

Web3 x Social Impact

Fundamentals

How Blockchain Tech Can Enable Positive Change

Safder Raza, Alejandra Borda, Jae-Hee, Madhav Goyal

Agenda

- Intro to Blockchain
- Key Properties for Social Impact (Case Study)
- NFTs, DAOs, DeFi
- What problems does it solve? (Another Case Study)
- Questions
- Breakout Room Case Studies



Introduction to Blockchain

What is web3?

cdixon.eth

@cdixon

web1: read

web2: read, write

web3: read, write, own

Coinbase NFT @Coinbase_NFT

What does web3 mean to you?

5:53 PM · Feb 7, 2022

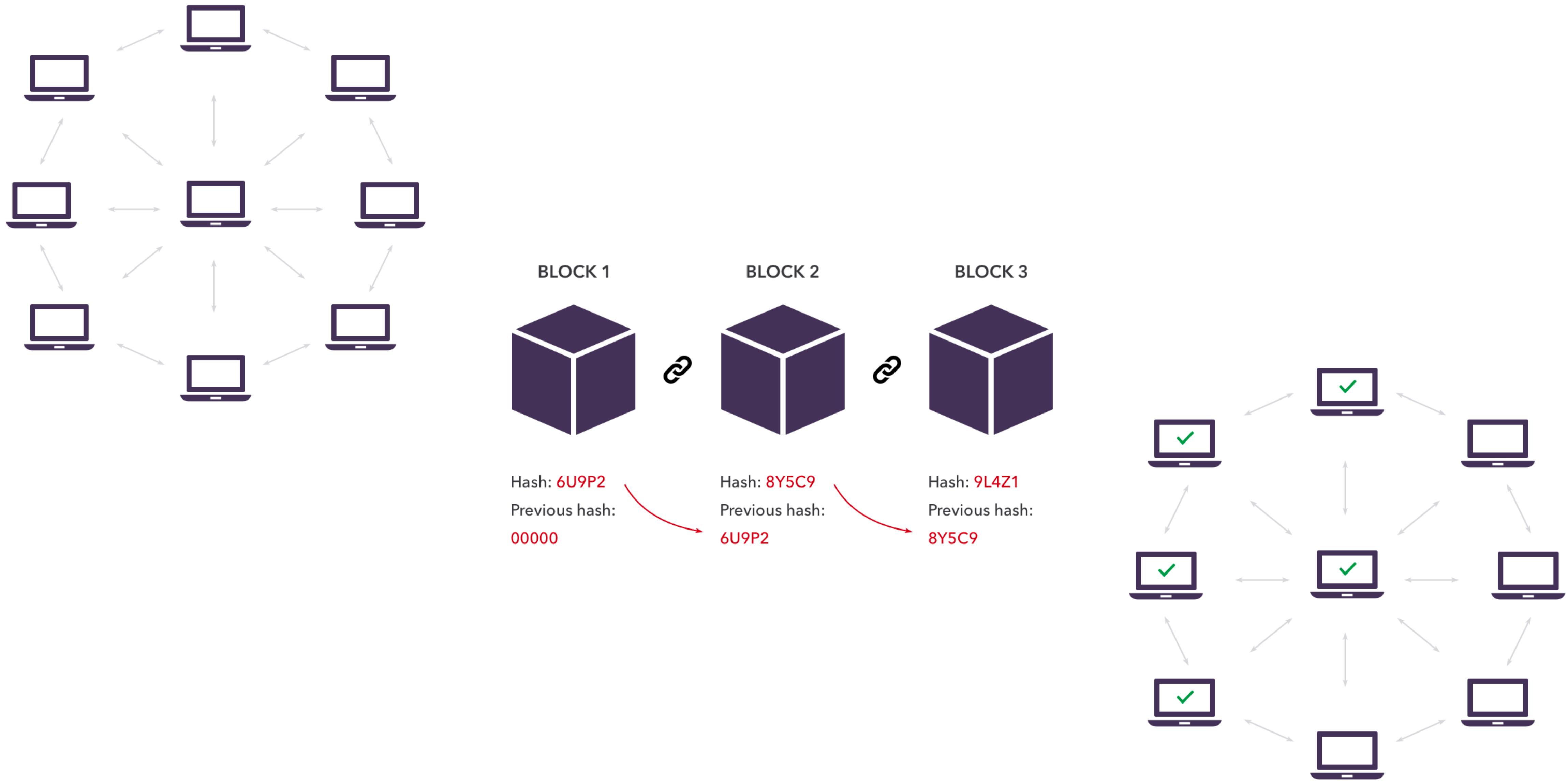
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“Blockchain, which first emerged as the system powering bitcoin, is a shared database maintained by a network of computers connected to the internet.”

Reuters

What is a Blockchain?



Consensus Mechanisms

- **Proof of work:** All the computers (miners) in the network **compete** to create the hash. The difficulty of generating hashes is adjusted as the network expands, so that new blocks are created and approved at a constant rate as the computing power in the network changes. This is the most **secure** consensus mechanism, but is very **energy-intensive** and **not very scalable**.
- **Proof of stake:** Nodes (validators) are selected via a lottery that takes their 'stake' in the system into account. This is usually how much of a cryptocurrency they own, with this stake held in the system to demonstrate that the node has a vested interest in the reliability of the blockchain. **Less secure**, but **more scalable** and **less energy-intensive**.

Bitcoin vs. Ethereum

Introducing “Smart Contracts”

- **Bitcoin:** Data contained on the blockchain consists only of transactions between wallets; serves as a medium of exchange and store of value; no (or very limited) smart contract functionality
- **Ethereum:** Enables the deployment of Smart Contracts and Decentralized Applications (dApps) built and run without any downtime, fraud, control, or interference from a third party; comes complete with its own programming language that runs on a blockchain, enabling developers to build and run distributed applications

What is a Smart Contract?

- A self-executing contract with the terms of execution directly written in lines of code. Smart contracts can define rules, like a regular contract, and **automatically enforce them via the code**. Smart contracts **cannot be deleted** by default, and interactions with them are **irreversible**.



Source: Shrimpy Academy

Layer-1 vs. Layer-2

- **Layer 1:** The underlying main blockchain architecture. Eg; Ethereum, Cardano, Solana
- **Layer 2:** Overlaying network that lies on top of the main blockchain. Allows for **greater speed and scalability**. Eg; Polygon, Optimism, Arbitrum

Coins vs. Tokens

- **Coins:** A digital asset native to its own (Layer-1) blockchain network. Eg; ETH, ADA, SOL
- **Tokens:** Represent units of value built on existing blockchains using smart contracts; rely on the existing protocols of their operative blockchains; a token can run on several blockchains. Eg; USDT, SkywalkerZ

Key Properties for Social Impact

- Decentralized
- Trustless
- Transparent
- Permissionless
- Interoperable
- Composable

Key Properties for Social Impact

Etherisc: A Case Study

- **A Decentralized Insurance Protocol** that aims to close the “protection gap” through the use of blockchain technology; built on Ethereum



- **Decentralized:** The product is open-source and anyone can contribute, use, and modify the smart contracts as they like - this helps reduce rent-seeking and conflicts of interest without all the expensive overhead costs and middlemen.
- **Trustless:** The middleman (insurance brokers) is eliminated, since insurance payouts are completely controlled by smart contracts.
- **Transparent:** Being on a public blockchain reduces the costs of auditing, moral hazard, payout processing, and other issues that make insurance so expensive.

- **Permissionless:** Accessible by those without access to traditional regulated loan facilities, who might otherwise go to moneylenders or loan sharks.
- **Interoperable:** Utilizes data from blockchain “oracles”, which bring data from the outside world to confirm the parameters needed for the execution of the smart contract.
- **Composable:** Traditional “specialty insurance” is very costly, but through composability people can take existing smart contracts and build on top of them, to create new types of insurance or adapt to a specific context.

NFTs

Non-Fungible Tokens

- Represent a unique asset on the blockchain
- Can be images/video/sound, but could also represent ownership of things in the physical world (eg; real estate)
- Social impact example: Axie Infinity (NFT Gaming)



DAOs

Decentralized Autonomous Organizations

- Take the best qualities of blockchain (such as trustlessness, transparency, composability) and apply them to an organizational framework
- Allows members to have ownership and voting rights in the organization
- Can be thought of as “digital co-ops”, but even more transparent
- Social impact example: Klima DAO



DeFi

Decentralized Finance

- Removes the control banks and institutions have on money, financial products, and financial services
- Anyone with an internet connection can use it without needing approval
- You can transfer funds in seconds or minutes with minimal fees
- Social impact example: Goldfinch



How Could Crypto Improve Existing Institutions?

Yet Another Case Study

US Paycheck Protection Program (PPP)

- In the summer of 2020, the US govt launched the PPP - in theory to help small businesses cover payroll, rent, and other basic expenses during the pandemic. A total of \$521 billion in loans was given out.
- The govt resisted calls for transparency, but after intense public pressure released some of the data (only about 15% of the data was released).
- Loans went to fake businesses, businesses connected to President Donald Trump's son-in-law Jared Kushner, Kanye West's fashion brand, Yeezy, and other large organizations like the LA Lakers.
- It remains unclear where the majority of the \$521 billion went.

How Could Blockchain Solve This?

- Would provide complete transparency of the flow of funds - both from the govt to the organizations, but also within the organizations to see how the funds are being used.
- Could use smart contracts to ensure funds are only disbursed to organizations that meet certain eligibility criteria.
- ???

“If crypto succeeds, it's not because it empowers better people. It's because it empowers better institutions.”

Vitalik Buterin