PENN BLOCKCHAIN

Token Distribution

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Overview

Initial Coin Offerings

Cryptocurrency Regulation

Airdrops

Innovations in Token Distribution

Course Recap

Bitcoin

Organic adoption

Whitepaper published to cryptography newsletter

Software was released January 9th 2009 by Satoshi on Sourceforge

Satoshi mined genesis block and sent first transaction of 10 bitcoin

People hear about Bitcoin through one means or another and download the software and begin mining

All current bitcoin came from mining

Initial Coin Offerings

Initial Coin Offerings

An organization or individual issues a cryptocurrency and sells the cryptocurrency to others in exchange for funds to launch a project

Mastercoin

“The Second Bitcoin Whitepaper” by J.R. Willett published on Bitcointalk forum January 2012

Specification for MasterCoin, a token/protocol on Bitcoin used for creation of other currencies/stablecoins

First description of an ICO

“We claim that the existing bitcoin network can be used as a protocol layer, on top of which new currency layers with new rules can be built without changing the foundation.”

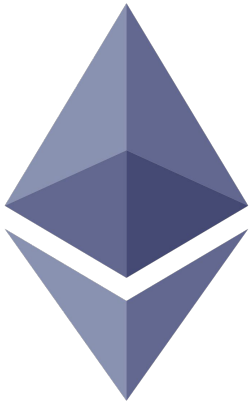
Mastercoin

“We further claim that the new protocol layers described in this document…

• Will provide initial funds to hire developers to build software which implements the new protocol layers, and ongoing funds to pay for maintenance of this software.

• Will richly reward early adopters of the new protocol, in proportion to how successful it is.”

Ethereum



Opened July 20th and closed on September 2nd in 2014

Uncapped ICO structure done in Bitcoin - no funding target

Collected $18.4 million Bitcoin over the 42 days

Issued 60,000,000 ETH tokens

About 6000 people participated

Over 40% of the ether sold went to the top 100 buyers

EOS

Nearly year-long uncapped ICO from June 26, 2017 to June 1, 2018

Raised over $4 billion dollars in ETH. Initially issued tokens as an ERC-20 and later transferred onto EOS blockchain when it went live

Block.one (company behind EOS) was charged $24 million in September 2019 for unregistered ICO

Other Large ICOs

Telegram - $1.7 Billion

Dragon Coin - $320 Million

Filecoin - $257 Million

Tezos - $200 Million

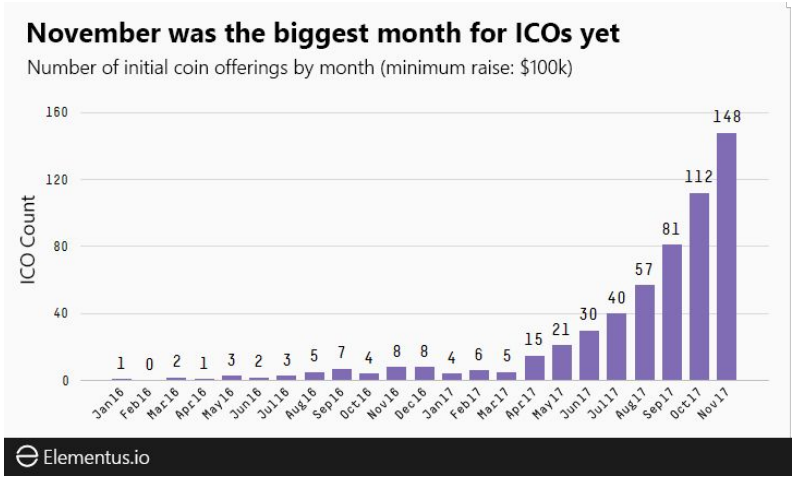
2017 ICO Bubble

People saw ICOs as a quick way to make money

Not a lot of regulatory clarity on ICOs/crypto investments

Lots of scams/low quality projects

- Large quantity of premined tokens
- High percent of tokens owned by creators
- Pump-and-dump schemes



What are Some Potential Problems with ICOs?

Problems with ICOs

Raising too much money

- Organization no longer has motivation to work

The investors and speculators who buy your token will likely not use the token or interact with your network

Majority of tokens go to a few large buyers

- High Gini coefficient

Lots of scams

Legal issues

Cryptocurrency Regulation

Regulation in the United States

Securities and Exchange Commission (SEC) - Independent agency that enforces laws related to securities

Important in crypto as they deal with token sales and distribution

Howey Test

Under US law all security sales and offers must be registered or qualify for exemption

But what is a security?

Securities and Exchange Commission v. W. J. Howey Co. (1946)

> “a contract, transaction, or scheme whereby a person invests his money in a common enterprise and is led to expect profits solely from the efforts of the promoter or a third party, it being immaterial whether the shares in the enterprise are evidenced by formal certificates or by nominal interests in the physical assets employed in the enterprise.”

Howey Test

1. Investment of money
2. Common enterprise
3. Expectation of profit
4. Efforts of a third party

Bitcoin, Litecoin, Dogecoin fail Howey Test

Ethereum has not been considered a security by the SEC!

How to Do a Regulatorily Compliant Token Sale

Simple Agreement for Future Tokens (SAFT) - created by CoinList and Protocol Labs, modeled after SAFE

- Generally Reg D - Only available to accredited investors, companies with >$5 million and individuals with >$1 million

Reg A+ - Token is available to both accredited and non-accredited investors

- Need to be traded on regulated exchange or ATS

Airdrops

Airdrops

Crypto projects have a strong need to bootstrap their network and gain users for adoption (recall Metcalfe’s Law)

An airdrop is when a crypto project decides to send their token to lots of people/wallets for free

Airdrops

Dfinity - cloud computing on blockchain

- Airdropped tokens to community members who signed up for mailing list before April 4, 2018
- ~$35 million worth of tokens airdropped
- Required KYC/AML, was not open to US residents

OmiseGo - layer 1 payments blockchain

- Airdropped 5% of supply to Ethereum wallets with at least 0.1 ETH

What are Some Potential Problems with Airdrops?

Problems with Airdrops

Most people who sign up just want free money

Users will likely not use the token to interact with the network

- Most likely will sell/speculate

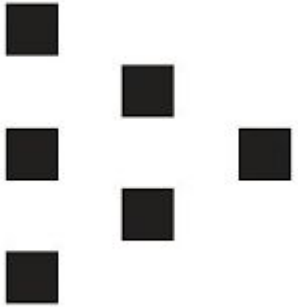
Costs the project transaction fees to send airdrops to user wallets

Legal issues

- SEC thinks they are securities

Innovations in Token Distribution

Livepeer Merkle Mining



Livepeer - decentralized video streaming and broadcasting

Built on Ethereum

Livepeer Token (LPT) Distribution

1. A “snapshot” of the Ethereum network was taken. Wallets with more than 0.1 ETH eligible to participate in Merkle Mine
2. Users generate Merkle proofs that they are in the snapshot and send it to a smart contract. (cost/proof ~100,000-133,000 gas, a few cents)
3. Contract mints and gives LPT to the “miner”

Slow start period - must generate your own proofs

Livepeer Merkle Mining

How does this compare to airdrops and what does this mechanism fix?

Not a security!

One unforseen problem was that Merkle Mining clogged up the Ethereum network, took up to 40% of network bandwidth and spiked gas cost

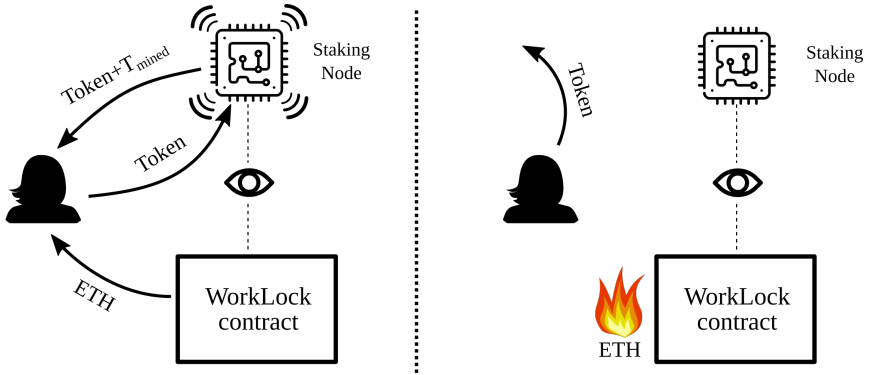
Nucypher WorkLock

Network for proxy re-encryption and homomorphic encryption

Built on Ethereum

1. User deposits ETH into WorkLock Contract
2. User receives token in return
3. Users can get back their ETH if they stake their tokens, but if they don't they lose their ETH.

Not a security!



Edgeware LockDrop

Edgeware - Smart contract platform built as Polkadot parachain

1. Send ETH to lockdrop contract and lock it for 3, 6, or 12 months
2. Different parameters for length and timing
3. Signaling - don't need to lock tokens but get a 80% deduction

Lock Duration	Method	Previous Weight	New Weight	EDG Received
0 Months	Signal	~~0.60x~~	0.20x	25% is delivered at launch 75% at 12 mo. after launch.
3 Months	Lock	1.00x	1.00x	Delivered at Launch
6 Months	Lock	~~1.10x~~	1.30x	Delivered at Launch
12 Month	Lock	~~1.40x~~	2.20x	Delivered at Launch

Edgeware *Lockdrop Early Participation Bonus Schedule*

May 31, 2019

Date Range (2019)	Bonus	ETH Cap
June 1 - June 15	50%	No Cap
June 16 - June 30	35%	No Cap
July 1 - July 15	23%	No Cap
July 16 - July 30	14%	No Cap
July 31 - August 14	8%	No Cap
August 15 - August 29	5%	No Cap
August 30 - August 31	0%	No Cap, End of Lockdrop

Edgeware LockDrop

$200 Million ETH locked

Minor bug in contract was found

Not a security!

Course Recap

What We Covered

How Bitcoin works

Decentralization, hashing, public/private key cryptography, transactions, mining, proof-of-work

How Ethereum works

Smart contracts, proof-of-stake, gas, Turing-completeness

Cryptoeconomics

Where Bitcoin’s value come from, network effects, store-of-value

Decentralized Finance

Stablecoins

Off-chain collateral, Tether, Maker DAO system, on-chain collateral

What We Covered

Decentralized Exchanges

On-chain orderbooks, liquidity, EtherDelta, Uniswap

Blockchain governance

Soft/hard forks, aligning incentives, formal vs. informal governance (Ethereum vs Tezos)

DAOs

Moloch DAO, collection action problems

Ideas in Voting

Banzhaf index, one-dollar-one-vote, one-person-one-vote, quadratic voting

What We Covered

Token Distribution

- Network adoption

Initial Coin Offerings

- Mastercoin, Ethereum, EOS, SEC regulation

Airdrops

Improving Token Distribution

- Merkle Mine, Work Lock, Lock Drop

What We Didn’t Cover

Consensus Algorithms

- Byzantine generals problem

Blockchain Scaling

- Lightning Network, sharding

Cryptography

- Zero-knowledge proofs, homomorphic encryption, secure enclaves

Smart Contract Programming

- Solidity

Non-fungible Tokens

- ERC-721, digital art, supply chain tracking

More DeFi

- Decentralized lending, prediction markets, oracles, decentralized insurance

What We Didn’t Cover

Security Tokens

Crypto Regulation

- KYC/AML, taxation

Enterprise blockchain

- Private/permissioned blockchains

On-chain identity

Ethereum Web Assembly (eWASM)

And much, much more!

If You Want to Learn More...

Join Penn Blockchain Slack and attend more events!

Read blogs and whitepapers of reputable projects

Crypto Twitter, talking to people working in the space

Try the technology on your own!

- Buy some crypto, try staking, lending, or interacting with the network

Trading crypto

Learn to program smart contracts

Thank you!