Executive Summary

AUGUST 10, 2017

Aion: The third-generation blockchain network

EXECUTIVE SUMMARY

by Matthew Spoke, CEO

Today, there are hundreds of blockchains. In the coming years, those hundreds will become thousands and—with widespread adoption by mainstream business and government—millions. Blockchains don't talk to each other at all right now; they are like the PCs of the 1980s.

In the future, blockchains will federate data and value in a hub and spoke model similar to the internet. The future of mainstream blockchain adoption will be achieved by the development of a networked, federated blockchain to integrate these separate spokes. That integrated blockchain network is Aion.

Aion is a third-generation blockchain network that will enable any private or public sector organization to:

- **Federate**: Send data and value between any Aion-compliant blockchain and Ethereum.
- **Scale**: Provide fast transaction processing and increased data capacity to all Aion blockchains.
- **Spoke**: Allow the creation of customized public or private blockchains that maintain interoperability with other blockchains, but allow publishers to choose governance, consensus mechanisms, issuance, and participation.

At the root of the Aion network is a purpose-built, public, third-generation blockchain called Aion-1. Designed to connect other blockchains and manage its own robust applications, Aion-1 also provides the economic system that incentivizes interoperability in the ecosystem.

AION tokens are the fuel used to create new blockchains, monetize inter-chain bridges, and secure the overall network.

OPPORTUNITY

Currently, there is intense interest in blockchain technologies for enterprise and other use cases in both the public and private sectors. In addition to the new mainstream attention being placed on Bitcoin, Ethereum, and the broader ICO market, IBM and other companies have many public and secret blockchain projects; and companies as diverse as Disney and Microsoft have put their name
on enterprise blockchain projects.

As of July 2017, over 150 companies in various industries are members of the Enterprise Ethereum Alliance (EEA). In addition, over US$400M has been invested in VC (CBInsight) and US$900M through token-generating events since November 2016 (Smith and Crown).

However, the widespread adoption of blockchain technology is constrained by unsolved questions of scalability, privacy, and interoperability.

Previous enterprise blockchain innovation has been ineffective at addressing these core concerns. Large amounts of resources have been spent trying to build the next perfect blockchain instead of working to integrate existing systems into an interoperable blockchain network.

Aion is the solution.

EXPERTISE

Aion is an initiative being led by Matthew Spoke, CEO of Nuco and board member of the EEA. Matthew has been a leader in the enterprise blockchain domain for nearly four years and is backed by an incredibly talented team at Nuco.

Jin Tu, Nuco CTO, has over 15 years of experience in enterprise engineering, most recently at Morgan Stanley, and has been working in the blockchain industry for more than four years. Learn more about the Nuco team.

Advising and supporting the Aion project is the team at New Alchemy, led by Peter Vessenes. Peter launched the first VC-backed Bitcoin company in 2011, co-founded the Bitcoin Foundation in 2012, and financed the first company to deploy 65nm custom Bitcoin ASICs in 2013. In 2016, Peter publicized a vulnerability that was later exploited, revitalizing security practices in the token ecosystem. Peter has consulted for Fortune 500 companies, governments, and startups since the inception of Bitcoin.

As we move forward, we'll be growing our team and adding notable advisors. If you're excited about our vision, we'd love to hear from you.

CHALLENGES AND SOLUTIONS

Having identified notable shortcomings in existing blockchain solution architectures, Nuco is focused on building a set of protocols that provide solutions to the broad and diverse requirements emerging for mainstream blockchain adoption. Core to our hypothesis is the idea that many blockchains will be created to solve unique challenges within diverse industries.

As such, the Aion network is designed to support complete interoperability, on-chain and inter-chain scalability, and individual blockchain customization. Within this design, Aion-1 acts as the common blockchain through which an economic model is supported to incentivize and secure the operation of the network.

Interoperability

The need for inter-blockchain communication spans myriad use cases. Cross-organizational functions such as supply chain operations, communication between health providers, and government entities are obvious examples, as well as businesses with multiple internal blockchains.

The Aion protocols specify a high-performance bridging mechanism for inter-chain communication. Multiple bridges between pairs of chains allow both data and value to transfer between chains. The bridge mechanism relies on incentives to ensure the validity of cross-chain communications.

In situations where incentives are insufficient or unreliable, Aion uses alternative verification technologies to ensure that transfers between chains are reliable and secure. At the root of this design
is the world's first public enterprise blockchain: Aion-1.

Aion-1 is a connecting network designed as a trustless software execution platform with a robust cryptoeconomic model that will:

- Allow the creation of unlimited spokes—custom blockchains that connect with all other Aion network blockchains and allow users to customize governance, issuance, and participants.
- Provide federated inter-chain communication of data and value between all Aion network spokes.
- Connect with the main Ethereum blockchain, allowing AION tokens to traverse chains between Aion-1 and Ethereum seamlessly.

Scalability and performance

Commercial and government applications often require a high transaction rate. In addition, most blockchain systems have not been designed to store large amounts of data. The Aion network addresses these issues by introducing a new, high-performance virtual machine (VM) and a scalable database solution.

Customization

Enterprises often want to partition a blockchain to control access for security, privacy, or business/partnership reasons. The range of blockchain-related use cases in a single, large enterprise can also be broad enough that the enterprise would need multiple blockchains, each with different semantic, operational, or governance properties—while still maintaining safe and private communication between them.

Additionally, mined chains are not suitable for enterprises because they become dependent on entities (miners) outside their control. The Aion network solves these challenges by:

- Allowing custom blockchain design—including different consensus algorithms and VMs—without sacrificing interoperability
- Pioneering a new representative consensus that uses a proof-of-intelligence staking mechanism

SUMMARY

The Aion network is a multi-tier blockchain network designed to support a future where many blockchains exist to solve unique industry problems and to power the services of the modern world. Aion will become the common protocol used for these blockchains, enabling more efficient and decentralized systems to be built.

Phase 1 of Aion network development focuses on launch technologies that will be functional for the first version of the live system. The Aion network will:

- Depend on a secure proof-of-work algorithm while we continue to design and develop our neural-net-backed consensus system.
- Leverage characteristics of the Ethereum VM, modified to improve performance.
- Support a mechanism for AION tokens to flow seamlessly between Ethereum and Aion-1.

To get the latest news, announcements, and technical papers about the Aion project, join our mailing list and follow us on Twitter.