

ADHIVE

ADD YOUR PASSION

The first
AI-controlled platform
for influencer marketing



W H I T E P A P E R

version 2.0

2017

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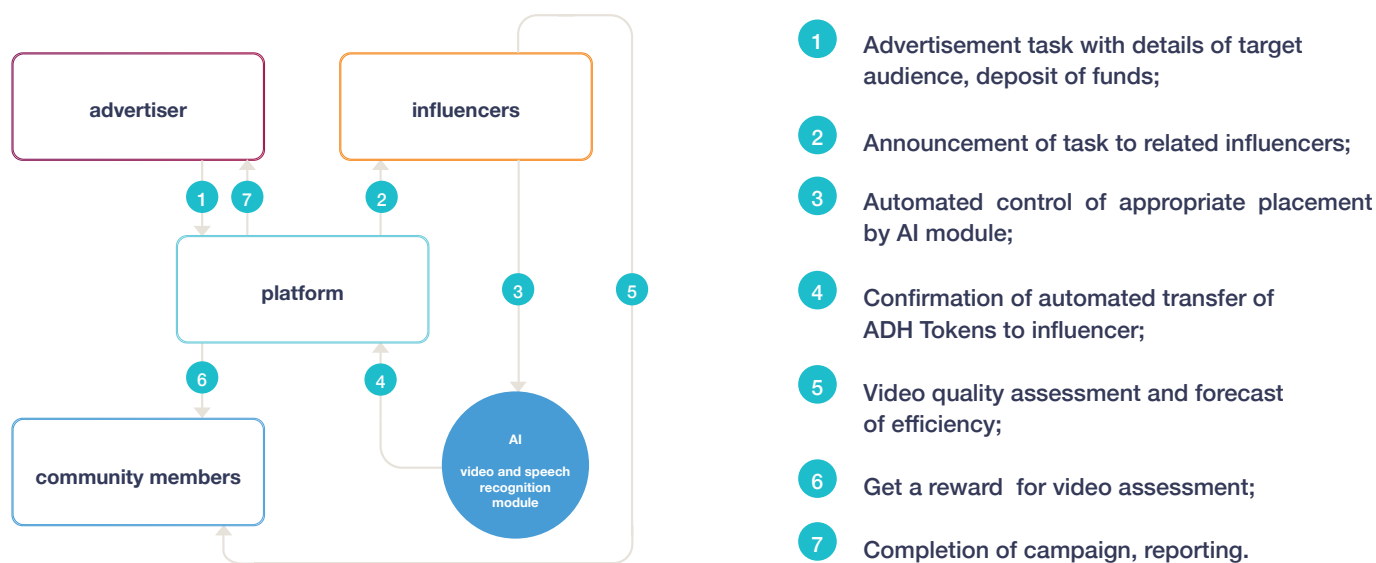
1. The purpose of this White Paper is to present AdHive and ADH Token to potential Token holders in connection with the proposed Token sale.
2. The information set forth below may not be exhaustive and does not imply any elements of a contractual relationship. Its sole purpose is to provide relevant and reasonable information to potential Token holders in order for them to determine whether to undertake a thorough analysis of the company with the intent of purchasing ADH Tokens.
3. Nothing in this White Paper shall be deemed to constitute a prospectus of any sort or a solicitation for investment, nor does it in any way pertain to an offer or a solicitation of an offer to buy any securities in any jurisdiction.
4. This document is not composed in accordance with, and is not subject to, laws or regulations of any jurisdiction, which are designed to protect investors
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9. White Paper can be modified to provide more detailed information. This English language White Paper is the primary official source of information about the ADH Token.
10. The information contained herein may from time to time be translated into other languages or used in the course of written or verbal communications with existing and prospective customers, partners etc. In the event of any conflicts or inconsistencies between such translations and communications and this official English language White Paper, the provisions of this English language original document shall prevail.

11. The White Paper may be updated or altered, with the latest version of the Document prevailing over previous versions. AdHive is not obliged to give notice of and changes. The latest version of the White Paper in English is available at the website <https://adhive.tv/>. While we make every effort to ensure that all data submitted in the White Paper is accurate and up to date at the point in time that the relevant version has been disseminated, the proposed document is no alternative to consulting an independent 3rd party opinion.

ABSTRACT

AdHive will be the first AI-controlled Influencer Marketing platform with Blockchain technological solutions. The AdHive platform fully automates all steps of interaction with influencers in order to save a huge amount of time and effort for advertisers. The platform will offer brands the opportunity to place a native video ad on an unlimited number of influencer channels without having to worry about proper execution. Native video advertising will become easy to run, and new opportunities for blog monetization will power community development and increase audience and advertising capacity.

The **core mission of Adhive.tv** is to create a new world of advertising by increasing reach for brands and providing a way to monetise blogs while creating better content for viewers. Our **main goal** is to remove the boundaries between brands and influencers, taking control of the fastest growing segment of advertising.



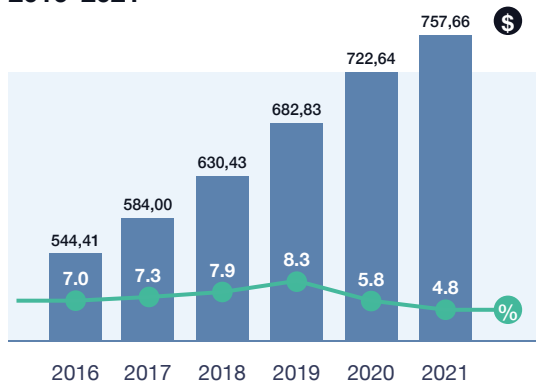
Settlement and quality control systems built on Ethereum blockchain and smart contracts ensure transparent and genuine results. AI modules for video and speech recognition connect to video channels and control the execution of ad tasks by the influencer. Blockchain technology provides a real-time, cost-effective and secure settlement model for advertisers, influencers and community members. The AdHive platform automates all placement, control and payments — usually a common nuisance for advertisers. The platform can be easily integrated with other platforms and services for native video ad placement like Ninja Outreach, BlogMint, BrandBacker and others to deliver additional value for advertisers.

The team of AdHive consists of diverse professionals from AI and software development, financial management, international digital marketing, sales, and business development areas.

1 MARKET OVERVIEW

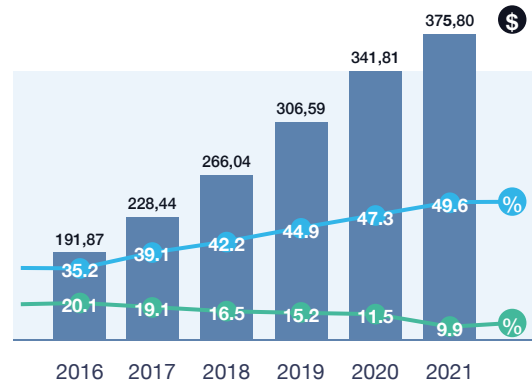
GLOBAL ADVERTISING MARKET

Total Media AD Spending Worldwide 2016–2021



bn Total Media AD Spending % Change

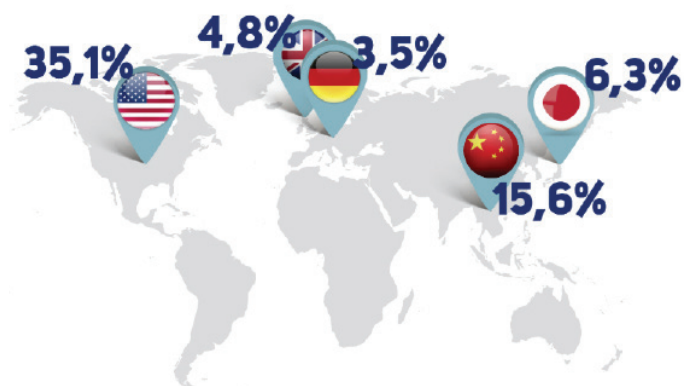
Digital AD Spending Worldwide 2016–2021



bn Digital AD Spending % Change

The global advertising industry is evolving quickly due to increased use of digital media and a shift in advertising formats. According to eMarketer’s latest forecast^[1], the global advertising market is set to reach \$584bn this year and is expected to increase 29.7% to **\$757.7bn in 2021**.

The US, China, Japan, the UK, and Germany are still representing the major share of global ad spending. The United States continues to be the largest advertising market with a total spend of \$205.06 billion in 2017. The Chinese market is expected to grow by 11.5% this year, its ad spend surpassing that of the UK, Germany and Japan combined. Moreover, global advertising markets will accelerate in 2018; in particular, Russia will be one of the drivers with a growth rate of 10%, due to the preparation and holding of the FIFA World Cup^[2].



+11.5%

Asia-Pacific is experiencing the fastest ad spend growth with China rising at 11.5% this year.

+10%

The Russian advertising market is expected to accelerate in 2018, due to the Football World Cup.

+6.1%

The US advertising market will continue to grow at a steady pace in 2017.

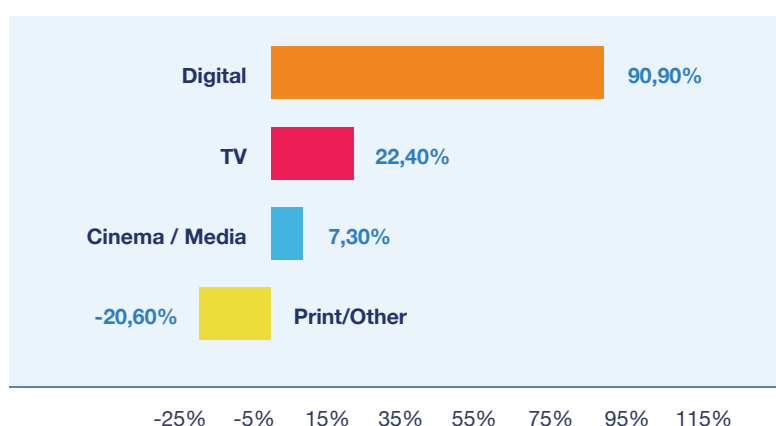
Growth in ad spending is primarily driven by the continued rise of Digital media, which is on track to sustain its double-digit growth annually through to 2020.

Digital advertising reached two symbolic milestones in 2017:

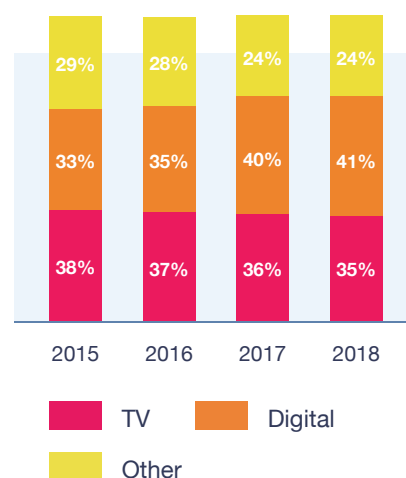
- 1) Digital ad spending surpassed TV ad spending in 2017, and became the **number 1 category globally**;
- 2) Digital ad spending passed the \$200bn mark to reach **\$228.4 billion this year**^[2].

By the end of 2017 digital ad market **will have grown 19.1%** and contributed a \$36.6 billion increase in advertising spending, representing more than 90% of total incremental media spend offset by declines in Print^[3].

Incremental spending by media in 2017



Digital AD Market share

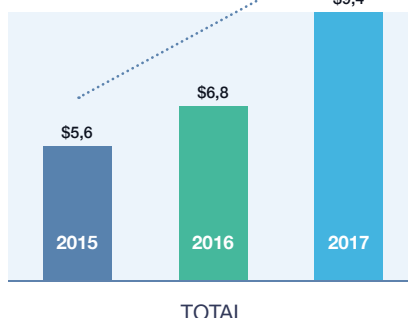


DIGITAL VIDEO ADVERTISING

With mobile media consumption rising rapidly, easily adaptable ads such as video, social media, and search advertising, are also quickly transitioning to mobile. According to Magna, video advertising and social media are the key drivers of digital advertising growth in 2017, **expanding by +30%** and **+32%** respectively^[4].

Online video is quickly becoming one of the key means for people to meet their information and entertainment needs. The number of digital video viewers grew by 8.2% and reached **2.15 billion** globally this year. This is equal to 62% of all internet users^[5].

+67%
Increase 2015–2017*



* % Change in Digital/Mobile Video Dollar Spend 2015–2017

A recent IAB research showed that average annual spend on Digital Video surpassed \$9 million in 2017 — an **increase of 67%** over the last 2 years^[6].

Advertisers are now allocating **56% of digital advertising** budgets to digital video.

Further, 61% of advertisers plan to increase their spending in the next 12 months.

According to HubSpot review^[7], **51.9% of marketers** worldwide consider video to be the content category with the **best ROI**.

Aberdeen Group reports that the revenue of companies using video advertising is growing 49% faster than those of non-video using companies^[8].

Another significant advertising market trend over the past two years has been the **rapid rise of social video**. Social video advertising already **represents 25% of digital video** advertising and its share is increasing rapidly^[4]. The top social networking sites — Facebook, Instagram and Snapchat — along with YouTube, the biggest digital video platform, are currently driving the shift to digital video.

NATIVE ADVERTISING MARKET

Advertising is an increasingly volatile industry — new trends rise thick and fast. **Native advertising has rapidly become a new reality** for the advertising market for the reasons outlined below, which are by no means exhaustive.

Traditional Marketing is becoming obsolete

TV audience is getting older:

- **33%** — People under 24 years old watch television 33% less than in 2010;

Print and radio advertising sales will decrease:

- **9% CAGR** (16-21) for print media market. Print and radio will continue to face stiff competition from digital media market^[4].

The Emergence of Banner Blindness

Only 8% of internet users can recall the last promoted brand they saw;

0,17% — average CTR in 2016 (opposed to 1,5% in 2005);

1903 ads per months — the average user sees;

50% users never click on online ads^[10].

Growing Adblock Usage

\$27bn by 2020 — estimated revenue loss due to Adblocking;

70% of consumers would have a poorer opinion of a brand if interruptive ad formats are subjected;

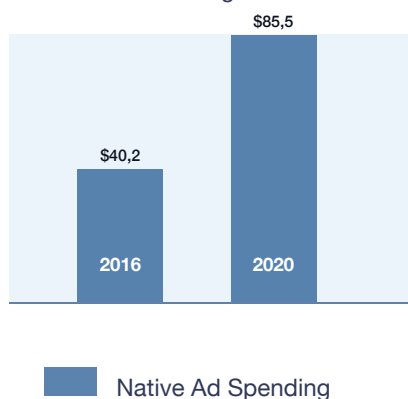
11% of internet users blocking ads around the globe;

30% global growth year-to-year in Adblock usage^[9].

The Native Advertising Institute (NAI) defines Native Advertising as paid advertising, where the ad matches the form, feel and function of the content of the media on which it appears^[11]. Native Ads are attracting greater attention, are more consumer engaging, more trusted and non-intrusive.

Global Native Advertising Market

\$ billions and % change



Native advertising has skyrocketed over the past few years, accounting for \$40.2 billion in 2016 and is expected to **climb to \$85.5 billion by 2020**, according to AdYouLike. This equates to **+113% growth** within four years^[12].

According to a recent Facebook Audience Network report, consumers interact with native ads up to 60% more often than standard banner ads.

Moreover, native ad brings 2 times greater eCPM and 3 times CRR^[13].

A recent NAI survey shows that **91% of advertisers say that native advertising important** or very important for their company. Moreover, only 3% of advertisers are not using or do not plan to use native ads in their campaigns [14].

When it comes to video, **63% of advertisers** now consider this format to be one of the biggest native advertising opportunities for their company. According to IAB report, 42% of Original Digital Video Advertising budget goes to Native Ads.

All of this makes native video advertising, especially native video ads through social media, one of the best advertising opportunities for the future.

INFLUENCER MARKETING

Social media has become a crucial tool for digital communications. According to IZEA, 7 in 10 US internet users aged 18–70 use social media each month^[16]. Such changes in information consumption habits have promptly led to a change in consumer behaviour. According to AdWeek, **74% of internet users** now use social networks prior to making purchase decisions, and **49% of users rely** on purchase recommendations from influencers.

With social media representing an increasingly integral part of consumers' lives, influencer marketing has become one of the biggest trends in the industry. Influencer marketing has a number of benefits for advertisers:

- Greater audience engagement;
- Speak your customer's language;
- Cost-effective;
- AdBlock resistant content format;
- Fast and simple way to create unique video content.

It is no wonder the influencer advertising market skyrocketed in 2016. A recent Linqia report says that **86% of marketing professionals are already using influencer marketing** tools and 94% of them found this advertising channel to be effective ^[15].

Furthermore, 48% of marketers increased their influencer marketing budgets in 2017 and 37% of respondents are currently spending \$50K-\$100K per influencer marketing program.

According to Nielsen Catalina Solutions, influencer marketing content delivers **11x higher ROI** than traditional forms of digital marketing^[17].

Social media platforms that offer quick visual content have the strongest consumer engagement, therefore, YouTube, Facebook, Instagram and Snapchat are the most preferred social media platforms for influencer advertising. There are over **15 million businesses now on Instagram**, and 80% of Instagram users follow at least one business account.

YouTube has become a major platform for digital video advertising and a valuable tool for influencers: **over four thousand YouTube channels have 1M+ subscribers**. YouTube's audience is huge and is about to get even bigger: **1.5 billion logged-in viewers** visit YouTube every single month — one of every five people around the world! Users spend over an hour a day watching YouTube. YouTube stars are **17x “more engaging” and 11x “more extraordinary”** than “traditional” celebrities among teenagers.

A huge number of internet users are creating their own social media profiles on a daily basis, and with an ever-increasing audience influencer marketing prospects are growing rapidly.

GAME STREAMING

Another segment of native video advertising with great potential for growth is game streaming and video broadcasting: Twitch, Dailymotion, YouTube, USTREAM, etc.

The global audience of video game content is 500 million people, more than 30% of which receive information from stream-content. According to market researcher Newzoo, In 2017 the E-sports Economy will grow to \$696 million, with a year-by-year growth of 41.3%. Brands are expected to spend \$517 million, including \$155 million on advertising, with overall investment nearly tripling by 2020 to \$1.5 billion. The global e-sports audience will reach 385 million in 2017 and is expected to grow another 50% by 2020. With the development of real-time engines for ad placement and control recognition on live channels, the AdHive platform could be easily integrated with streaming platforms to deliver additional value for advertisers and for the whole AdHive ecosystem.

LONG-TERM MARKET TREND

Advertisers and publishers are gradually adopting programmatic ad-buying and selling tools. Currently, programmatic advertising is mainly presented by desktop banner ads. But, by 2020, video and mobile will represent a majority of the programmatic ecosystem.

¹ Original digital video is professionally produced video for digital/online consumption.

Programmatic advertising — algorithm-driven targeting of ad units to specific audiences.

Main advantages:

- Greater campaign control and targeting;
- Greater campaign flexibility;
- Lower media unit costs;
- Better campaign reporting;
- Faster campaign set up and launch;
- Highly automated advertising.

The long-term goal of AdHive is to make a programmatic native advertising platform built on influencer marketing channels.

2 ABOUT THE PROJECT

PROJECT OVERVIEW

[Adhive.tv](#) – AI and community powered platform for native video advertising on influencer’s channels.

There are millions of influencers in the world, but brands only work with a limited number, due to a lack of transparency and reliability, inaccurate metrics and the overall complexity of the given market. Despite the outdated and inefficient ad format, TV still represents a large part of the advertising market.

The AdHive team has decided to launch a platform which will create a distributed network of influencers with clear rules and quality, with automated operations and payments. AdHive will enable the transformation of ad placement on influencer channels from a PR area into a pure media product, a standardized media inventory, open for purchase by media agencies by CPM or display media procurement.

NATIVE ADVERTISING

Native ad — advertising in which the ad matches the form, feel, and function of the content of the media in which it appears.

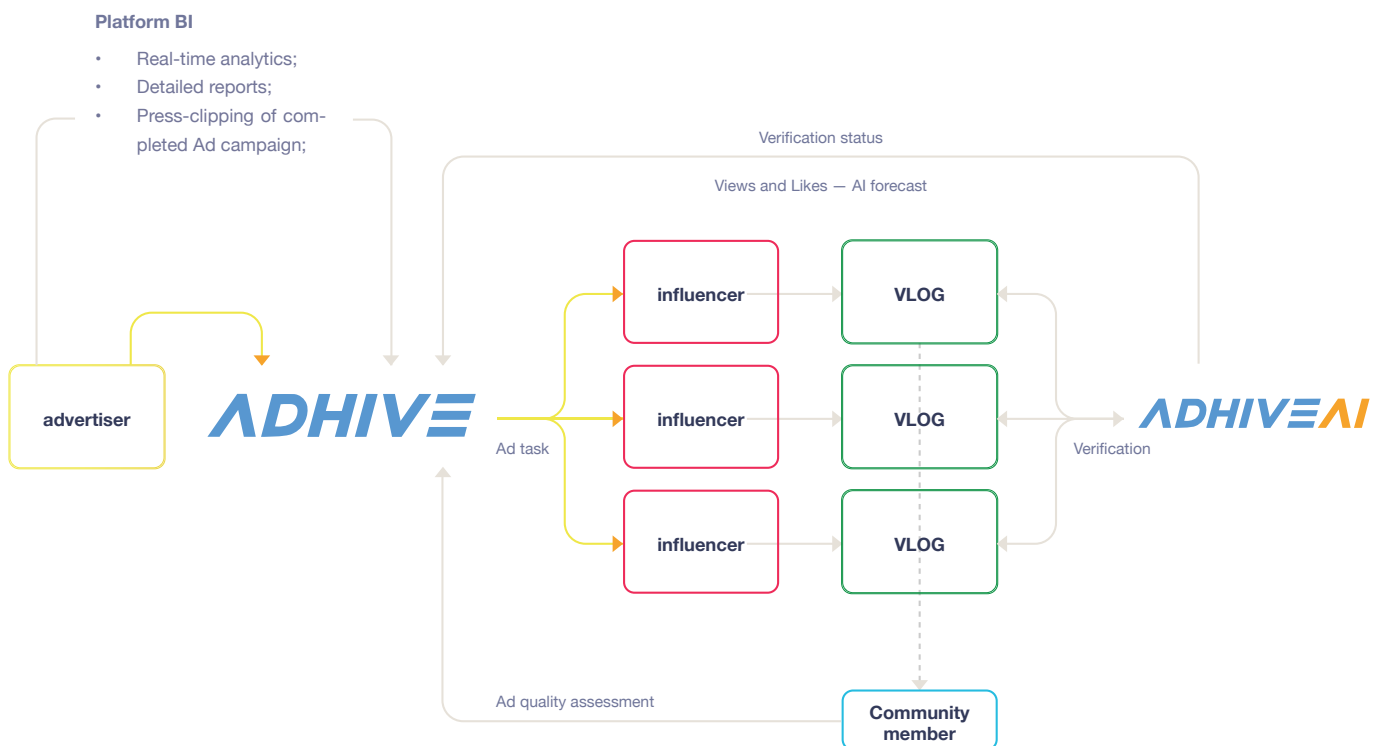
Native ads are organically integrated into the content of a particular source of information, and are not overly noticeable or distracting.

AI modules and blockchain technology make this platform a place, where influencers assemble to form one giant virtual TV channel with powerful targeting mechanics and high audience engagement, the likes of which is unachievable in the TV advertising market.

AdHive will assemble advertisers and influencers on the platform, working with thousands of small influencers as one channel, worldwide.

Agencies working with influencers will also gain access to the AdHive platform for free, monetizing their local networks of influencers, and allowing them to share their bloggers with other agencies. This will drive demand for the ADH Token.

The main advantage of [Adhive.tv](#) over the current system of multiple influencer marketplaces is that there is no time wasted on peer-to-peer communication between advertisers and influencers. With AdHive, advertisers do not need to choose a particular influencer and control the placement — the platform does it automatically. The platform will choose relevant influencers, propose tasks and conditions, confirm acceptance of terms, ensure proper placement, and release payment when the task is complete. All these actions are performed automatically, saving time for advertisers.



One of the features of the platform is complex and reliable assessment of native video ad placement efficiency by community members, making advertising measurable and understandable with proven results. The Platform can analyze the mentioning of words and showing of brands on video channels to find the volume of brand coverage and that of competitors.

ON ADHIVE

- No direct communication payments between advertisers and influencers — payments are released by smart contracts when AI confirms that the work is done properly;
- No need to choose influencers — just choose the target audience and the platform will do the rest;
- No messy chats, endless questions and comments — all tasks are formalized to be confirmed by Machine Learning modules for video and speech recognition.

PROBLEMS AND SOLUTIONS

The global advertising market has been plagued by multiple problems for years, including banner blindness, aging of TV audiences, declining audience involvement in classical advertising, the emergence of advertising blockers, etc. To a certain extent, a response to these problems was the explosive growth of markets for native advertising and influencer marketing.

Consumers aged 13–24 spend 11.3 hours weekly watching free online video, compared to 8.3 hours for regularly scheduled TV, according to a study by Defy Media. A major factor driving Internet-video consumption among millennials were, per the study: 62% of survey respondents said digital content makes them “feel good” about themselves vs. 40% reported for TV. According to the survey, 67% of millennials said digital content delivers content they can relate to vs. 41% for TV, and 66% said they turn to digital content to relax vs. 47% for TV.

Users are less likely to pay attention to banners — very few people are receptive to them, most actually hate them. Native video advertising, on the other hand, does not stand out against the background of the video on which it is located. Such advertising corresponds to the type, style and content of the video.

Influencer Marketing and Native Advertising markets have been growing at an incredible pace in recent years and such growth rates inevitably entail certain institutional disparities. However, an adequate and transparent system of interaction between market participants has not yet been formed, and brands and influencers suffer from asymmetric information and the presence of intermediary agencies with unreasonably high commissions. Effective metrics and control mechanisms have still not been defined and the structure of the market as a whole remains extremely complicated. The AdHive platform effectively solves most problems for both the Native Advertising and Influencer Marketing markets and the global advertising market in general.

PROBLEM**SOLUTION****For ADVERTISERS****1.****Lack of video contact with target audience**

Young people under the age of 25 watch almost no TV, therefore they can hardly be reached by display ads. Traditional channels of video advertising are limited. Millennials are watching video blogs, looking for answers not on Google, but on YouTube.

The price of placement on famous influencers' channels can be comparable to TV or even higher, but the price of placement on unknown channels is quite affordable. However, operationally, it is difficult to place similar commercials on more than 20-30 channels at the same time.

AdHive platform solution

The main difference between traditional ad agencies and AdHive is the ability of Adhive.tv to work with a group of small influencers, providing more accurate targeting and reaching a broader audience with a lower price per contact. Via API, each influencer shares statistical data about the audience of the channel: number of video views, likes and comments, subscribers, involvement of the audience, regions of viewers, duration of the views, etc. The advertiser will get an overview of the audiences of various influencers and can filter for his target audience, getting a list of only those influencers who match it. However, it is impractical to choose influencers manually, so the platform is void of personal placement.

After the advertiser sets up a campaign, each influencer from the selection can respond to the task and perform it, receiving payment the same day. During the whole process the advertiser and influencer can not communicate with each other directly — only with the platform. The platform arranges the deal and manages the task of buying views from influencers and selling prices to advertisers.

2. **Tools not effective for working with influencers**

In its current state, this market is growing mostly by campaigns where 90+% of ad budgets go to top-level influencers, and there is very little movement to shift the budgets to influencers with medium and small audiences.

Dozens of influencer marketplaces will not change this picture dramatically because of a lack of confidence, rules, metrics and tools for control — a mainly manual process with low productivity and capacity.

3. **Difficulties of working with influencers**

Influencers work on a prepayment system, and the price of ad placement for the same influencer can vary, depending on many factors. The actual budget may differ from the planned one, and the number of viewers/price for contact could also vary.

When a commercial is posted by an influencer, there is a risk of receiving an unsuccessful video for the entire audience which cannot be adjusted or altered by the advertiser. It is safer to decrease risk and place more commercials with less popular influencers as opposed to fewer commercials with big-name influencers, but it is organizationally unmanageable.

It takes time to agree on details and to verify results for each influencer and to check whether each requirement of the assignment was executed.

AdHive community members are involved in giving and getting feedback about quality and attractiveness of published videos. Community assessment and feedback will be shared between the platform and the influencers and will be used for further education of influencers and advertisers. Community members can be any person who is interested in the development of social video advertising.

AdHive will start from Youtube. Instagram, Facebook, and popular local social networks will be connected to the platform later. All of them have API to get all available information about channels' audiences.

Calculation of the amount of payment to the influencer is based on quality assessment of community members and a prediction math model. CPM, which is used for calculation, can also be changed by the platform using internal algorithms to manage the margin or expand the coverage by trying to attract influencers with a requested audience. The advertiser credits his account with Tokens, fiat or crypto currencies, by sending the amount of the advertising campaign to the platform account as a refundable deposit. The influencer is rewarded when the job is completed and verified by the AI.

4. Lack of information about video content

There is a lack of any information about video content on influencer channels – what they mention, how and which brands appear on video, and how often they appear.

For the moment there is no measured data about video content which could be used for new content creation for native video ad campaigns.

AdHive video monitoring solution

The AdHive platform is able to monitor each channel to track brands / names / objects in video. To prepare effective targeting and the right type of advertising messages, advertisers can take into account current competitor activity, coverage and brand awareness, market share of each brand, etc. for each audience. Video monitoring could be organized as a continuous service to keep an eye on competitors and public activity.

Before developing an advertising strategy and plan, advertisers with AdHive can analyze previous and current mentioning of target brands, categories, products, or objects to prepare a plan based on measurable parameters. At the moment, searching for a mention can only be made in text form, similar to Google Brand Lift. After the campaign execution, advertisers will remain active on AdHive to monitor results of the campaign and track new video content.

For INFLUENCERS

5. To have an appropriate supply of advertising offers to monetize blogs, a influencer's base of subscribers must be big enough to be interesting for agencies, or the influencer can build a pipeline of offers on his own. Both ways are not so easy for beginners or early influencers, and it doesn't work very well for influencers who value independence.

Influencers get a flow of advertisement proposals, all of them formalized, and it becomes possible to plan the several next videos with the understanding of their monetization. Influencers save time by excluding negotiations from their schedule and have more opportunities to create content.

AdHive is focused on the establishment of a global decentralized native video ad network. The AdHive ecosystem will be built as a long-term cooperative effort where advertisers have an opportunity to be involved in the dynamic market of native video advertising, and participants of the platform will be able to grow their capabilities and gain a profit from participating in a variety of advertising and quality assessment tasks.

ADHIVE ADVANTAGES

For ADVERTISERS	For INFLUENCERS
<p>Analysis of all connected video channels to investigate volume of target mentions, words, and showing of brands</p>	<p>Work with a proven provider, regular orders, and payment guarantees</p>
<p>Fair and reliable assessment of native video ad campaign efficiency based on complex review by the community</p>	<p>Receive a reward calculation daily and in advance</p>
<p>No need to interact with influencers directly to agree on terms, control the result, pay for the result, or collect reports</p>	<p>Access to a large pool of advertising campaigns</p>
<p>Payment for properly placed ads only</p>	<p>Transparent mechanism for monetizing a channel</p>
<p>Access to a young audience as well as subcultures</p>	<p>Ability to monetize online streams — control the placement of advertising in real time</p>
<p>Links placed on influencers' public pages on social networks for a multiplied effect</p>	<p>Support of video influencers to better monetization of blogs and creation of effective native advertisements</p>
<p>No production costs, but a lot of user content could be accumulated</p>	

Real time tracking of online broadcasts — impossible to do manually

Run multinational campaigns with video ad creation in local languages and corresponding to local culture

Review by community members as a double check of AI to make sure the ad is properly placed

3

TEAM & ADVISORS



Dmitry Malyanov

PROJECT DEVELOPMENT, OPERATIONS, CO-FOUNDER

Co-founder of [Scorch.ai](#), [Webvane](#), CEO of data management service, 10+ years in sales and business development.

Previously: Groupon



Vadim Budaev

STRATEGY, HR, TECHNOLOGICAL DEVELOPMENT, CO-FOUNDER

Software development team leader and architect (15 years of experience), Co-founder of [Scorch.ai](#), Ideologist and developer of [Webvane](#) framework.



Alexandr Kuzmin

TOKEN MODEL DEVELOPMENT, INVESTMENT AND FINANCIAL MANAGEMENT, CO-FOUNDER

Serial entrepreneur and investor with much experience in start-up development. Former professional trader.

**Ivan Kotov**

OPERATIONS, MARKETING

Expert in executing go to market strategies and building up marketing & sales functions, with 10 years of experience. Deep knowledge of ICO projects. Cultivates integration of sales and marketing channels, building the structure of marketing units.

**Alena Vinokurova**

PROJECT MANAGER

Experienced ICO manager. Worked with top global and Russian agencies specializing in digital marketing and CRM with sophisticated understanding of both B2B and B2C markets.

**Roman Vias**

MARKETING

Qmarketing Founder, Qlean Co-founder.

**Joy Yugay**

ASIA COMMUNITY MANAGER

Broad experience in community-building worldwide.

**Dmitry Romanov**

STRATEGY AND BUSINESS DEVELOPMENT: INVESTMENT ACQUISITION, GOVERNMENT RELATIONS AND JOINT VENTURES ON FOREIGN MARKETS.

M.S.P.M.

**Kristina Kurapova**

LEGAL COMPLIANCE AND STRUCTURING

8 years of experience in international tax planning. Kristina's competence also covers the issues of offshore and holding structuring, financial and gambling licensing and legal support in bank account opening worldwide.



Denis Vorobev

SOFTWARE DEVELOPMENT. ARTIFICIAL INTELLIGENCE EXPERT

5 years of experience in software development. 3 years of experience in AI and new methods for localizing objects in image using convolutional neural net-works. Ph.D. candidate.



Denis Dymont

FRONTEND AND FULL STACK DEVELOPER

5 years of experience in software development in Video streaming, AI tools for businesses, Dating, Social Community sites.



Dmitry Bogdanov

SERVER SIDE DEVELOPER

6 years of experience in software development in: microservice architecture, video streaming, interaction with external services (payment, social and other).



Daria Muhaleva

HEAD OF BLOGGERS COMMUNITY

Five years in advertising, since 2016 in journalism. Six years of experience in project management.



Larry Christopher Bates

USA COMMUNITY MANAGER

Neuroimaging scientist, serial crypto project developer and Blockchain Enthusi-ast. Telecommunications and cyber-security specialist. Former community leader/advisor for Factom and Synereo. Chief Security Officer/President for Bitland Global



And this is not all!

The AdHive team consists of about **50 professionals** with vast experience in business, marketing, software development and other industries!

ADVISORY BOARD



Serguei Popov

SCIENTIFIC AND TOKEN PRODUCT CONCEPT ADVISOR

Brazilian [research mathematician](#) of Russian origin with a Ph.D. from the Moscow State University. Currently works in the field of Stochastic Processes. He became interested in crypto in the end of 2013, and made a number of contributions to [the theoretical aspects of the Nxt cryptocurrency](#) and PoS in general. Co-founder of IOTA and WINGS projects.



Ivo Georgiev

AD TECH ADVISOR

Extensive experience as a software engineer with a particular interest in the video-on-demand industry. Since 2012, he has been heading Stremio. Well-versed in cryptography and crypto currencies. CEO and co-founder of AdEx.



Eyal Hertzog

BLOCKCHAIN AND AD TECH ADVISOR

Venture-backed technology entrepreneur for over 20 years. Founder of Meta-Cafe, Israel's fastest growing video sharing site reaching over 50m uniques at its peak. Previously, Eyal founded Contact Networks, one of the first social networks. Eyal has been an outspoken thought leader on cryptocurrency in Is-rael and is a talented piano and bass musician. Co-founder of Bancor.



Soheil Mirpour

BUSINESS DEVELOPMENT ADVISOR

Senior Vice President for Investments at Rocket Internet and a Senior Director at the firm's investment arm Global Founders Capital. He leads the firm's Private Equity and Growth Investing. Previously, he worked in Private Equity at Kohlberg Kravis Roberts and in Investment Banking at Morgan Stanley.



Chad Pollitt

NATIVE ADVERTISING ADVISOR

Chad Pollitt is the co-founder of Relevance, the world's first and only website dedicated to content promotion, news and insights. He's a former partner at the Native Advertising Institute, dedicated to advancing native advertising and leading, educating and connecting marketing, advertising, and publishing professionals so they can flourish in a new, more native, world.

Named one of 8 top influencers to follow in native advertising, Chad authored "The Native Advertising Manifesto," "The Content Promotion Manifesto" and "The Global Guide to Native Advertising Technology." He's also an Adjunct Professor of Internet Marketing at the Indiana University Kelley School of Business and an Adjunct Instructor of Content Marketing at the Rutgers University Business School.



Ariel Israilov

INVESTMENT ADVISOR

Graduate from Finanz Akademie, Vienna with a trading and market making background. Over 15 years of global entrepreneurship experience. As a venture capitalist his investment focus is East-African, ASEAN and CIS countries. CEO and founder of FRESHVALE LTD and several IT, finance and security technologies companies.

PARTNERS



[WINGS](#) — Decentralized platform for crowdfunding projects. Wings plays a significant role in tech support for the AdHive crowd-sale campaign. The Wings community brings marketing support for the project.



[AdEx](#) is a blockchain-based ad exchange aimed at disrupting the existing online advertising landscape and addressing its significant problems: advertising fraud, privacy, and consent to receiving sponsored messages, etc.

The partnership between AdEx and AdHive will allow us to function more effectively in the advertising market for both projects. In particular, some AdEx advertising campaigns related to video will be implemented on the AdHive platform using ADH Tokens.



[The Bancor](#) protocol enables built-in price discovery and a liquidity mechanism for Tokens on smart contract blockchains.

The Bancor protocol eliminates the liquidity risk for ADH Token holders by providing exchange mechanisms for ADH Tokens through the Token Changer — a combination of an exchange and market-maker based on smart contracts. The Token Changer is a smart Token that holds two or more digital assets in its reserve and is used to exchange between ADH Tokens, BNT Tokens, ETH, etc.

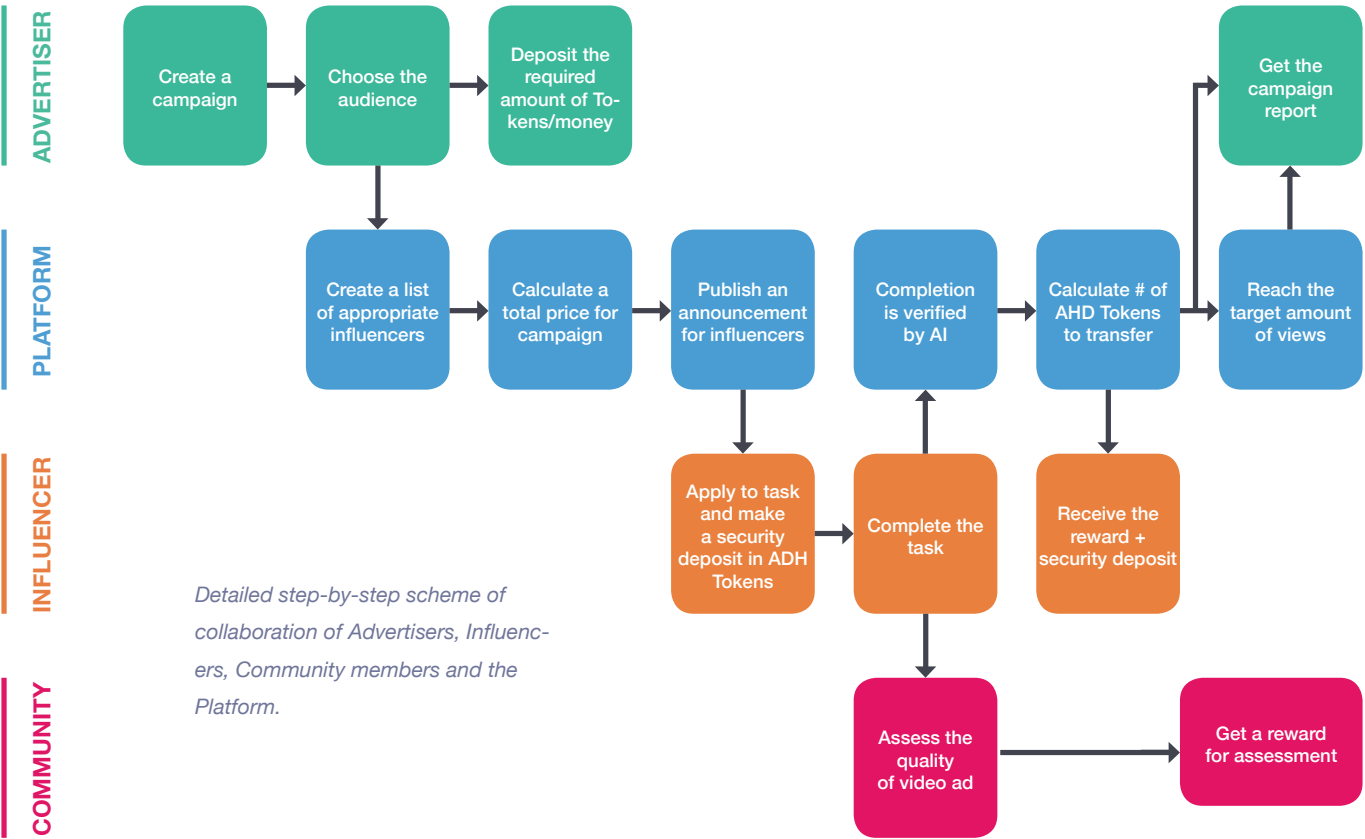
4 HOW IT WORKS

ECOSYSTEM

AdHive will be built as an environment where each participant will be motivated to act and develop the platform ecosystem, which will in turn increase rewards for all participants involved. Financial mechanics for each part is based on a profit-and-loss approach where influencers must need to guarantee their intentions via a security deposit of ADH Tokens, which will be locked in a smart contract until certain conditions are met. Community members risk missing out on rewards in case of incorrect assessments of ad quality. Rewards for community members depend on the amount of Tokens held in their wallets. This approach will motivate influencers to place ads properly and community members to make more accurate assessments and well-informed surveys. It also provides anti-spam and Sybil-attack protection.

PLATFORM OVERVIEW

The key approach of the platform is balance, help, and control of each other. Community members balance the interests of influencers and advertisers. The platform shares advertisement budgets among the all Platform participants to maximize motivation to act and develop the platform ecosystem.

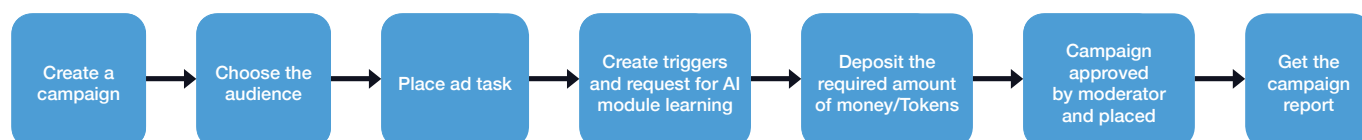


ADVERTISERS

The cabinet for advertisers will be easy-to-use, with the following key functions:

Campaign setup and start page	In this section, the Advertiser can set up all the necessary parameters for the future campaign (Parameters of audience, Deadline for publication of the task, Duration of the campaign, Deadline for applications, Target regions, Budget) and launch the campaign.
Wallet	Card and crypto wallet details for transfer of ADH Tokens to crypto and fiat currencies. Debit card details.
Campaign dashboard	Detailed statistics of advertising campaigns. Reports on completed campaigns.
Video content analysis page	Page for launching and monitoring studies on the influencer channels. Advertisers can build a very comprehensive monitoring list to track video content and activity of brands opinions of influencers.
Feedback on the platform	At any time, the advertiser can get help on technical or other issues.

A. NATIVE VIDEO AD PLACEMENT ON INFLUENCER CHANNELS WITH RELEVANT AUDIENCE



Advertiser workflow

The Platform allows to advertise classic brands and companies, as well as to advertise the Token Sale promotions and actual crypto projects. Payments for campaign can be done via cryptocurrencies or via project Tokens which will be converted to AdHive Tokens.

An advertiser can select the target audience by all available parameters (with API), place the advertising task, create triggers and request explanations of recognition modules, and credit the deposit by any type of money (fiat or crypto currencies). After the campaign opens, it must be approved by an AdHive moderator. During the campaign real time data is collected on the dashboard with the appropriate metrics. During the period of adoption of the AdHive platform and AI technology there will be no cost for explanations of AI video and speech recognition modules.

The screenshot displays the 'New Project' interface with the following elements:

- Header:** 'New Project' title, 'Select project options' subtitle, and a 'New Project' button. The user 'Boris Zaslonskiy' is identified as the advertiser.
- Progress Bar:** A five-step process: 1. Bloggers parameters (checked), 2. Coverage and budget, 3. Tasks details, 4. Tasks distribution, 5. Start time.
- Platform Selection:** Radio buttons for YouTube (selected), Instagram, and Load filters.
- Channel Topics:** A search bar with 'Tra' entered, showing a dropdown menu with 'Travel', 'Traveling' (highlighted), and 'Train'.
- Keywords:** A text box containing 'Traveling, travel, adventure, amazing, amazing stuff'.
- Popular segments:** Buttons for sport, science, beauty (selected), food, music, technologies, gadgets, announce, and history.
- Gender of blogger:** Radio buttons for All (selected), 18+, and 21+.
- Content restrictions:** A section with a sub-header.
- Viewers age:** A slider set between 25 and 35, with a range from 18 to 60+.
- Blogger language:** A dropdown menu currently set to 'Select'.
- Summary:** 'Total number of unique views' is displayed as '42 million'.
- Navigation:** 'Back' and 'Next' buttons at the bottom.

Start of campaign

An advertiser should not spend more than a couple of minutes preparing a campaign:

1. Parameters of audience — can be filtered by all available parameters of social networks;
2. Deadline for publication of the task;
3. Period of campaign, deadline for applications;
4. Target Regions;
5. Budget.

After these are set, the platform will estimate the number of views, comments, likes, reposts, and the advertiser will be able to change settings to achieve the target parameters.

Duration of campaign

The period of campaign is determined by the advertiser and not limited by platform. Technically it could be 2-3 days or 1 year. By default, the calculation of the cost of campaign for the advertiser is based on total number of video views for the first 30 days and CPM for the advertiser.

If the duration of the campaign is less than 30 days, then the CPM proposed to the advertiser will be higher to compensate for the missed profit of the influencers and to provide additional efforts by the influencer to publish videos during the campaign period.

How to manage a influencer list for a campaign

In general, [Adhive.tv](https://adhive.tv) is a platform where influencers have an opportunity to become more professional and famous. The mechanics of advertising with AdHive are similar to TV ad placement — advertisers initially choose the parameters of the audience and not the specific influencers. However, AdHive proposes a few ways for the advertiser to have an affect on the influencer pool:

1. **Stop List** — a field in the campaign creation form, for influencers that the advertiser does not want to attract for a task. The Advertiser can put links in the field for channels which should be excluded from the pool.
2. **List of sponsored influencers** — advertisers can send promo Tokens to groups of influencers manually mentioned (links to their channels) or filtered by their rating, to motivate them to take part in the campaign. Such Tokens can only be received for execution of a particular advertising task. If the influencer does not execute the task, the promo Tokens will be returned to the advertiser.

End of campaign

At the end of a campaign the Advertiser will get a report with the number of contacts with the target audience and a list of links to video instances of task execution. Each report will contain details about unique and total viewers of the video, as well as interactions within the audience of influencers.

B. VIDEO CONTENT ANALYSIS AND MONITORING - PRE- AND POST- CAMPAIGN ANALYSIS

With AdHive, brands are able to collect data about the current level of public activity and opinions. To prepare or enhance campaigns, advertisers can propose a survey for community members to get feedback from the target audience. The audience of surveys can be filtered additionally by gender/age/region/interests and by influencer/spectator / both. Surveys can contain any materials and can be focused on any part of the audience. The price will be calculated based on demand for a particular audience.

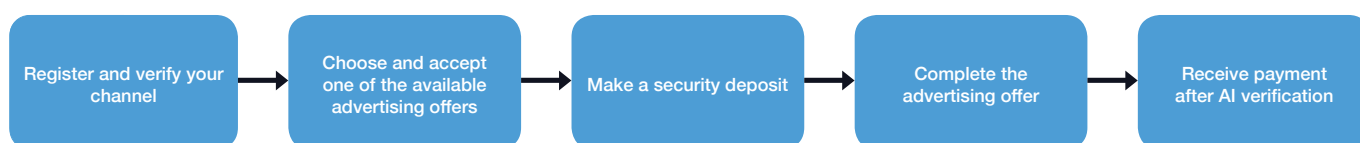
To remain informed, fit the campaign more precisely to its aim, and to develop relevant creative ideas, advertisers can analyze past or current activity on influencer channels with AdHive video analytics. Advertisers can request a single analysis or permanent monitoring of all channels or any group of channels. The cost of this monitoring consists of a fixed cost of AI modules learning from each brand/object and a variable cost of processing, which depends on the intensity and number of minutes of video that need to be analyzed.

Advertisers can build a very comprehensive monitoring list to track video content and activity of brands and opinions of influencers.

INFLUENCERS

The Platform is designed to work with influencers and streamers in the same way — by “influencers” we mean video bloggers on Youtube, Instagram etc., as opposed to streamers from Twitch, Smashcast etc. Video recognition modules for streams are included in the release of v.07 and will be deployed in 2018. The process and approach for streamers will be identical to that of influencers with a small difference in reward calculation. Moreover, influencers on Instagram can stream their video, so the difference between influencer and streamer is not so significant now and will disappear almost entirely soon.

All functionality for influencers will be available from the client cabinet with notifications by any channel selected or chosen- email, SMS, messengers and app notifications. The wallet will provide the mechanics for convenient spending or saving of the Tokens.



Influencer Workflow

THERE ARE 5 MAIN DOMAINS IN THE INFLUENCER CABINET:

Personal data	Name, email, photo (optional)
Channel audience statistics.	Data from social network channels, keywords for the channel, type of advertisers with whom the influencer is ready to work (FMCG, services, goods, entertainment etc.). Each channel should be confirmed by the influencer to avoid doubling and fraud.
Feed of advertising proposals.	All related proposals from advertisers. Promotional campaigns (to increase involvement or referral campaigns).
History and previous activity of the influencer.	At the beginning this information will be available for the influencer only, in later releases access could be developed for advertisers to view and analyze detailed statistics of influencers.
Wallet for ADH Token and other wallet details.	Card and crypto wallet details to be able to transfer ADH Tokens to crypto and fiat currencies. Debit card details.

After the registration and confirmation of the channel, all relevant advertising tasks will be available for the influencer. Each task contains a detailed description with precise words and phrases, picture/object descriptions, certain sequences, estimated reward for task execution, duration of campaign, minimal Participation balance, and the amount of the Security deposit required to ensure proper task execution. By default, each influencer has 14 days for task execution, but an advertiser can change that parameter. The Participation balance is a required minimum balance of Tokens in influencers wallet in order to be able to participate in an ad campaign. A minimum balance needs to be held by the influencer in order for the influencer to have access to free educational materials including those for video blog development and mechanics for blog monetization. The Security deposit is an AdHive Token (ADH) deposit which the influencer should make to ensure a proper task execution.

Active Tasks
List of proposed tasks

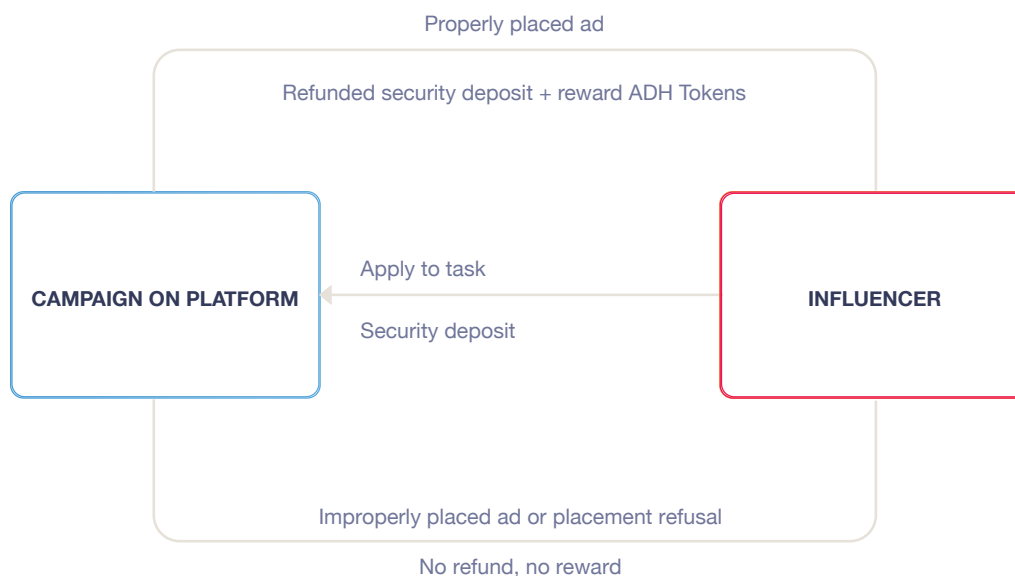
Add Channel Marcus Stickman Blogger

Filters Sorting

Open	Start – Deadline	Est. reward	Views
20 Jan	21 Jan – 3 May	21 \$	216 500
20 Jan	21 Jan – 3 May	21 \$	216 500
20 Jan	21 Jan – 3 May	21 \$	216 500
20 Jan	21 Jan – 3 May	21 \$	216 500
20 Jan	21 Jan – 3 May	21 \$	216 500
20 Jan	21 Jan – 3 May	21 \$	216 500

1 2 3 4 5 ... 54

The bigger the potential reward of the influencer, the bigger the Participation balance and Security deposit needed. After the successful execution of the task, the Security deposit will be refunded. This refund will take place just after the publication of the video and first assessments by the community. In case the influencer refuses to execute or does the placements improperly, (The AI module did not recognize the required phrases and objects) the influencer loses the Security deposit and it will be sent to the platform. There will, of course, be claims from influencers who disagree with the AI module judgment and such issues will be reviewed manually. The required Participation balance of Tokens will be calculated based on a math model (Appendix 2). On average, it will be about 10% of the estimated reward. The Security deposit will be constant for each group of influencers (depending on the average # of views in the first 30 days of the 10 most recent videos of each influencer) and will not exceed of 2-3% of influencer's estimated reward. After applying for the task, the required sum of Tokens will be locked in a smart contract until the proper execution of the task. Influencers will see all campaigns available for them but can apply only to those in which the required minimum Participation balance is lower or equal to the balance of Tokens in their wallets.



RATING SYSTEM AND EFFECT ON REWARDS

Community members assess the advertising effect of ad placement which the influencer has prepared (the mechanic is described in detail in the paragraph “Community”). Rating of the video depends on the assessment of the measure of advertising attractiveness of the influencer video. Rating of the influencer depends on assessments of previous videos of the influencer and their effects on internal CPM (price of task placement) for the influencer (details in Appendix #2. Math models and Token mechanics) and on the potential selection of influencers for limited campaigns (detailed in paragraph “How It Works--> Advertiser”).

Before applying for a task, each influencer will see a potential reward, estimated by the platform, based on the influencer’s internal CPM and estimated number of views of his future video. The Estimated reward calculation is based on the average # of views in the first 30 days of the 10 most recent videos multiplied by the influencer’s CPM, which is enough for influencers to make a rough assessment of possible earnings. The Effective reward will be predicted within 7 days after the video is published using The Prediction Module, and is based on the math model of linear regression of number of views ratio for 7 and for 30 days from the last 25 videos (details in Appendix #2. Math models and Token mechanics). The Reward will be calculated as “Number of views in 30 days predicted by platform” * CPM of the influencer.

Token transfers to influencers are made daily during the first 7 days after a video is published. Details of calculation of influencer effective reward are as follows:

- **Day after video publishing:** refund of Security deposit + “Number of views for the 1st day” * CPM;
- **3rd-7th days:** “Number of views for the day” * CPM — for each day from the 2nd to 6th;
- **8th day:** Effective reward for the placement — paid amount (Security deposit + 6 days reward);

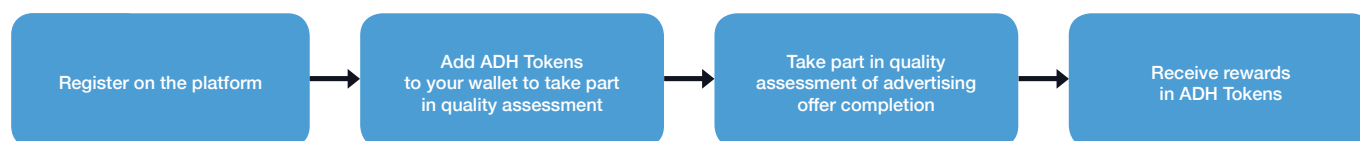
After the campaign each participating influencer has a chance to get a bonus for quality of task execution in the case that the rating of the video will be in the TOP tier. AdHive will charge 3% from the campaign budget for bonuses based on advertisement quality.

COMMUNITY GROWTH AND INFLUENCER INCENTIVIZING MECHANICS

1. In order to reduce barriers for first play, AdHive will start with a very easy promotional mechanism for participants with promotional Tokens which could be used as a Security deposit only and will be transferred to the influencer after the ad task execution in addition to the reward. The rule concerning minimal Participation balance of Tokens will not be in effect for promo participation.
2. Another mechanism to motivate newly-registered influencers to take part in a first ad campaign is “AdHive task” with no Token deposit required. This task is to display in some way the Adhive.tv logo (on a t-shirt or any other object), or to say a specific phrase about AdHive. After that, the influencer will receive a reward in ADH Tokens in their wallet on the platform. As soon as the Tokens have transferred into the wallet, a tutorial will be available to help the influencer with tips on how to operate using the wallet and what the influencer can do with ADH Tokens.
3. During the brand promotional campaign, advertisers can send promo Tokens to influencers to motivate them to take part in the campaign. Such Tokens can only be received for execution of a particular advertisement task. If the influencer does not execute the task, the promo Tokens will be returned back to the advertiser.

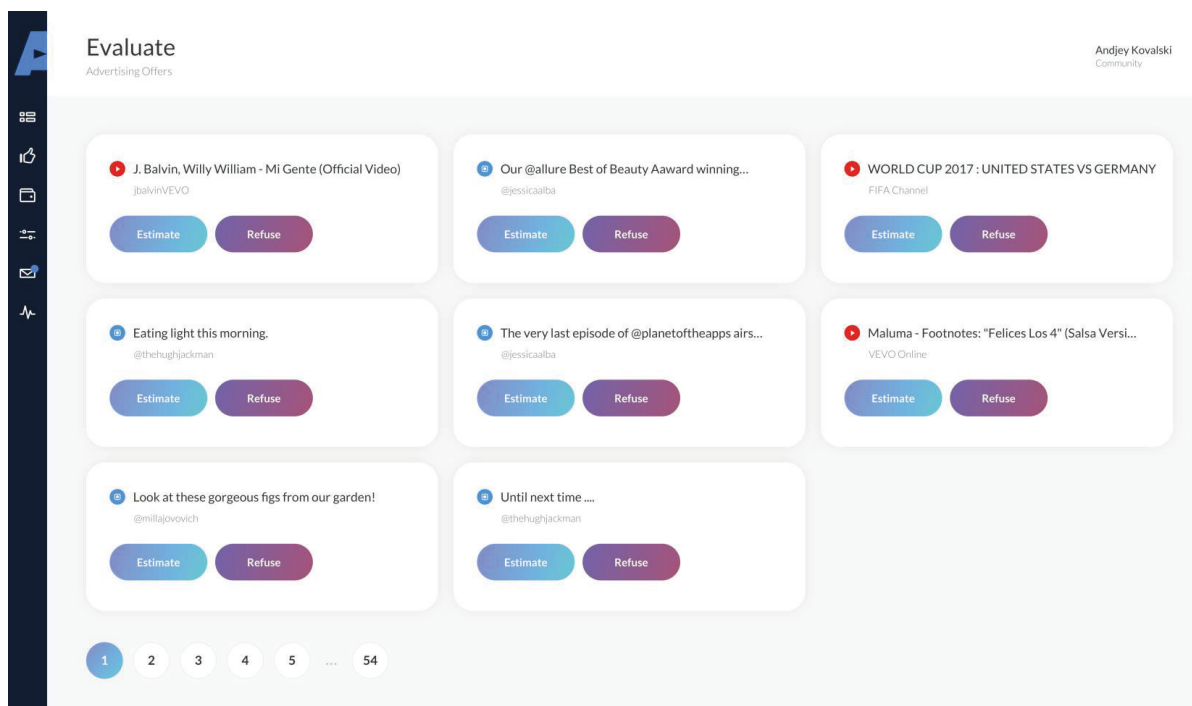
COMMUNITY

The overall mission of the community is to develop native video advertising on influencer channels, to develop new ways of brand promotion in social media, to educate influencers as well as advertisers, and to attract new and talented people into the community. One of the main goals of the community is to help advertisers get more qualitative video advertising and to help influencers increase the efficiency of their video monetization. Community members can send feedback to influencers about videos and to the platform about fraud issues as well as give feedback on how to improve the process. Influencers can receive feedback messages in their profile from the community and from the platform. A portal will be organized on the platform for influencer education with feedback, cases, and materials, which will be created by platform methodologists and by community members.



Community Members' Workflow

Community members can be influencers, spectators, or people who understand the principles of social video advertising and could be involved in campaign execution. Community members will be invited to assess native advertisement quality, creativity, and influence on spectators. Each visitor of the website can register and become a community member and can be rewarded with ADH Tokens for involvement in such activity. The more accurate estimation a member provides and more Tokens held in their wallet for the period of the survey, the larger the reward the member receives. The quality assessment of video engagement will be determined by the Swarm Intelligence principle.



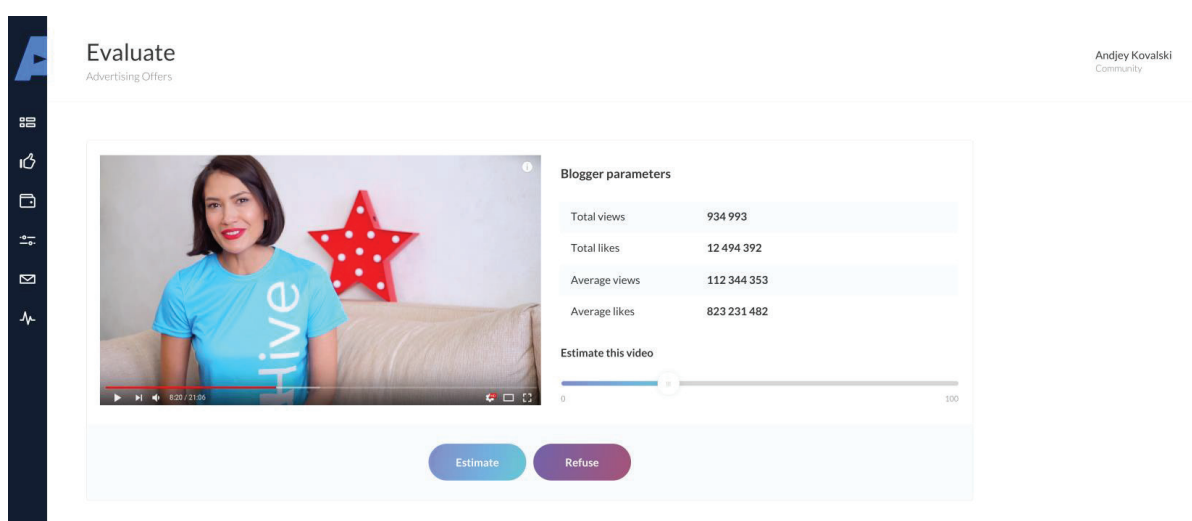
BENEFITS FROM COMMUNITY INVOLVEMENT

for ADVERTISERS	for INFLUENCERS	for PLATFORM & COMMUNITY
<p>Share scenarios and ideas with advertisers for how to create more attractive advertisements.</p>	<p>Create scenarios, graphics and designs for influencers, other outsourced work, rental of equipment. (AdHive Classified - see page 34)</p>	<p>Quality control of video ads / identify low quality videos.</p>
<p>Influencers on AdHive platforms will be more motivated to execute tasks properly and attractively to viewers thanks to AdHive assessment mechanics and base of learning on the platform.</p>	<p>Share knowledge and ideas with influencers on how to create more attractive videos.</p>	<p>Token holders can earn Tokens for activity on the platform.</p>
	<p>Develop an expert community to combine analytics and benchmark of influencer activity.</p>	<p>Increase the accuracy of AI modules in video and speech recognition.</p>

	<p>The higher the assessment of executed tasks, the higher the reward.</p>	<p>Develop an expert community to assess the impact of audience engagement and social activity on the effectiveness of advertising campaigns.</p>
		<p>Identify fraud schemes as well as, inappropriate ad placement.</p>
		<p>Reduction of operational costs.</p>

ASSESSMENT BY COMMUNITY MEMBERS

Community members assess the measure of advertisement attractiveness for each video after it is published. The assessment is made on a 100-point scale and the objective result is calculated as a weighted mean (trimmed mean) value from the pool. Rewards for assessments are paid to those who are more precise, based on dependence of difference from mean assessment and the average number of Tokens held by each member during the period of the survey (10 days by default). There is an additional bonus available for video assessment during the first 24 hours from the time of publication of the video to eliminate cases of fraud. Community rewards for assessment will be funded from the advertisement campaign budget. The share of the budget allocated to the community will be about 5% and it can be changed depending on the activity level of community members. The mathematical model on which the reward calculation is based will be continuously adjusted.



To build a smooth and convenient process of video assessment, links to all newly created videos will be published on the platform and mobile app, including all notifications which will deliver updates to community members who are interested in being involved. Members can send feedback to the platform or influencer about the style, approach and quality of the advertisement task execution.

In later stages, the algorithm of reward calculations for video assessments will be continuously adjusted depending on historical accuracy in order to balance the influence of accuracy and the number of Tokens in the wallet.

If community members detect an attempt of any influencer to abuse the platform, then the task execution will be canceled and the Security deposit will be distributed between members who detected this case. Feedback from community members will be used to update AI recognition modules in order to avoid such cases in the future.

ADHIVE CLASSIFIED

Influencers use a lot of services to make their video more attractive, such as creation of scenarios, video editing, video effects, rental of equipment and so on. For these services, AdHive Classified will be created, a place with ads from community members, mainly focused on influencers. Payments can be made with ADH Tokens. Ad placement will be without charge and the authors will have access to statistics of visits by users of the platform. Access to the portal will be available to registered users only.

In addition, within the framework of AdHive Classified, a separate rating system will be introduced, which will eliminate fraud within the framework of interaction within AdHive Classified.

AdHive Classified will allow the project to increase the community, increase its involvement, solve Influencers’ problems with content creation, and allow the community to work more closely with influencers.

LEVEL OF COMMUNITY INVOLVEMENT

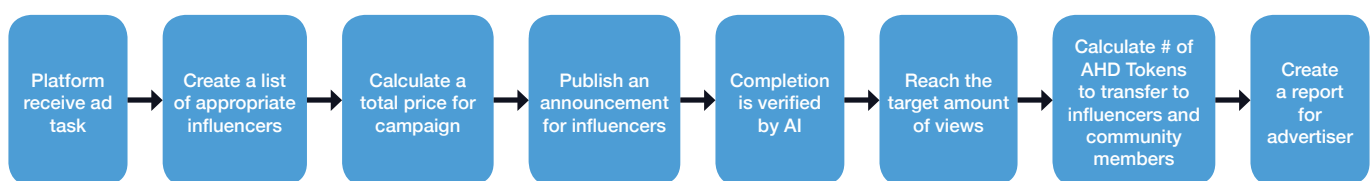
The Community plays a significant, but not critical, role in platform functionality. AdHive is able to operate without a community but would require more operational staff. The first working version of the platform (up to release v.06) will function without community involvement; this role will be performed by the moderators. The process of control of execution of advertising tasks will be fully automated by the AI module. The staff of the platform will perform AI work checks in requested cases. Influencers will not be rated by the quality of executed advertising tasks and their CPM will be the same for an advertising campaign.

AdHive plans to attract community members among the Token holders and plans to develop a vast community on the platform. To attract new members, AdHive plans to conduct various incentive programs, including referral campaigns. A part of platform’s budget will be allocated to community development, which includes community member and influencer attraction schemes. As the number of community members increases, their significance and involvement in the functioning of the platform will grow.

After the core of the community is formed and gains experience in video ad assessment, members will be able to advise influencers on how to improve the quality of advertising. The community will reduce manual work for platform employees and will increase the efficiency of AI modules.

The number of community members which are involved in the assessment process will be regulated by the budget which will be allocated for assessment. 5% of the ad campaign budget will be distributed to involved members which will attract enough people to maintain this model.

PLATFORM



Workflow of the platform

The AdHive platform will be an effective tool for native video ad placement, and executive participants of the platform will be interested in getting new notifications of offers as quickly as possible to have an opportunity to apply first. All activities will be guaranteed with a deposit of ADH Tokens and participants must have the required amount of Tokens in their wallets. The ideology of the platform architecture and interface development policy is the ability to react fast and with the confidence that the placement is properly done.

To reach the target amount of views required by the advertiser, the platform proposes to all the relevant influencers an advertisement task. Influencers who apply for the task are able to execute the task. A task is available until the required amount of influencers deliver the required amount of views. The estimation is based on the average number of views of each of the last 10 videos on the channel in the first 30 days. Evaluation is carried out for each influencer that has applied, including a reserve for refusals.

The Prediction Module recalculates and corrects the estimated number of views within 7 days after each video is published. Each day the platform assesses the factual traction of the campaign and attracts other influencers if the number of views is less than the earlier estimate or the percentage of refusals is more than predicted. If the number of influencers executing the task is not enough to reach the required target amount of views, the platform will increase the CPM of this campaign for new applicants to attract more influencers. The Platform will execute the advertisement task internationally and after the campaign budget is disbursed, the platform will generate a report for the advertiser about the campaign.

The final price of the campaign for the advertiser will remain the same as it was calculated at first. Factual number of viewers may differ from the estimated $\pm 10\%$, as it depends on the size of the campaign. The campaign report contains factual CPM and factual audience parameters. In order to prevent spamming of the platform, each action with a Security deposit will require a small transaction fee, which will be withheld from influencers. To prevent the situation of a Sybil attack during video assessment from affecting the rewards, the calculation of the reward depends of the amount of Tokens held in the wallet.

In order to make the platform accessible from the very beginning, the primary communications will be organized via chatbots integrated in popular instant messengers. AdHive will enable users to submit new proposals, get notifications about proposals, and inquire about additional information.

BACK-END

The Platform will be initially designed for high performance and productivity, and modular architecture will provide the required level of flexibility.

1. The Matching module obtains an appropriate list of influencers for and advertisers needs and assesses the time, cost, and engagement rate of the campaign by using detailed descriptions of the audience of each influencer.
2. The Recognition module arranges an execution check. The Moderator will need to develop the particular skills of the AI module.
3. The Payment module is based on smart contracts in order to transfer prescribed amounts of ADH Tokens to influencers after the trigger of execution is enacted.
4. The Analytics module collects successful triggers and combines with the dashboard.

5 TECHNOLOGY

The AdHive platform is a web service with integrated AI modules for Video and Speech Recognition and Trigger Detection. Modules control the placement of advertising material on each channel mentioned in the influencers' profiles. Channels are monitored daily for video updates and the AI module sends triggers to the platform in the case of proper execution of an ad task. To verify the proper execution of the task, video recognition modules analyze all video updates from the channels connected to the platform.

To start a campaign an advertiser must create a clear task for the influencers. Moderators from AdHive check the task and confirm it or comment on it. If the task is feasible and paid, it is transferred to AdHive content managers who teach the modules to recognize the specific target actions which can be words, phrases or objects in the video. Video and audio recognition modules should be updated each time a new task is placed. There is a Traintool that is a part of the system, and it provides quick upload and adaptation of the learning content, training the neural networks in the AI modules.

The AdHive platform is easy to scale thanks to the web application development technology WebVane Framework. The framework is used for the creation of business apps with web-based interfaces and it is capable of significantly accelerating the development of basic administrative and business functions and methods, as well as quickly changing the settings to meet new requirements.

Details of technological solutions are described in APPENDIX 1.

INTELLECTUAL PROPERTY (IP) OWNERSHIP

Video and audio recognition technology and WebVane Framework were developed by the founders of the AdHive Platform and are owned by fully controlled Scorchai Inc. After the crowdsale campaign is done, all IP which is required for the platform and module execution and further development will be transferred to the AdHive project.

A technical audit of this IP and IP transfer procedures will be organized by a well-known and accredited international IP consulting company and this report will be delivered to Token owners.

DEMO OF RECOGNITION TECHNOLOGY

These demo videos were taken from public Youtube channels and analyzed for the presence of well-known brands, using video and voice recognition.



Below is the Indonesian language, but we still can find some brands without additional learning:

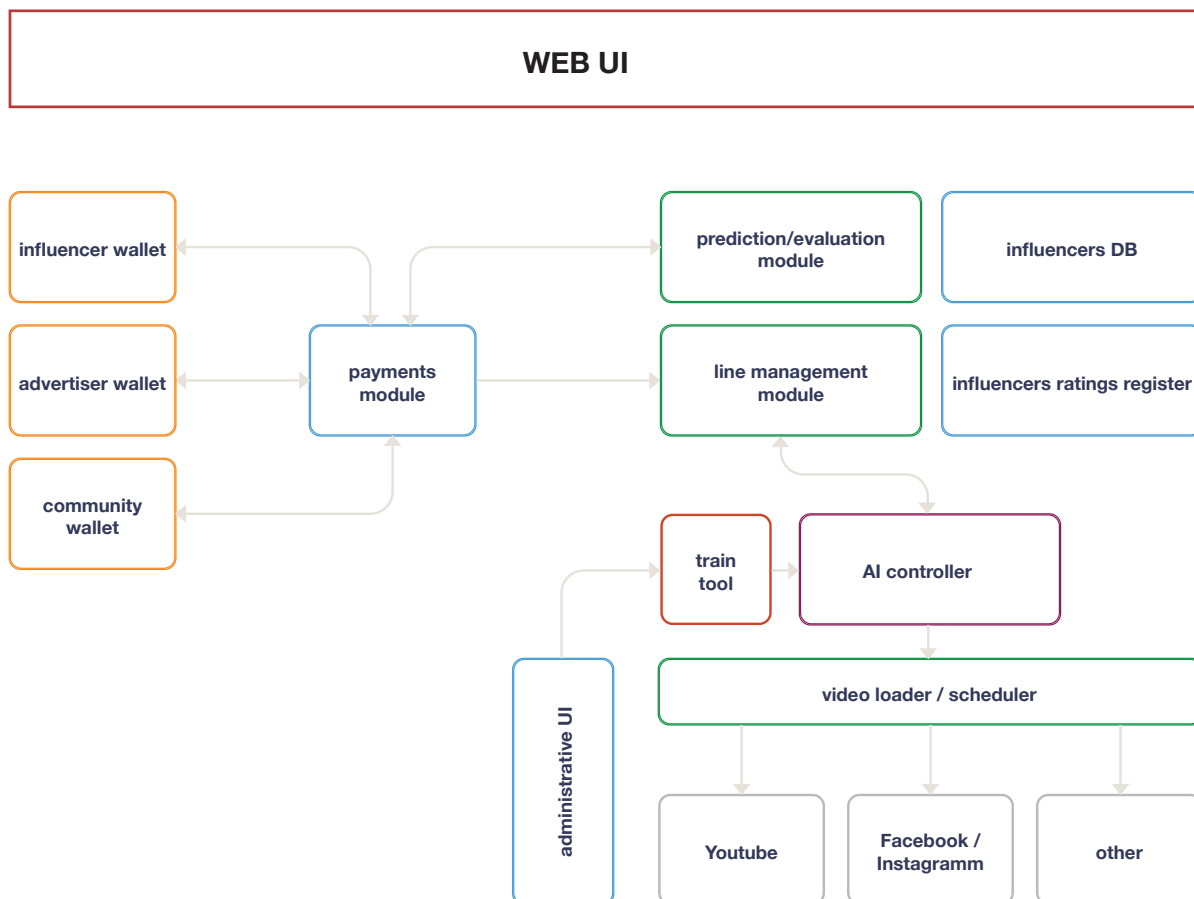


Originals:

- <https://www.youtube.com/watch?v=ptKuDIbEXMs>
- <https://www.youtube.com/watch?v=-bbRP-Hn1Eo>
- <https://www.youtube.com/watch?v=ptKuDIbEXMs>
- https://www.youtube.com/watch?v=DRY9Ei_Kxrc
- <https://www.youtube.com/watch?v=t8IYwnXgAj4>
- <https://www.youtube.com/watch?v=Fb0pX27ww7s>

ADHIVE CLASSIFIED

Influencers use a lot of services to make their video more attractive such as creation of scenarios, video editing, video effects, rental of equipment and so on. For these services, AdHive Classified will be created, a place with ads from community members, mainly focused on influencers. Payments can be made with ADH Tokens. Ad placement will be without charge and the authors will have access to statistics of visits by users of the platform. Access to the portal will be available to registered users only.



Common Architecture of AdHive Platform

Web Site and Administrative UI

Modules representing Web user interface and business logic of service users.

Order management module

Module responsible for creation and monitoring of advertisement tasks.

AI controller

AI service for video and speech recognition.

Train tool

Web UI based tool for creating new datasets (new brands, languages, words) for AI controller.

Video Loader/ Scheduler

Module allowing loading of video from influencer channels and execution of scheduled tasks for checking videos.

Influencers DB

Influencers database with updatable statistics.

Payments module

Module responsible for Token and crypto or fiat currencies transfer, see brief description below.

Influencer wallet

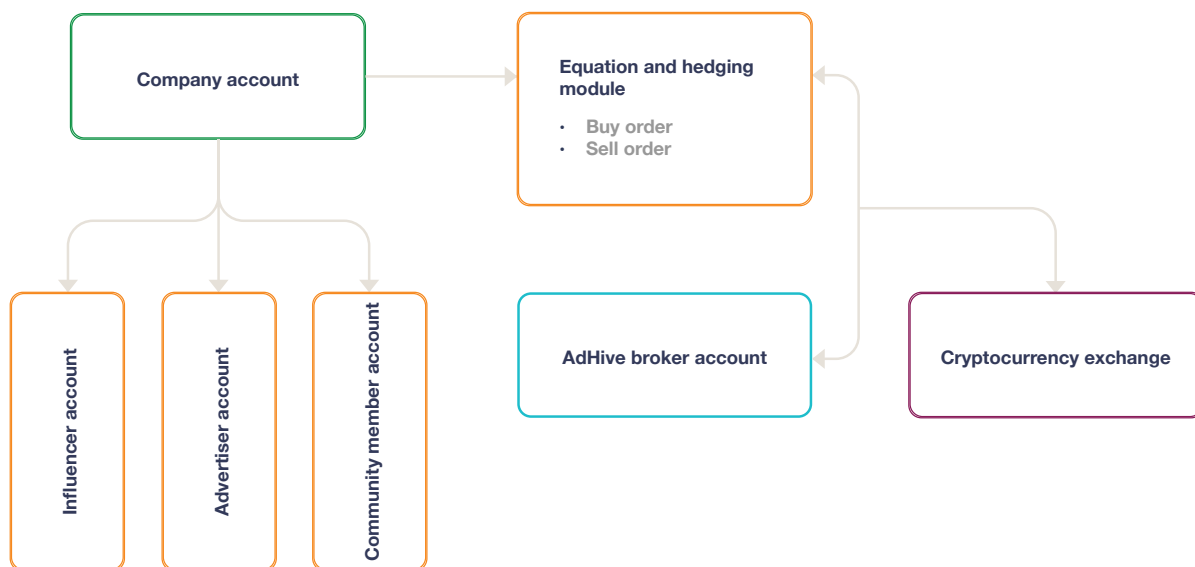
Influencer internal account.

Influencers ratings register

Register forms a influencer's digital rating.

PAYMENTS MODULE

Provides API for currencies and Tokens exchange for internal ADH Token calculations.



Payments module

Company account

Company crypto wallet or bank account.

Advertiser account

Advertiser account in internal system.

Broker account

AdHive account on fiat currencies exchange.

Exchange module

Module ensures we have enough ADH Tokens or fiat currencies to deal with platform participants using Cryptocurrency Exchange API.

ADHIVE TOKEN AND FINANCIAL MODEL

AdHive Token (ADH) — is a native cryptographic project Token, which gives participants the right to access multiple activities and services of the AdHive network. ADH Token has a critical role inside the AdHive ecosystem and is designed to be used for the following utilities:

1. A reward for participants. Participants are rewarded for actions such as advertisement placement on video, native advertising assessment, and completion of surveys.
2. A Security deposit and minimum Participation balance. To apply for ad placement, participants must use Tokens. This will increase motivation to execute tasks properly.
3. A daily transactions instrument. Smart-contract payment solutions allow to make Token transfers daily to make financial management more flexible.
4. Complementary services. Advertisers can spend ADH Tokens for analysis of all video channels to detect usage of keywords and brands they are interested in. management more flexibility.
5. Network growth driver. The AdHive platform will reward participants for registering and maintaining active involvement in the ecosystem. Members of the community can also participate in referral campaigns to promote the AdHive platform.
6. Anti-spam prevention tool. Influencers will pay a security deposit for applying to ad tasks.
7. Sybil-attack protection. To prevent a Sybil attack during video assessment from affecting the rewards, the calculation of rewards for community members will depend of the amount of Tokens held in wallet.
8. Payment for platform services. Advertisers will be motivated to use ADH Tokens for launching campaigns and for monitoring video channels.
9. Payments between participants. AdHive Classified provides additional services paid with ADH Tokens.
10. Compatibility. Easy integration to listing on cryptocurrency exchanges.

ADH Tokens are based on the Ethereum platform in accordance with the ERC20 standard — the most convenient and compatible with many Ethereum wallets and exchanges. Smart contracts provide robust and secure payment mechanisms and distribution of rewards. There is a limited supply of ADH Tokens and they cannot be reproduced by anyone. The ERC-20 standard involves the introduction of small commissions for transactions in ADH Tokens, which will be paid by platform participants. For stable functioning of the platform, AdHive will use nodes located on its own server.

AdHive has a partnership with Bancor. AdHive utilization of the Bancor protocol effectively eliminates the liquidity risk for ADH Token holders. The Bancor protocol provides exchange mechanisms for ADH Tokens through Token Changer — a combination of exchange and market-maker, based on smart contract. Token Changer is a smart Token that holds 2 or more digital assets in its reserve and is used to exchange between ADH Tokens, BNT Tokens, ETH, etc. The main advantages of using Token Changer:

1. Easy way of buying or selling of ADH Tokens directly through Token Changer smart contract without need of using cryptocurrency exchange.
2. Very high level of liquidity and lower volatility rate from the first day of trading.
3. Lower commission costs, zero spread, no risks of hacking or fraud issues of crypto exchanges.

ADVANTAGES OF BLOCKCHAIN TECHNOLOGY IMPLEMENTATION

Usage of Blockchain and ADH Token will eliminate the boundaries of interaction between advertisers, influencers, and community members around the world. This is what makes AdHive a global advertising platform.

Main advantages of Blockchain technology implementation:

1. **Settlement system** — a real-time, cost-effective, transparent, and secure settlement model for advertisers, influencers and community members.
2. **Effective involvement and incentivizing mechanics** — Flexible calculation mechanics for users to provide long-term participation interest in the development of the platform.
3. **Reliability and confidence in agreed terms of each campaign** — Smart contracts provide a safe and secure way to arrange agreements between advertisers, influencers, and other subjects of the platform.
4. **Worldwide coverage** — an easy way to make calculations for each individual influencer or community member in different countries and in different languages, which automatically solves three major problems of:
 - Financial clearing;
 - Regulatory paperwork;
 - High commissions for the conversion of fiat currencies and bank transfers of a large number of fiat micropayments;
5. **Collaboration with other crypto platforms** — wide capabilities for integration and cooperation.

AdHive Tokens are not Proof-of-Asset Tokens and are not a security under any circumstances. There is no promise of profit or any future value, and the Tokens are solely used as a right of access and use of platform services. AdHive Tokens do not constitute a currency equivalent as they are not issued by any government or central issuer, nor do they represent any relationship or rights to the ownership of the protocol.

INCENTIVES TO USE ADH TOKEN

FOR ADVERTISERS

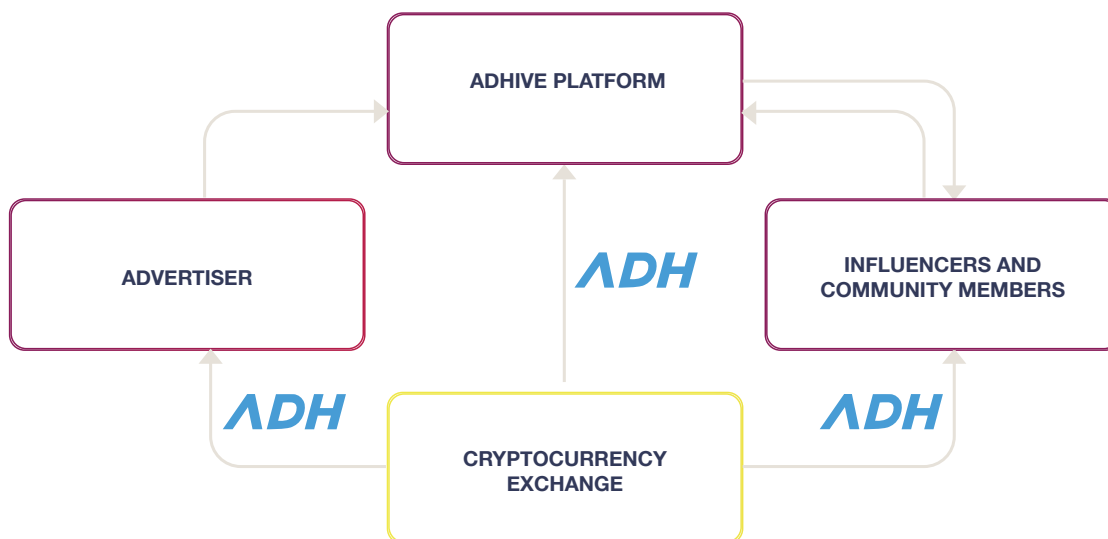
To promote the usage of ADH Tokens in Adhive.tv, an incentive program will be running during the first year. If an advertiser funds his account with ADH Tokens or cryptocurrencies with instant conversion into ADH Tokens at the current exchange rate, they will instantly receive 2.5% as a bonus in their wallet to use it for ad campaign payments only. When the liquidity of ADH Tokens increases, the amount of incentive bonuses for using ADH Tokens will gradually decrease. This program will motivate advertisers to use AdHive Tokens and benefit from growing blockchain ecosystems. With AdHive, any advertiser can take advantage of native advertising possibilities to grow their business.

FOR INFLUENCERS, COMMUNITY MEMBERS AND OTHER TOKEN HOLDERS

In order to participate in ad campaigns running over the AdHive platform, users are required to purchase and hold long-term ADH Tokens to be able to apply them to various advertising and quality assessments tasks. This mechanic should motivate all the participants to execute tasks properly. As the platform develops and the audience of users grows, demand for ADH Tokens will increase, but the total amount of Tokens never exceeds the number initially issued.

The Platform also proposes a way of earning ADH Tokens as a reward for user endeavors.

To provide platform operations, AdHive will make regular purchases of ADH Tokens on cryptocurrency exchanges. This model maintains high demand for ADH Tokens by platform users and by the AdHive platform itself, creating a direct relationship between the success of the project and the potential growth of the Token: the more users on the platform, the more Tokens are involved with internal payments, the greater the demand and liquidity of the Token on the cryptocurrency markets. In time, as ADH Token is utilized by more users and adopted by more project partners, it will bring significant growth and value to the AdHive ecosystem.



Cryptocurrency exchange by Token buyers

BENEFITS FOR TOKEN HOLDERS

- The ADH Token is the core infrastructural element of the platform. AdHive provides a real and effective solution for current market problems;
- Stable positive traction during next 2-3 years — we already have client funnels;
- ADH Token is a utility Token, all payments on platform, including payments for additional services, are executed in ADH Token and all users will be motivated to keep some of their ADH Tokens on the platform;
- **Revenues of the company will be stored in ADH tokens, and will be converted to fiat money only as required for project development;**
- Demand for the ADH Token will be driven by multiple agencies along with AdHive activity;
- Liquidity of ADH Token will be provided by Bancor Token Changer;
- Number of long term Token holders (influencers, community members, the platform) will grow, while Token supply will remain limited to the initially issued amount;
- Number of medium-term Token holders (advertisers carrying out marketing campaigns) will also increase as the platform develops.

7 ACCOUNTS, MONEY AND TOKEN TRANSFER

The Adhive.tv payment system operates on the basis of blockchain technology. An automated payment system will use smart contracts to provide maximum transparency and flexibility for all participants: advertisers, influencers, and community members. All the calculations on the platform between the participants are made with a native cryptographic Token — the AdHive Token (ADH), thus the ADH Token is a core element of the platform and will be used for the building and development of the ecosystem. A cryptocurrency wallet will be created automatically for each user after the registration on the AdHive platform.

Acquisition, utilization, and exchange of ADH Tokens will be very simple and straightforward for users of the platform. For operations with Tokens such as funding and transferring from personal accounts of platform users, an Exchange Module will be developed which will be used for instant exchange between the fiat and cryptocurrencies. The module will be integrated through Bancor protocol, which enables built-in price discovery and a liquidity management mechanism for ADH Tokens with help of Token Changer. Token changer is a smart Token which holds 2 or more digital assets in its reserve, smart Token can be used to exchange between ADH Tokens and BNT Tokens or any other Tokens that are held in the reserve. The BNT Token is a smart Token with ETH in its reserve, which makes conversion possible from or to ETH fast and easy. For AdHive purposes, in order to keep ADH Token volatility under control, we will use about 2-4% of AdHive market cap in Token changer reserve. Smart Tokens will be backed by BNT Tokens, which will increase confidence in ADH Token usage by advertisers and influencers. It decreases volatility and makes it more convenient to use ADH Tokens for advertisers and influencers for long-term campaigns.

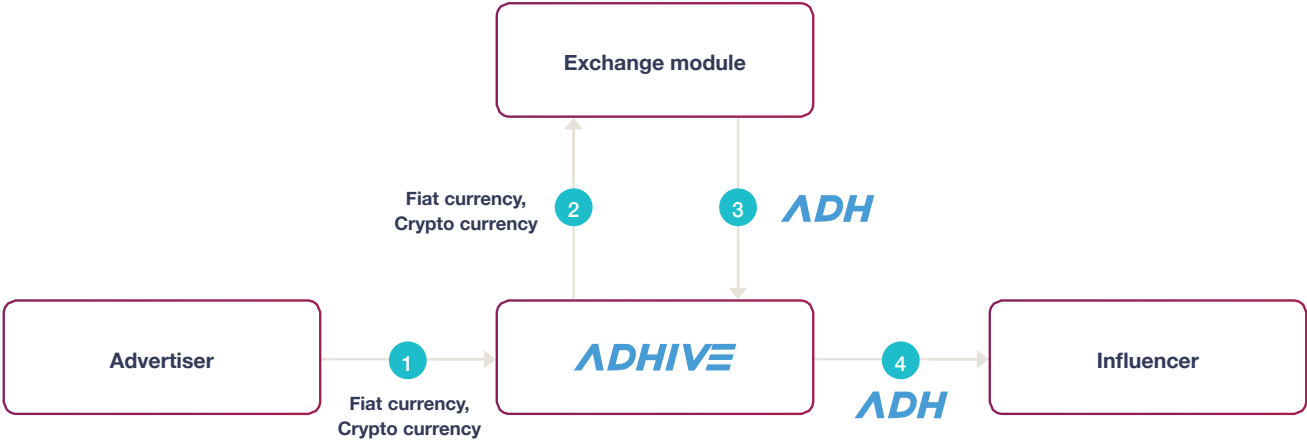
WAYS AND OPTIONS OF FUNDING

1. **FIAT currencies.** In their profile, the user adds and authorizes the data of their bank account /debit card/ electronic payment system (PayPal, Skrill, Yandex.money, etc) and specifies the required amount for funding. The AdHive platform automatically converts the deposited money into ADH Tokens at the current exchange rate with help of the Exchange Module. The Advertiser is able to choose the currency balance to be funded between ADH Tokens and local fiat currency.
2. **Cryptocurrencies.** An Advertiser is able to fund their cryptocurrency wallet with any cryptocurrency or Token which automatically converts to ADH Tokens at the current exchange rate plus a platform commission.

ADVERTISER ACCOUNT

The advertiser payment account is divided into two balances: ADH Tokens and local official currency of the local country of the advertiser. Credits on the advertiser's account can be stored in ADH Tokens or in local currency and transferred between each other, according to the advertiser's preferences. Regulation of currency exchange operations will start from general supervision and will be updated later, in order to avoid the use of crypto-fiat currencies exchange operations on the platform for non-campaign related needs.

Payments between the advertiser and the platform are made in ADH Tokens or in the local currency of the advertiser depending on the chosen payment method for each separate advertising campaign. In the case of payment for advertising campaigns in the local currency, the Exchange Module will automatically convert it into ADH Tokens.

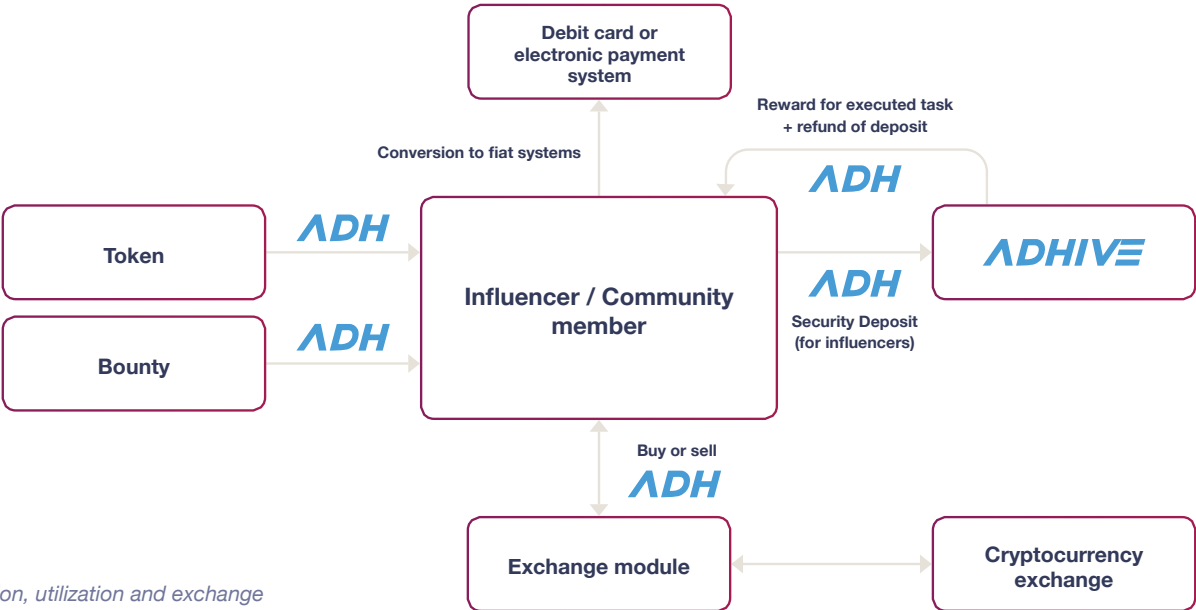


Acquisition, utilization and exchange of ADH Token by advertisers

The Campaign budget will be blocked on the advertiser’s account or locked in a smart contract for the period of the campaign. At any moment, the advertiser can withdraw available funds from his account in the same way he had added credit to it earlier. ADH Tokens can be transferred to an Ethereum compatible crypto wallet from which the account balance was funded or to the crypto wallet specified in the advertiser’s account.

INFLUENCER/COMMUNITY MEMBER ACCOUNT

Influencers and community members can receive Tokens either from a crowdsale, bounty campaigns, or by buying ADH Tokens on the platform wallet with fiat currencies. Payments between the platform and influencers or community members are made in ADH Tokens. Payments are performed automatically by smart contracts. Once the required conditions are met (AI reports, ad task execution by influencer, or community member completed a survey) a smart contract triggers the payment system, and the required number of ADH Tokens are transferred to the user.



Acquisition, utilization and exchange of ADH Token by influencers and community members

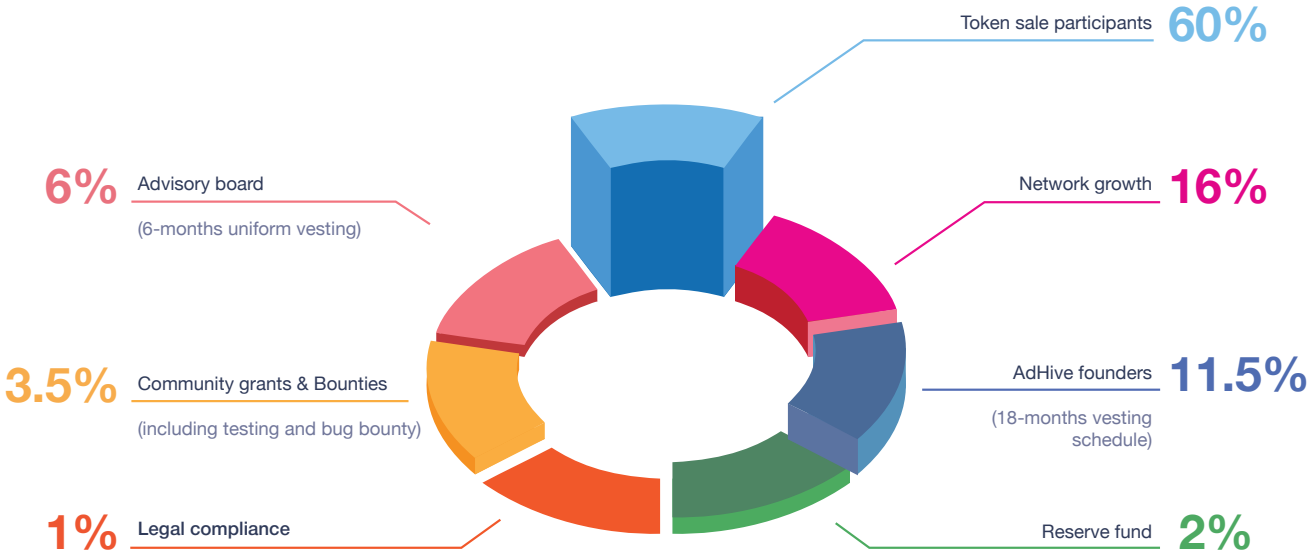
A influencer or community member can easily withdraw ADH Tokens and have them sent to electronic payment systems or a pre-authorized debit card. They can also transfer ADH Tokens from their crypto wallet to any other Ethereum compatible crypto wallet. The platform will automatically exchange ADH Tokens to the local fiat currency of the user or to any listed cryptocurrency at the current exchange rate. In the future the platform participants can order an ADH debit card for instant payments with ADH Tokens.

TAXES

AdHive is not a tax agent and transfers the full amount of income to the influencer/community member debit card or crypto wallet, and the influencer/community member is fully responsible for declaring and paying taxes in accordance with the jurisdiction of the country of which they are a tax-paying resident.

8 TOKEN SALE

The total amount of Tokens released will be 450 000 000 ADH. An additional release of Tokens will not take place, and if all of the released Tokens are not sold during the Token Sale Phase #1, the remaining Tokens will be destroyed. Upon completion of the Token Sale Phase #1, the Tokens will immediately become available for distribution among the Token Sale participants.



CURRENT TOKEN ALLOCATION:

60% for Token Sale Participants:

Amount of Tokens available for Presale + Token Sale Phase #1 is 30% of released ADH, while the amount of Tokens available for Token Sale Phase #2 is 30% accordingly. All figures will be finalized following the forecasting results on the Wings platform and be announced at least 5 days before the Token Sale Phase #1 begins.

16% for Network growth — Tokens for growth and maintenance of the world-wide community and expanding the adoption of the AdHive platform. These Tokens will provide community development, attract strategic partners, and remunerate key project team members. The first part of 6% will be vested the next day after the successful completion of the crowdsale campaign, and the second part of 10% be a subject to an 18 months uniform vesting period.

11.5% of AdHive Founders Tokens will be stored on the MultiSig with an 18-month vesting schedule with 3 equal portions to vest. The first part will be vested the next day after the successful completion of the crowdsale campaign, and the subsequent two parts in 9 and 18 months, respectively. These funds ensure long-term alignment of interests of founders and Token Sale participants.

The current AdHive Token exchange rate is 1 ADH = 0.0002 ETH (1 ETH = 5000 ADH).

Tokens will be priced in all accepted currencies. Due to the high level of volatility of ETH, the official conversion rate for the crowdsale campaign will be announced a 6 hours before the start of Presale.

REFERRAL PROGRAM (PRESALE AND TOKEN SALE PHASE 1)

You get a 4% bonus of all referrals, who bought Tokens. In case the amount of Tokens bought by all referrals in a month is greater than 500 000 ADH, a referrer gets a 5% bonus.

Additional bonus for referrals is 1%.

PRESALE

Most of the collected funds through the Presale campaign will be used for further development, legal and consulting services and promotion of the Token Sale campaign.

AdHive Presale allows participants to contribute early and to get up to 31% bonus, before the Token Sale begins.

The start of the Token Presale is scheduled for January 31, 2018 at 14:00 UTC and will last until February 6, 2018 at 14:00 UTC or when the Tokens available for Token Presale participants are sold out, whichever is earlier.

Presale target: \$3 million (for Private Presale, Whitelist Presale and Public Presale)

Presale Bonuses:

- Day 1-3 (Jan 31 – Feb 2): **20% Bonus**
- Day 4-7 (Feb 3 – Feb 6): **15% Bonus**

Presale Whitelist Details:

Whitelist registration ends on January 27, at 14:00 UTC (London time).

The **Whitelist Presale** is held one day before the Public Presale, and it is open only for Whitelist participants with an additional special bonus of 10%. The **Whitelist Presale** starts on January 30, 2018, at 14:00 UTC and will last only 24 hours.

During the Public Presale, starting January 31, a 5% whitelist bonus will be available.

TOKEN SALE PHASE #1

The start of the Token Sale Phase #1 is scheduled for February 21, 2018 at 14:00 UTC and will last until March 14, 2018 at 14:00 UTC or until the amount of Tokens available for Token Sale Participants sold out, whichever is earlier.

The Token Sale will be considered successful if \$2mIn is reached (soft cap). Otherwise, all funds will be distributed back to the participants.

Token Sale Phase #1 target: \$12 million

Bonus scheme for Token Sale Phase #1 participants depends on the tier the contribution is made:

- First 5 mln ADH Tokens — **10 - 15% bonus**
- Subsequent 10 mln ADH Tokens — **6 - 11% Bonus**
- Subsequent 20 mln ADH Tokens — **3 - 8% bonus**
- All subsequent ADH Tokens — **0 - 5% bonus**

Token Sale Phase #1 Whitelist details: TBA.

All figures will be finalized following the forecasting results on the Wings platform and be announced at least 5 days before the Token Sale begins.

At the end of the Token Sale Phase #1, all Tokens sold during the Presale + Token Sale Phase #1 are considered to be 30% of total supply, 30% will be allocated to Token Sale Phase #2 (overall - 60% for Token Sale Participants), 16% will be allocated to the Network growth pool, the remaining 24% will be allocated for distribution to AdHive founders, advisors, community grants & bounties, legal compliance and reserve fund.

TOKEN SALE PHASE #2

The start of the Token Sale Phase #2 is scheduled for Q3-Q4 2019.

This phase will be divided into several portions, so as not to affect the market situation. Token exchange rate will be announced a 5 days before the start of Token Sale Phase #2 and will be based on the Token market value. All participants of Presale and Token Sale Phase #1 will receive an additional 10% bonus for their second purchase with small vesting period. The maximum purchase amount with an additional bonus will be announced later and will be proportional to the amount of their initial contribution on Presale and Token Sale Phase #1.

The funds raised through the Token Sale campaign will be used to develop and promote the AdHive project. Fund distribution and other detailed information of the execution plan is described in Chapter 9: Business model and execution plan. All collected funds will be stored on the MultiSig wallet. The duties of a deposit agent include checking the fulfillment of the Token Sale terms, meeting the dead-lines, and obligations for distribution of ADH Tokens to Token Sale participants. Only if the stated conditions are met, shall the company get access to the collected funds.

This Whitepaper does not constitute a Public Offer Contract, any legal or binding document or shall not be considered as any terms of a crowdsale campaign or providing any legal, investment or tax advices.

BUSINESS MODEL AND EXECUTION PLAN

BUSINESS MODEL

The business model of the project is the re-selling of contacts with influencers' audiences and providing complementary services for video monitoring and analysis. The AdHive platform buys the views from influencers with discount, influencers gain access to mass advertising campaigns, and advertisers get an integrated media channel for targeted message delivery and analysis of video content for brands and keyword mentions. It's similar to contextual advertising, but in video format.

The platform margin is generated from the gap between bid and offer prices and should always remain sufficient because small influencers are happier to work for lower rewards, and in addition, advertisers are happier to avoid collaboration with large groups of influencers. Influencers will sell their contacts with their audience through wholesale prices, for access to large campaigns. The margin of each placement can differ depending on the goal of the placement — either to grow the margins, or to grow the involvement of rating influencers.

For example, each 1000 views (CPM) costs 20 ADH Tokens for the advertiser, while the influencer gets 14 ADH for each 1000 views, 1 ADH per each 1000 views transfers to the community for assessment, 5 ADH is retained by the platform.

PROJECT DEVELOPMENT

The funds raised through the crowdsale campaign will be allocated to development and promotion of the AdHive project. To achieve the project milestones it will be necessary to build highly-competent international team to develop and promote the platform in different countries. For the promotion of crypto projects, we plan to launch international operations from the beginning. For advertisers who pay in fiat currencies we will prepare commercial launch on the EU and Russian markets to be ready for global roll-out. The first commercial traction will be achieved in Q4 2017.

TRACTION

The main internal risk is the accuracy and effectiveness of using AI for such an application. We believe that some successful commercial implementations of the key elements of this project such as video recognition modules for media industry have neutralized the risk of proof-of-concept stages and have opened the way to further development and scaling.

- Smart TV operators use our models to determine the appearance of particular product placements on the screen to immediately show overlay ads. With our modules they can avoid creating highly sophisticated timetables of each block of video content depending on what channel it is delivered to. Depending on the region, there are different lengths of regional commercial breaks added into the broadcast so there is no easy way to understand the exact time of particular product placement appearance. Our modules recognize elements with 97+% accuracy and our servers could be easily expanded depending on traffic. This can help determine the exact moment of product appearance regardless of length of commercial break.
- Brand analytics on YouTube channels. An international FMCG brand launched a pilot project with [Scorch.AI](#) to analyze 100+ YouTube influencers and find keywords from the list about products of the brand and competitors.
- The first pure AdHive traction will be shown during the crowdsale bounty campaigns — influencers will be granted ADH Tokens automatically when they pronounce the word “adhive”, or if they are wearing AdHive T-shirt on video. Influencers should get in contact with AdHive via blogger@adhive.tv to get the AdHive T-shirt. This will be the alpha version of the platform.



ENGINEERING

There are two main domains in AdHive platform development — **The platform** (web service) and **AI**.

- **AI**

The AI recognition team will develop recognition modules to improve accuracy and reduce time and costs of training. The team already has a pipeline of solutions to be launched - emotion detection (2018), deep integration with speech recognition solutions (2018) and action detection (2018-19) are set to be delivered on schedule. After the crowdsale campaign, this team will be enhanced significantly.

We are looking for AI advisors with broad experience in optimized algorithm development.

- **PLATFORM**

The Web-service team will be split into two parts: back-end and front-end. Back-end will include all blockchain solutions, payment and administrative services, and mobile and live stream domains. The Front-end development will contain platform localization teams which can be partly located in some countries where the platform will operate.

Business advisors from fast-scaling companies in Ad-tech and e-commerce will be involved in the project immediately after the crowdsale campaign.

BUSINESS DEVELOPMENT

AdHive's development strategy is different for each stage of the project. In the first stage, AdHive will be focused on the US, Europe and Russia to increase the speed of development and reduce risk. In these countries, the AdHive team has business connections and an understanding of the business approach, and will be able to quickly become integrated in the advertising industry environment.

After the platform becomes operationally stable within several different markets, the second stage will begin with scaling to the Asian market. The platform will launch in China first and then will open in countries with large populations, high penetration of social networks and video services, and with significant advertising budgets which can be spread across video channels. Additional parameters of country potential to be considered are the average level of internal production of professional video content for TV and internet as well as type of video content consumption. Influencers in such countries could become great promoters and AdHive will help them to develop in the media industry.

To enter each country's market, AdHive plans to open a local office in order to establish a relationship with local advertisers, find influencers and promote the platform to both influencers and advertisers. Distribution of a remote professional team is also under consideration for this stage. Local offices will solve all legal and operational issues in the local markets and arrange sales and influencer acquisitions through the basic guidelines.

Each country will have supervisors who will be responsible for the launch and growth of the Platform in the country and this function will be globally governed by TOP management. Country managers will be recruited to AdHive from international ad-tech or global e-commerce platforms. After the 2d country in the roll-out list is launched successfully, a franchising program will be developed to deliver the service to other countries.

MARKETING AND PR

The marketing budget contains local and international campaigns which will be managed differently. Local campaigns will be under the Managing Director (MD) of the country and focused on particular communities. All local campaigns will be result-driven with KPI in conversion rates of new influencer registrations or new campaigns on the platform. Global international marketing campaigns are focused on influencer community development, influencer promos, and spreading information about opportunities. These campaigns will use influencers and other channels to distribute success cases and heat up the market.

The marketing budget will be spread across all the countries from the list in order to attract influencers to the AdHive community so that it is possible to achieve a critical mass of traffic and launch large advertising campaigns for the main target groups of the audience. Influencers and celebrities in each national market will be very helpful for promotion. By a rough estimation, we need to attract more than 1000 influencers in each country to make operations massive and referable.

COMMUNITY DEVELOPMENT

We will allocate a significant part of the budget for platform community growth and development, as well as knowledge and experience transfer on how to use the platform tools in order to earn money as a professional influencer. Education and training of influencers and advertisers in addition to development of the community will create more independent channels for spreading information and increasing the number of influencers on the AdHive platform.

There are two main goals of the community development process — to increase the number of members and to increase the engagement of influencers with advertisers. The first steps in industry development is education on both parts of the process — increasing the number of AdHive clients and increasing the involvement of the community. Influencers will receive guidelines, tips, and overviews on how to improve the attractiveness of their video content, how to communicate with subscribers, etc. All the training will be based on case studies. For advertisers, we will prepare successful cases of ad placement on influencer channels, tips how to structure the campaign, how to launch it, which metrics to use, etc. These will also be based on analysis of previous campaigns.

ROLL-OUT PLAN

The AdHive roll-out plan is based on business development strategy and is split into stages:

1. **EU and Russia** — to build a basic service and prove commercial potential.
2. **US** — to enter into a new market, localise service and achieve target unit economics.
3. **China** — to enter the region via the biggest Asian market.
4. **Asia, Middle East, LATAM, Australia and New Zealand.**

By the time the basic service is developed for the EU and Russian markets and operations are stabilised, AdHive's own industry research will be complete for US as a market with high potential. After the expansion to the Canadian market, entry to each country will cost about \$3mIn, which is required for company establishment, hiring of industry professionals, compliance with legal and financial regulations, and the first two years of operation. After that period, each branch will either be profitable or will close. Each country should be operationally profitable within 12-24 months from the start of operations, and every 6 months we will assess the potential of the country and decide the plan for the next half year.

The estimated cost of project development and roll-out includes software and business development, local and global marketing, legal and administrative costs, and community development. The marketing budget is split to local PR campaigns and marketing coverage in local press and locations. All international campaigns will be covered by the global marketing budget. Depending on the amount of money collected during the crowdsale campaign, AdHive will adjust the roll-out plan. The goal of the crowdsale is to collect funds for the 1st wave of the roll-out. Expanding the platform to other countries will be financed from the generated revenue and Token Sale Phase #2.

\$ mln	EU & Russia	US	China	Canada	Korea	Japan	India	Pakistan	Indonesia	Philippines	Brazil	Mexico
3,5	X											
6,5	X	X										
10,0	X	X	X									
12,0	X	X	X	X								
15,0	X	X	X	X	X	X						
18,0	X	X	X	X	X	X	X	X				
19,5	X	X	X	X	X	X	X	X	X			
21,0	X	X	X	X	X	X	X	X	X	X		
22,5	X	X	X	X	X	X	X	X	X	X	X	X

All the collected funds will be spent for the roll-out of countries of the 1st wave

BUDGET

Calculations are made by taking into account that the crowdsale was successful and all funds are collected. In this case the distribution of funds will be close to this table, according to our models:

Project expenses, \$			2017	2018	2019
Software and infrastructure development	31%	6 200 000	62 000 1%	3 410 000 55%	2 728 000 44%
Marketing	32%	6 400 000	320 000 5%	3 200 000 50%	2 880 000 45%
Business development	17%	3 400 000	136 000 4%	1 530 000 45%	1 734 000 51%
Legal and administration costs	10%	2 000 000	60 000 3%	900 000 45%	1 040 000 52%
Community development	10%	2 000 000	40 000 2%	980 000 49%	980 000 49%
Total expenses	100%	20 000 000	618 000	10 020 000	9 362 000

If we collect less than cap value, distribution will be slightly different but still focused on key goals of the project:

Budget allocation	> 3 mln	> 8 mln	> 12 mln	> 15 mln	> 18 mln
Software and infrastructure development	45%	40%	38%	35%	31%
Marketing	28%	29%	29%	30%	32%
Business development	12%	13%	14%	15%	17%
Legal and administration costs	10%	10%	10%	10%	10%
Community development	5%	8%	9%	10%	10%

During the scaling process the share of each type of cost will change by the logic of scaling. The share of software development and global marketing in each country will decrease. The share of local marketing and local administration costs will remain roughly the same. The share of business development and global legal & administration will grow due to expanding organizational structure and number of regions where the platform operates.

REVENUE FORECAST

Based on the premise that influencers have existed, on average, for the same time period in each country and that they started with YouTube and have similar prerequisites for development, we can extend market data to several markets to make a rough estimation of financial and basic forecast metrics. A huge effect of AdHive development will be penetration of crypto currencies in the world, in particular in countries from our roll-out list, which is not taken into account in the estimation below:

Budget allocation	2017	2018	2019	2020
Total expenses	618 000	10 020 000	9 362 000	9 362 000
Revenue	-	1 680 000	9 720 000	19 800 000
# of active bloggers		5 000	20 000	30 000
# of campaigns		480	2 160	3 600
Rev per campaign		3 500	4 500	5 500
Gross Profit	-	672 000	3 693 600	6 732 000
EBITDA	- 618 000	- 9 348 000	- 5 668 400	- 2 630 000

By our estimates, all collected funds will be enough for financing all AdHive operations until the end of 2019. Further platform and community development and growth will be funded from generated profit and Token Sale Phase #2.

PROJECT ROADMAP

	2017	2018	2019	2020
Project development		US, UK, Germany, Russia	Canada, Spain, China, Korea, Japan	Brazil, France, India, Philippines, Mexico
First client for video recognition from media industry		- Token Sale - Activation of Bancor Token Changer - ADH Token listing	Advertisers can hedge the risks for high value campaigns with AdHive risk manager	Identification of brand/logo/object/phrase on video to analyze the impact of ads on live-streams connected to the platform

	AdHive idea conceived, customer development conducted	v.02	MVP with minimum functionality for ad campaign start		Rating for influencers depends on community assessment	v.11	Integration with web studios for on-line production and placement on different networks
	Negotiations with partners, Token sale preparation	v.03	Ready-to-use platform for YouTube	v.07	Education mechanics for influencers and advertisers to increase campaign efficiency		Integration with tools for online CG effects
v.01	Alpha-version of the platform		Credit the account with several cryptocurrencies		Integration with debit card providers for instant payments with ADH Tokens	v.12	Metadata and background analysis on live streams
			Integration with Instagram	v.08	AdHive Classified – alpha version	v.13	Identification of the impact of ads on live streams
		v.04	Chat-bots in main messengers to increase participant engagement		Control of real time ad placement on streaming platforms (Twitch, TBD)		
			Users can exchange ADH into several crypto and fiat currencies on platform	v.09	Metadata and background analysis on video channels		
			Integration with FB		Platform launched on local social networks		
		v.05	Mobile app for notifications on IOS/Android to track new proposals from advertisers		Regular International campaigns for advertisers		

		Mobile app for influencers with wallet to manage personal Token account	Regular International campaigns for advertisers	
		Community assessment functionality		
		Identification of brand/logo/object/phrase on video to analyze the impact of ads on all channels connected to the platform		
		Integration with social networks with video content		

RISKS

There are several main risks for contributors which need to be disclosed:

1. **Technological.** Because the economics of the project are based on stable operations and the effectiveness of AI video recognition, technological risk had previously been a major factor. Currently, the risk is extremely low, there are many frameworks which could be used for development of standard elements of the platform.

Status: VERY LOW — in Paragraph 8 proof-of-concept is described.

2. **Market.** Advertisers will not be ready to use influencers as native channels to deliver information.

Status: VERY LOW — audience migration to influencers and advertisers is well-documented. New delivery channels could appear but for now there is an organic way to harness influencers’ potential. Please review Paragraph “Market overview”.

- 3. Legal.** Systematic risk could be applied to wide range of players who work with cryptocurrencies and Tokens. We consider the possibility of internal failures only.

Status: LOW — we will use a high-ranking International Law Firm to cover all possible issues and be able to react quickly and properly on potential legal changes and adjustments. For now we are in the middle of a tender procedure.

- 4. Security.** Regarding internal failures of security, there are some procedures applied: DDoS attack prevention, audited smart contracts, MultiSig wallets. If it is necessary we will consider the possibility of running AdHive internal operational procedures on top of other smart contract platforms.

Status: AVERAGE — we are attracting security professionals from the crypto industry and are prioritizing this division.

- 5. Business.** Risk of failure of the business development and scaling.

Status: LOW — two of the co-founders are former senior managers at Groupon with successful traction — the company created huge experience of geographic and business growth in different categories and industries. The business model B2B2C is very connected to the AdHive business model where we will need to balance supply and demand — both B to increase audience of C — customers.

After the crowdsale, we will recruit business advisors from leading Ad-Tech companies with international scaling experience.

10 COMPETITORS

GOOGLE VIDEO ADVERTISING

Applicable to the advertisers

AdHive and Google are complementary services and competitors at the same time. Google (with video pre-rolls) provides an opportunity to deliver commercials to spectators similar to TV ad breaks. Such commercials are not related to the content, as there is almost no engagement of the audience. The price of such placement is based on number of views and additionally depends on current demand from other advertisers, and would not be less than the cost of a campaign on AdHive. Nevertheless, demand could affect the pricing on AdHive. The cost of placement with influencers is more inert, stable and predictable, and more sensitive to ad tasks than to demand. Google might be the better option for the promotion of difficult products or something people do not want to be connected with, but for the promotion of simple, attractive, or common products and services, AdHive will perform better.

Google may be more convenient and familiar, and in some cases it may be better to use both AdHive and Google, but AdHive will ultimately be easier as it removes the necessity of actually producing commercials, and is more cost-effective since there will be a much higher engagement rate. In addition, it will be transparent, with smart contracts. And that is not even mentioning the curiosity factor — people will generate a lot of new unique content. We will provide a high level of comfort and confidentiality through native video ad placement with influencers.

Applicable to the influencers

By giving Google the right to show pre-rolls before videos, influencers can get an average of \$0,7 per 1000 views of video, but influencers can earn up to \$4 (6 times) from AdHive for native ads which is much more engaging for the audience. Plus, influencers can avoid irritating viewers with pre-rolls and get feedback and knowledge from the AdHive community on how to improve video quality and video ad placement. AdHive requires more involvement from influencers and most likely increases the time for video creation but the reward is significant.

PLATFORMS FOR NATIVE AD PLACEMENT

Media platforms for native ad placement like Ninja Outreach, BlogMint, BrandBacker and others mainly work with photo and text ad formats. In addition, they are partners, like AdEx, rather than competitors because they have not automated verification of video.

AGENCIES

There are many agencies professionally engaged in advertising with YouTube influencers. The main difference between agencies and AdHive is the ability of Adhive.tv, thanks to AI, to work with a group of small influencers, which will provide more accurate targeting and a better price per contact. Agencies will continue their business, usually conducted by PR departments, with top-level influencers. For advertisers, AdHive will transfer native video campaigns with influencers from manual craftwork to an automated tool for media placement.

INFLUENCERS MARKETPLACE

Agencies work mainly with top-level influencers that have at least 200,000 subscribers, but marketplaces are ready to work with everyone. However, all marketplaces operate in a very similar way: the advertiser can either create an advertising campaign, under which influencers can make their proposals, or they can find an influencer independently for various parameters: subscribers, views, likes etc. It is hard to imagine that placement in a such way could be done on more than a dozen channels — it is far too much manual work. AdHive can easily place advertisements on 10 or on 10000 channels with the same involvement and manual work on the part of the advertiser.

COMPETITOR COMPARISON MATRIX

In terms of AdHive’s competitors, our team created the following comparison matrix with necessary information about our competitors’ key features.

Project	Marketing Agencies	Marketplaces	Basic Attention Token	AdHive
Precise Audience Targeting	✚ Primarily manual targeting mechanics	✚ Primarily manual targeting mechanics	✓ Targeting based on the Brave browser data	✓ AI-powered precise targeting mechanics

Cost-effectiveness	✗	Huge commissions up to 60% Transaction fees up to 4%	✗	Huge commissions up to 60% Transaction fees up to 4%	✓	Cost-effective for digital ad placement Blockchain based transactions (less than 1%)	✓	Cost-effective due to the high level of automation Blockchain based transactions (less than 1%)
Availability for small businesses	✗	High commissions and fees make agencies unavailable for small businesses	✗	Marketplaces are mostly unavailable for small businesses due to high fees and minimum budget requirements	✓	Service is available for any type of business and any budgets	✓	Service is available for any type of business and any budgets
Availability for micro-influencers	✗	Agencies work mainly with top-level influencers that have at least 200k subscribers	+	Marketplaces are ready to work with everyone, but manual work makes them unavailable for small influencers	✓	BAT only works with digital ad formats like pre-rolls, banners, etc.	✓	AI module allows AdHive to work with any size of influencers
Availability of massive ad placement	✗	Manual ad placement process makes massive ad campaigns unavailable	✗	Manual ad placement process makes massive ad campaigns unavailable	✗	BAT reachable audience is currently restricted by the number of Brave browser users	✓	Full automation, excludes any personal intervention in all of the processes
Low transaction costs (low communication barriers between market participants)	✗	The need to consistently negotiate and enter into numerous legal agreements	✗	The need to consistently negotiate and enter into numerous legal agreements	✓	Available due to the use of Smart Contract technology	✓	Formalized and structured template, allows advertiser to create a Smart Contract in a couple of minutes
Anti-fraud protection	✗	Subjective task performance assessment is not regulated by any external supervision	✗	Subjective task performance assessment is not regulated by any external supervision	✓	BAT works with verified publishers only	✓	AI and community powered quality control combined with Smart Contract technology
Accessible tools and metrics	✗	Analytical report after campaigns' end	✗	Analytical report after campaigns' end	✓	Real-time "attention" metrics	✓	AdHive provides users with access to real-time analytical data at all stages of the advertising campaign

Campaign Automation	✗	Mainly manual work	✗	Mainly manual work	✓	Fully automated ad placement process	✓	Fully automated ad placement process
AI Involvement	✗	Not available	✗	Not available	✗	Not available	✓	AI module is used for object, text and voice recognition in order to control quality of ad task performance
Scaling potential	✗	Scaling is unavailable for this type of service	✗	Scaling is unavailable for this type of service	✗	Scaling potential restricted due to dependence on Brave browser users number	✓	High potential for scaling

COMPETITOR COMPARISON MATRIX

Project Feature	Efir.io (former qaazqaaz)	SocialMedia.Market	indaHash	AdHive
Precise Audience Targeting	✓ Automated targeting service	✓ AI-powered precise targeting mechanics	✓ Automated targeting service	✓ AI-powered precise targeting mechanics
Cost-effectiveness	✓ Cost-effective Blockchain based transactions (less than 1%)	✓ Cost-effective Blockchain based transactions (less than 1%)	✓ Cost-effective Blockchain based transactions (less than 1%)	✓ Cost-effective due to the high level of automation Blockchain based transactions (less than 1%)
Availability for small businesses	✓ Available for small companies	✓ Available for small companies	✓ Available for small companies	✓ Service is available for any type of business and any budgets
Availability for micro-influencers	✗ Currently works mainly with influencers that have 100k+ subscribers	✓ Available for micro-influencers	✓ Available for micro-influencers	✓ AI module allows AdHive to work with any size of influencers

Availability of massive ad placement	+	Availability of mass campaigns is limited due to incomplete automation	+	Availability of mass campaigns is limited due to incomplete automation	+	Availability of mass campaigns is limited due to incomplete automation	✓	Full automation, excluded any personal intervention in all of the processes
Low transaction costs (low communication barriers between market participants)	✓	Smart contract templates are available	✓	Smart contract templates are available	✓	Smart contract templates are available	✓	Full automation, excluded any personal intervention in all of the processes
Anti-fraud protection	✓	Expert communities are used for quality control + Smart Contract	✓	Platform users participate in dispute resolution + Smart Contract	+	Smart Contract only. No quality control system	✓	AI and community powered quality control combined with Smart Contract technology
Accessible tools and metrics	✓	Available	✓	Available		No information	✓	AdHive provides users with access to real-time analytical data at all stages of the advertising campaign
Campaign Automation	+	Views counting is automated — external services	+	All processes are automated, but there is no automatic quality control system	✗	Not available	✓	Fully automated ad placement process
AI Involvement	✗	Not available	+	AI module used only for data analysis	✗	Payment process automation only	✓	AI module is used for object, text and voice recognition in order to control quality of ad task performance
Scaling potential	✗	Medium scaling potential	+	Medium scaling potential	+	Medium scaling potential	✓	High scaling potential

Among all of the potential competitors, AdHive platform is the most attractive start up due to high level of automation and strong technical and innovation background.

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APPENDIX #1. TECHNOLOGICAL SOLUTIONS

1. SCORCH.AI SOLUTIONS

[Scorch.ai](#) develops ready-to-implement machine vision and speech recognition solutions for different industries and applications:

- SDK for machine vision/Speech recognition: to choose algorithms and neural networks for specific problems and devices.
- Computation framework: to connect different algorithms, internal modules, raw data, train tools, different OS through business process which is required for video and speech recognition.
- Train tool: to train an AI system to recognize what a business needs, includes web-interface, high degree of automation, provides cost optimization for searching data sets.

SDK FOR MACHINE VISION – VIDEO AND SOUND RECOGNITION

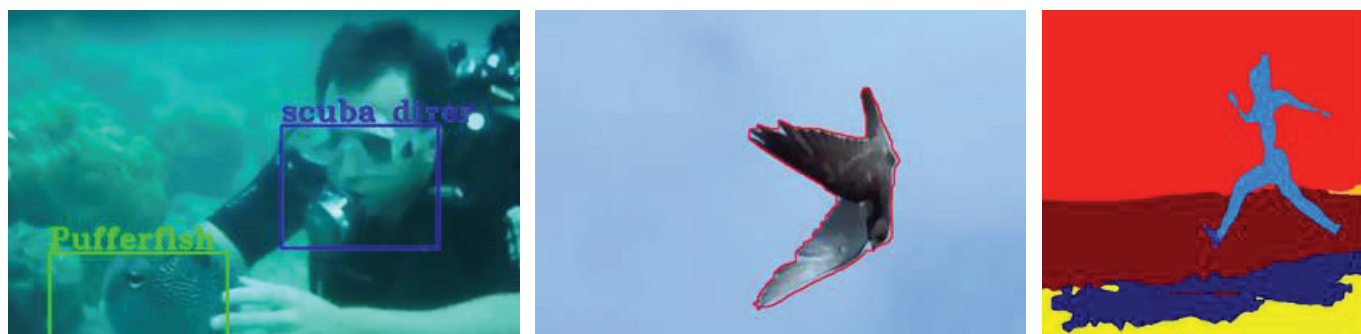
<http://scorch.ai/Technology/machine-vision/>

SDK enables analysis of video content for visual recognition of objects, backgrounds, actions and emotions in various combinations. This module can recognize elements and actions, send them to the next unit or save them as a file, and based on that, any device or ecosystem can decide what to do next.

SDK enables combining different computer-vision algorithms with a recognition module for specific goals according to the requirements in accuracy and performance, for example:

- To find out if there is an object on the frame;
- To localize an object;
- To recognise and segment (to cut) an object.

The SDK allows you to recognize chunks of speech and to translate speech into text with accuracy depending on the presence of words from the sample. If any words are missing, the SDK will make a hypothesis. The process consists of 3 steps: segmentation with neural networks; contour analysis using segmentation data; approximation-creation polygons to optimize transfer size.



COMPUTATION FRAMEWORK

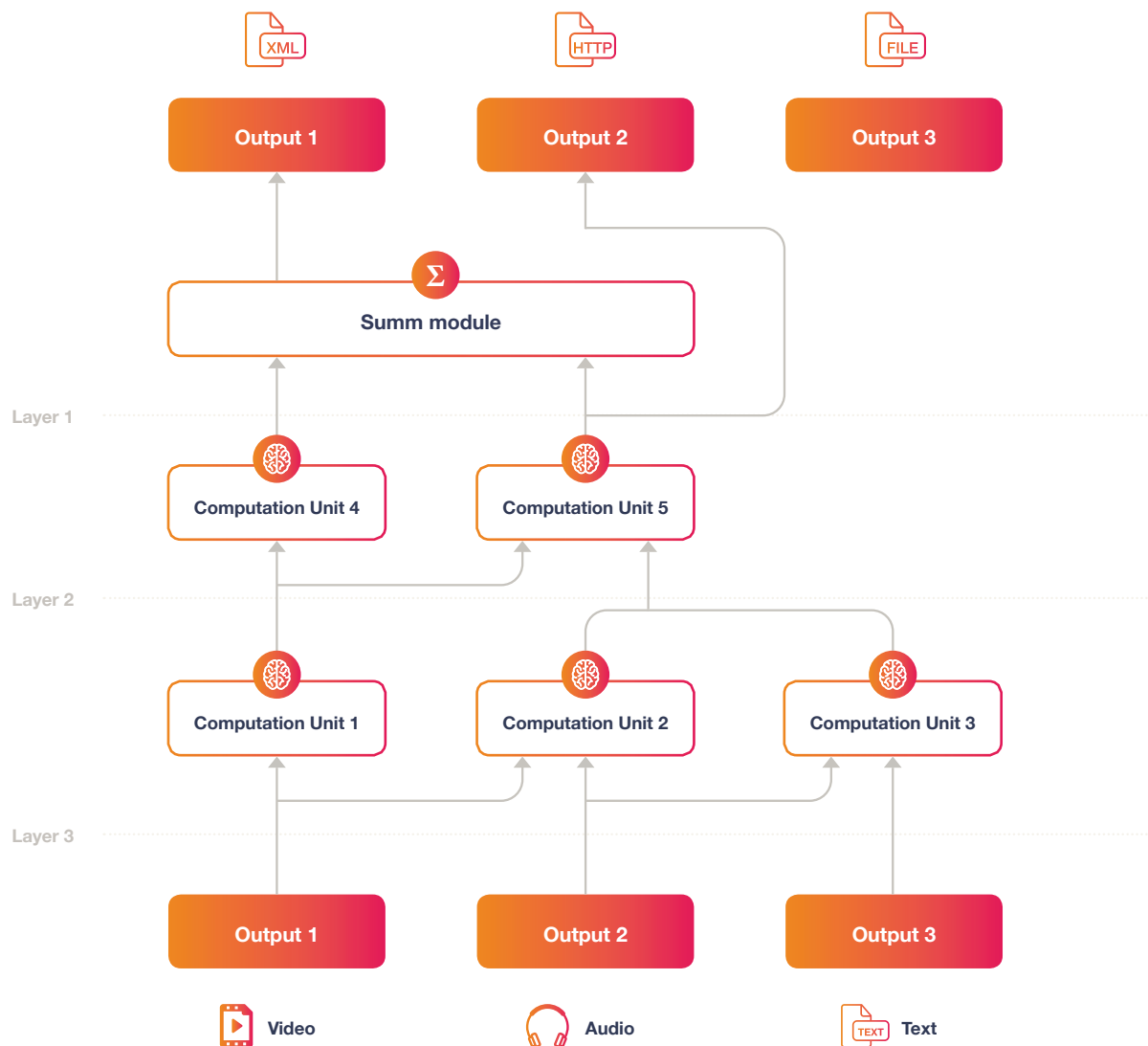
<http://scorch.ai/Technology/computation-framework/>

The structure of artificial intelligence systems should be very different depending on the tasks that should be solved. To simplify the creation of complex AI systems for prediction and classification, the Scorch Computation Framework was developed.

The framework performs two key functions:

1. Combination and integration which makes it possible to combine various machine learning modules.
2. Integration of input and output internal data with external data — video, sound, data from motion sensors, radar. For analysis it can use neural networks, contour analysis, various mathematical filters and decompositions (for example, sound can be decomposed into Fourier transforms), Machine Learning classifiers (probabilistic, vector and others).

Moreover, the Computation Framework provides additional functionality for working with memory and various configuration tools, such as sum of weights configuration modules from different units. This technology can be used for different purposes such as defining layers and data flows, identification of data sources, dividing layers into units, combining neural networks, etc.



TRAINTOOL

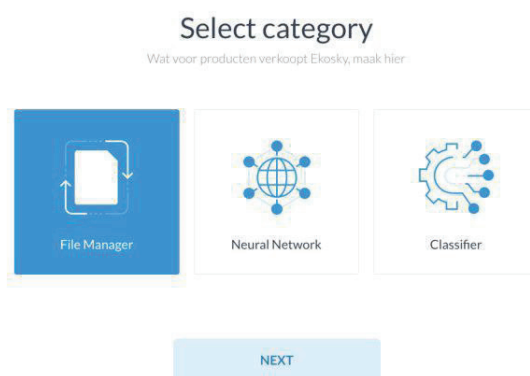
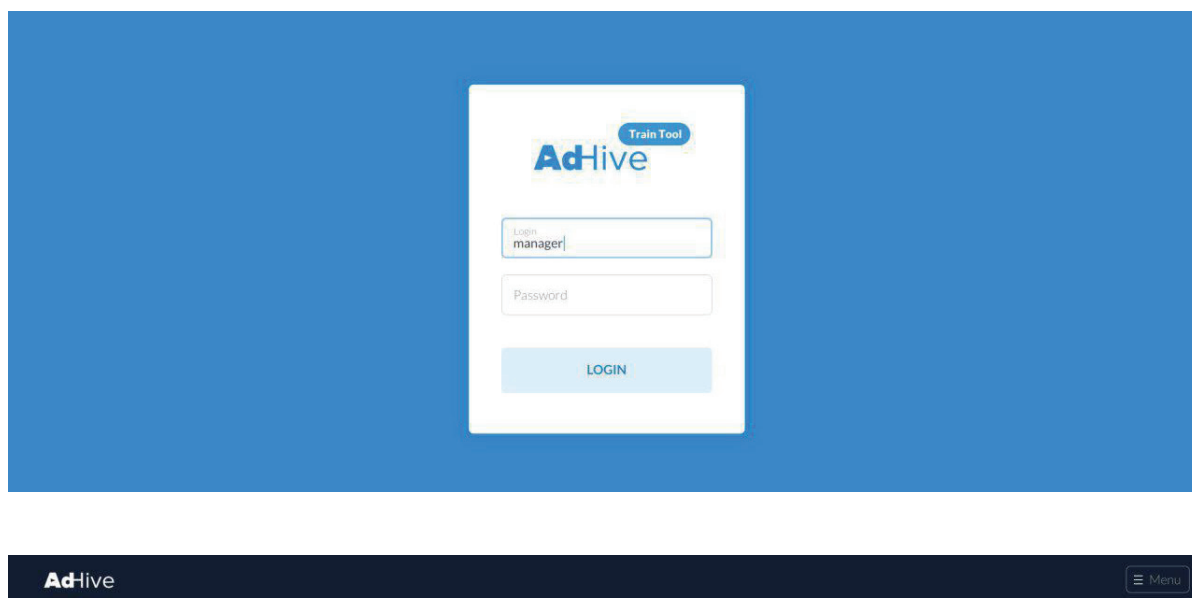
<http://scorch.ai/Technology/training-tool/>

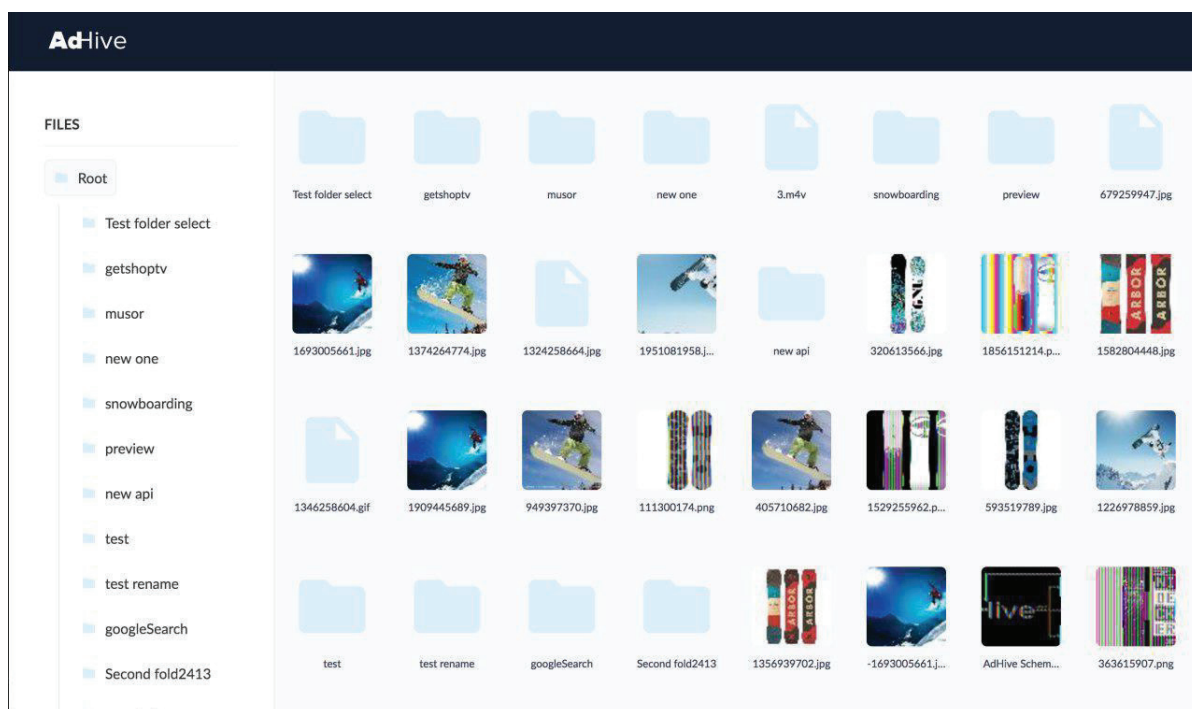
Traintool is an instrument for fast arrangement of datasets for ML modules. Traintool as a part of Scorch platform, it should take 2-3 times less for teaching modules to objects, action and sound recognition.

Traintool is an instrument for fast arrangement of datasets for ML modules. Traintool as a part of Scorch platform, it should take 2-3 times less for teaching modules to objects, action and sound recognition.

Traintool advantages:

- Provide high level of independence from recognition services provider — teach on your own;
- Create additional data sets from input data;
- Pull data automatically from the Internet by the URL;
- Optimised and convenient development;
- Exchange skills with other modules via cloud;
- Train Neural Networks for Machine vision;
- Train Neural Networks for Speech recognition;
- Train classifiers for Computation Framework;
- Check training results and statistics.





2. WEBVANE FRAMEWORK

<http://webvane.org/WebVaneFramework/>

WebVane Framework — web application development technology — will be used to develop AdHive web services.

WebVane Framework is used for creating business apps with a web-based interface. WebVane significantly accelerates development of basic administration functions, business functions and methods, as well as quickly changes the settings to meet new requirements. Web-based interface can be built faster for existing systems using their own data.

APPENDIX #2.

MATH MODELS AND TOKEN MECHANICS

AdHive: the rewards schemes

Version 0.2

Serguei Popov

September 1, 2017

Description of the system. There are *advertisers*, *bloggers*, and *users*. The advertisers pay bloggers for the (indirect) advertising; the users validate the work of the bloggers. Additionally, the advertisers may conduct research within the users' community, asking them to fill some questionnaires. In the following, we describe how the system works.

- An advertiser deposits an amount of funds (possibly but not necessarily in ADH tokens), which serves to pay the bloggers and the users. In fact, it may be a good idea to separate bloggers' reward fund from the users' reward fund already in the beginning, in order not to create an incentive for users to undervalue bloggers (and therefore increase the own rewards).
- A blogger, who is willing to take a part of that reward, proceeds in the following way:
 - he makes a small security deposit (this is for spam prevention), which he will get back in case the user community decides that his work was not trash;
 - then, he produces content (say, a video with indirect promotion of the advertiser's brand);
 - he then receives a reward based on the community evaluations, and the number of views.
- A user produces evaluations of the bloggers' efforts in the following way:
 - After seeing the content produced by the blogger, the user rates it on the scale ranging from 0 to 100, in accordance e.g. to the following question:

*How likely is this video to improve your perception of the brand,
under the hypothesis that you were neutral to it before?*

- The user then receives a reward based on the closeness of his evaluation to the median of the weighted¹ dataset of all evaluations.

Next, we describe our proposal in detail. For the sake of notational cleanness, in the following we assume that the users’ evaluation scores rather range from 0 to 1 (just divide the “previous” evaluation score by 100).

Some notations. There are N users, let $b_i^{(k)}$ be the balance of the i th user at block k . Let B be the total number of tokens that exist; note that $B = \sum_i b_i^{(k)}$ for all k . There are M bloggers that take on the task proposed by the advertiser. Let $v_{ij} \in [0, 1] \cup \{\varnothing\}$ be the evaluation given by the i th user to the j th blogger, $i = 1, \dots, N$, $j = 1, \dots, M$. We set $v_{ij} = \varnothing$ when the i th user did not evaluate the j th blogger; here, \varnothing is just a special symbol² meant to indicate the absence of evaluation.

We assume that the evaluation starts at block $n_0 + 1$ and ends at block $n_0 + k_0$ (that is, it lasts k_0 blocks). We then define the *average balance* \bar{b}_i of the i th user during the evaluation period by

$$\bar{b}_i = \frac{b_i^{(n_0+1)} + \dots + b_i^{(n_0+k_0)}}{k_0}.$$

Notice that it also holds that $B = \sum_i \bar{b}_i$.

Next, fix $j \in \{1, \dots, M\}$ and consider the weighted dataset (v_{1j}, \dots, v_{Nj}) with the corresponding weights

$$w_{ij} = \begin{cases} \bar{b}_i, & \text{if } v_{ij} \neq \varnothing, \\ 0, & \text{if } v_{ij} = \varnothing \end{cases}$$

for $i = 1, \dots, N$ (that is, we effectively exclude the users who did not evaluate the j th blogger from that dataset). Let m_j be the 5%-trimmed mean³ of the above

¹by the average balances, see below

²one may as well assume, for example, that $\varnothing = -1$

³that is, we discard 5% of top and 5% of bottom evaluations (with respect to their weight), and then take the weighted mean of the rest

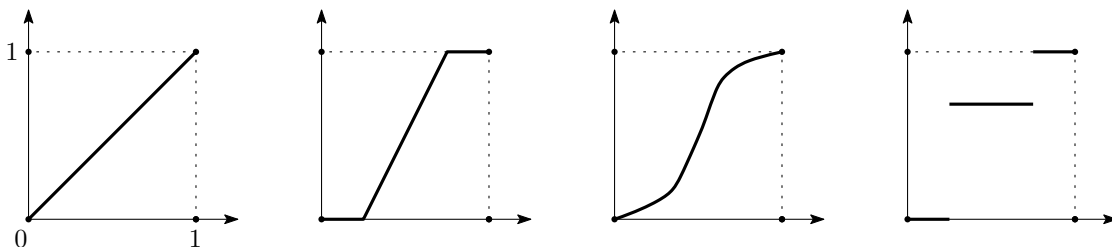


Figure 1: A few possible bloggers’ reward functions

weighted dataset, and I_j be its interquartile range⁴. Let us define also

$$\theta_j = B^{-1} \sum_{i=1}^N w_{ij}$$

to be the proportion of tokens that took part in the evaluation of the j th blogger.

Estimating the number of views in 30 days. The following question is of practical importance: given the number of views of a particular content during the first week, estimate the number of views of that content during a month. Here, one is tempted to consider the *distribution* of these views within the seven days (or maybe simply the number of clicks per day) and then perform a statistical analysis of all that data in order to achieve a finer prediction. The author is not unfamiliar with statistical methods that can be used for such a task, but nevertheless suggests the following simpler scheme. Use a simple linear regression (the usual least-square or maybe rather some robust variant such as e.g. the Theil-Sen estimator [1]) on the set of the last (say) 25 videos of the blogger, with the variables “the number of views in seven days” and “the number of views in a month”. This is because if we try to do a finer analysis, this would also open more possibilities for manipulations e.g. of the following kind: the blogger artificially inflates the number of views on the seventh day, to make the system “think” that the view counts on subsequent days would not decrease too quickly.

Bloggers’ rewards. Consider a nondecreasing function $f : [0, 1] \rightarrow [0, 1]$, which we call the bloggers’ reward function (see Figure 1). Let also s_j be the number of views that the j th blogger’s content received (or, possibly, the *projected* number

⁴i.e., $I_j = Q_3^{(j)} - Q_1^{(j)}$ where Q_1 and Q_3 are the quartiles of the above weighted dataset

of views obtained by the simple linear regression estimate above). Fix some k_1 (e.g., $k_1 = 10$), and consider the weighted (by the participation’s proportions) average evaluation of the blogger’s work taking into account also the previous k_1 evaluations:

$$M_j = \frac{\theta_j m_j + \theta_j^{(-1)} m_j^{(-1)} + \dots + \theta_j^{(-k_1)} m_j^{(-k_1)}}{\theta_j + \theta_j^{(-1)} + \dots + \theta_j^{(-k_1)}},$$

where $\theta_j^{(-1)}, \dots, \theta_j^{(-k_1)}$ and $m_j^{(-1)}, \dots, m_j^{(-k_1)}$ are the corresponding quantities obtained during the last k_1 evaluations of the j th blogger. Then, his reward R_j will be proportional to that number of views *and* the reward function of the quantity M_j , i.e.,

$$R_j \sim s_j f(M_j). \tag{1}$$

We prefer to use M_j rather than m_j to make the results more “predictable” for the blogger.

Quality of evaluation. We propose the following way to measure the *quality* γ_j of the j th evaluation:

$$\gamma_j = \min \left(\frac{I_j \sqrt{\theta_j}}{\varepsilon + 4m_j(1 - m_j)}, C \right), \tag{2}$$

where C and ε are fixed constants; one may take e.g. $C = 1$ and $\varepsilon = 0.03$. To explain the reasoning behind (2), first observe that the situation when (almost) all users make (almost) exactly the same evaluation usually indicates the existence of some conspiracy between them; in normal circumstances the evaluations are naturally spread. This explains the factor I_j in the numerator. It is also reasonable to say that a better evaluation has to have more participants, although that dependence need not be linear (hence the factor $\sqrt{\theta_j}$ in the numerator). Observe that it is not usually possible to organize a conspiracy in order to increase I_j , since this would require that *many* users must *voluntarily* make excessively good and/or excessively bad evaluations, thus strongly decreasing their own rewards. Next, if m_j is close to 0 or 1, then the spread of evaluations has to be naturally smaller; we introduce the term $4m_j(1 - m_j)$ to compensate this. The (small) number $\varepsilon > 0$ is added to that term to deal with (highly improbable but still possible) “boundary” situations, when at least (weighted) half of the users gave the score 0 (or at least half of the users gave the score 1) to the j th blogger. The constant C is an upper limit, introduced to prevent the evaluation’s quality from varying too much.

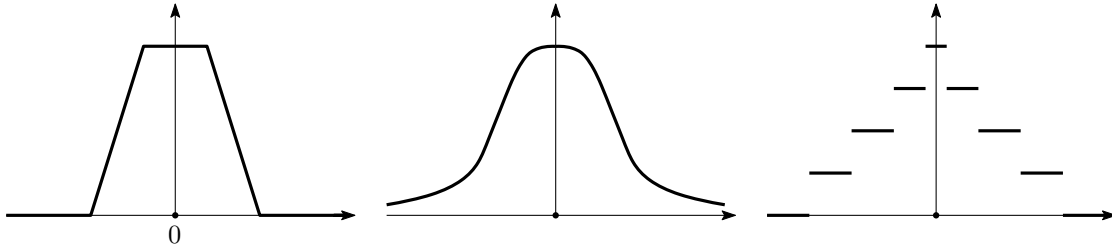


Figure 2: Examples of possible users' reward functions

Users' rewards. We propose that the reward \tilde{R}_{kj} of the k th user in the j th evaluation should be proportional to w_{kj} (i.e., to \bar{b}_k in the case when the user has effectively taken part in the evaluation), also to γ_j , and the *users' reward function* g of the distance from the user's evaluation to the median m_j , normalized by the interquartile range I_j :

$$\tilde{R}_{kj} \sim w_{kj} \gamma_j g\left(\frac{m_j - v_{kj}}{I_j}\right). \quad (3)$$

Examples of possible users' reward functions can be seen on Figure 2.

References

- [1] Theil-Sen estimator: en.wikipedia.org/wiki/Theil-Sen_estimator