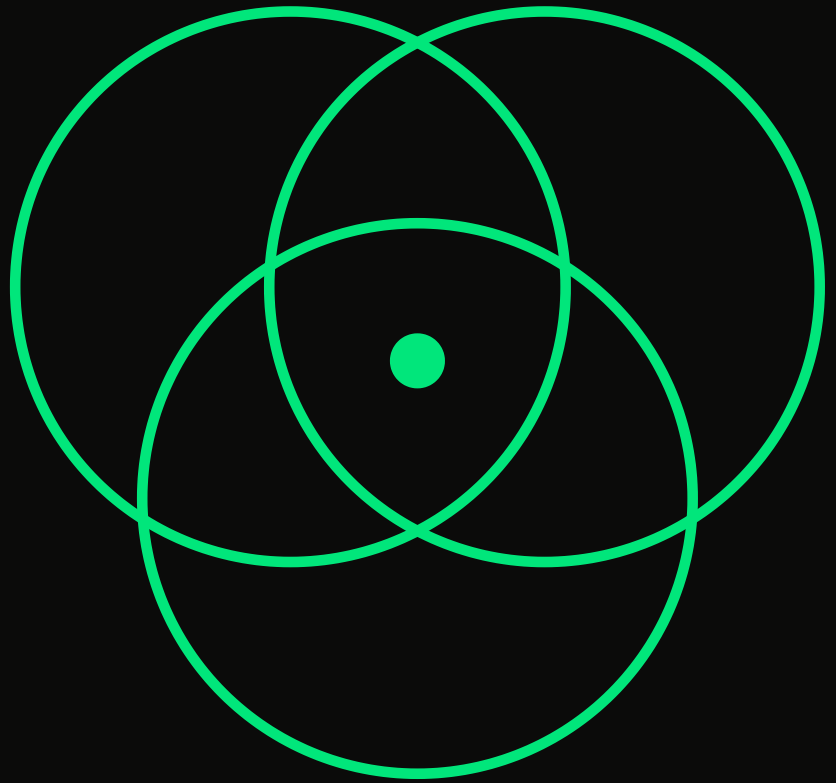




WHITEPAPER • CONVERGENCE ERA

2016

BLOCKCHAIN-ENABLED CONVERGENCE

Understanding the Web 3.0 Economy

Blockchains will become the shared data and asset layer of Web 3.0. That layer lets AI, the Internet of Things, robotics, 3D printing and AR/VR combine and trade with each other securely, without a broker in the middle.

The paper argues that six technologies are converging: blockchains, artificial intelligence, the Internet of Things, autonomous robotics, 3D printing, and augmented and virtual reality. Each is usually studied on its own. The authors treat them as one system. Blockchains sit underneath as the layer that records who owns which data and assets. That record lets people and machines exchange value directly, so trusted middlemen become less necessary.

The second half follows these ideas through the trade value chain. Manufacturing moves towards small, local and personal production. Logistics is automated and loses its share of profit. Retail shifts from shops and e-commerce to what the paper calls d-commerce, where buyers and sellers deal peer to peer. Finally, the firm itself changes. Decentralised organisations, and later AI-run ones, start to compete with the corporation.

CONTEXT

The paper appeared in late 2016. Ethereum was a year old and smart contracts were new. The DAO hack had happened that summer, and the ICO boom was about to start. Deep learning was making fast gains. IoT forecasts ran to tens of billions of devices. Few people were linking these fields together, and Outlier Ventures used the paper to set out its investment focus.

50 billion

Connected IoT objects estimated by 2020

6.3%

Speech recognition word error rate in 2016, down from 43% in 1995

8%

E-commerce share of total commerce

Figures as stated in the original paper at the time of writing.

Five ideas that shaped the paper.

01 Web 3.0 as a trust network

The first internet was built to share information. Blockchains add the missing piece: a shared record of value and ownership that any party can rely on.

02 A real sharing economy

Platforms such as Airbnb and Uber are new middlemen taking a large cut. Peer-to-peer exchange of assets on blockchains reduces the need for them.

03 Decentralised data marketplaces

AI needs data, and much useful data sits unused. A blockchain market lets people and institutions sell or rent their data, so creators of data are paid, not only processors.

04 Cheaper logistics and production

Robots, AI, IoT and blockchains automate distribution and shrink its margins. Over time 3D printing and AR/VR push design and production towards the home.

05 The decentralised organisation

New tools for funding, voting, payments and coordination let start-ups avoid costly corporate structures. In the long run shareholders and workers merge, and much management is automated.

Blockchain-Enabled Convergence Framework

A four-layer stack showing how the six technologies fit together, from devices that collect data up to the organisation that directs the system.

DATA COLLECTION

Connected sensors and hardware: phones, drones, vehicles, 3D printers, headsets and home appliances.

DATA MANAGEMENT

Decentralised storage, processing and ledger components that hold and manage the collected data.

DATA AUTOMATION

Smart contracts and oracles, with narrow AI, that automate business processes and decisions.

ORGANISATION

A DAO run by people, or later an AI DAO, governing the whole stack.

"Blockchains are ideal as a shared database in which every user can read everything, but no single user has control over who can write what."

ORIGINAL, P.7

"Web 3.0 provides trust and chain-of-ownership; the missing link with the existing Internet infrastructure."

ORIGINAL, P.5

"It is just as important with technological progress to study Plato and Hume as it is to study Von Neumann and Shannon."

ORIGINAL, P.4

The paper set a lasting pattern. It treated blockchains as the ownership layer for other technologies. Its interest in virtual economies fed later work on the Open Metaverse. Its ideas on data ownership, machine payments and AI DAOs anticipate the Post Web focus on agents. The pairing of AI with physical systems returns in AI, Atoms and Association.



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Original whitepaper (PDF)

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ORIGINAL CREDITS

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