Introduction Blockchain

KIVI 8th of February

BLOCKCHAIN

General:

- Electronic cash system +
- Peer-to-peer network
- Public distributed ledger
- Network is secured by a network of nodes
- Cryptographic hash functions
- Consensus algorithm
- Everybody can run a node

BLOCKCHAIN

Advantages:

- Decentralized P2P network
- No central bank or single administrator
- Borderless payments
- No of bank accounts you can have is unlimited at no costs
- Low transaction fees
- No middleman required
- Immutable
- Security - hashes cannot be reverse engineered
- Provenance
- Open source

BLOCKCHAIN

Disadvantages:

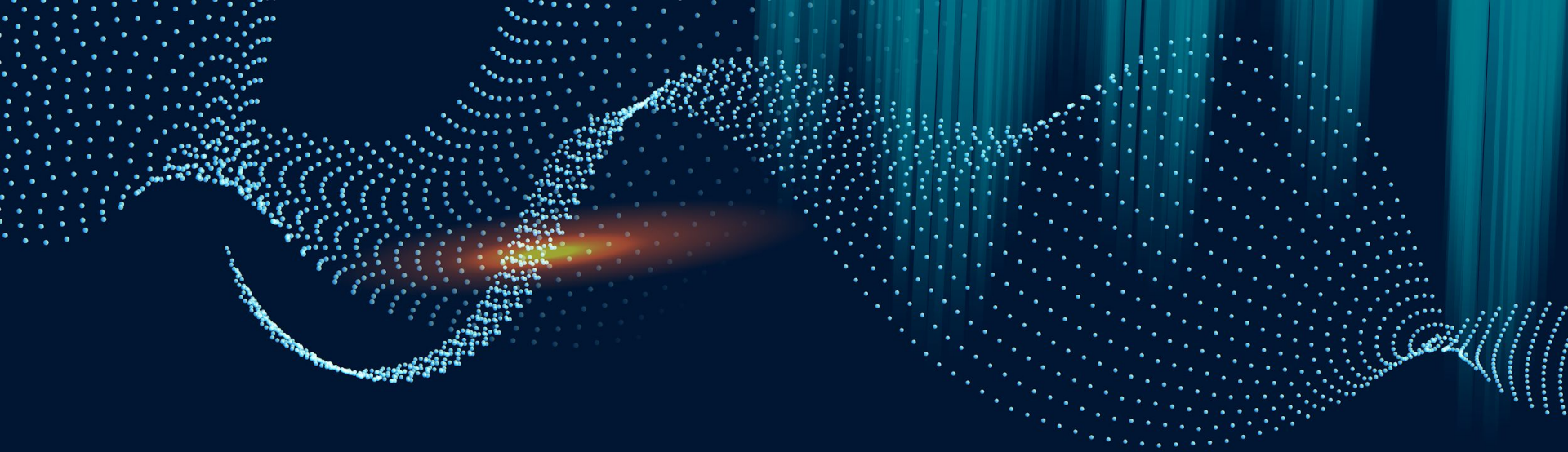
- You are your own bank
- Transactions are irreversible
- Speculative aspect of coins/tokens
- Volatility due to limited liquidity and siloed exchanges
- Possibility for criminal activities and fraud
- Money attracts hackers/scammers
- Clash with the old economy and regulations
- Regulatory unclarity
- Decentralized development is a slow process
- dApps are still centralized “new middlemans behind the scenes”
- To participate in the network you have to run your own servers

BLOCKCHAIN TRILEMMA

Security

Decentralization

Scalability



01 BITCOIN

Introduction

BITCOIN

Properties:

- 1st generation blockchain
- Invented in 2008 and open sourced in 2009
- Anonymous - Satoshi Nakomoto
- Largest market cap ~ 800B $
- Decentralized digital currency - BTC
- Network is secured by a network of nodes - Miners
- Consensus algorithm PoW - GPU/ASICS
- Layer 1 solution
- UTXO model
- A maximum supply of 21 mln BTC
- BTC has 8 decimals
- A satoshi is 1/10000000 BTC

BITCOIN

Advantages:

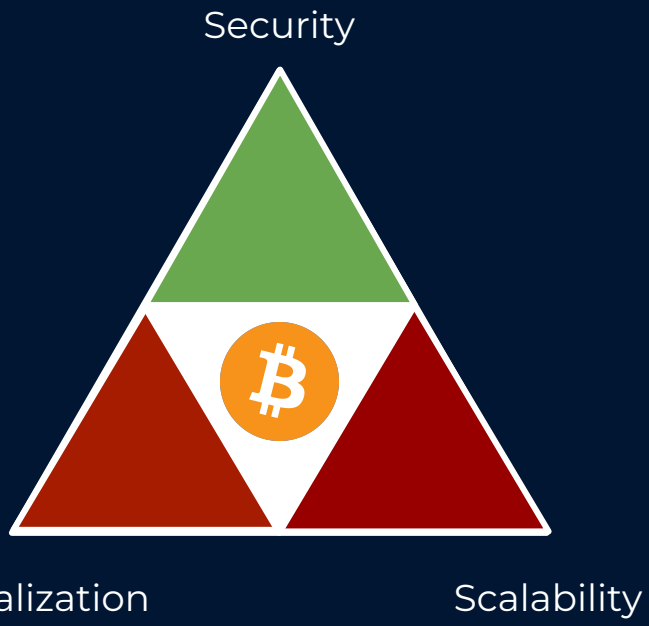
- Accessibility
- Anonymity
- Transparency
- Security
- Hard capped supply - disinflationary
- Store of value
- Institutional investor interest
    - Hedge against inflation

BITCOIN

Disadvantages:

- Limited functionality, programmability
- Limited usability, slow settlement times
- Limited group of users
- Energy consumption

BITCOIN & BLOCKCHAIN TRILEMMA



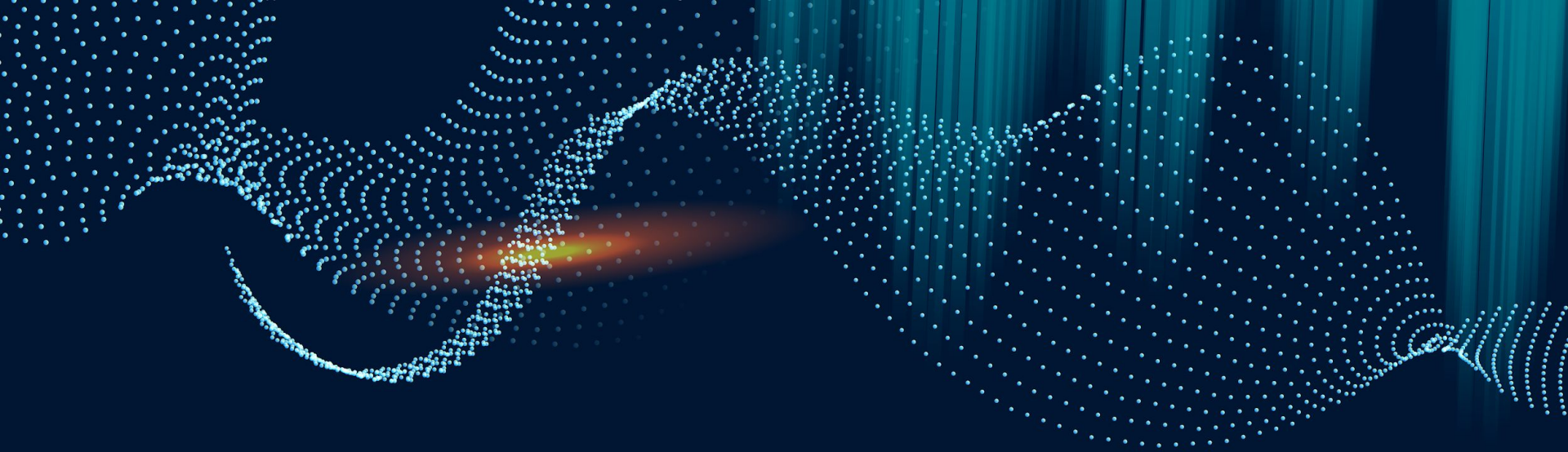
BITCOIN ENHANCEMENTS

Lightning network

- L2 solution improving scalability

Taproot

- Enhances scripting capabilities



02 ETHEREUM

Introduction

ETHEREUM

Properties:

- 2st generation blockchain
- Invented in 2013 and open sourced in 2015
- Vitalik Buterin
- 2nd largest market cap ~ 360B $
- Decentralized digital currency - ETH
- Network is secured by a network of nodes - Miners
- Consensus algorithm POW - GPU/ASICS
- Layer 1 solution
- Accounting model
- Programmable - EVM
- Unlimited supply
- ETH has 18 decimals

ETHEREUM

Advantages:

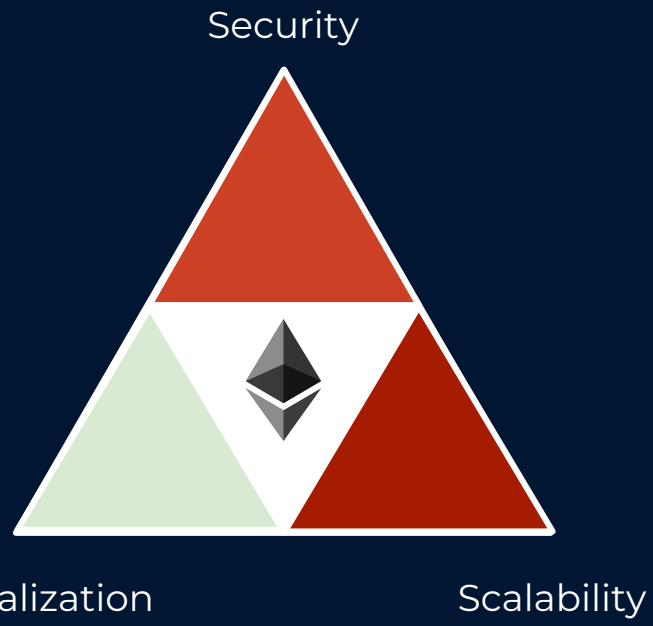
- Programmability
- 1st mover advantage
  - Large development community
  - Extensive tooling ecosystem
- Institutional interest
  - EIP-1559 slowing the supply by burning tx fees

ETHEREUM

Disadvantages:

- Scalability
- Security
  - Doubts about “Immutability”
  - Programmability language “Solidity”
- Management of Hard forks
  - Requires a complete resync of the “chain/ledger”

ETHEREUM & BLOCKCHAIN TRILEMMA



ETHEREUM 1.0 PROBLEMS

Some of the many problems Ethereum is facing:

- Network congestion
- High gas fees
- Power usage
- Disk space usage
- Security - no separation of concerns
- Migration from PoW to PoS

ETHEREUM 2.0 TO THE RESCUE

Promises:

- Migration from PoW to PoS
  - Reduction of energy consumption
  - Increase decentralization
- Introduction of sharding
  - Increase scalability

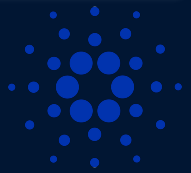
“Not all problems will be solved with Ethereum 2.0”

Ethereum will be dependent on 3rd party solutions to solve its problems

NEW COMPETITION

Promising to solve the problems Ethereum is facing

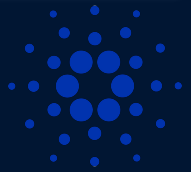
CARDANO



Properties:

- 3rd generation blockchain
- Invented in 2015 open sourced in 2017
- Engineering company IOHK - Charles Hoskinson & Jeremy Woods
- Based on academic research
- Peer reviewed
- 6st largest market cap ~ 38B $
- Decentralized digital currency - ADA
- Consensus algorithm PoS - Intel/ARM
- Layer 1 & 2 solution
- UTXO model
- Limited supply - 45B
- ADA has 6 decimals
- A lovelace is 1/100000 ADA

CARDANO



Advantages:

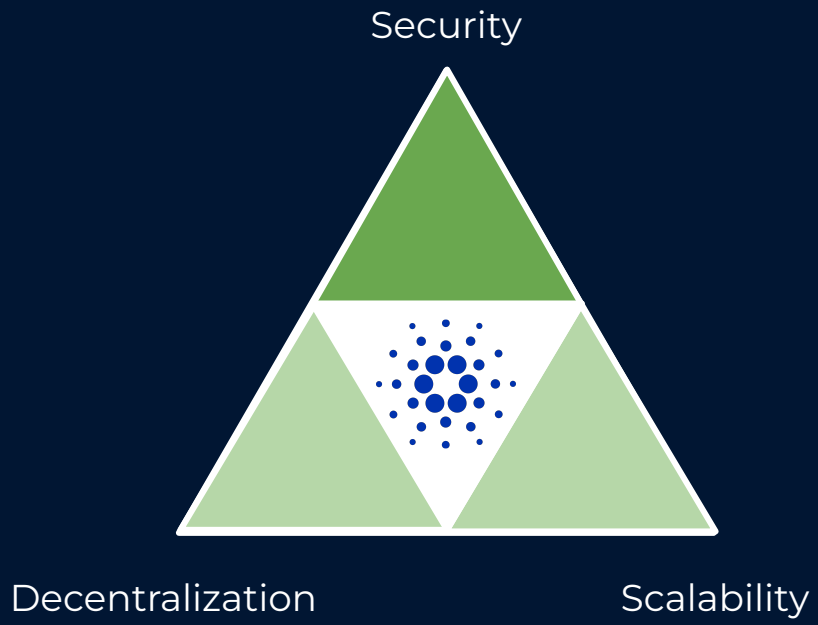
- Rigorous development
- Very secure programming language - Haskell
- Separation of concerns
- UTXO vs. Accounting model
- Hard fork combinator
- ERC-convertor
- Decentralization
- Scalability
  - Tunable by parameters
  - Hydra L2 solution
- Governance - Project catalyst
- Low transaction fees
- Not controlled by VCs

CARDANO

Disadvantages:

- Slow development

CARDANO & BLOCKCHAIN TRILEMMA



NEW COMPETITION

Driven by Venture Capital

- Fast development
- Less decentralization
- Less secure

NEW CHALLENGERS

SOLANA

L1 & L2 solution
PoH consensus protocol
Centralized solution

AVALANCHE

L1 & L2 Solution
DAG consensus protocol
Decentralized solution
DeFi, Enterprise

LUNA

L1 solution
Tendermint PoS protocol
Limited decentralized solution
DeFi

POLKADOT

L0 solution - relay chain
Forked Ouroboros NPoS
Centralized secure Interoperability
Parachain/Parathreads
Decentralized features
No smart contracts
Improve Ethereum

MATIC

L2 solution
Lower tx fees
Zero knowledge proof
Improve Ethereum
Metaverse, Gaming

WHO WILL DOMINATE

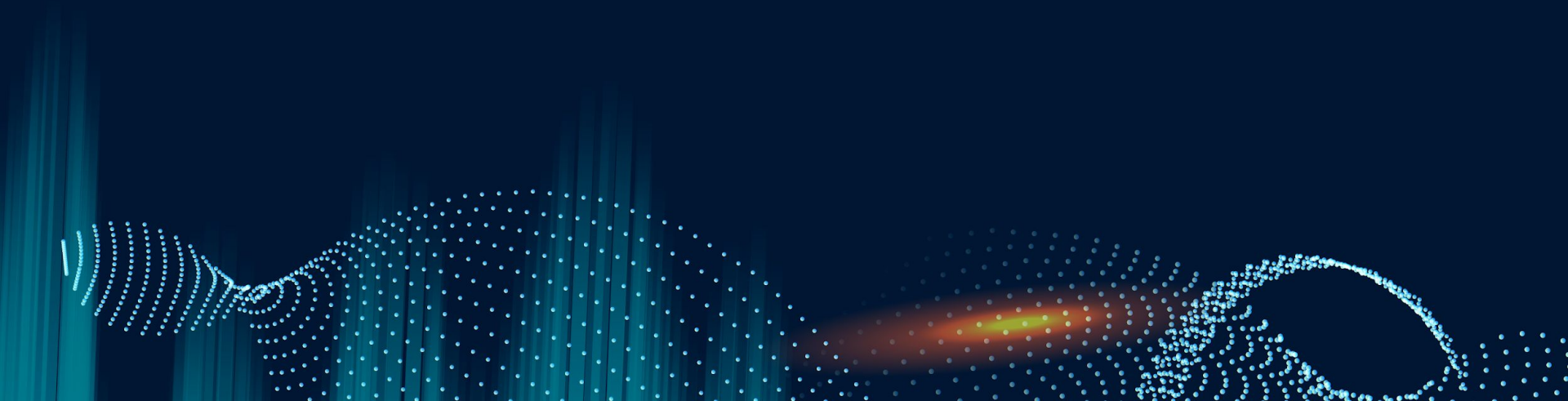
Fast versus slow and rigorous development

We are still very early

Blockchain venture capital amounts to less than 1% of the entire VC market

INNOVATION

As a result of blockchain



INNOVATION

- Transparency
  - Traceability
    - Anti counterfeiting
    - Provenance
- Tokenization
  - Capital acquisition/Equity crowdfunding
  - New ways of payments
  - NFTs
- DeFi
  - Banking the unbanked
  - Decentralized exchanges
  - Lending and borrowing
  - Liquidity pools
  - Yield farming
  - Play to earn
  - Easier access to investment products for retail investors

METAVERSE

METAVERSE

- Convergence of different technologies in one solution
  - Blockchain
  - Tokenization - NFTs
  - Auctioning/galleries
  - Micro payments
  - DeFi
  - Gaming/Film
  - AR/VR
  - Making a connection to the real economy

INTEROPERABILITY

INTEROPERABILITY

- Bridging different chains
  - Cross chain transactions
    - Bi-directional exchange of assets - for example: NFTs
  - Wrapping the coin from the origin to move it to the destination chain
  - Destroy the coin from the origin chain
  - Provide a secure and trustfull L1 to store these assets
- A few players
  - Cosmos
  - Polkadot
  - Harmony
  - Nervos network