

BLOCKCHAIN.





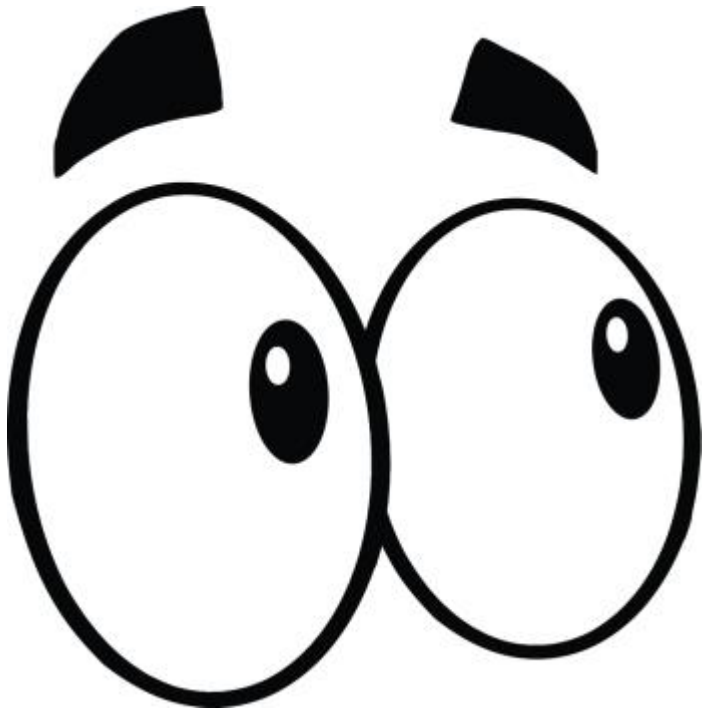
Blockchain is not...

 ***bitcoin***

...is a Blockchain

Blockchain is the
foundation of
decentralized
computing



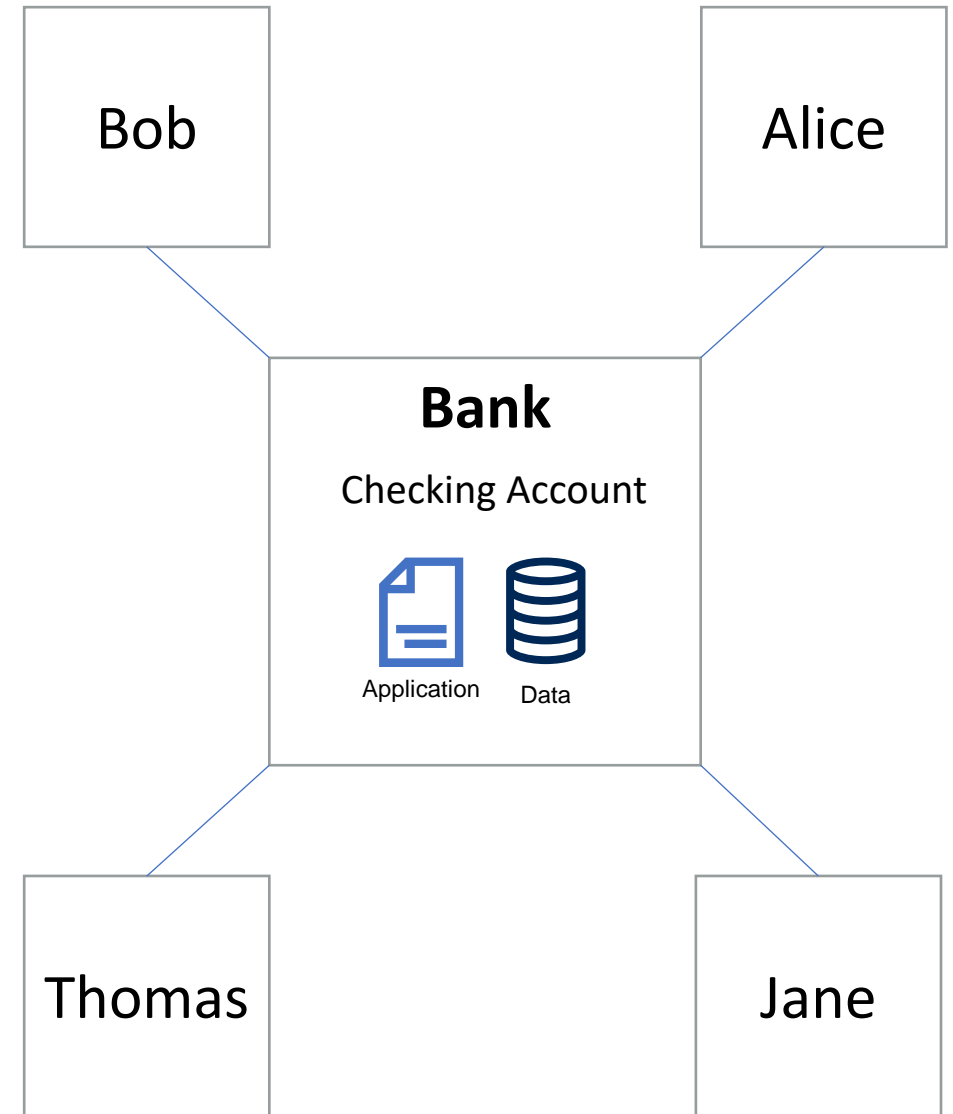


Decentralized
computing is
the Future of
Internet...

Centralized Computing

One entity executes (a program), confirms (the output), and records what happened (in a storage)

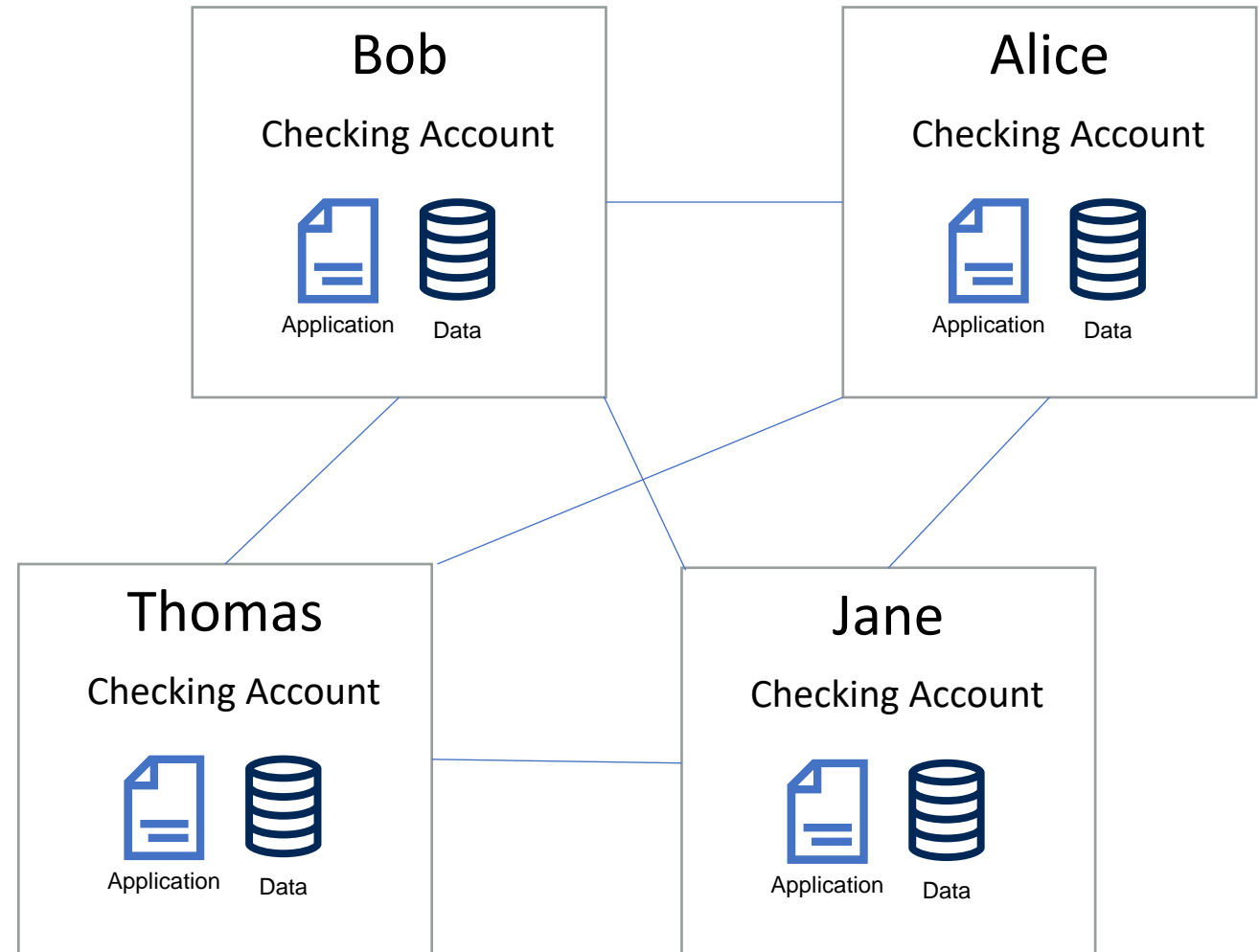
- The entity has full control over how the system works...
- There may be many distributed components but all are controlled by one entity

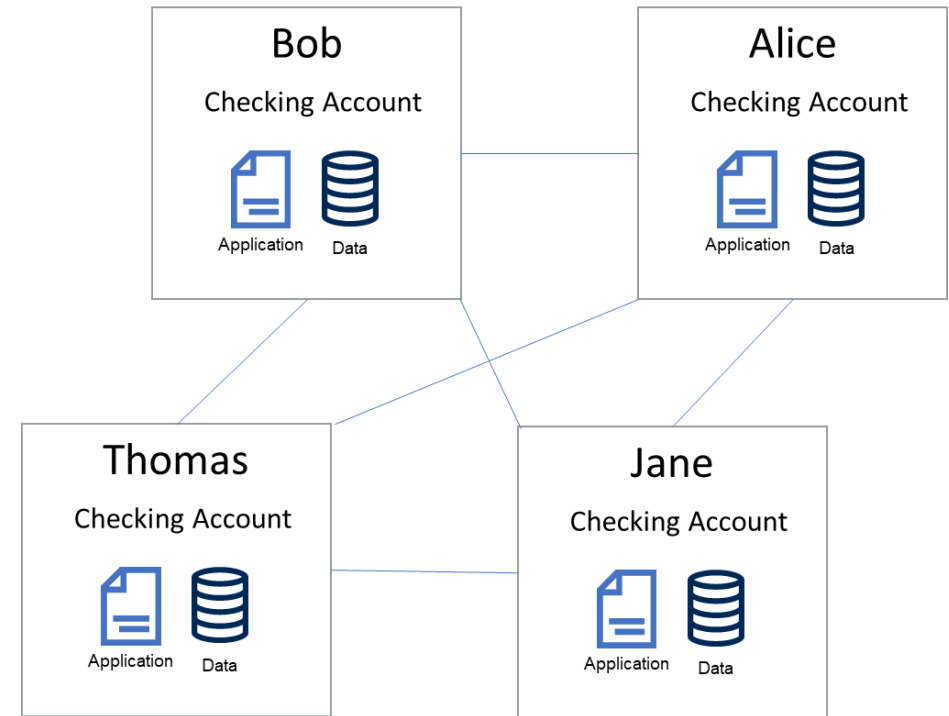
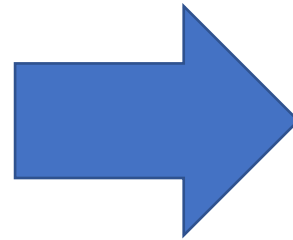
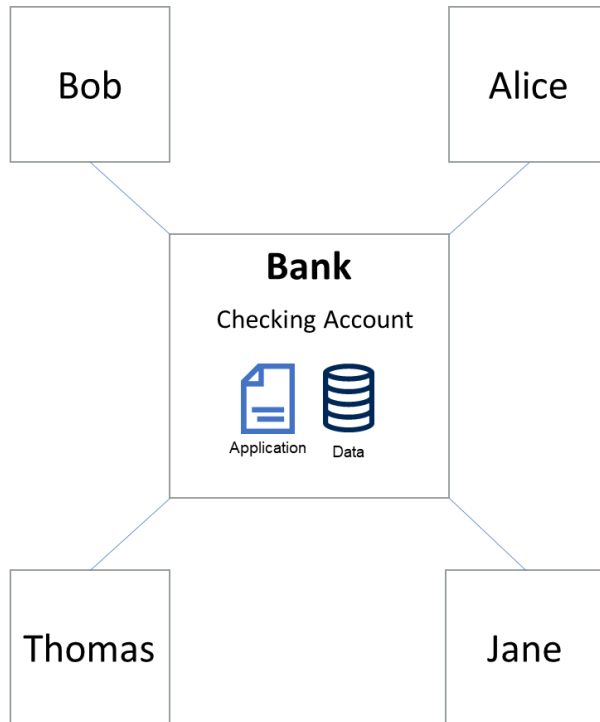


Decentralized Computing

Multiple entities collectively execute (a program), confirm (the output), and record what happened (in a storage)

- The system is not owned by any single entity
- This is a more equitable model...





The Bank (centralized entity)
keeps track of how much money
we have...

We Trust the Bank

The peers (decentralized entities)
all together keep track of how
much money we have...

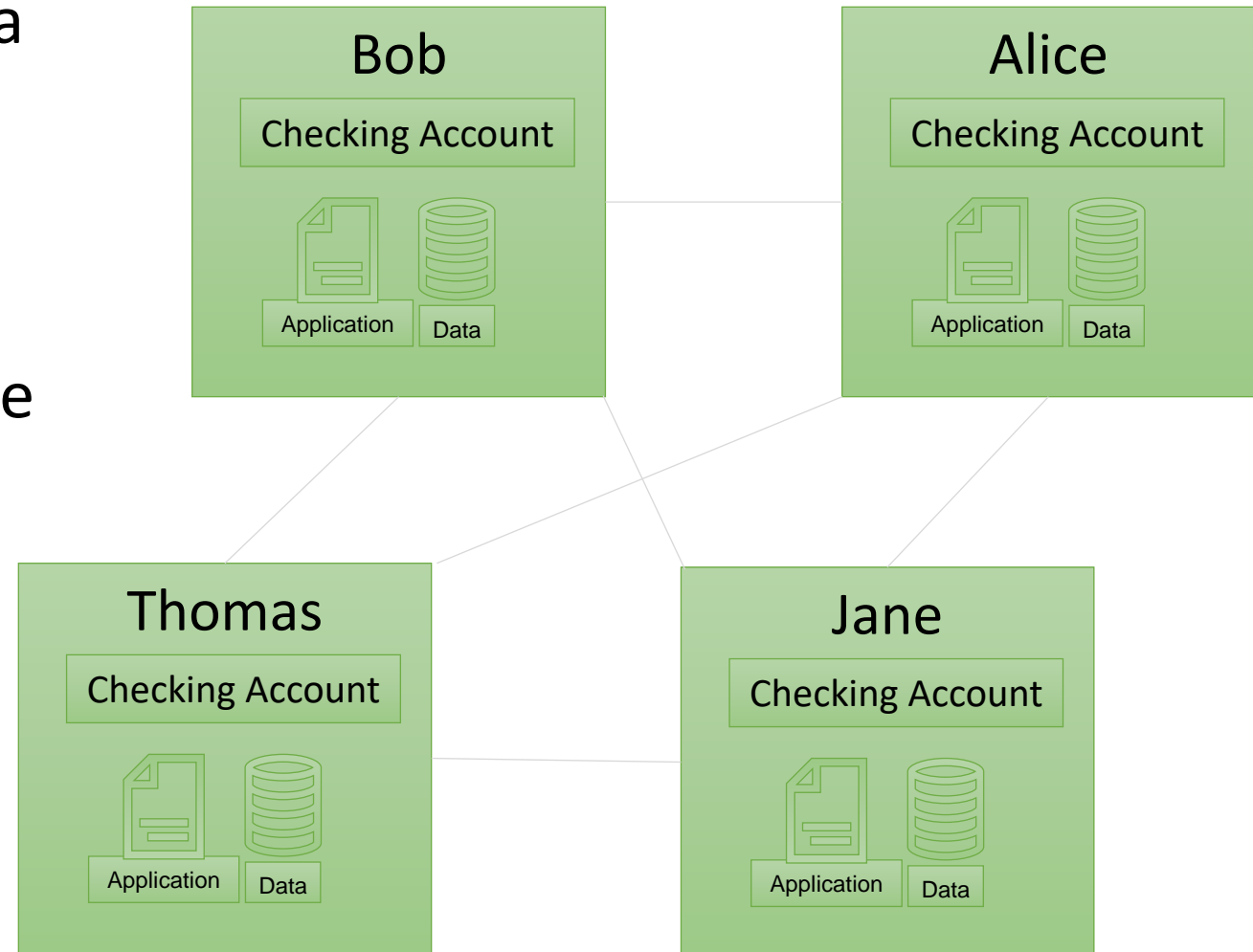
Trust is Inherent (Algorithmic...)



A blockchain platform is
a peer-to-peer network with
an immutable shared ledger
that enables **Trust** in a
digital ecosystem.

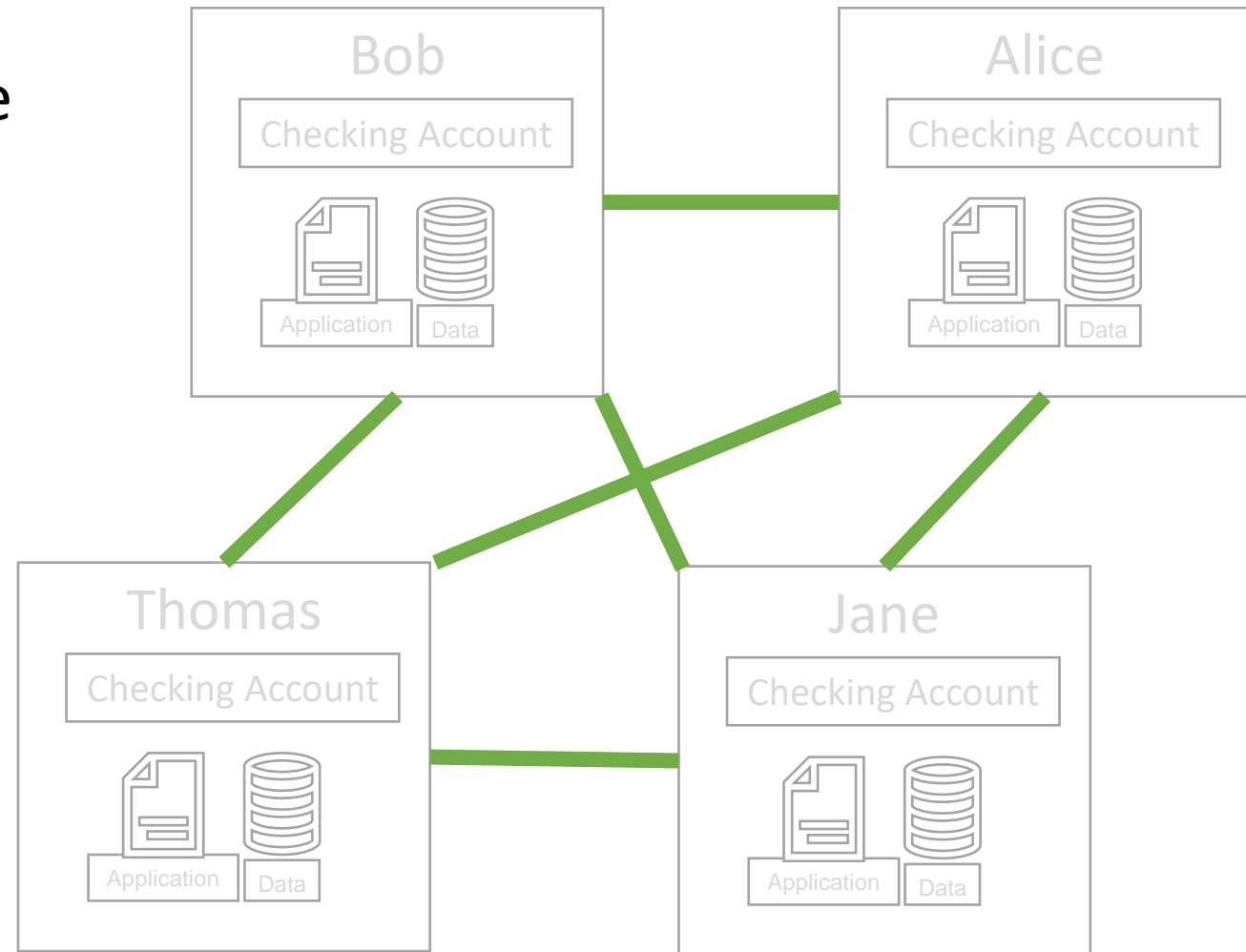
Key Component: Peer Nodes

- A client software that is run by a computer to join the network
 - ...participants...
- Some nodes are passive participants and some nodes are active participants.
 - ...active nodes operate the network...
 - A.k.a. full nodes, miners or validators...



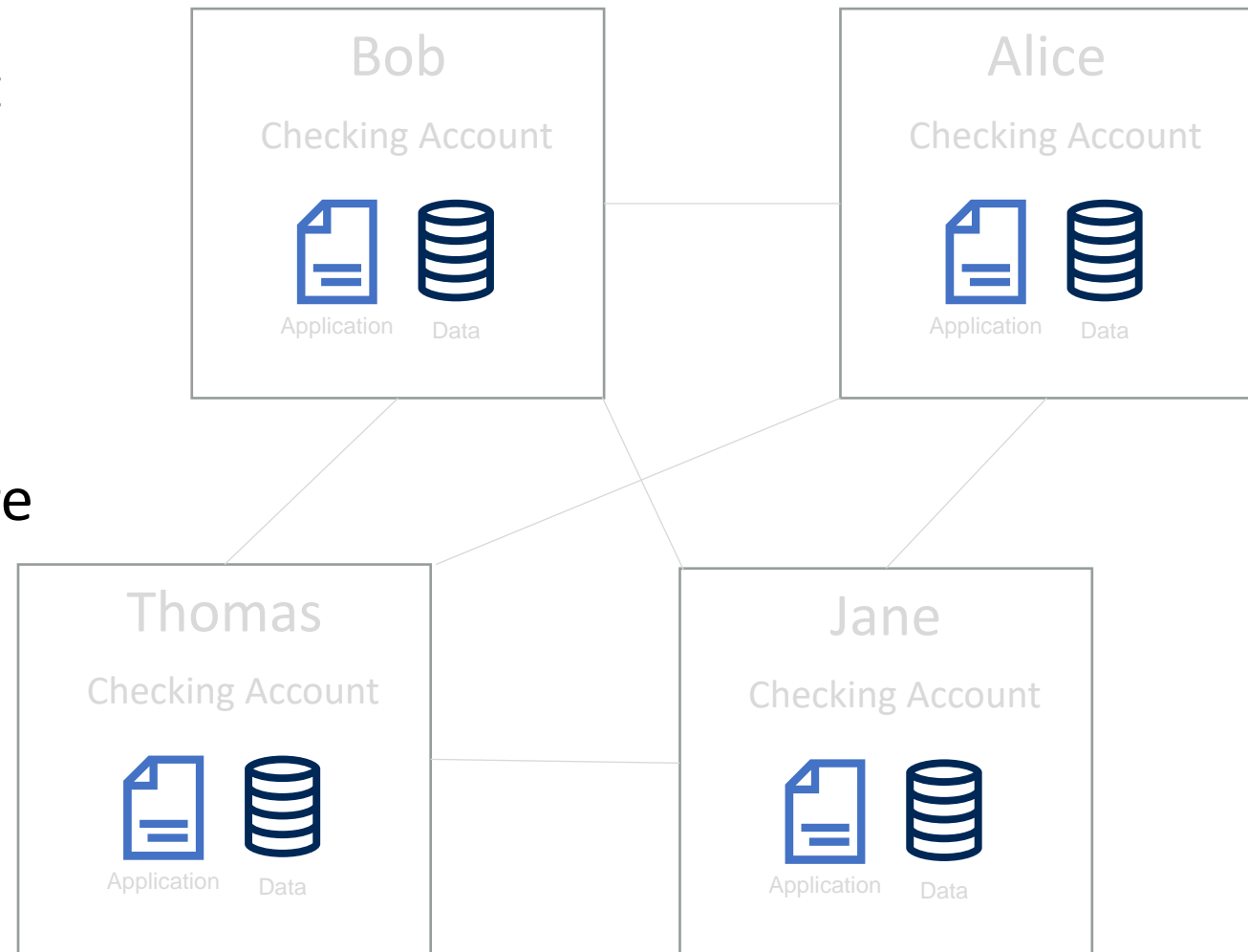
Key Component: Coordination Protocol

- Coordination Protocol: A protocol that facilitate collective execution of codes and writing to the ledger safely/securely
 - ...the trusted protocol...
 - ...a.k.a. consensus protocol...
- Examples: Proof of Work and Proof of Stake



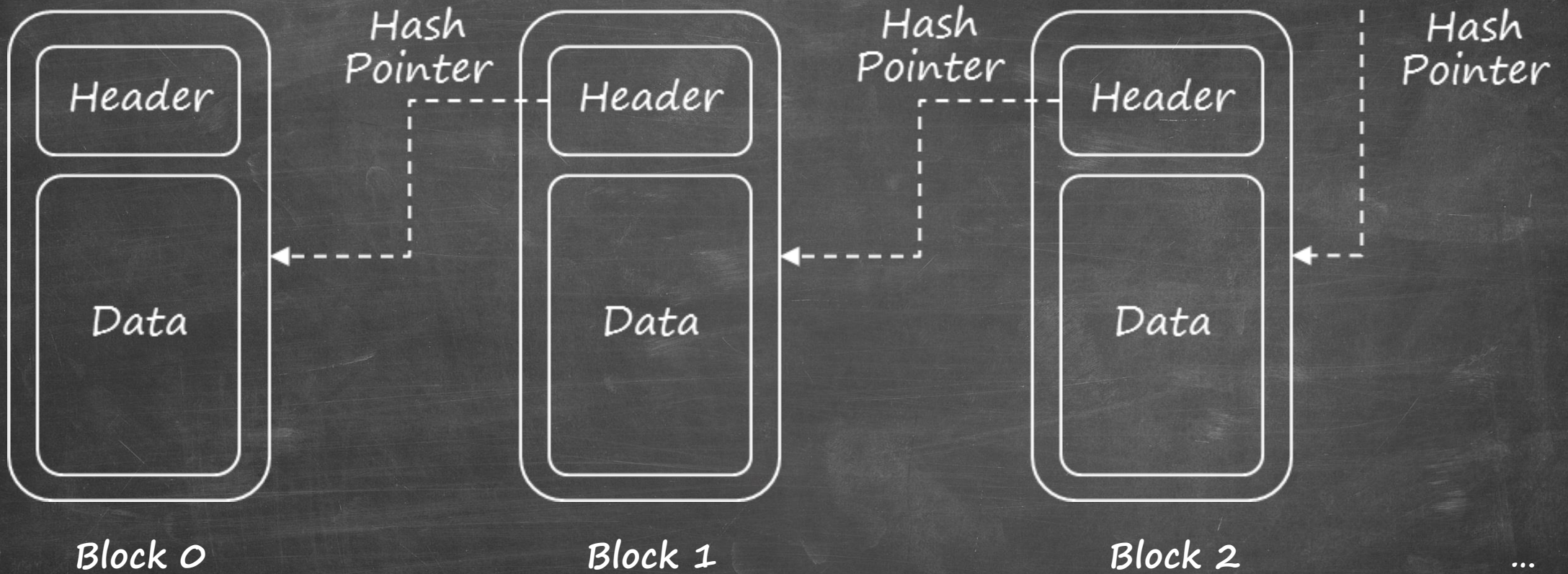
Key Component: Shared Ledger (data) & Rules

- An immutable (write-only)/shared ledger that is maintain by a subset of nodes (full nodes...)
 - ...the trusted storage...
 - ...the so called block-chain...
- Rules are immutable codes that are stored in the ledger and control what can be written to the ledger...and other things!
 - ...the so called Smart Contract...

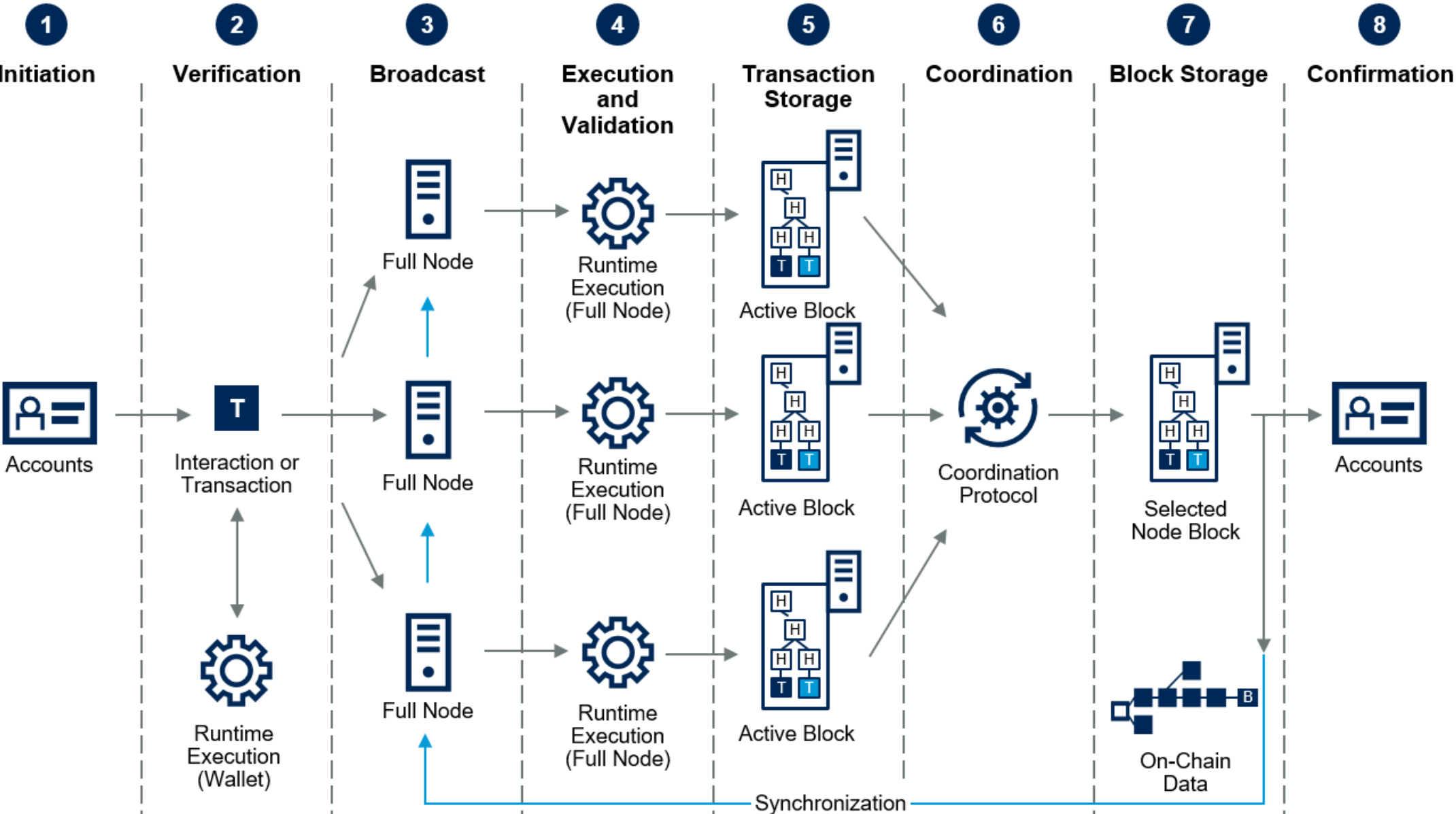


A Quick Look at the Ledger ("Block - Chain")?

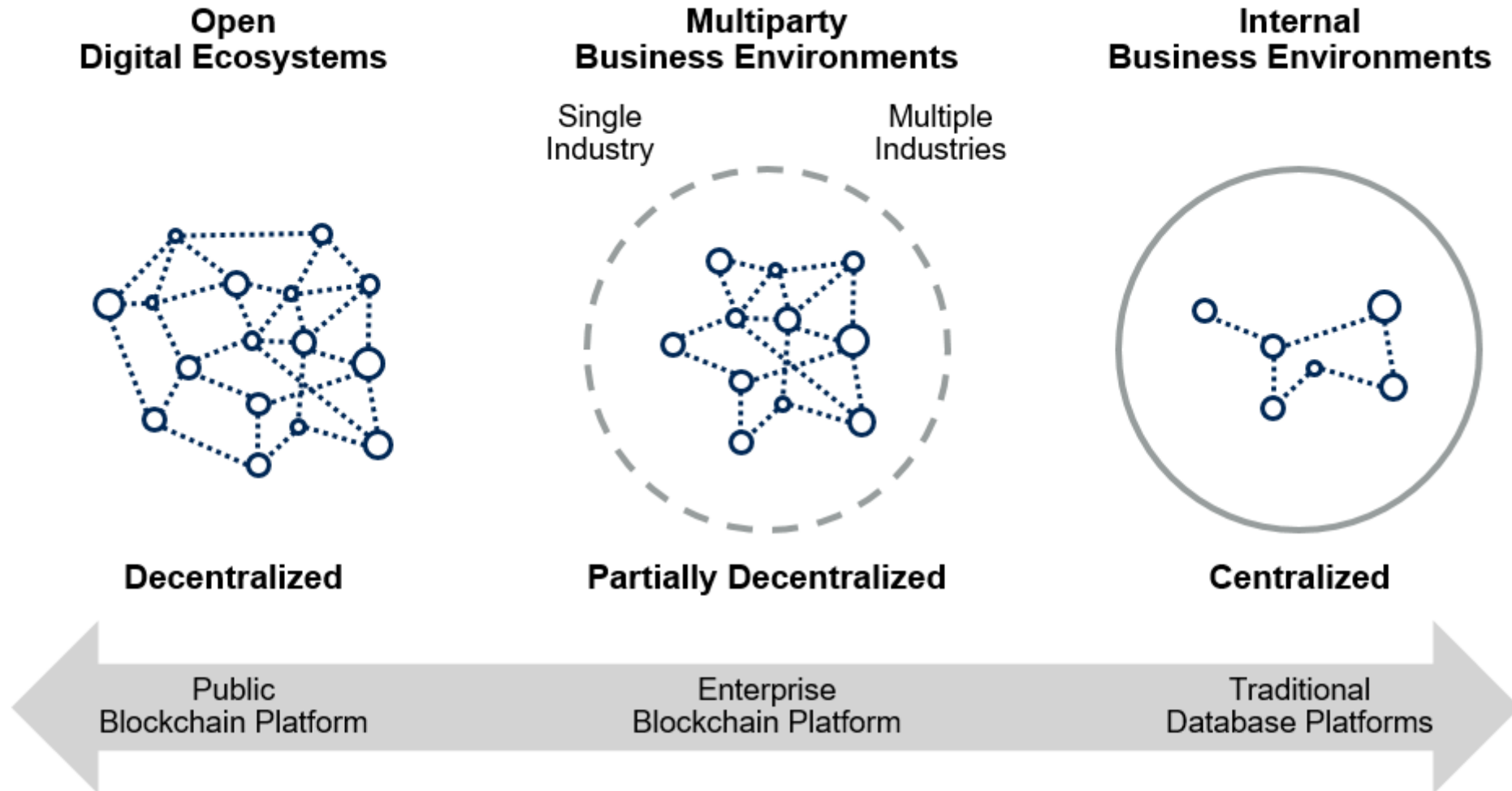
A list of blocks with hash pointers (chain)...makes the data storage **immutable** (write-only)!



Blockchain Platform Basic Flow of Operations



Blockchain Platforms are Not Built Equally



Want to know more?

- There are hundreds of blockchain platforms...:
 - Ethereum
 - Hyperledger Fabric
 - ...
- Try Ethereum online learning resources:
 - <https://ethereum.org/en/what-is-ethereum/>
 - <https://ethereum.org/en/developers/>