Evolving Music Ecosystem 2020

Blockchain and the Disintermediation of Music

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Fundamentals

What is money? What is cryptocurrency? What is blockchain?

QUESTION

What is money?

Money is a social agreement



IT REQUIRES TRUST



A SUFFICIENT NUMBER OF PEOPLE MUST HAVE IT



SELLERS MUST TRUST IT'S OF VALUE AND ACCEPT IT AS A FORM OF PAYMENT



SOCIETY MUST TRUST THAT IT'S VALUABLE AND THAT IT WILL REMAIN SO FOR FUTURE FOR WANTS & NEEDS

Concept of Value

Representations of value:

- Seashells
- Salt
- Sugar cane
- Gold & silver

Inherently valuable commodities:

ex: chickens for shoes



What is cryptocurrency?

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Cryptocurrency

cryptocurrency is digital cash for the digital age It's similar to regular money — think USD digital-only, no physical representation

How is crypto different from fiat currency?

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	Cryptocurrencies	Other Currencies
Who manages it?	A network of computers running open source code	The government that issues it
How does it hold its value?	Primarily based on supply and demand	Primarily based on confidence in the government that issues it
How is it secured?	By a network of computers that verify every transaction — anyone with an internet connection can participate	By third parties like banks and governments — only a select few can participate
Physical bills/coins?	No	Yes
Can you buy goods/services?	Yes, but only where merchants accept it	Yes, but typically only in the country that issues it

What is bitcoin?

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Bitcoin

- Introduced on October 31 2008 via <u>Satoshi's whitepaper</u>.
- January 3, 2009, code released and the first bitcoins were created by software
- Bitcoin is often compared to gold in that there is a limited supply — the maximum number of bitcoins that will ever enter circulation is 21 million.
- Unlike gold, bitcoin is digital, and far easier to divide, transfer, and store.

Bitcoin's Origin

"Satoshi Nakamoto" created the Bitcoin blockchain, launched in 2009, to solve the double-spend problem for digital currency.

[Satoshi White Paper (2008)]



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Different from current financial system



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QUESTION

What is blockchain?

Blockchain: Web 3.0 - The Internet of Value

6 C The blockchain is an incorruptible digital ledger of economic transactions that can be programmed to record not just financial transactions but virtually everything of value.

> - Don & Alex Tapscott Blockchain Revolution

Blockchain Statistics

 Global blockchain in retail market size, valued at 44.2 million USD in 2017 is projected to reach 2.3 billion by 2023

[World Economic Forum]

 Blockchain technology's business valueadd will grow to \$176 billion by 2025

[Deloitte Insights]

- 10% of global GDP will be stored using blockchain by 2027
 - [World Economic Forum]



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Blockchains Defined

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Blockchains are decentralized databases, maintained by a distributed network of computers that rely on network effects and economic incentives to secure the network.



Purpose is two-fold:

- To store information (database)
 - Decentralized across network of computers
 - Without requiring trust of a third-party clearinghouse
 - Without disclosing identities
 - To run computer processes (smart contracts)
 - Facilitate performance and memorialize all or part of an underlying legal agreement (aka contract)
 - Administration of digital organizations, in part or full, with code

Three Stages of Computer Network Revolution



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Core Technological Components



Consensus Mechanisms

Market-Based or Game Theory

Core Characteristics

Append-Only

Resilient, Resistant to Change Disintermediated & Transnational

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Core Concerns

- Transnational = difficult to govern
- Append-only = impossible to change
- Pseudonymous nature raises concerns of the proliferation of illegal activity
- Transparent and traceable nature raises concerns about privacy

Blockchain Mechanics 101

- A digital spreadsheet of transactions shared across a network of computers
- Each computer that runs a full version of a blockchain's software is called a **node**
- New transactions are broadcast to the network and verified by each node
- Verified transactions are grouped in regular intervals by network consensus
 - Various methods (PoW, PoS etc.)
- A group of verified transactions is called a **block**
- New blocks are added to the **chain** by a special node called a **miner** (PoW)
- Miners compete to solve a mathematical equation
- The winner gets the **block reward** (new bitcoin); new block is added to chain
- Blocks are interrelated because each block contains part of previous block's data

Blockchain

an interrelated chain of blocks



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Bitcoin

- 1st cryptocurrency (2009)
- 1st use of blockchain technology
- Goal to fix global banking and serve as fiat alternative
- Highly liquid, limited supply
- Used for purchases, money transmission & store of value
- Takes minutes to complete and they are manual

Ethereum

- Blockchain 2.0 (2015)
- All transactions powered by smart contracts
- Provides a platform to build smart contract apps (dApps)
- Highly liquid, unlimited supply
- Transactions take seconds to complete & are programmable and, therefore, automated

Smart Contracts

- Fully or partially self-executing, self-enforcing software code
 - first proposed by Nick Szabo in 1994
 - Ex: vending machine (if, then)
- Runs on a blockchain, like Ethereum Virtual Machine, that can store software and run computer programs like software runs on a computer
- Neither "smart" nor "contracts", in the legal sense





Smart Contracts

- Not everything can be put into a smart contract because some contracts don't have a bright line "if, then" deliverable model
- Supply chain, identity verification, and international payment settlement are all strong use cases
- Concern is pre-input data integrity and audits because code only as good as the data input

