, we will use a combination of the following tactics.

Direct contact of major media and advertising agencies by our business development sales force. We will target agencies that invest ad budgets for huge brands, including Carat, MediaCom, Mindshare, OMO AGENCY, and SeventyOne.

Direct acquisition of brands by our business development sales force. We will target brands already involved in gaming from beverages (Coca-Cola, Red Bull) and tech (Intel, NVIDIA). We will also target brands looking to enter the market and currently testing IGA from sectors like automobiles (BMW, Dodge, Hyundai), fashion (Nike, Reebok), film (Disney, Universal), and toys (Hasbro).

Ongoing PR to gain mentions in major marketing journals and influential blogs such as Adweek, Business Insider, Campaign, Forbes, and MarketingProfs.

Attending advertising industry trade shows such as Advertising Week and dmexco to network and build contacts.

To make sure we chose the best approaches and use the best practices, our experienced advisors will share their expertise and networks with us.

All these activities will be accompanied, supported, and realized in part by Hill & Knowlton, one of the world's leading PR agencies. Together with Vreo's internal PR & marketing team, we will create an excellent image and position the company strongly in our target industries. To achieve these goals, we will follow an action plan that includes influencer campaigns, media training, press tours, trade show interviews, workshops, and more.

6.1.4 Scaling Up the Business

As part of Vreo's online presence, we will set up a professional blog with SEO/SEA to reach our clients in all three roles: advertisers, developers, and gamers. The blog will feature engaging content such as studies, guides, industry trends, tips, and solutions to challenges.

Operations will begin in Europe, North America, and Asia. Outside Europe, we will open branches, since it can be difficult to acquire contacts and build relationships from thousands of kilometers away.

Our multilingual team already covers most of the languages spoken in the biggest markets. For Europe, we will extend our local staff by cooperating with regional sales agencies with contacts in Hungary, Spain, and Poland.

Our head office will host our accounting clerks, business development officers, designers, help desk people, key account managers, programmers, and management team. We will hire in tiers only as required. With our plug-ins and platform, we expect Vreo will benefit from scalability and require fewer employees to support customers than in more traditional industries. This should lead to faster and better profits.

6.2 Development Roadmap

Table 7 on the next page sums up the milestones achieved and those ahead on the development roadmap for the five-year period from 2015 through 2020.

Note that the Vreo team will make every reasonable effort to meet these milestones, but this roadmap is not binding. As in any software project, delays and changes are possible for many reasons. This roadmap assumes that the ICO hard cap is reached.

Table 7: Vreo Development Roadmap, 2015–2020

Quarter	Done?	Milestone
Q4 2015	✓	First VR experiences and company founding process started
Q1 2016	✓	—Work on VR & gaming solutions begins —First VR game in development (Infinite)
Q2 2016	✓	—VR Demo is a press title for Razer OSVR HDK head-mounted display —Eye tracking conceptual phase finished —First investor gives greenlight for investment
Q3 2016	✓	—Development of eye tracking started —German government issues first contract for VR gamification project
Q4 2016	✓	Work on Vreo begins
Q1 2017	✓	—Eye tracking and Vreo alpha are presented at GDC in San Francisco —Further products under development reach beta/prototype phase
Q4 2017	✓	—Vreo marketing starts —Vreo and eye tracking reach MVP state
Q1 2018	✓	—Community building and establishing launch partners —White paper v1.0 released
Q2 2018	✓	—White paper v2.0 released —Work on market implementation begins
Q3 2018	✓	—Programmatic advertising reaches MVP state —Vreo plug-ins for more major game engines reach MVP state
Q4 2018	✓	—First branches in North America and Asia opened
Q1 2019		—First projects are available on Funding Gateway during beta test —Adding more Launch Partners to the roaster
Q2 2019	🚶	Closed Beta testing begins
Q3 2019	🚶	—Mobile app released —Depending on market development, more offices are opened —User retention goes live
Q4 2019	🚶	Offices open in South America and Oceania
Q1 2020	🚶	Adoption of other advertising forms into Vreo blockchain model starts
Q3 2020	🚶	Vreo plug-ins can dynamically exchange 3D assets

7 ICO Token Sale Summary

The VREO Token Sale will take place in one phases. Vreo will issue 700 million VREO Tokens in all: 400 million during the Token Sale. Proceeds from the VREO Token Sale will be used to fund the development of the Vreo technology, as well as all other expenses required to operate the business. VREO entitled its holders to use the Vreo platform.

7.1 Token Sale

The Token Sale will take place in the near future. Dates will be announced. During the Token Sale, a total of 400,000,000 VREO Tokens will be issued. The price of 1 VREO is unchanged at $0.05. However, the Token Sale will take place in three phases with three different bonus levels.

The price of VREO Tokens will be denominated in Ether, with the exact conversion rate of Ether to Euro fixed within 24 hours before the Token Sale. Vreo will accept either Ether (ETH) or Bitcoin (BTC) in the Token Sale. Any unsold VREO Tokens will be added to Vreo VREO Token reserve.

7.2 Summary of Token Sales

Table 9 sums up all the key details about the upcoming Vreo token sales.

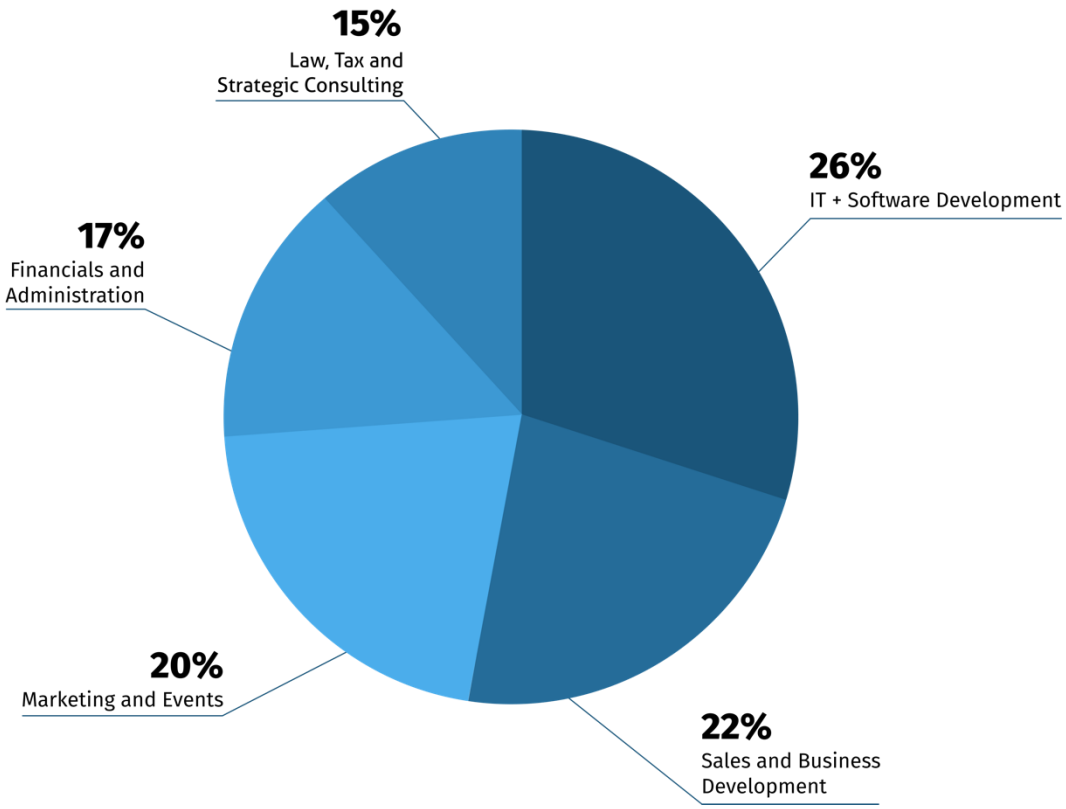
Table 9: Vreo Token Sale Summary

ITEM	DETAILS
Token Issuer	Shaping Games AG
Total VREO Tokens	700,000,000 (700 million)
VREO Tokens to be sold during Token Sale	450,000,000 (450 million)
VREO Tokens to be provided to advisors	58,000,000 (58 million) with no vesting period
VREO Tokens reserved for Vreo legal entity	57,000,000 (57 million) 40% with no vesting period and 60% with vesting period of 2 years
VREO Tokens reserved for Vreo team members	85,000,000 (85 million) with vesting period of 1 year
VREO Tokens reserved for VIT Token Sale Bounty program	50,000,000 (50 million) with no vesting period
Short / Ticker name	VREO
Type	ERC20 of Ethereum blockchain
Accepted cryptocurrency	Ether (ETH) or Bitcoin (BTC)
AML/KYC required for Token sale	Yes
Token Sale price per VREO for 390,000,000 (390 million) VREO	$0.05 USD (priced in Ether 24 hours before Token Sale)
Hard cap on Token Sale	390,000,000 (390 Million) VREO
Minimum buying limit	1,000 VREO
Maximum buying limit	40,000,000 (40 million) VREO

7.3 Distribution of Funds

As shown in Figure 10, the funds raised from the sale of VREO tokens will be used to strengthen every essential area of the company.

Figure 10: Distribution of Funds



8 Tier Levels and Headcount

The Vreo team estimates that developing and refining the Vreo product line and platform will cost about 15 million EURO over five years. Vreo will cover these costs from the proceeds of the Token Sale and income from the Vreo platform and plug-ins.

The Token Sale will be the foundation from which we raise a new B2B marketplace for embedded in-game advertising (EIGA). We propose the following tiers for making the best possible use of the contributions raised in the Vreo token sale. Please note that this is not a binding commitment, but the current view of the the Vreo team. It may be revised at any time at the sole discretion of Vreo

The team members listed are the total new hires added at each tier, in addition to the current management team. New hires will be brought on only as needed.

Tier 1: Up to $4 Million USD

Deliverables

- Adapt Vreo plug-ins to more game engines to cover 60% of the games developed with licensed game engines
- Enable ads on loading and log-off screens through Vreo plug-in
- Start marketing and business development in Europe and U.S.
- Implement programmatic buying in Vreo marketplace, including re-design

Team (13 new hires from today)

- 1 senior developer
- 2 blockchain developers
- 1 system administrator
- 1 UI/UX developer
- 2 web developers
- 2 business development officers
- 1 key account manager
- 1 marketing/PR person
- 1 local advisor (in U.S.)
- 1 accounting clerk

Tier 2: $4–$7 Million USD

Deliverables (in addition to Tier 1)

- Open registered offices in Asia and U.S.
- Adapt Vreo plug-ins to more game engines to cover 70% of the games developed with licensed game engines
- Experiment with exchanging 3D assets to enable product placement
- Start marketing and business development in Asia and South America
- Begin work on the mobile app
- Attend the most important conferences and trade shows

Team (22 new hires from today)

- 2 senior developers
- 3 blockchain developers
- 1 system administrator
- 2 UI/UX developers
- 2 web developers
- 4 business development officers
- 2 key account managers
- 1 marketing/PR person
- 3 local advisors (in U.S., China, and Korea)
- 1 HR/accounting person
- 1 help desk person

Tier 3: $7–$12 Million USD

Deliverables (in addition to Tier 2)

- Expand to the West and East coasts of the U.S.
- Add another office in Asia
- Increase marketing and business development efforts to more countries based on gaming population, size of industry, and game revenue
- Adapt plug-ins for all engines with relevant market share
- Support HTML5 to further strengthen cross-platform availability
- Sponsor important conferences, trade shows, and workshops
- Assess and depending on the outcome of the assessment develop Funding Gateway for game developers

Team (36 new hires from today)

- 3 senior developers
- 3 blockchain developers
- 2 system administrators
- 2 UI/UX developers
- 2 web developers
- 6 business development officers
- 3 key account managers
- 2 marketing/PR people
- 5 local advisors (in U.S., China, Korea, Russia, and Brazil)
- 2 accounting clerks
- 1 HR/accounting person
- 2 help desk people
- 1 quality assurance person
- 1 sales engineer
- 1 legal advisor

Tier 4: $12–$20 Million USD

Deliverables (in addition to Tier 3)

- Increase salesforce and business development in all offices
- Open offices in South America and Eastern Europe
- Assess and if the assessment is positive potentially applying for a license from a regulator such as FINMA to, for example, provide the entire billing process and open the possibility of offering securities
- Host workshops and events at key locations all over the world to strengthen community building
- Start integrating other advertising models into our blockchain such as cost-per-click and cost-per-impression
- Add further resources to strengthen and speed up R& D

Team (52 new hires from today)

- 4 senior developers
- 4 blockchain developers
- 2 system administrators
- 2 UI/UX developers
- 3 web developers
- 9 business development officers
- 4 key account managers
- 3 marketing/PR people
- 7 local advisors (in U.S., China, Korea, Russia, Brazil, India, and UK)
- 3 accounting clerks
- 1 HR/accounting person
- 4 help desk people
- 2 quality assurance people
- 2 sales engineers
- 2 legal advisors

In addition to this hiring, we will intensify our PR and marketing efforts with our partners at Hill & Knowlton to run international marketing campaigns and increase awareness of Vreo. And we will focus on acquiring partnerships with media agencies and industry publishers.

9 Reporting to Vreo's Contributors

Transparency is a key principle for us in the development of the Vreo marketplace. Keeping our community and all contributors to the Vreo Token Sale informed will be a top priority. We will report clearly to all how the resources from the Vreo Token Sale have been spent.

To this end, we propose issuing an annual report at the end of each fiscal year and posting it on our website at https://vreo.io for everyone to access.

Each report will cover one year, starting either from the end of the VREO Token Sale or the end of the previous report. In these reports, we will disclose the following information:

- % of contributed amount spent in the previous year
- % of contributed amount spent on product development
- % of contributed amount spent on marketing and PR
- % of contributed amount spent on research and development

All these reports will be prepared by an independent third party. The first report will be published within three months from Q3 2019. These reports will be produced every year until all the proceeds from the Token Sale are completely allocated.

10 Glossary of Terms

B2B (Business to Business): The exchange of products, services or information between businesses, rather than between businesses and consumers (B2C).

CLV (Customer Lifetime Value): A projection to estimate a customer's monetary worth to a business after factoring in the value of the relationship with a customer over time.

CPQV (Cost-Per-Quality-View): Vreo's unique solution for defining the value of an in-game ad impression.

CPC (Cost-per-Click): a way to charge for advertisements based on the number of users who click on the ad.

CPV (Cost-Per-View): a way to charge for advertisements based on the number of views an ad receives, the same as cost per impression.

CPM (Cost-Per-Thousand): a way to charge for advertisements per 1,000 impressions on a web page or in a publication.

Cryptocurrency: A new type of "unofficial currency" that an organization has created, based on software and cryptography.

EIGA (Embedded In-Game Advertising): Vreo's acronym for its unique way to embed dynamic, native ads in game on any device: mobile, desktop, or console.

F2P (Free to Play): A business model for online games in which the game developers do not charge the player to join the game. Instead, they hope to bring in revenue from advertisements or in-game sales.

Fiat: A traditional currency that a government has declared to be legal tender, such as dollars ($) and Euros (€).

Game engine: A game engine is a software framework used for the development of video games by providing visual development tools for the developer.

HDK (Hacker Development Kit): A combination of early-version hardware and software intended to help developers experiment and validate the technology.

ICO (Initial Coin Offering): An event in which a new token project sells part of its tokens to early adopters. ICOs provide a way for token project creators to raise money for their operations. Most ICOs raise money in Bitcoin or other cryptocurrencies like Ethereum.

IGA (In-Game Advertising): the practice of inserting ads in games and mobile apps.

Impression: a user or reader seeing an advertisement on their screen. These 'impressions' are not always subject to any quality provisions, so that if an ad appears anywhere on a user's screen for any length of time—even a fraction of a second—it's counted as an impression.

LTV (Life Time Value): A metric that represents the total net profit a company makes from any given customer. See also CLV.

MVP (Minimally Viable Product): A development approach in which a new product or website is developed with sufficient features to satisfy early adopters. The final, complete set of features is only designed and developed after considering feedback from the product's initial users.

SAM (Serviceable Available Market): the segment of the TAM targeted by a company's products and services which is within its geographical reach

SME (Small and Medium Enterprises): Companies with less than 250 employees and 50 million EUR annual revenues.[53]

SOM (Serviceable Obtainable Market): the portion of SAM that a company can capture.

TAM (Totally Available Market): the total market demand for a product or service.

VC (Venture Capital): Venture capital is financing that investors provide to startup companies and small businesses that are believed to have high growth potential.

VR (Virtual Reality): an artificial environment created with software and presented in such a way that the user suspends their disbelief and accepts it as a real environment.

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