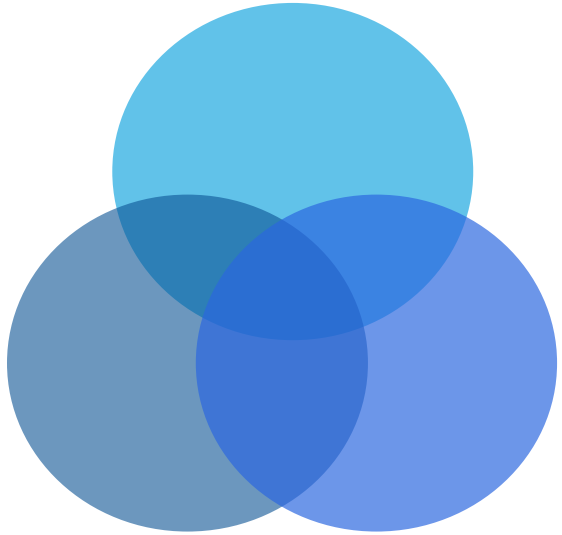
# What are digital assets?

Digital records of value stored and tracked using distributed ledger technology / blockchain

**Taxonomy**

Cryptocurrencies



Stablecoins

Tokens (Utility, Securities, Payments, etc.)

**Key Attributes**

| | | |
|---|---|---|
| 1 | Utilize cryptography | • Encryption ensures authenticity<br>• No possibility of counterfeiting |
| 2 | Decentralized | • No single authority or person controls the system<br>• Difficult (not impossible) to censor |
| 3 | Bearer instruments | • The private key controls spend<br>• Loss of private key = loss of assets |

# Why use/invest in digital assets?

Blockchain/Digital Assets is ushering in a disruption as large as Internet 1.0

**Global**

Real-time, 24x7 access for anyone around the world

**Decentralized**

No single point of failure (or control)

**Transparent**

All transaction records are publicly auditable

**Composable**

Open source / applications can build on each other

**Tokenization of assets**

Liquid exchange of any real or financial asset

# The History Of Bitcoin

Oct 31 2008:
Satoshi Nakamoto publishes
9-page Bitcoin Whitepaper

Jan 3 2009:
First bitcoins minted

Jan 12 2009:
2nd user joins network

May 22 2010:
2 pizzas sold for 10K BTC

Dec 12 2010:
Satoshi is last heard from

In the past decade…

- Price volatility
- Lots of scams
- Massive increase in cost to hack
- Hard fork
- 1000s of new tokens emerge

Today:

- Daily Settled: ~20B
- Market Cap: ~1.3T
- Hash power: 143.389M
- Developers: 8,000
- Up-time 99.98%

**Today**

Two years Ago

- Daily settled: ~1.9B
- Total settled: ~$2.4T
- Market cap: ~$150B
- Hash power: ~120EH
- Developers: 1000+
- Up-time: 99.98%

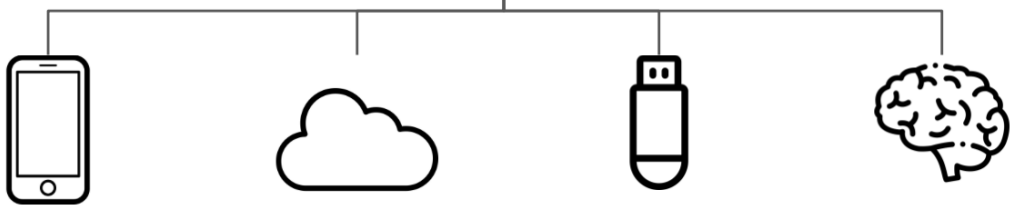
# What does it mean to “have some bitcoin”?

Ownership is controlling the **private key** that allows you (and only you) to transfer bitcoin stored at some public address on a shared ledger.

**Private Key**

5Kb8kLf9zgWQnogidDA76MzPL6
TsZZY36hWXMssSzNydYXYB9KF

**Custody options**



Risk vs UX tradeoffs

**Bitcoin Public Ledger**

| Public address | Amount |
|---|---|
| bc1qar0srrr7xfkvy5l643lydnw9r | 5 BTC |
| 1F1tAaz5x1HUXrCNLbtMD | 26,000 BTC |
| 3P3QsMVK89JBNqZQv5zMA | 0.28 BTC |

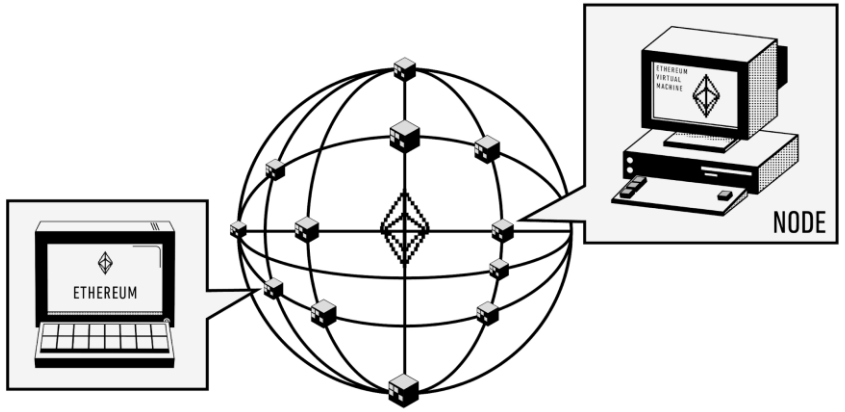
**Fun fact:**

You can have a fraction of bitcoin!
Each bitcoin is composed of 100M satoshis.

# What is Ethereum?

## Ethereum is <u>different</u> from Bitcoin

- **Mission and Vision**
  - Bitcoin is Store of Value (digital gold)
  - Ethereum is a global, decentralized, permissionless ***world computer***
    - "Bitcoin is like a Calculator, Ethereum is a full computer"
- **Utility**
  - Ethereum is a world computer and enables "smart contracts" -- expressive programs that execute
- **Roadmap**
  - Ethereum plans to move to proof-of-stake and sharding for higher throughput and scalability, aims to be a global platform for unstoppable applications
- **Data Structure**

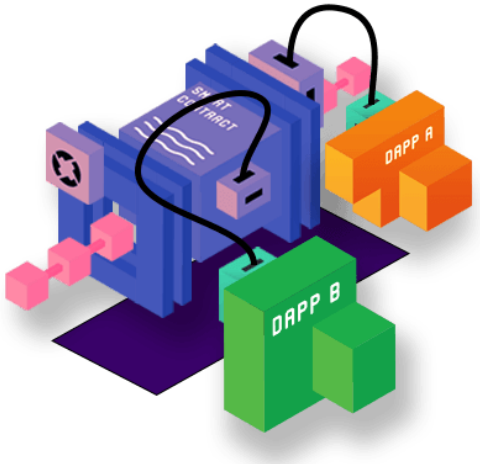



From ethgas.io

Ethereum aims to become a **global, open source platform** for **decentralized applications**

# Ethereum Smart contract Examples

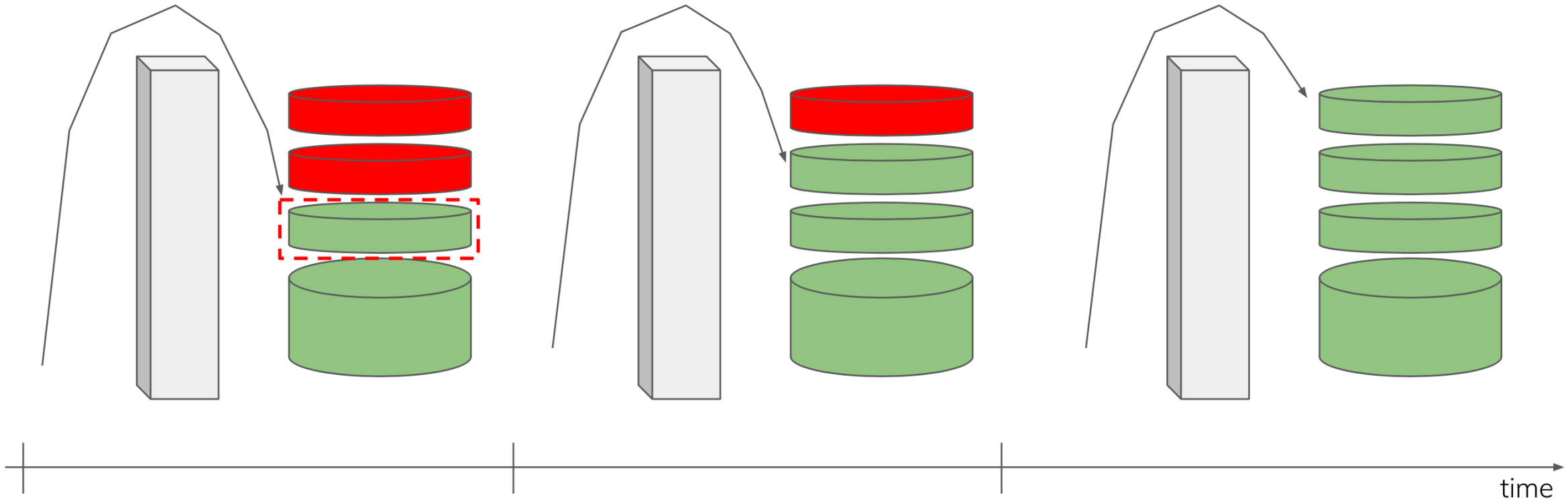
- Multi-Sig “Safety” Contract
  - Store your funds, and if keys are lost (e.g., death of the owner), funds will be eligible to be sent to other accounts after a time-lock expires
- Gambling Contract
  - Play gambling-type games that can be provably fair, pay out winners instantaneously every time
- DeFi -- Financial Contracts
  - Repliating financial services, e.g., lending (Compound), borrowing (MakerDAO), exchange (Uniswap), exotics (Opyn, Synthetix, etc)




**Smart contracts are like legos,** can interact and build on top of each other

# Changing history becomes infeasibly expensive

E.g. making a change 3 periods ago means re-doing work x3




Anyone trying to change history “falls behind” other miners and won’t catch up.

# Proof of Stake (PoS) is an innovative category of consensus algorithms that verify and secure the blockchain

## PROOF OF WORK


Bitcoin


Ethereum


Litecoin

- **Miners solve computationally intensive cryptographic problems** to validate the blockchain
- The **first miner to solve the problem** produces the next block and receives a reward
- Miners are incentivized to properly validate because of the **cost of electricity to solve problems**
- Uses **large amounts of energy** in the process

## PROOF OF STAKE


Ethereum 2.0


Tezos


COSMOS


- **Validators "stake" their holdings**, using them as collateral to validate the blockchain
- A validator is chosen **based on the size of their stake** to produce the next block & receive a reward
- "Slashing" **incentivizes validators to properly validate,** as bad behavior results in loss of funds
- **Energy efficient** and much **more scalable**
- Staked funds may be **subject to a lockup period** where they cannot be withdrawn

# DeFi Overview

**What is DeFi?**
*Short for Decentralized Finance*

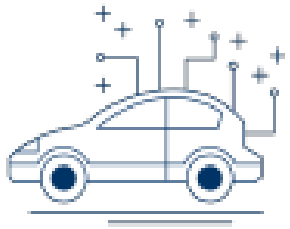
- **Bringing Financial Tools onto the internet** in a way that is accessible, programmable, transparent, and useful for everyone
- **An enabling technology,** DeFi can create new products not possible before
- **Enabled by the trustless and permissionless nature of crypto**

**Examples**

| Category | Traditional Finance | Decentralized Finance |
|---|---|---|
| Borrowing | CHASE, LendingClub, Bank of America | MAKER |
| Lending | Marcus: by Goldman Sachs, axos BANK, PROSPER | Compound, AAVE |
| Trading | TD Ameritrade, robinhood, Fidelity, coinbase | UNISWAP, Balancer |

# Fractionalization of assets

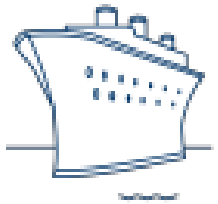
## CARS



Rally RD.

**Last Round:**
$7M Series A Sep'18
**Investors:**
Social Leverage, Anthemis Group, Upfront Ventures

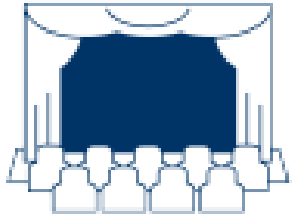
## MARINE



YIELDSTREET

**Last Round:**
$12.8M Series A Jan'18
**Investors:**
Greycroft, FJ Labs, Saturn Partners, The Raine Group

## MUSIC



Royalty Exchange

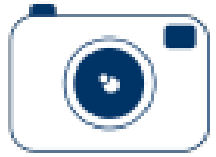
**Last Round:**
$3.37M Series B-II Nov'18
**Investors:**
Grotech Ventures, Techstarts

## MUNICIPALITIES

Neighborly

**Last Round:**
$25M Series B May'17
**Investors:**
8VC, Abstract Ventures, Sound Ventures, Fintech Collective, Village Capital

## ART



Otis MASTERWORKS

**Last Rounds:**
Undisclosed

# Whole New Asset Classes (gaming)

# Skins/NFTs