



# Executive Summary

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# Aion: Enabling the Decentralized Internet

## EXECUTIVE SUMMARY

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by Matthew Spoke, CEO

The introduction of blockchain technology has provided us with the opportunity to build a equitable, censorship-resistant and globally accessible internet. This decentralized internet movement is comprised of multiple layers that build up the future stack of the internet. Layers such as identity, messaging, payment, data storage, registries and file storage are all being rapidly built across the blockchain ecosystem on various protocols. However these layers in their current design lack a critical component to enable the widespread adoption of the decentralized internet - the ability to communicate value and logic between them. The future of the internet will not consist of a single winner, but an ecosystem of decentralized layers operating on and collaborating across numerous blockchain protocols. Aion is the common infrastructure that will bridge communication between these layers and the development of native-cross chain applications to enable a global decentralized internet.

With a vision towards enabling the decentralized internet, the Aion network will enable any public or private organization, enterprise, community or individual to:

- **Federate:** Send data and value between any blockchain in the connected Aion ecosystem
- **Scale:** Provide fast transaction processing and increased data capacity to all connected 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, 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 coins are the fuel used to create new blockchains, monetize inter-chain bridges, run cross-chain decentralized applications 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 March 2018, over 350 companies in various industries are members of the Enterprise Ethereum Alliance (EEA). In addition, over US\$2.5B has been invested in VC ([Coindesk](#)) and US\$8.8B through token-generating events since early 2016 ([Smith and Crown](#)).

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

Previous enterprise and public 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 Aion.

Jin Tu, Aion's 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 Aion team.](#)

Aion's team is comprised of many leading researchers and engineers, spanning multiple countries. Special credit is particularly due to Yao Sun and Yulong Wu, who were instrumental in the early research and design of the Aion vision.

Aion's advisory board was carefully assembled to bring together an incredible set of individuals, representing various domains and relevant industry expertise. This group includes Salim Ismail, Anthony Di'lorio, Eric Wetlaufer, Steven Neyeroff, Jeff Pulver, Eric Gu, John Lee, Michael Terpin, Tony Van Marken and Moe Levin.

## CHALLENGES AND SOLUTIONS

Having identified notable shortcomings in existing blockchain solution architectures, the Aion Foundation 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 a scalable and performant public blockchain with interoperability as the core of its design: 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 inter-chain communication of data and value between all connected blockchains in the Aion ecosystem
- Enable the development of cross-chain dApps that can leverage and execute data and logic across all

connected blockchains

- Allow the seamless movement of Aion coins across native Aion blockchains to signal adoption as major core protocol upgrades are launched as new Aion blockchains
- Utilize a hybrid delegated consensus model with wide-spread participation through coin staking “stakers” and participants in the proof-of-intelligence algorithm “solvers”

## 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 may not be 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 enable the decentralized internet, in which 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:

- Utilize a optimized version of the Equishash proof-of-work algorithm (Equihash2109) while we continue to design and develop our hybrid consensus system
- Leverage the FastVM, a performance optimized Ethereum VM, for faster and economical contract execution
- Support a mechanism for AION tokens on Ethereum to flow seamlessly and become native AION coins

To get the latest news, announcements, and technical papers about the Aion project, follow us on Github, join our Forum discussions, and subscribe to our mailing list.

**Enabling the decentralized internet, together.**