Vocal
A Platform for Decentralized Advertisement

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***Abstract*—Vocal is building a currency platform and exchange that puts the control of the advertising experience back in the hands of consumers. Vocal is not owned by any single one party. Rather, it is managed by an open distributed network of validators which enforce behavior of all participants. It uses the mechanism of a protocol coin to create a proof-of-stake blockchain to enable enforcement of market activity amongst participants. This high-performant distributed network enforces exchange across asset classes, from fiat-backed issuers to fully decentralized blockchain coins (ERC-20 style and native cryptocurrencies). Unlike nearly all other decentralized exchange platforms, this allows for decentralized exchange of other blockchains and between multiple blockchains directly without a trusted gateway coin. Markets may be able to significantly reduce spreads and encourage market assurance via decentralizing custody and increased transparency of market activity. This is achieved using smart contracts, which enforce correct market behavior of order-book matching, and commitments to historical exchange data for use with Ethereum smart contracts.**

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I. Introduction

Advertising has long been a unidirectional business; many advertisers force ads and messaging upon end users in exchange for public awareness. These advertisers often due this in exchange for payment by a third party. This year (2017), the US Digital Advertising market will reach $83 billion in aggregate transactions - offering large growth opportunities for new and innovative advertisement offering platforms.

Vocal seeks to reverse this model by providing a platform wherein users can earn a unit of exchange (in this case the Vocal Coin) by engaging with advertisers through the Vocal application. Within the Vocal application, users are able to control their advertising experiences by watching ads provided by a network of peers and sponsors. As users continue to watch advertisements, they begin to earn credit (Vocal) which can either be redeemed for their own marketing purposes or traded to other users.

Vocal seeks to provide advertisers exposure in a new and creative way, and to, equally, create a marketplace where consumers can earn credit for their own use or investment purposes.

II. Scope of Use

Vocal is targeted at two main user groups: Consumers and Producers. In this section we will explain how each of these terms are defined in the Vocal model.

A. Producers and Consumers

1) Producers: Producers are the advertising partners and providers. Put another way, these producers are the consumer goods entities (i.e. anyone in CVS) and companies in the crypto/blockchain space.

2) Consumers: The scope of consumers is designed to have limited barriers to entry. The consumers include anyone interested in generating passive value generation by watching and interacting with advertisements. Producers of ads can also be consumers - earning Vocal coin as they watch and interact with advertisements provided by advertisers (other Producers).

III. Existing Work

Open trade is a fundamental aspect of Vocal coin (and financial activity in general). There are many other efforts which seek to build advertising-focused currencies that are publicly trade-able.

Basic Attention Coin (BAT) is one example of such a currency - with a main concept to track the user's attention span to ads by creating a custom browser, Brave, which can track user attentiveness when viewing advertisements.

In contrast, Vocal's model is simpler. Vocal provides a medium for a mutually beneficial relationship between advertising partners and consumers by providing an exchange of advertising content that benefits both parties.

IV. Vocal Coin

The Vocal coin is the main unit of exchange and credit in the Vocal ecosystem; however, the utility of Vocal extends to these primary areas:

1) As a main unit of bookkeeping for advertisement publishing and viewing.
2) As a store of value - the vocal coin may be able to redeem more or less in the future.
3) As a unit of purchase - the vocal coin can be redeemed for offers and services from public retailers.

V. Design

The Vocal coin is an ERC20 based currency, which will have an initial public offering which buys a predefined amount of advertisement credit. Once the coin has reached the required funding level, the Vocal market will open to public - enabling open trade and use of the coin on the Ethereum blockchain.

As users view advertisements, the vocal coin is recorded in the user's application and delivered every Sunday night to the user's wallet in a single transaction. These records are proof

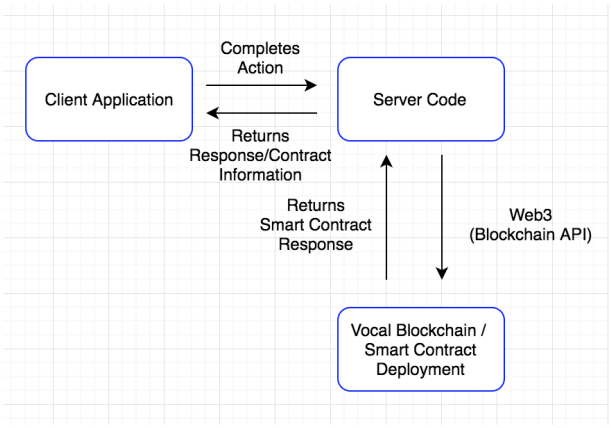

Figure 1. Basic Vocal Client/Server Architecture

of all Vocal coin transfers and are stored publicly on the Vocal blockchain.

A. Blockchain Overview

The above model for tracking and transacting Vocal coin implies a large volume of activity (carrying a large amount of additional weight on the network). At the time of this writing, not all of this activity will be able to take place on the Ethereum main chain (due to known scaling limitations of the Ethereum blockchain).

These scaling concerns may be mitigated by the upcoming Ethereum blockchain improvements such as Metropolis (the next upgrade to the Ethereum blockchain scaling system). However, we will plan to use a batched approach which provides both the benefit of reducing the cost of transacting for the end user on the main network and reduces the complexity of tracking public transactions.

Vocal is largely a coin which will connect to other blockchains via public exchange - largely backed by the Ethereum coin. Activity on other blockchains can interlink with this chain. The Vocal chain validates the activity of the behavior of all the participants on the main net (albeit if transactions are performed off the main chain these cannot be tracked, see the website LocalBitcoins.com as an example).

The Vocal coin itself is providing the computation and enforcement of the design via the smart contract protocol. Owning Vocal coin grants the user the right to validate this chain through transaction fees, payment, interchange, trading, and clearinghouse use.

B. Holding Vocal Coin

VI. Discussion

The Vocal architecture can be defined as a simple 3-tier system as illustrated in the below figure.

VII. Coin Supply

Vocal coin follows a fixed coin distribution model as to be described in this section.

A. Total Cap

Vocal will be capped at a total circulating supply of $100,000,000$ coins. Coins will be earned by engaging with advertisements (either by watching, viewing, or opening advertisements). The coin quantity earned for each action will vary according to the total number of supply still remaining. In this sense, viewing ads has become the notion of mining - rewarding users for participation on the network.

As more coins are mined and held - the coin quantity reward granted will diminish; however, the corresponding market or redeemable value of the coin may correspondingly increase in value. This model lends itself similarly to Bitcoin. In that users will still be given roughly equivalent reward for the amount of work and early holders/participants will potentially be rewarded for their early entry point and involvement.

VIII. Distribution

The distribution of the coin will proceed as follows.

1) Vocal Launch (50%) Vocal is inherently a publicly traded and earned coin that plays a critical role in the expansion of this new ad engagement platform. We are fully committed to creating a sound governance structure and we plan to dedicate significant resources to the continued Research and Development of the platform.
2) Retained by Vocal Coin (15%) The Vocal coin core development team will be able to sustain itself using funds raised through the coin launch. If the Vocal platform proves itself to be a fundamental technology as we believe it to be, the retained Vocal coins will allow the Vocal development team to sustain operations for many years.
3) Developer Fund (15%) The Developer Fund will be used to make targeted capital injections into high potential projects and teams that are attempting to grow the Vocal Coin ecosystem, strategic partnerships, hackathon prizes and community development activities.
4) Founding Team (10%) The founding team's allocation of Vocal will vest over a traditional 4 year vesting schedule with a one year cliff. This is standard practice for equity vesting and we believe the same standards should be applied to the coin offering.
5) Early Backers and Advisors (10%) Our backer and advisors are valuable resources to the expansion and growth of the Vocal platform. This remaining 10% will be reserved for them, as a continued incentive to offer guidance and sustain a coin that holds genuine utility.

A. Challenges and Limitations

Creating an advertising-based currency poses several challenges. We highlight a few of them here; for example,

1) In order for advertisers to participate, the opportunity for them should be equal to or greater than current other opportunities and channels.
2) Is that true for participation in Vocal? For their participation, they would be both paying for Vocal and be willing to provide a good or service to a consumer in

Table I
VOCAL COIN TIMELINE

Nov 2017	Finish coin proposal and development.
Dec 2017	Finish Client facing coin application.
Jan 2018	Vocal Coin Presale.
Apr 2018	Mobile application released for Android.
Jul 2018	Coins redeemable for goods and services.
Dec 2018	Obtain retail partnerships for addition offers.
2019	TBD: Ongoing security and product development.

exchange for coins. How is this better than distributing coupon's from a advertiser's point of view?

3) Why would an advertiser want coins? What do they do with them thereafter?
4) The quality of the advertisement view is important to its value. For instance, if a user is watching ads continuously, the value of a single ad may not be necessarily very high. How does Vocal mitigate this? And how does this affect the go to market strategies for advertisers who wish to become involved with Vocal Coin?

These are fundamental questions to be solved by our Roadmap below.

IX. DEVELOPMENT ROADMAP

X. CONCLUSION

Vocal is a coin that has potential both as a store of advertising value and as an accounting system for advertisement engagement. Taking inspiration from both the Bitcoin and Ethereum mining models, one of Vocal's main goals is to create a coin ecosystem whose rewards stay consistent over time (but with greater potential for individual growth with a more early the entry point). The coin is designed to be easily accountable by transactions discoverable on the public ethereum (ERC20) blockchain.

Vocal coin's initial offering will be done in early January 2018.

APPENDIX

A. Founding Team

Vocal was founded by Eric Asquith and Chris Buonocore. Eric is a Boston-area natives and bring a complimentary blend of professional experience to Vocal. He is also an attorney and real estate broker, with a clear vision for how technology can fix relationships between customers and advertisers. Chris is a former consultant and now developer from silicon valley with over 8 years of development experience. He brings wealth of relevant experience to take Vocal to consumers - holding expertise in creating and scaling mobile-based software platforms.

B. Acknowledgements

We would like to express our gratitude to our mentors, advisors and to the many people in the Ethereum community that have been so welcoming and generous with their knowledge. In particular, we would like to thank the folks in the Boston Cryptocurrency and Ethereum developers meetup groups for their support and advice.

C. ERC20 Vocal Protocol

Vocal follows the ERC20 (ethereum-blockchain) protocol for recording transactions. ERC20 establishes a standard contract ABI for coins on the Ethereum blockchain and has become the de facto representation for all types of digital assets. ERC20 coins share the same contract interface, simplifying integration with external contracts. Core ERC20 functions include:

1) transfer(to, value)
2) balanceOf(owner)
3) approve(spender, value)
4) allowance(owner, spender)
5) transferFrom(from, to, value)

EIP101 includes a proposal to change ether to follow the ERC20 coin standard. For now, a "wrapper" smart contract may be used as a proxy for ERC20 ether. For reference, see the Maker implementation or the Gnosis implementation.

1) Contract ABI: EIP50 proposes an extension to the contract ABI to support structs. This would allow the community to establish standard Order and Signature data structures, simplifying our contract interface and integrations with external contracts.

2) Ethereum Name Service: EIP137 or Ethereum Name Service (ENS) will be used to resolve human-readable names, such as "myname.eth," into machine-readable identifiers that may represent Ethereum addresses, Swarm and/or IPFS content hashes or other identifiers. It can also be used to associate metadata with names, such as contract ABIs or whois information. ENS will be used by 0x protocol to create more intuitive message formats that optionally reference Makers, Takers and Relayers by name.