Recurring pitfalls in the revenue transaction process could be removed if this new technology is used effectively.

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MUCH HAS BEEN WRITTEN AND DISCUSSED about what blockchain is and what it can do. We read a recent article that described it is an emerging technology that has the potential to disrupt transaction processing, settlements, accounting, reporting and auditing in the media industry. But a lot more information is needed in order to understand the technology and its potential for media companies.

For starters, it is useful to appreciate why blockchain can add value to industry sectors universally. Its potential and related adoption strategies should be looked at in two distinct pools. The first is that blockchain-based networks offer the opportunity to develop new business and trust models, most of which haven't been invented yet.

Adoption will require the creativity of entrepreneurs and practitioners to use the technology as a means of rethinking the way in which individuals, public authorities and business interact without compromising data privacy and commercial confidentiality, while also minimizing fraud risk. That's discussed in an IBM-supported Forrester report called *The Total Economic Impact of IBM Blockchain.*

The second path, and the focus of this article, is on improving the efficiencies of existing process flows. In this pool, an effectively installed blockchain network will improve those situations that involve multiple parties wasting time and resources reconciling data when all should be reviewing and using the same data.

It can also help companies avoid situations where fraud arises from a lack of timely information. And blockchain is also a valuable tool for processes where efficiency gains and other benefits can be achieved if all participants have visibility across an entire supply or value chain. This last-named pool is where improvement of advertising revenue transaction processing squarely fits.

Programmatic advertising transactions involve several steps starting with the advertiser placing the buy. The intended transaction typically involves ad servers, trading desks, ad exchanges as well as both sell-side and demand-side platforms. Finally the order reaches a publisher and then is seen by consumers. (See top diagram page 12.)

This linear relationship is certainly open to the challenges of errors, fraud, customer credit risk, delays in settlement and accounting for revenue recognition under the new accounting rules. Those rules are tilted heavily under accounting principles to significant judgement interpretation and not a rules-based application as in previous U.S. Generally Accepted Accounting Principles, better known as GAAP.

HOW IT WORKS

Our view is that these challenges can be proactively addressed by deploying blockchain technology. (The bottom diagram on page 12 illustrates this.)

This blockchain network operates under the foundational principles of:

- ***Permissioned Network*** – Each participant has a unique identity, which enables

the use of policies to constrain network participation and access to transaction details.

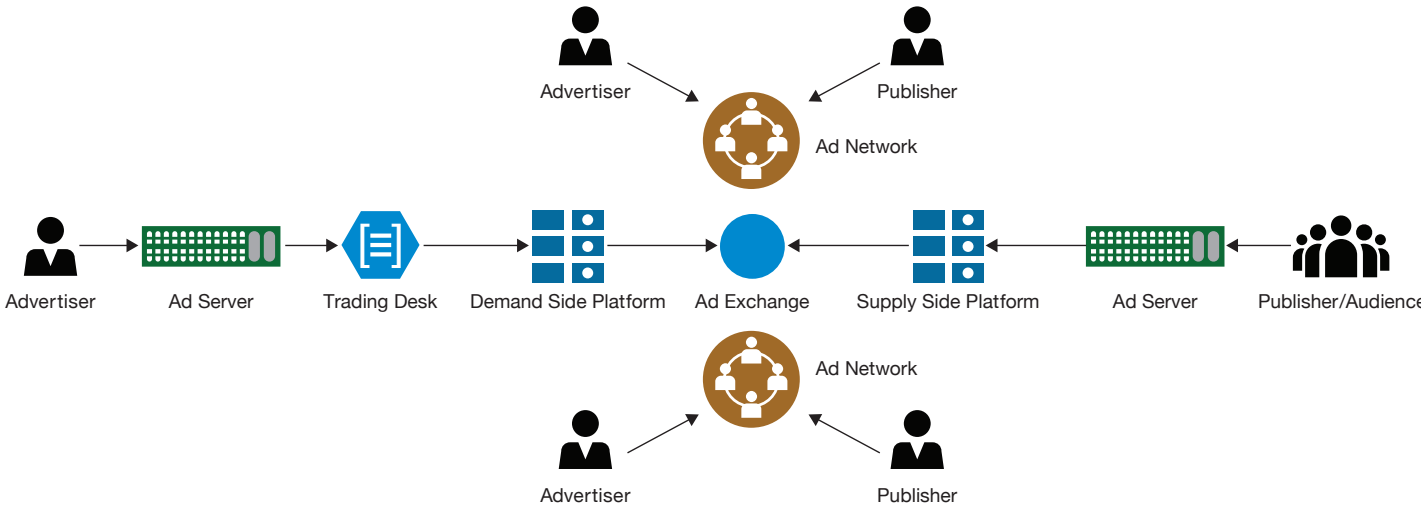
- ***Consensus*** – For a transaction to be valid and recorded on the platform, all participants must agree on its validity.
- ***Provenance*** – Participants know where the underlying asset came from and how its ownership has changed over time.
- ***Immutability*** – No participant can tamper with a transaction after it has been recorded in the ledger.
- ***Finality*** – A single, shared ledger provides one place that participants can visit in order to determine the ownership of an asset or the completion of a transaction.

Operationally, the advertiser, intermediaries and publishers form a blockchain consortium network. Each member of the consortium has at least one node in the blockchain network. Each transaction connected to the advertiser's digital asset is verified at each of the nodes through smart contracts.

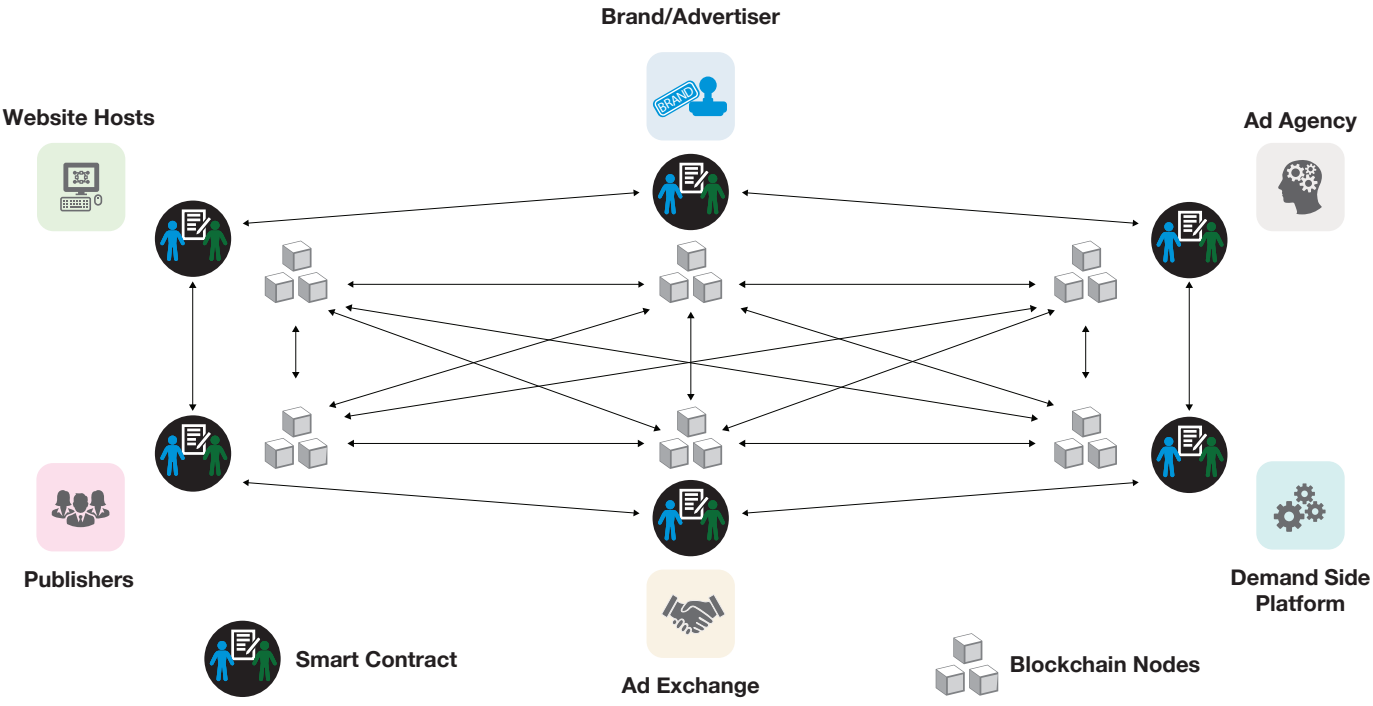
The relevant transaction is stored on the blockchain and replicated on all the nodes – but only if members form a consensus on the validity of the transaction across all the nodes. The approved blockchain of transactions are then added to the blockchain in a direct, sequential manner, and it is written as a cryptographically ensured block.

New blocks of approved transactions/information are associated with more established blocks, making a chain of blocks that

HOW PROGRAMMATIC ADVERTISING WORKS



PROGRAMMATIC ADVERTISING TRANSACTION PROCESS UNDER A BLOCKCHAIN NETWORK



demonstrate validity of each transaction in that blockchain's history. The entire chain is continuously synchronized so every ledger in the network is the same and gives every member the ability to prove at any time who owns what type of transaction.

Each digital asset can then be allocated a unique tag, which helps in the audit process. And members on the blockchain can proactively search each transaction to avoid fraud. The flow from asset creation to bid price, display (location, context and click through) can be tracked. And everyone in the ecosystem will be aware of impact of the ad display.

With additional use of artificial intelligence and machine learning algorithms built in to mitigate fraud, the network host can proactively practice detection by observing signature patterns, track DNS (domain name system) traffic monitoring and perform behavioral analysis reviews. A rigorous application of these techniques is a robust defense in combatting fraudulent transactions.

MEETING MEDIA'S NEEDS

In terms of collections of advertising revenue receivables, the industry has a unique issue: once the ad has run, there is no going back to repossess the asset due to an inability to collect cash. Credit and collections policies are vitally important to the industry and invariably time-consuming and subject to repetitive tasks.

Our view is that this can be improved immeasurably with a blockchain solution. When a customer is established on the network, the credit-worthiness and ability to pay can be vetted (not dissimilar to current practices) and the ability to pay and banking details coded into the smart contract that governs the interaction of parties as the contract is executed.

When an ad airs, it will trigger performance obligations embedded in the contract and payments flowing through the banking system can be executed. This, properly configured, can be an effective tool in reducing the length of days outstanding in ad revenue receivables and the incidence of uncollected debts.

For revenue recognition, we note that ASC 606 Revenue From Contracts With Customers is weighted towards principles-based accounting (and usually requires the application of significant judgement) as opposed to rules-based accounting that has long been applied to revenue recognition rules.

The implementation of a blockchain network can improve on this application as follows:

Step 1 – Identify the contract with the customer. This should be transparent with the nodes and smart contracts specifically identifiable to each customer.

Step 2 – Identify the separate performance obligations in the contract. This will be a bit tricky and will involve judgement calls, especially with the need to identify distinct deliverables. With the aid of artificial intelligence tools and big data analytics built into the platform, verifiable evidentiary support can be mined from the transaction processing data.

Step 3 – Determine the transaction price. This may involve the accounting for variable consideration and as performance obligations are satisfied. The trove of verifiable transaction data and the use of artificial intelligence and big data analytical tools should assist here.

Step 4 – Allocate the transaction price. Having verifiable data and transaction history from the proceding steps 1-3 will render this step easier to perform.

Step 5 – Recognize revenue when (or as) a performance obligation is satisfied. With transparency and verifiable data from the network, the revenue recognition and financial reporting for this step can be better facilitated.

Adoption of blockchain technology will take some bold actions by stakeholders. A clear vision of the end stage is needed early on. And its success depends on the involvement and buy-in of internal and external stakeholders.

Transaction processing volumes will continue to dramatically increase in the coming years. There will be a need for a better system for recording, using and safeguarding sensitive data. When it's used effectively, blockchain technology can accomplish these goals.

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