

ADSHARES WHITEPAPER

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ADSHARES NETWORK

Value proposition

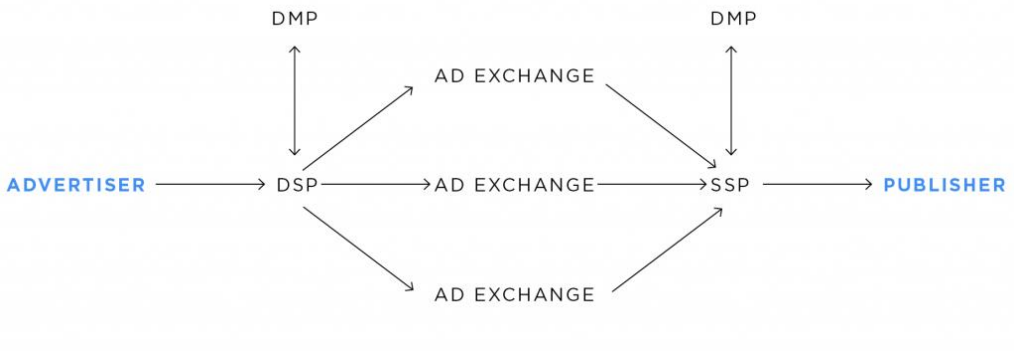
Adshares Network is a decentralized, peer-to-peer market for programmatic advertising. Adshares provides better transparency, less fraud, and reduced costs for all market participants. Adshares Network runs on ESC Blockchain and uses Adshares Tokens for ad payments. Fees collected from processing payments are distributed among token holders.

Advantages of Adshares Network
Elimination of middlemen
Greatly reduced fees. 90% reduction of the fees is feasible
No barriers to entry. Especially important for small players.
Single currency. No problem in cross border commerce
Ability to serve controversial segments: gambling, cryptocurrencies, disruptive
Equality of access to data –machine learning available for small players
Market structure that makes fraud unprofitable
Data available to academics to develop better algorithms
Resistance to Adblockers
Compatible with Coalition For Better Ads

Advantages of ESC Blockchain
Easily scale to 10k transactions per second and over 100k transfers per second
No blockchain bloat. Disk requirements are not tied to transaction volumes
Cheap transactions
Built in support for Two Factor Authentication.
Unique Two-Tier node structure
Economics done right. Dividend distribution to all token holders. No mining required.
Instant secure transactions for accounts in same cluster
Ability to create instant fiat exchanges without transferring control of tokens
Ready to launch multi party, distributed and secure alternative for Tether USD
Secure lightweight clients with ability to run on smart phones

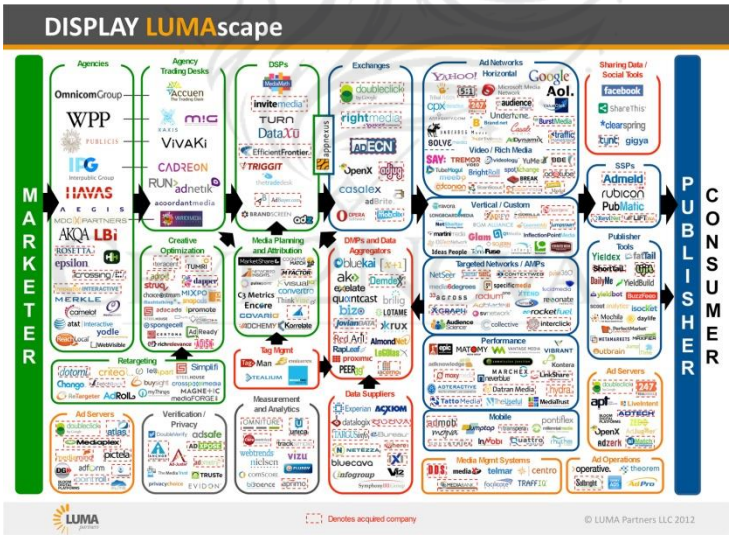
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Overview of existing market



Simplified view of programmatic ads market

The current programmatic advertising landscape is highly opaque and fragmented. Far too many intermediaries stand between advertiser and publisher. This causes inefficiency in pricing while intermediaries fees consume huge parts of publishers' revenue. For example, Google Adsense takes a 32% cut for allowing you to find suitable advertisers. Reliable estimates of typical intermediary fees are hard to get (no surprise!), but estimates point to around 50% fees[i]. Some high-profile cases point to even more absurd fees up to 70%[ii]. Just to recap: advertisers pay $3.00 per thousand impressions while the publishers who actually deliver these impressions only get $1.50, or perhaps even $0.90! This massively inefficient market is ripe for disruption.



More accurate state of advertisement ecosystem[iii]

Part of the problem that causes this fragmented market is that there is no one standard for communication between advertisers. The Adtech industry is trying to establish such standards, but the dominant model of Real-Time-Bidding is extremely expensive and does not scale well.

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The primary aim for the Adshares project is to render various ad exchanges obsolete by making an open platform that will enable advertisers and publishers to find themselves and trade directly using blockchain.

Standardized exchange and easy access to market will foster development of open algorithms that will enable publishers to be their own SSP and advertisers to be their own DSP.

New peer-to-peer solution

Decentralized market

A real-time auction to determine a buyer for every single ad request is both costly and ineffective. It forces advertisers to blindly buy impressions because there is insufficient time to properly assess them. It greatly increases the cost of infrastructure because RTB systems must operate under strict response time constraints. Adshares network is based on a different model of market; every advertiser creates an account on blockchain and associates it with their domain.

An advertiser uses Adshares Api to describe the inventory which he wishes to advertise. A typical entry will include creative content (banner, text, video), various information about the intended audience and, of course, price. It is up to the advertiser to decide which information is made public and which is to remain a secret.

Publishers use blockchain to discover advertisers and crawl their inventories. When a user visits the publisher's site, the inventory database is analyzed to find the banner with the highest expected payout. Before displaying the banner to a user, a script checks if the banner is exactly the same as the one promised in the inventory.

The advertiser collects information about displayed ads and periodically (e.g. every hour) analyzes received events and decides which one to pay for and how much.

Both sides of the network constantly learn and evaluate the reputation of different actors. Advertisers have an incentive to pay a fair amount for displaying their ads or risk getting banned from the most valuable sites, or even lose bids to other advertisers. Publisher are incentivized to display the most matching ads to maximize their yield.

Disintermediation

There are services in the advertising space that need some kind of trusted authority to ease trading of impressions. An example of such a need is classification of content. Some publishers are interested in filtering which kinds of ads they want to display on their websites. For example, they want to exclude adult content or gambling. This creates the need for a common standard of ads classification. Adshares can accommodate such needs by introducing in-network services.

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To further illustrate this, there can be a service which classifies advertisements. Digitally signed classifications from popular providers can be included alongside inventory. Publishers can then have a policy of only displaying advertisements checked by providers whom they trust. This encourages advertisers to undergo quality checking, there can be numerous competing standards, and everything can be paid using Adshares Tokens.

More generally, we can observe that ad exchanges operating in centralized environments have huge pricing power over their users as they can enforce certain policies and accompanying services, like ad quality standards, landing page classification or data services. The smallest users are the ones most disadvantaged in this area. With an efficient, common means of payment, most of the accompanying services can move to on-demand services, competition will greatly increase and prices will fall.

Reduced fraud

Accounts used to receive and send payments for ads on blockchain will be linked to domains. This repository of cryptographic keys can be leveraged to authenticate events generated during ad request and delivery. This will substantially reduce surface attacks by fraudsters.

Adshares operates on the "display first, collect payment later" principle. This gives significant advantage to advertisers because they are not forced to blindly bid in RTB auctions and, therefore, can take more time to assess the validity of impressions. Fraud can be further eliminated by adopting a revenue sharing model.

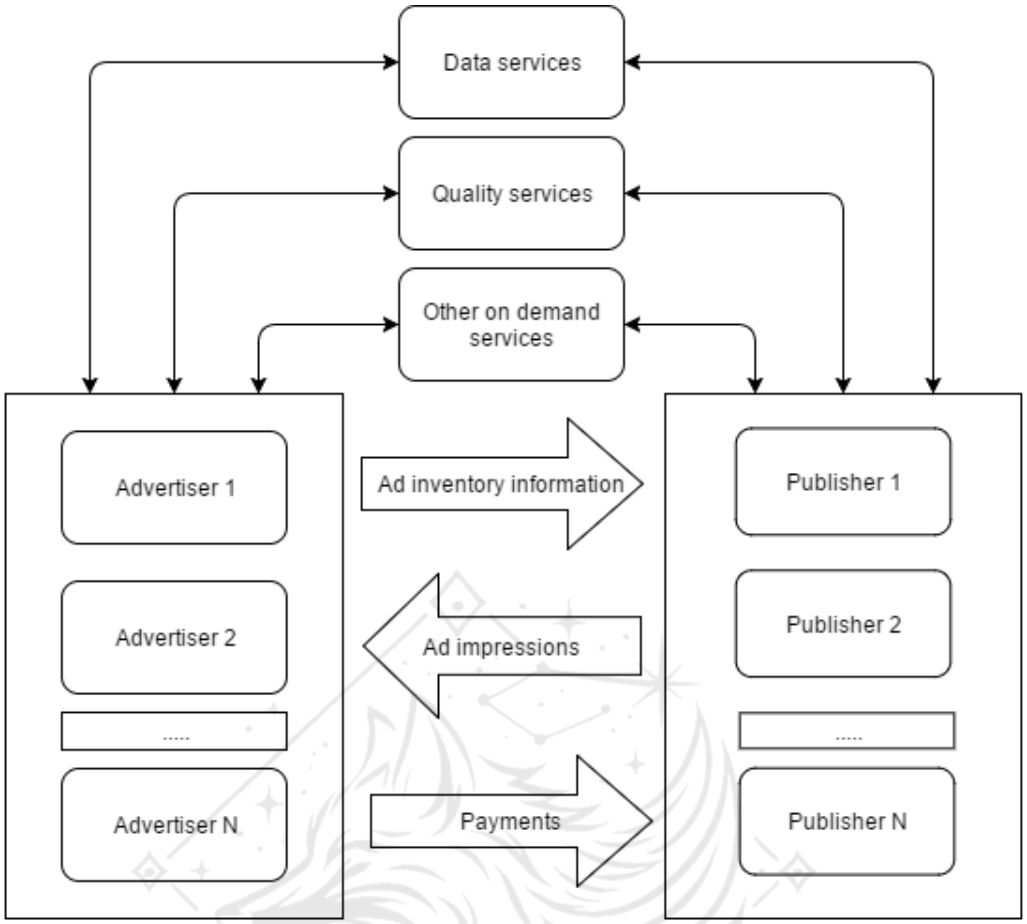
Decreased effectiveness of ad blockers

A distributed network gives everyone the ability to serve ads from their own server / domain with custom solutions. This will make adblock software an order of magnitude harder to develop.

User ecosystem

When the system reaches widespread adoption, users can start to use Adshares Tokens. For example, a user can offer their own bids to a website to not display any ads or share their advertising preferences with publishers to get better ads or just be part of the advertiser payment.

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Adshares Network

Business model

Market Size

Programmatic digital display advertising spending is projected to be over 32 billion dollars in 2017 in the USA alone. It is expected to grow to almost 46 billion dollars by 2019[iv]. This huge market with dynamic y/y growth is an ideal target for disruption.

Global digital ads spending is projected to exceed $220 billion dollars in 2017. The share of programmatic ads is growing.[v] Profitability can be reached once Adshares takes over even a small portion of the ad market and satisfied with only 1% average fee collected from payments. 1% fee is an order of magnitude smaller than current rates, so even higher revenues might be possible.

Scenario	Revenue per annum based on year 2017
1% of global digital ads market; 1% fee	22 million dollars
10% of US programmatic market; 1% fee	32 million dollars
10% of global digital ads market; 1% fee	220 million dollars

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Competition

Basic Attention Token. Although BAT attempts to bring blockchain to advertising, its target is to fundamentally change how ads are viewed. This is a laudable goal but it will have enormous adoption problems. Even the first step, making users switch their favorite browser for a BAT alternative, is a huge challenge. We think it is better to serve the existing market and evolve it for future use while simultaneously making money for token holders. BAT is also a potential user of ESC blockchain as they currently have no working solution for efficient large scale multi party token transfers.

Big players in the ad exchange market like Google DoubleClick, AppNexus, OpenX, AOL's Marketplace will not be able to prevent their users from simultaneously using our product so, they will have to reduce fees and adapt or maybe even start posting their inventories on our network.

Competitive advantages

The main competitive advantage of the Adshares Network is greatly improved transparency and reduced barrier to entry. This will cut off most of the profit for middlemen and greatly reduce the cost of advertising. Reduced costs will make advertisers and publishers eager to switch to our platform.

A second area of improvement is resistance to fraud and the ability to serve ads to customers with adblock. A new model, paying for advertisers after impression, gives advertisers more time to evaluate whether traffic is genuine. Fraud can even be totally removed by switching to revenue sharing. For example, an advertiser running an online shop can pay for directed traffic by sharing revenue generated by users.

Reduced prices and disintermediation of various services will fuel greater competition which will further reduce prices and give incentives to improve existing services.

Present ecosystem	Adshares Network
Opaque auction system	Transparency
Proprietary software	Free software, open source infrastructure
Advertiser pays upfront -uncertainty about delivery	Advertiser pays after impression, less incentive for fraud
Expensive ads due to middlemen fees	Efficient ad pricing
Publisher not sure what ads are displayed	No surprises - every ad content is checked against hash before displaying

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Growth plan

Adshares Network is under active development[vi]. Blockchain for Adshares Token and Adshares Adserver have completed proof of concept stages and are working prototypes. More work is needed to bring products to release quality. There is also a need for an improved user interface.

Bringing Adshares token blockchain to release quality will take 3 - 12 months depending on funding levels.

Finishing development of Adshares Adserver will take another 3 – 12 months.

Simultaneously, we will make further efforts to find business partners in the ad market and start running gateways to existing ad exchanges. This is needed to overcome the chicken-and-egg problem of bootstrapping network. By copying inventory from existing ad networks, we will have a good offer for advertisers and publishers from day one.

The next area that needs attention is the internal market for accompanying services. We will run basic data and ad quality checking tools within the network. Preferably, we will establish business relations with existing players in this space as they are not competing with our product.

After the network starts, we will use machine learning and analytics tools to improve the efficiency of Adshares Adserver.

Growth hacking in industries which are prohibited from most of the traditional networks (e.g. gambling or cryptocurrencies)

Technical reference

Registering advertisers

To register a new advertiser, send a simple broadcast transaction which contains the domain to be associated with the sending account.

```
{"run": "broadcast",  message:"example.com"}
```

Publishers request a list of broadcasts and add the domain to their list of known advertisers.

```
{"run": "get_broadcast", since: 1496673855}
```

Publishing inventory

Advertisers publish all their inventory under a special url in their registered domains

```
GET /adshares/inventory/list
```

Response will contain JSON encoded list of available ads along with requirements for audience. Example:

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```
{
    "creative": {
        "type": "image",    "width": "468",  "height": "60",
        "hash": "ec4e456702218f279e3c6ad630ddcc017ea3297d",
        "classification.provider1": {adult: no, alcohol: yes, signature: "AC..." }
        "classification.provider2": {gambling: yes, signature: "ACBF352A..." }
        // ^ Banners have been checked by these providers and signed to prove it
    },
    "landing": {
        "url": "http://example.com/"
        // Possible to have trusted classification for landing page
    },
    "price": {"cpm": "10.00", "cpc": "100.00" },
    "budget": { "per_hour": "344.00" }
    "time": { "start": "2017-04-11", "end": "2017-05-11" },
    "adshares_address": "0002-00000001-659C",
    "creative_url": "http://adserver.example.com/serve/1",
    "view_url": "http://adserver.example.com/view/1",
    "click_url": "http://adserver.example.com/click/1",
    "accepted data providers": [DMP1, DMP2, …]
    // ^ Payment decision will be made using data from this providers
    "require": {
        "browser ":  "chrome"   // Will only pay for displays in chrome
        "age": "19-25",
        "interests": "bitcoin"
    },
    "modifier": {
        "platform": {
            linux: +0.06,   // Will pay 6% more for linux platform
            windows: -0.05  // Will pay 5% less for win platform
        },
        "language": {
            "en": +0.20     // Extra price for english language
        }
    },
    "exclude": [
      hosts: [example.com, example2.com]
      // Won't pay for impressions in these domains
    ]
}
```

Publishers will crawl inventory from all known advertisers and use it to optimize revenue.

Sending payments

Every advertiser periodically analyzes a log of served ads. Such a process may involve checking impressions against fraud databases or analyzing data from user interactions on the landing page. The algorithm can be simple or complicated – it depends on advertiser needs. The goal of this process is to assign monetary value to every impression. Once this is done, one bulk payment is generated to all publishers that displayed advertiser ads during the processing period. The result of this process is remembered so the advertiser can provide detailed impression stats to the publisher.

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Receiving payments

The publisher is connected to blockchain and waits for payments from advertisers. Each incoming payment is analyzed. First, the publisher downloads details of payments by contacting the advertiser's domain

```
GET /adshares/report/<TX ID>/<PUBLISHER ADDRESS>
```

Downloaded reports help the publisher to adjust its algorithms to better understand advertiser needs.

Improving ads selection

Publishers constantly compare expected payouts from various impressions with actually received payments. They use this data to evaluate and improve weighting assigned to different factors which determine ads selection. This process should in time lead to better revenue.

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[i] Terence Kawaja's IAB Networks and Exchanges Keynote, 2014
[ii] http://www.thedrum.com/news/2017/03/28/the-guardian-suing-adtech-outfit-rubicon-project-breach-contract
[iii] http://www.lumapartners.com
[iv] Data source: www.eMarketer.com
[v] statista.com - Digital advertising spending worldwide from 2015 to 2020
[vi] https://github.com/adshares/

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