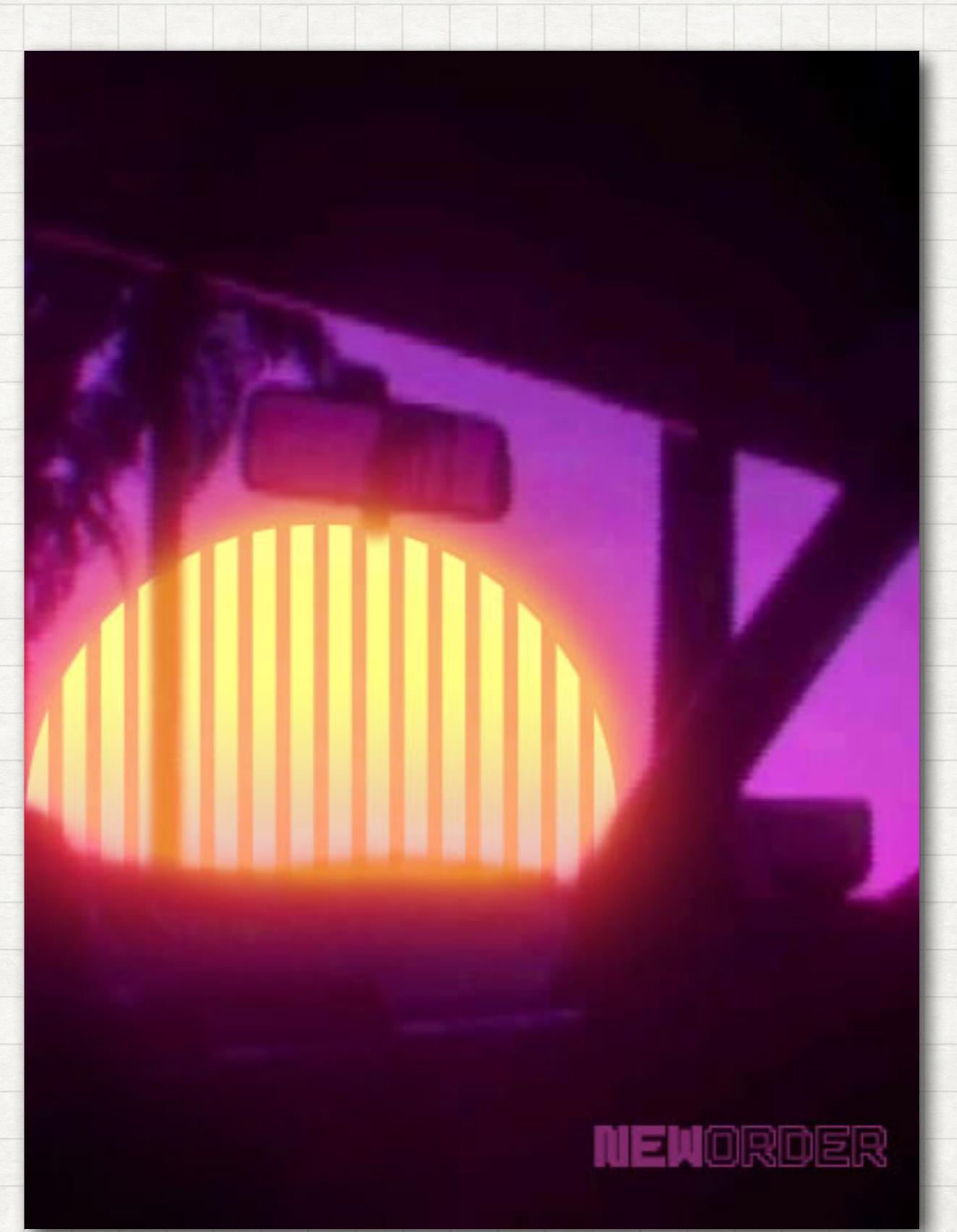


@REGULARMAREK  
BLOCKCHAIN  
BOOTCAMP

**NEWORDER.NETWORK**  
**@NEWORDERDAO**

**A VENTURE  
DAO FOCUSED  
ON DEFI AND  
WEB3**



**BOOTCAMP GOAL:  
BE READY TO START A  
WEB3 OR DEFI PROJECT**

**LEVEL UP:**

**UNAWARE ==> AWARE**

**AWARE ==> UNDERSTAND**

**UNDERSTAND ==> CREATE**

**CREATE ==> TEACH**

# All times UTC+1 (Lisbon/London time)

## **Week 1 - August 6th**

1400 - 1600

1600 - 1630 (Break)

1630 - 1830

Intro to Blockchain and DeFi  
Programming Smart Contracts in Solidity I

## **Week 2 - August 13th**

1400 - 1600

1600 - 1630 (Break)

1630 - 1830

Programming Smart Contracts in Solidity II  
Front End demo  
Automated testing  
Working With Auditors

## **Week 3 - August 20th**

1400 - 1600

1600 - 1630 (Break)

1630 - 1830

Security Practices, Security & OrgSec  
Business Models  
Token Engineering  
○ Theory  
○ Simulation Model

## **Week 4 - August 27th**

1400 - 1600

1600 - 1630 (Break)

1630 - 1830

Pitch deck 101  
Fundraising Dos and Don'ts  
Running a DAO (Orca - Tooling, tips, etc.)  
Building a team  
Panel Discussion

## **Week 5 - online**

**Deliverable due.**

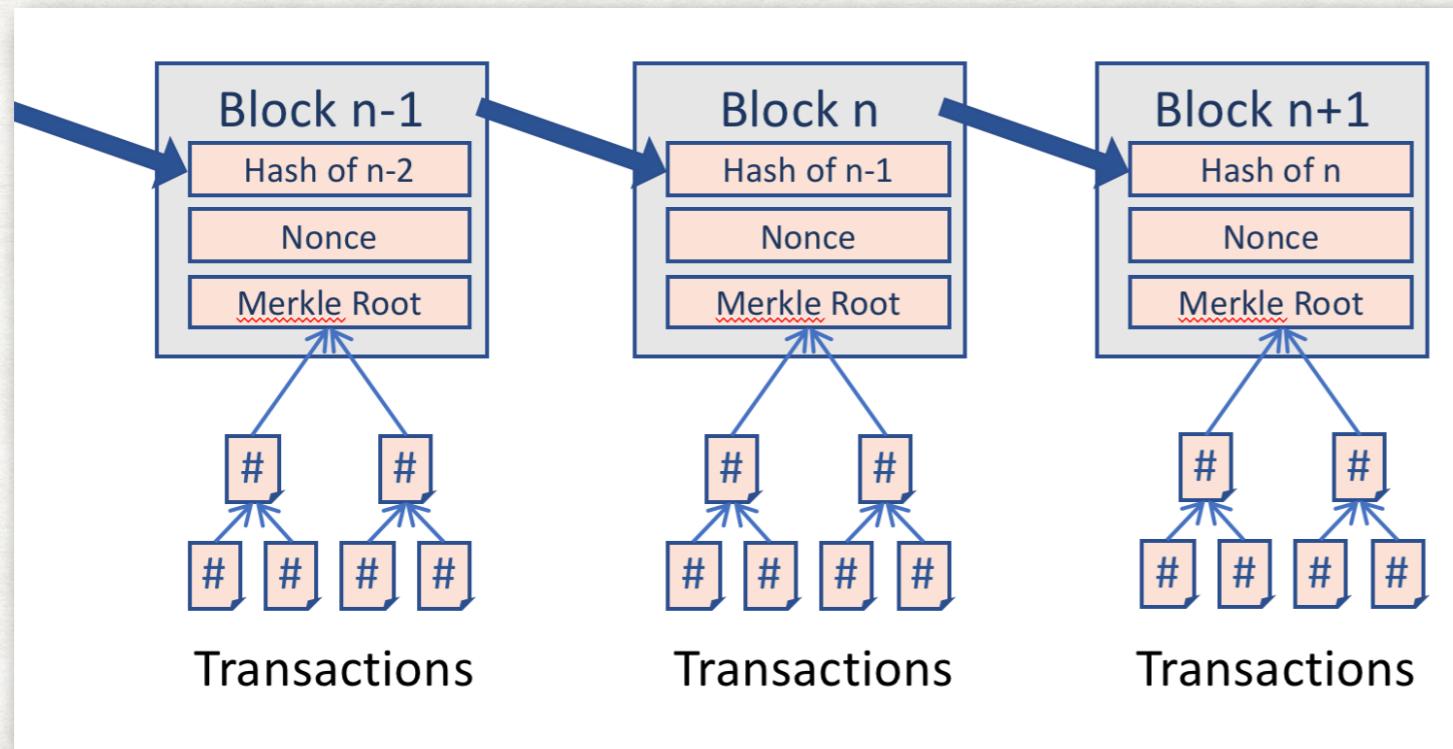
**Time TBD.**

Business Plan + Presentation on demo day

# BLOCKCHAIN IN A NUTSHELL

KEY: CONSENSUS IN AN UNTRUSTED NETWORK OF PEERS

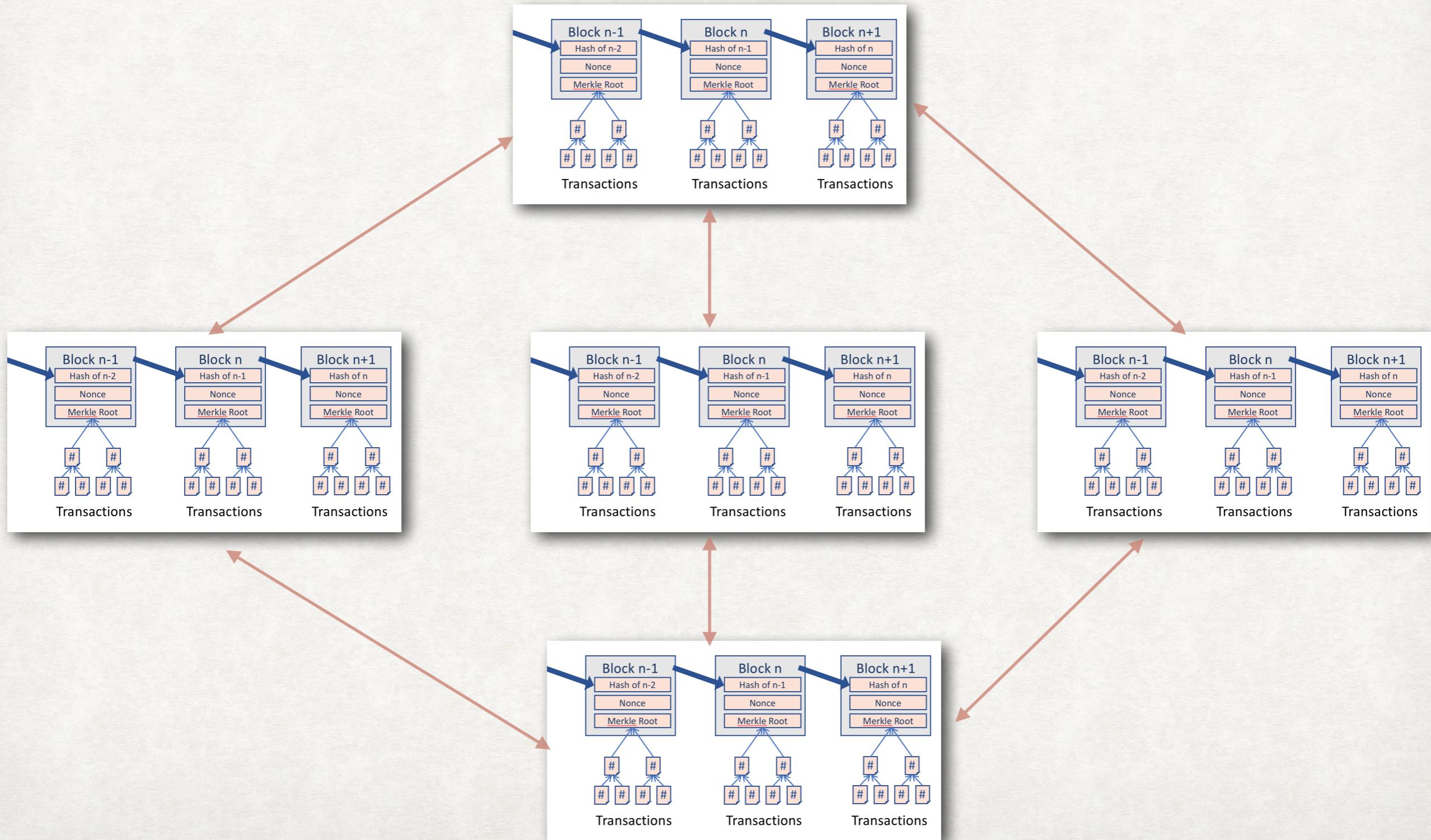
- Data structure: New blocks of transactions are “chained” to the previous block using a “cryptographic hash”.
- Network: A distributed ledger in which independent maintainers take turns adding blocks of transactions the head of the ledger.
- Very difficult to alter transactions in previous blocks (“immutable” ledger).



Distributed Ledgers  
Decentralized Finance  
Decentralized X  
e.g. gaming, social, DAOs

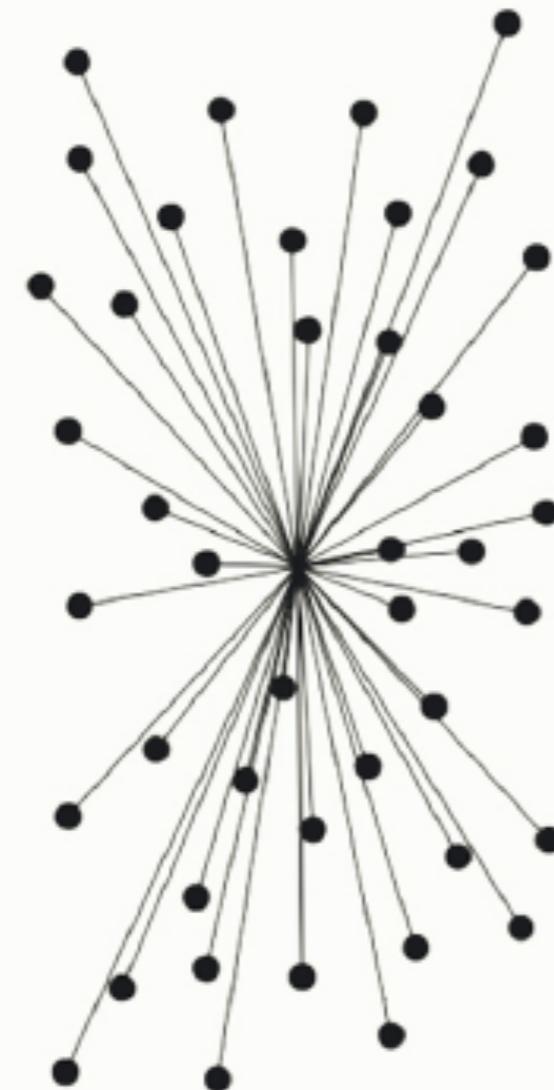
# BLOCKCHAIN IN A NUTSHELL

## COPIES OF THE LEDGER ARE MAINTAINED BY A PEER-TO-PEER NETWORK OF COMPUTERS (NODES)



# “DECENTRALIZED” NETWORKS

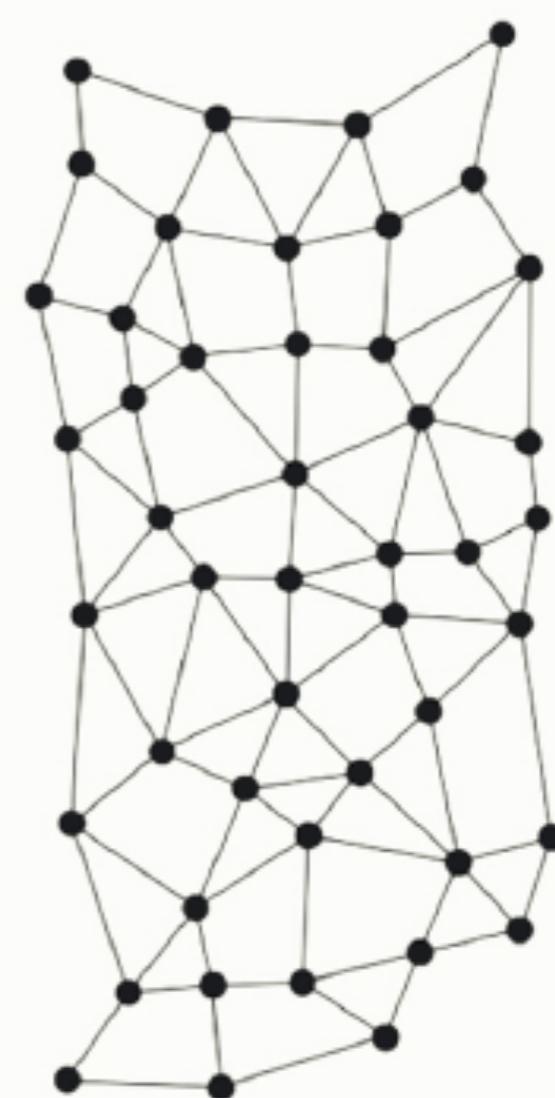
## NETWORK STRUCTURE VS. TRUST “HORIZON”



Centralised (A)



Decentralised (B)



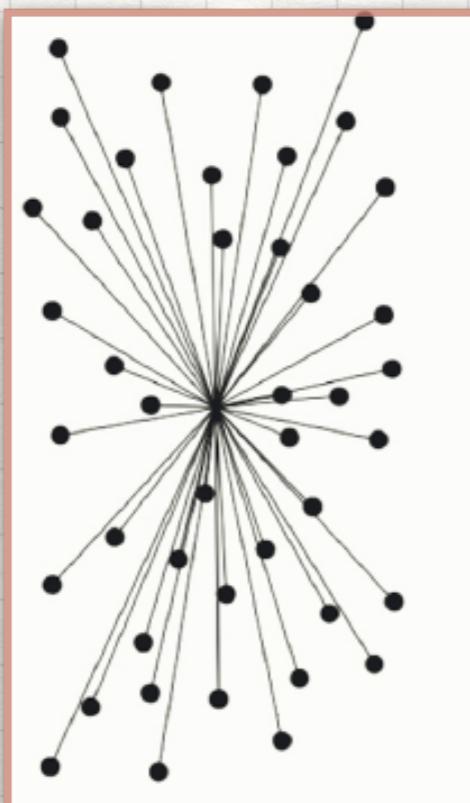
Distributed (C)

“Centralized, decentralized and distributed network models by Paul Baran (1964), part of a RAND Institute study to create a robust and nonlinear military communication network ”

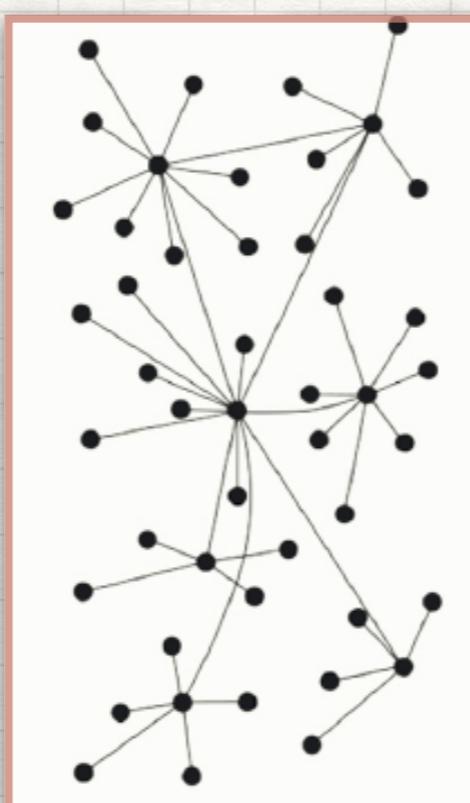
# "DECENTRALIZED" NETWORKS

NETWORK TOPOLOGY VS. TRUST "HORIZON"

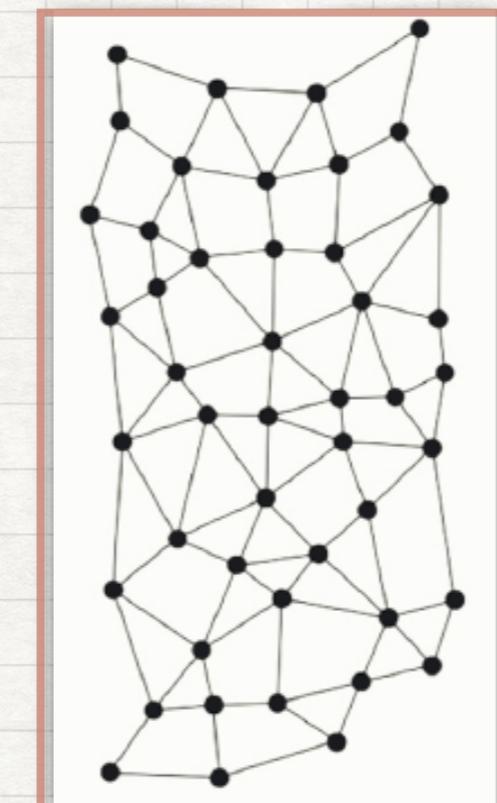
One Owner



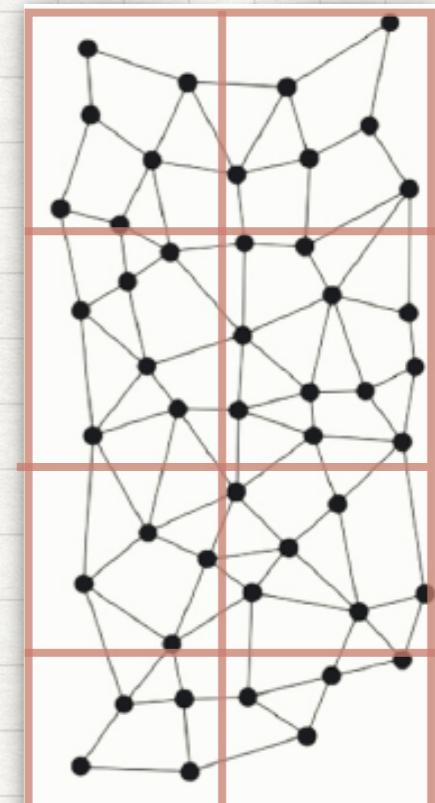
One Owner



One Owner



Many Owners



Trust Minimized between various stakeholders in the system

**BUILD  
APPLICATIONS  
RESILIENT TOWARDS ADVERSARIAL  
CONDITIONS**

# NETWORK VALIDATION

## NETWORK SECURITY MODELS

- Network participation open to anyone in a *public blockchain*
- Networks have rules for joining the group of block producing nodes and including transactions in blocks.
- Nodes come to consensus using:
  - Proof-of-Work
  - Proof-of-Stake
  - Proof-of-Authority
  - Proof-of-Space-and-Time
  - Proof-of-History

# “SMART CONTRACTS”

## COMPLEX AGREEMENTS AND LOGIC ENFORCED BY A BLOCKCHAIN NETWORK

- Secure Notary i.e. time-stamping
- Track and trace (physical goods, or data)
- “Smart contracts” enable arbitrary business logic to be encoded and executed by a blockchain
- Tokenization - encapsulation of an asset in an easily transactable envelope.
- Fungible vs. non-fungible tokens (Measurable vs. Countable)
- Applied with cryptography digital and physical assets can be securely managed

# ETHEREUM VIRTUAL MACHINE (EVM)

## POPULAR EVM COMPATIBLE PLATFORMS

- Ethereum
- Polygon
- Binance Smart Chain
- Fantom
- Telos
- Avalanche (C-chain)
- Moonbeam
- Near (Aurora)
- Ethereum Classic & Merge inspired forks

# ETHEREUM VIRTUAL MACHINE (EVM)

## A VERY POPULAR PLATFORM FOR DECENTRALIZED APPLICATIONS

- Turing Complete Languages
  - Solidity
  - Vyper
- Execution is bounded by block size
- Pay for computation (transaction fees - "gas")
  - Each operation in a transaction has a price
- Many blockchains in EVM ecosystem

# SOLIDITY PROGRAMMING I

# MORE ABOUT EVM PLATFORMS

## BASICS FOR DEVELOPERS

- All accounts have addresses:
  - External accounts are usually owned by humans (cryptographic public-private key-pairs)
  - Smart Contracts, are programs deployed and executed by the EVM
- Accounts have a balance of ETH (gas token)
- All transactions have to be initiated and (Gas) paid for by an External account.

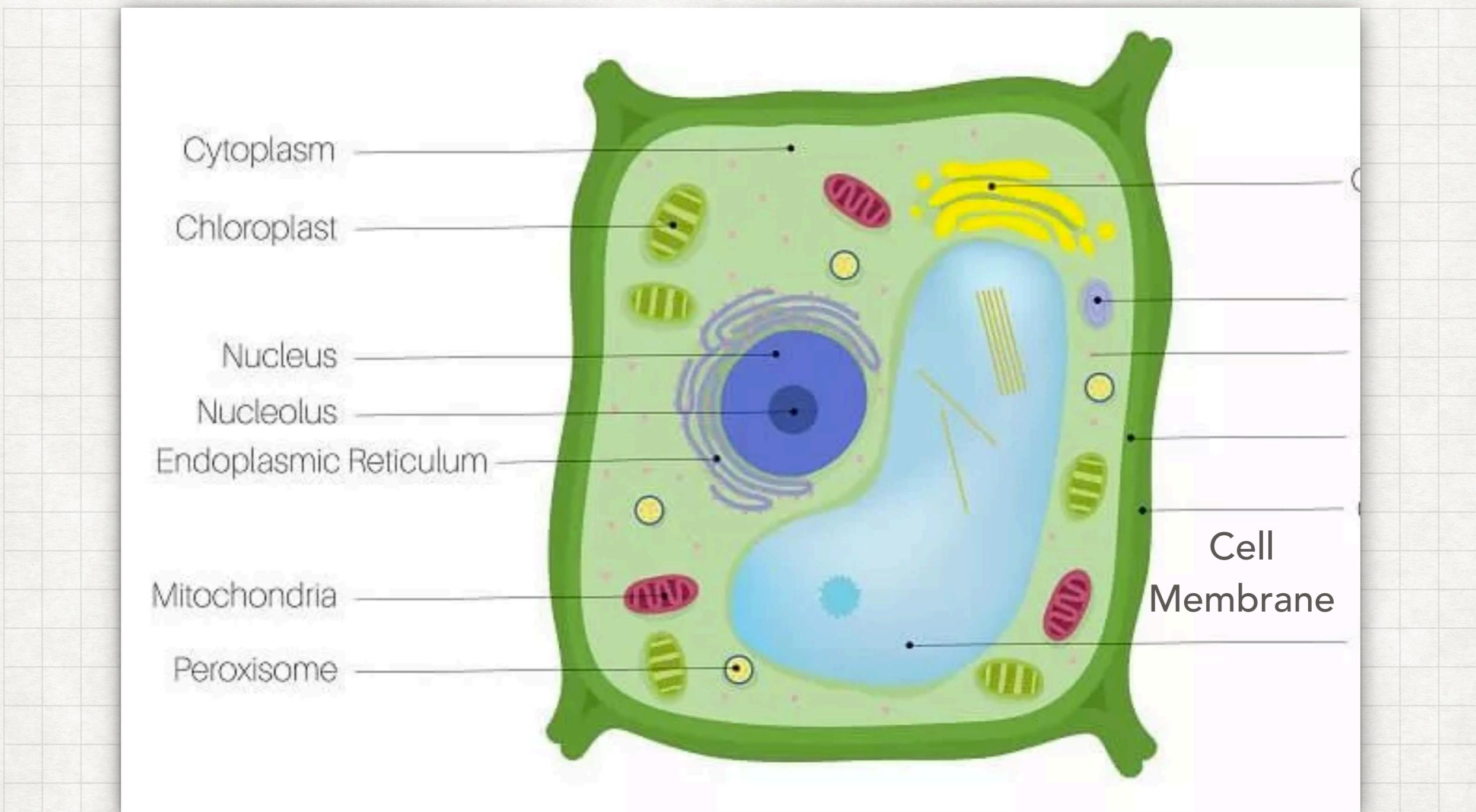
# SOLIDITY

## THE MOST POPULAR LANGUAGE FOR EVM PLATFORMS

- Object Oriented (contract-oriented)
- Strongly typed
- Inspired by Javascript
- Compiles to EVM bytecode
- No floating-point types
- State is rolled back (transaction reverted) if an Exception occurs
- Various safety features

# CREATING SMART CONTRACTS

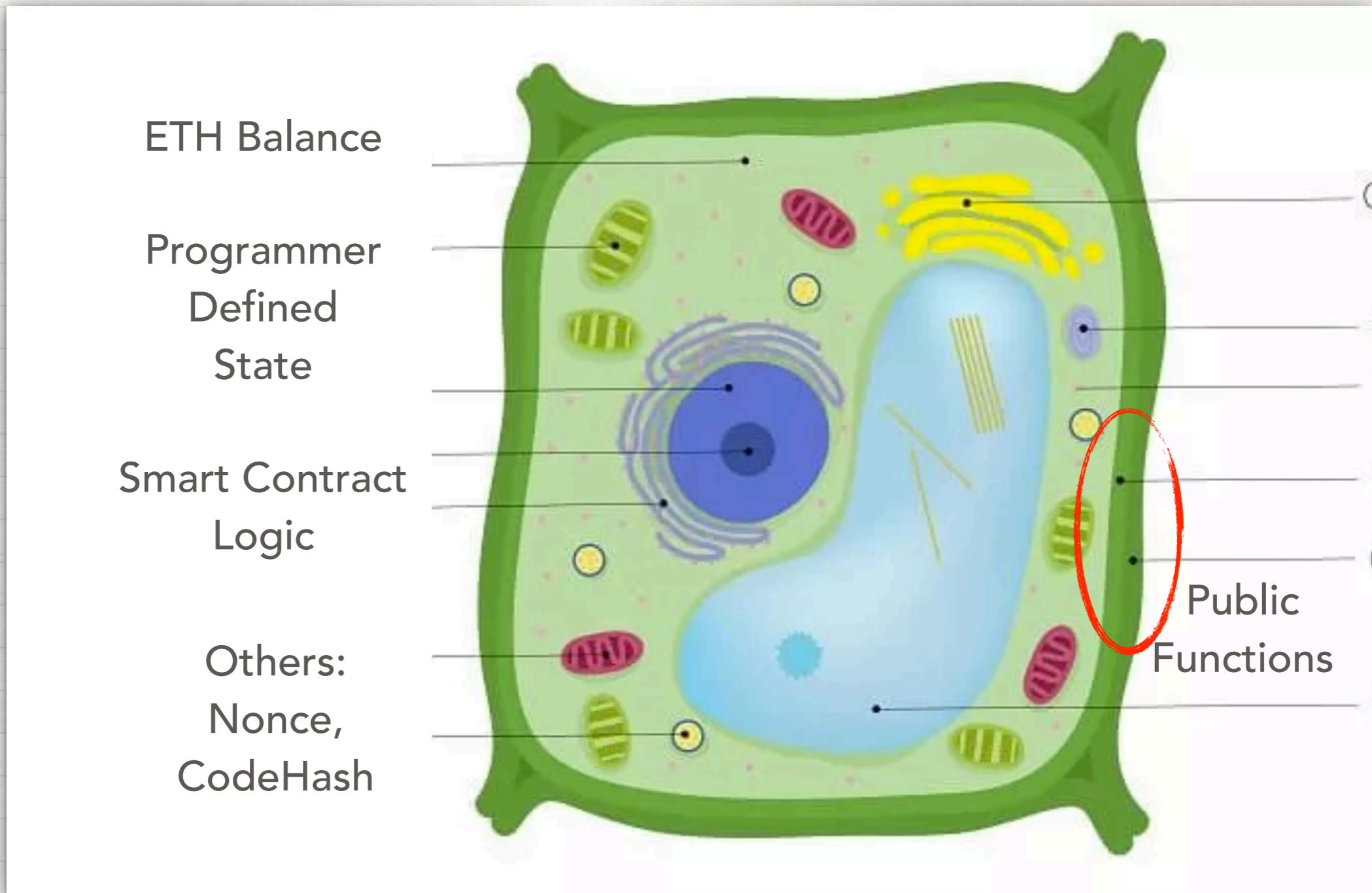
## AN ANALOGY



The cell wall and membrane are an interface between the inside and outside  
Membrane controls what goes in and out.

# CREATING SMART CONTRACTS

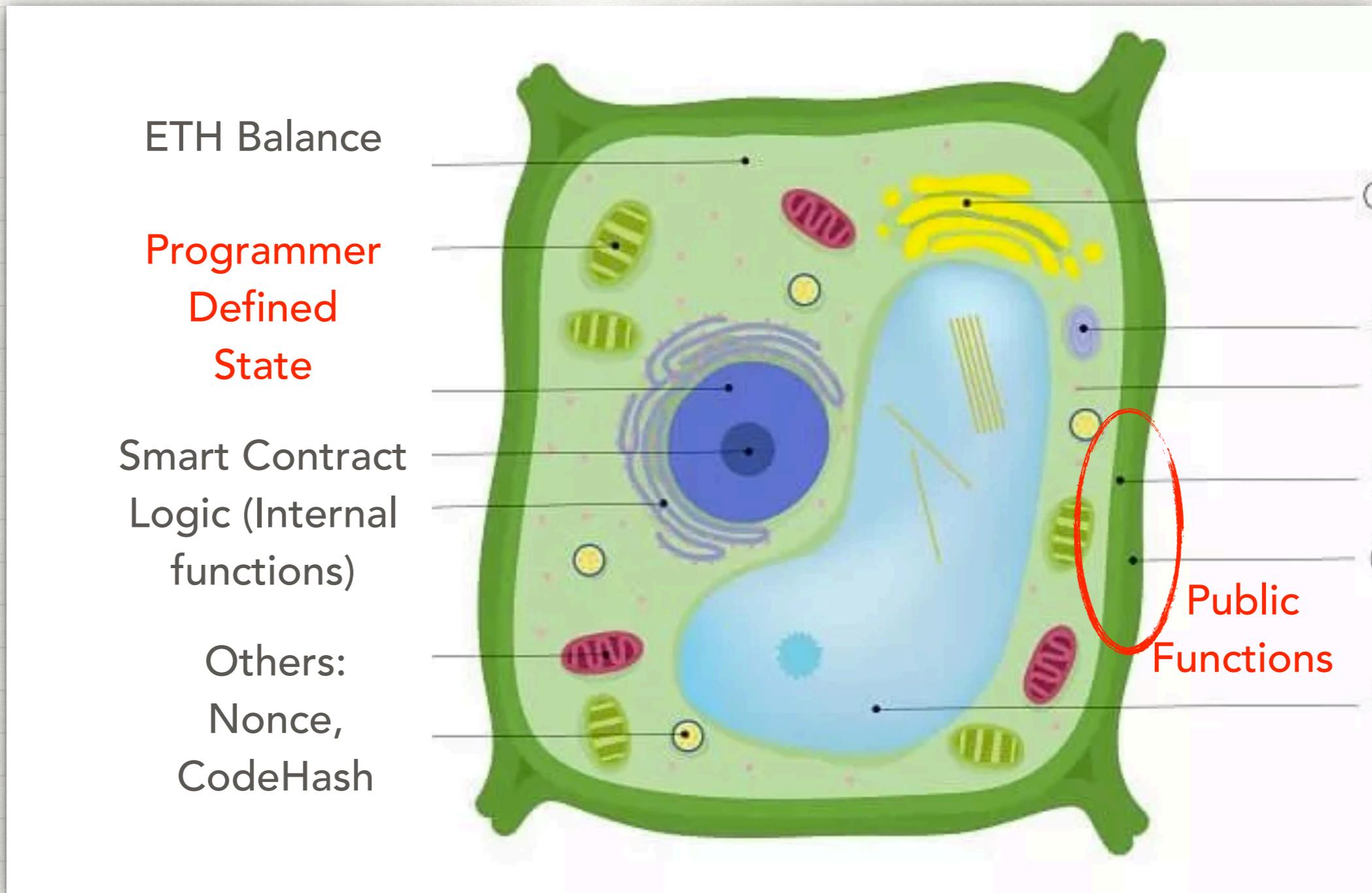
## AN ANALOGY



The programmer creates the interface between the inside and outside.  
Functions control how state can be changed from the outside.

# CREATING SMART CONTRACTS

## AN ANALOGY



The programmer creates the interface between the inside and outside.  
Functions control how state can be changed from the outside.

# SOME USEFUL TOOLS

- <https://docs.soliditylang.org/>
- [remix.ethereum.org](https://remix.ethereum.org)
- [etherscan.io](https://etherscan.io)
- <https://ethstats.net/>
- <https://brave.com/>
- <https://metamask.io/>