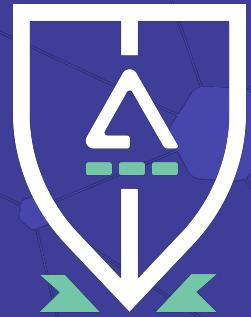


# Blockchain

Why, how & what?



tr<sup>A</sup>se  
*{ University }*

## C o n t e n t s

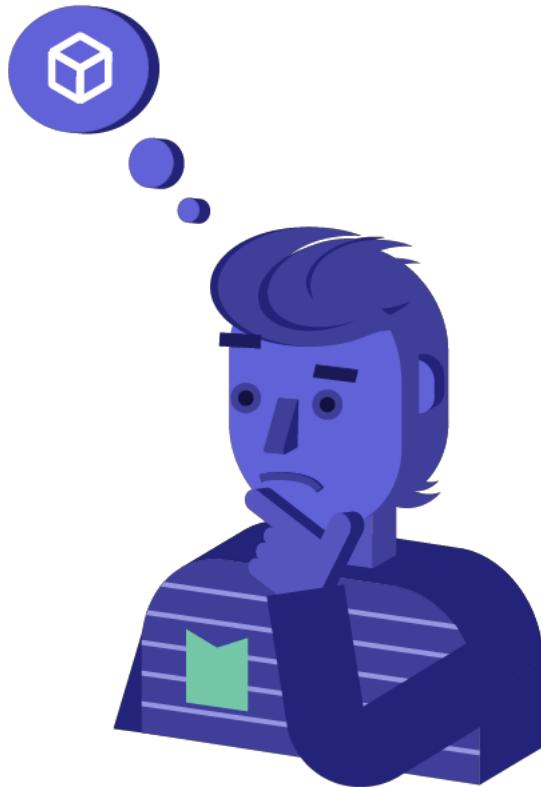
### 1. Introduction Blockchain

A. Concept explanation

B. Thinking Decentralised

C. Blockchain 1.0, 2.0, 3.0

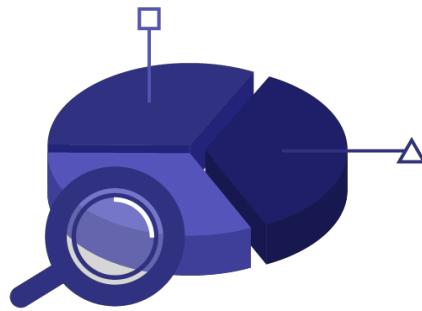
**E X E R C I S E : C O M E U P W I T H K E Y W O R D S**



## KEY BLOCKCHAIN CHARACTERISTICS



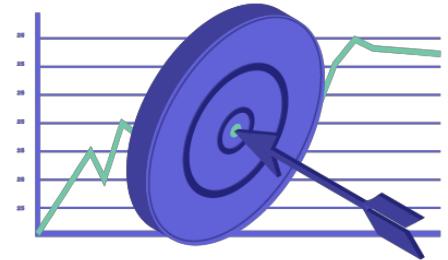
Consensus



Provenance



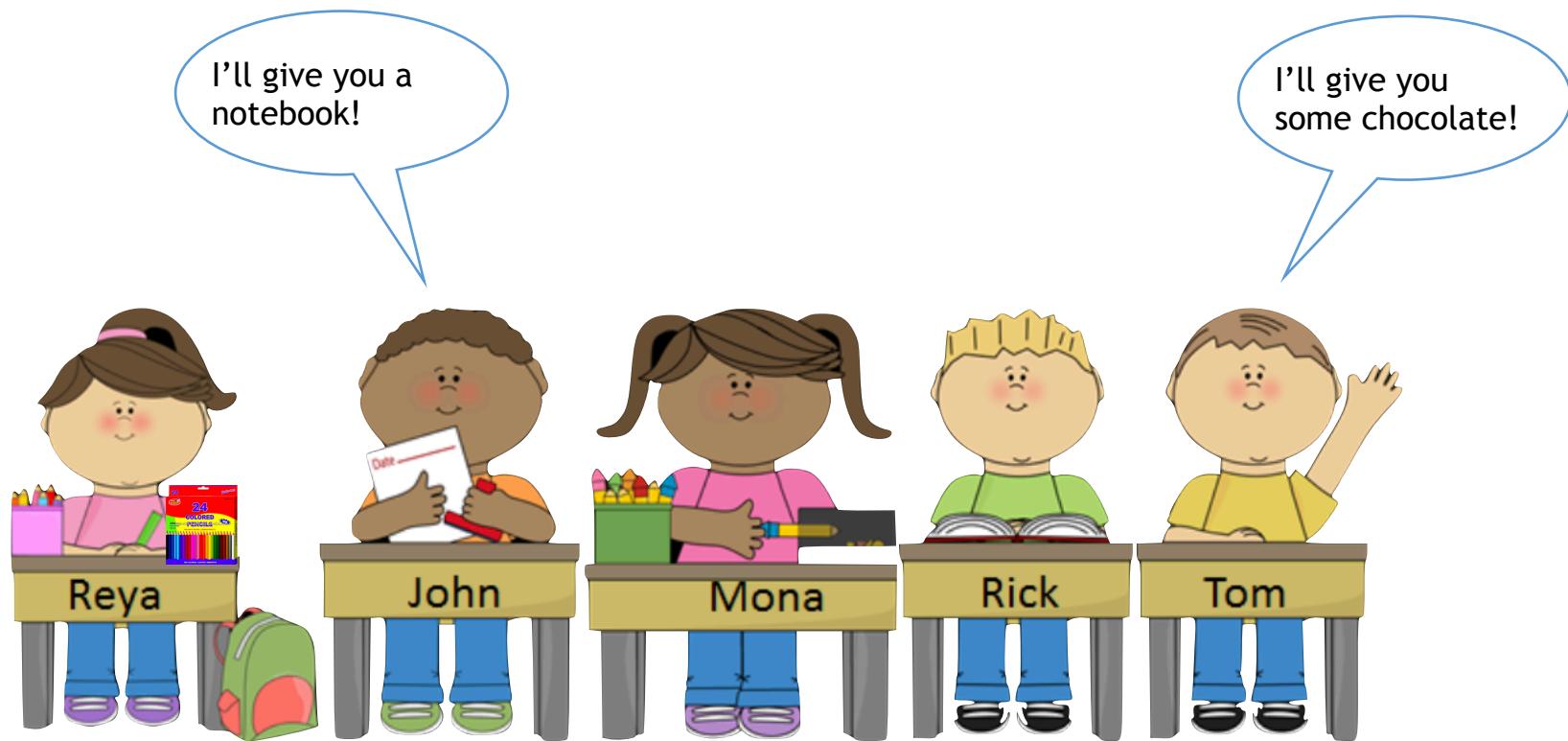
Immutability



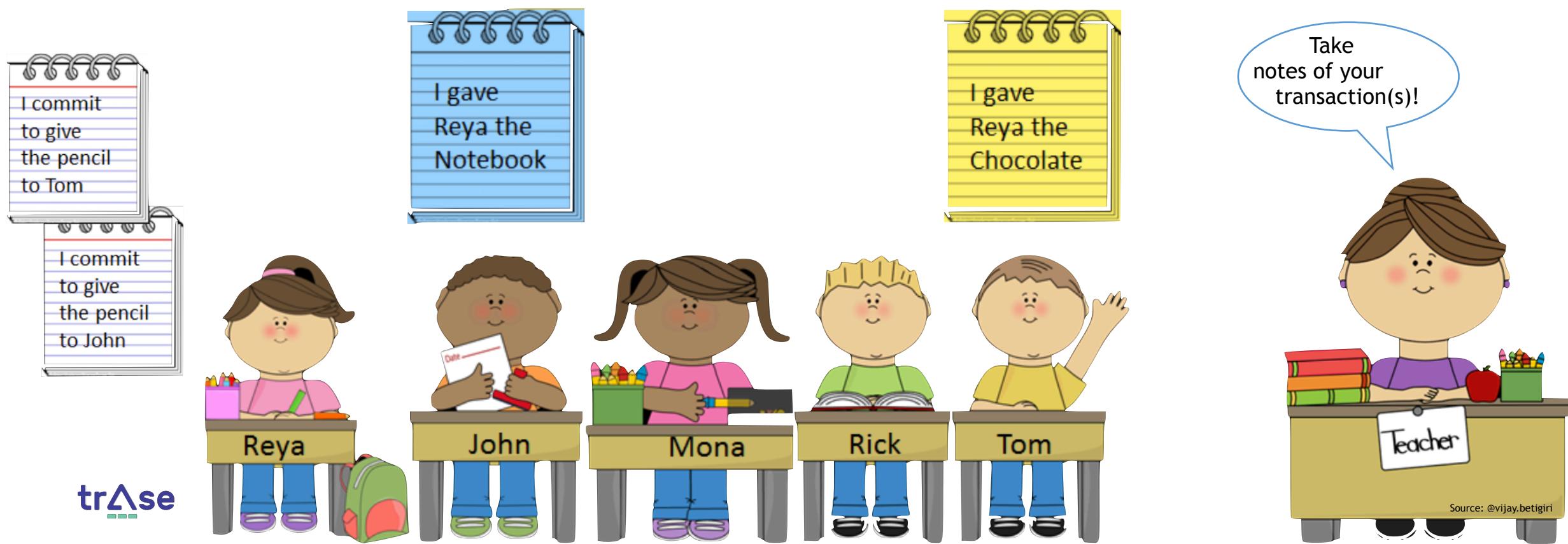
Finality/  
Single source  
of truth

# CONCEPT EXPLAINED

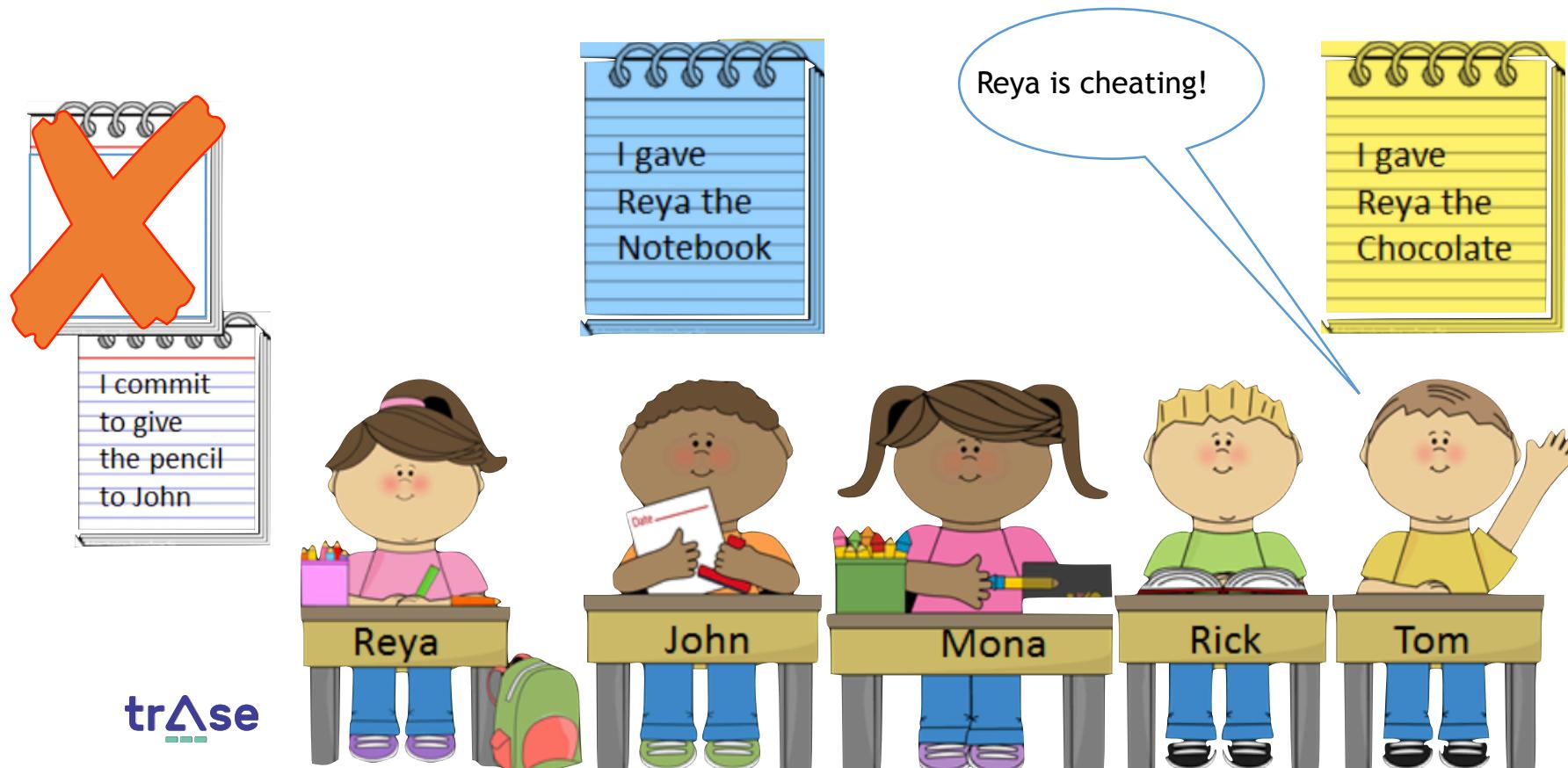
# BLOCKCHAIN EXPLAINED



# BLOCKCHAIN EXPLAINED



# BLOCKCHAIN EXPLAINED



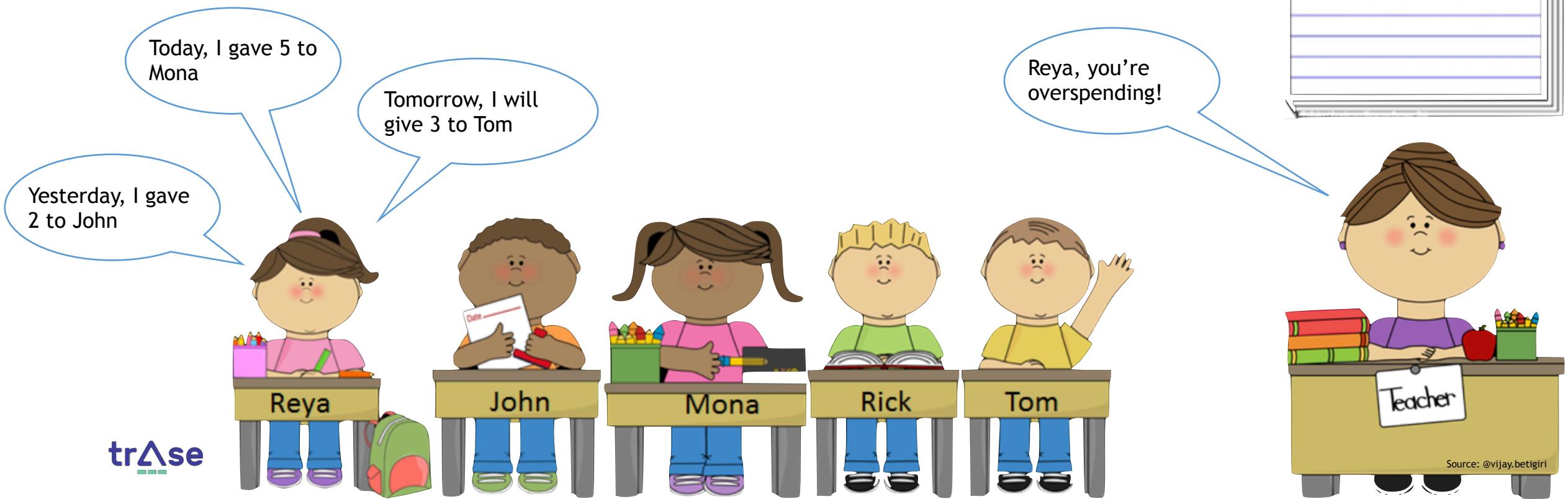
Solution:  
Centralized Ledger  
(e.g. Bank)



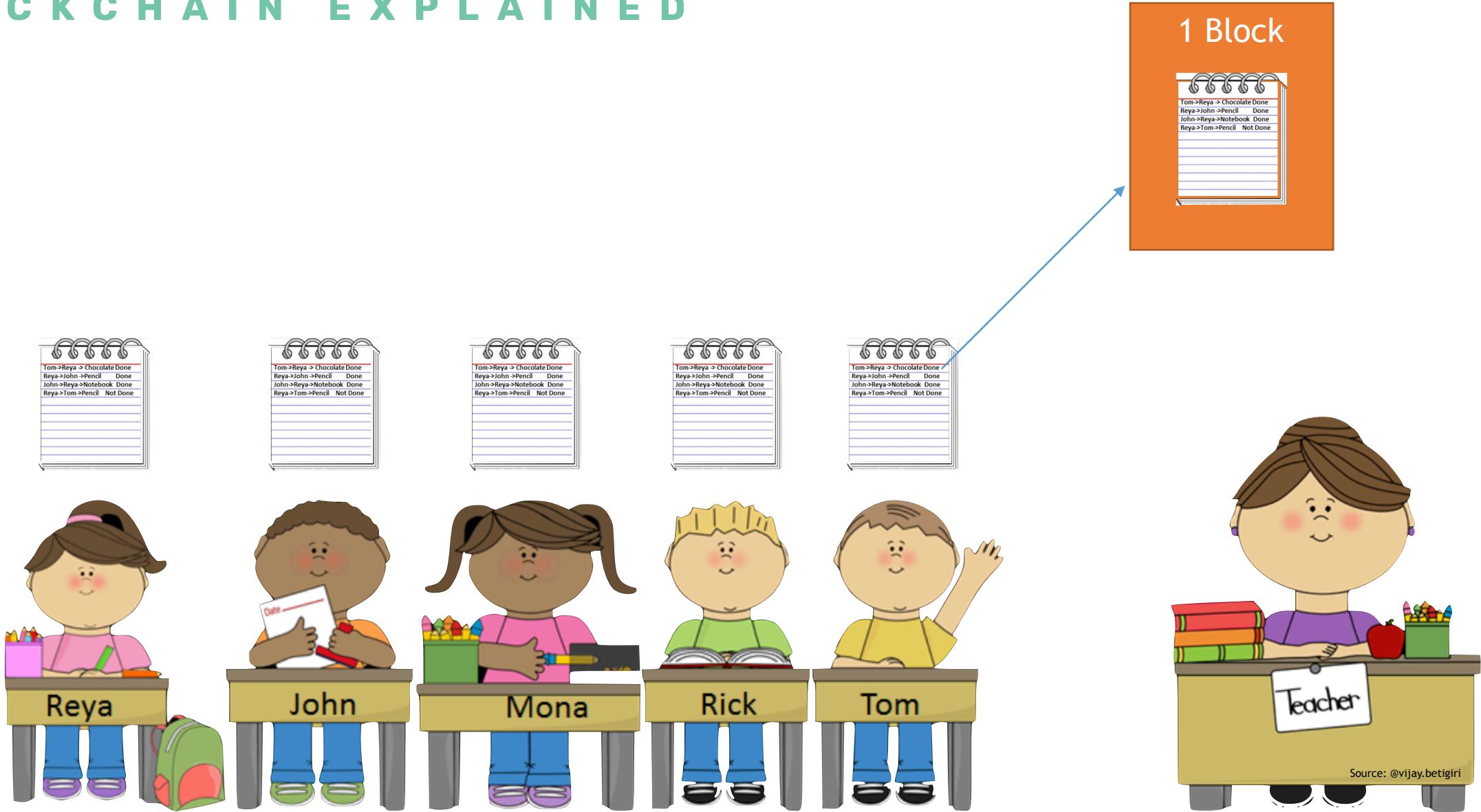
# BLOCKCHAIN EXPLAINED



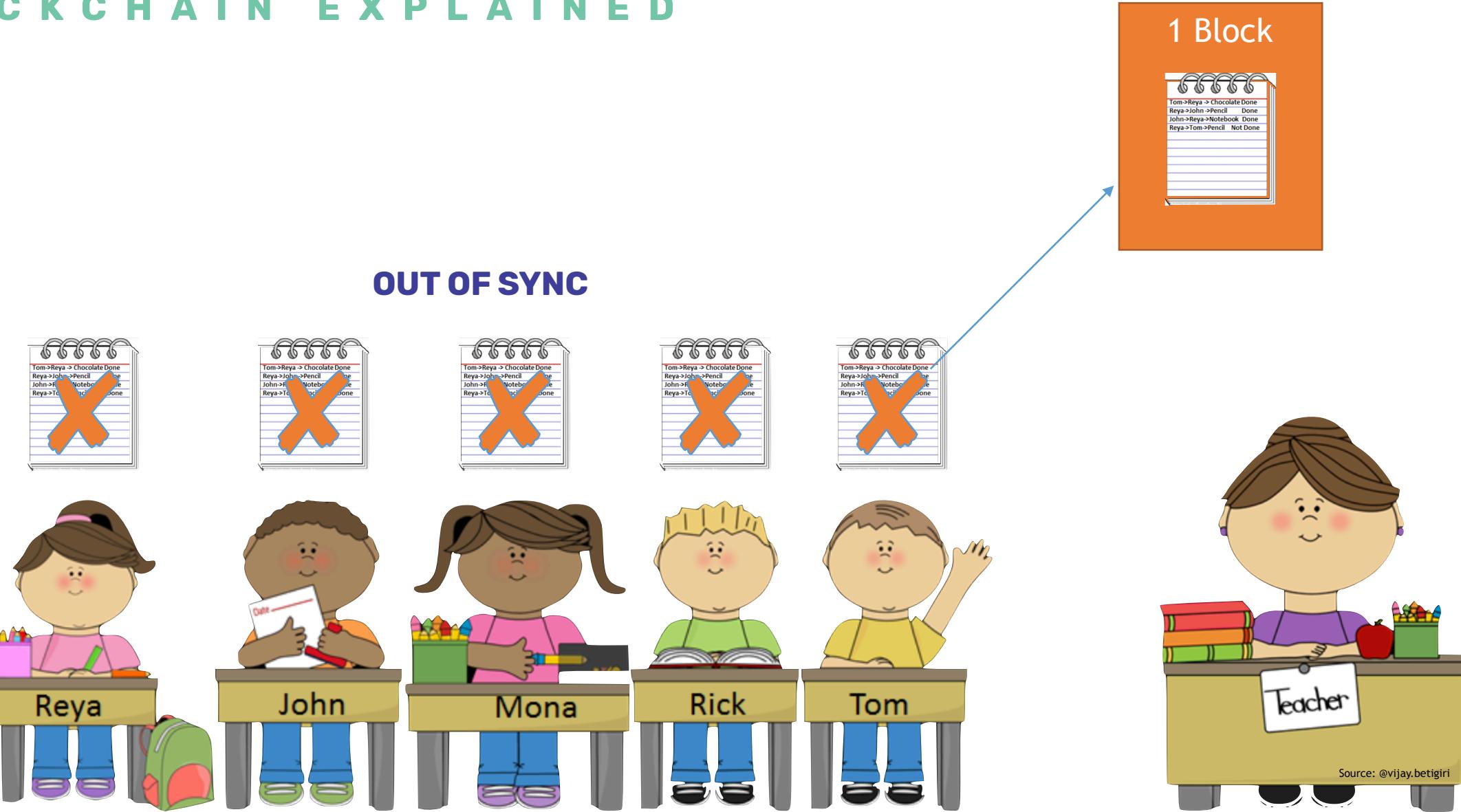
# BLOCKCHAIN EXPLAINED



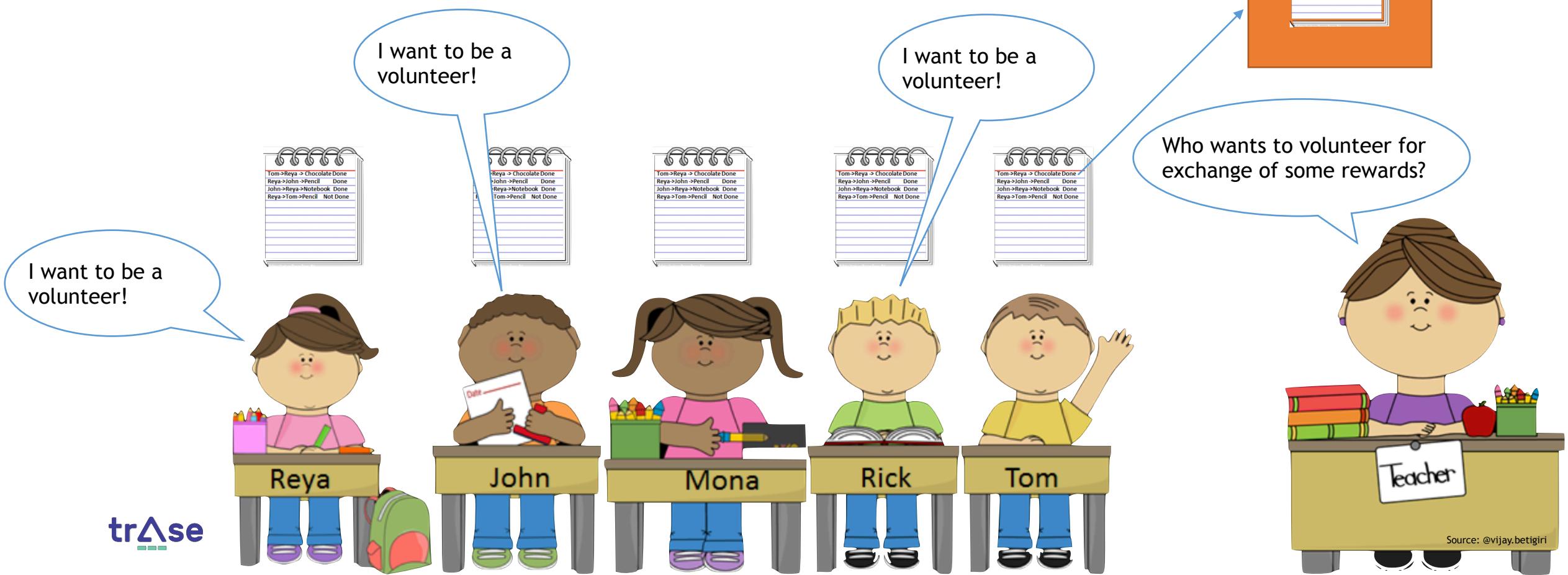
# BLOCKCHAIN EXPLAINED



# BLOCKCHAIN EXPLAINED

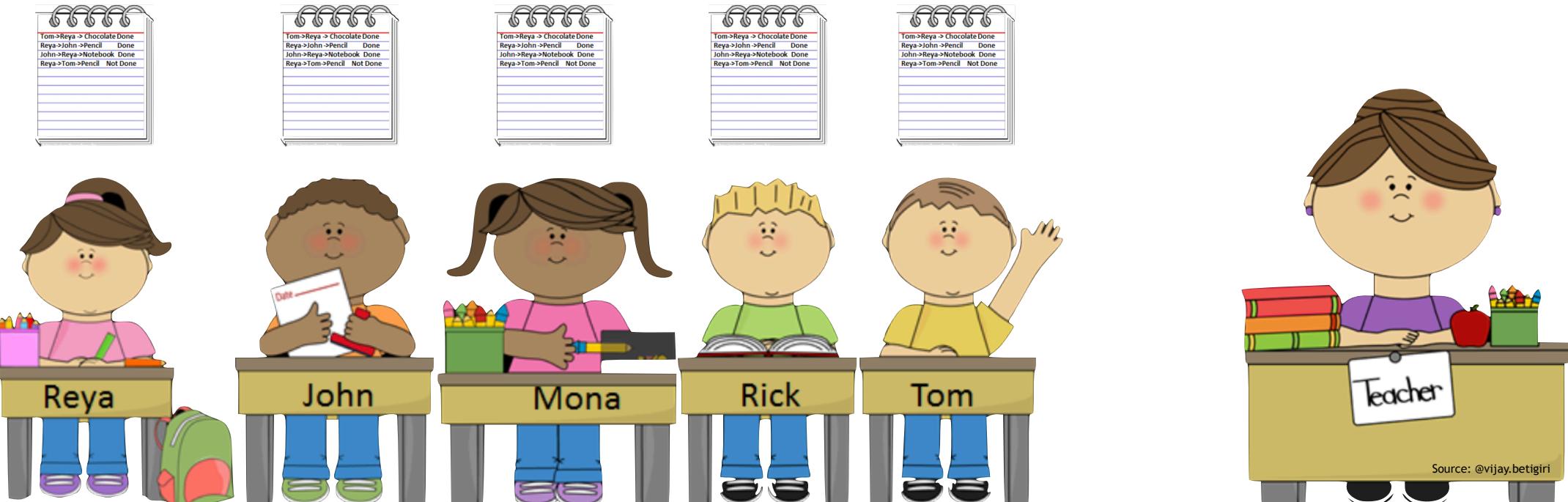
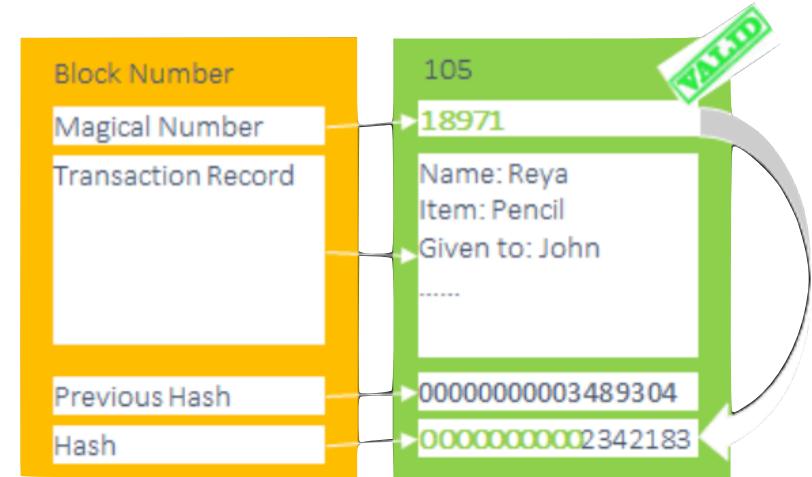


# BLOCKCHAIN EXPLAINED

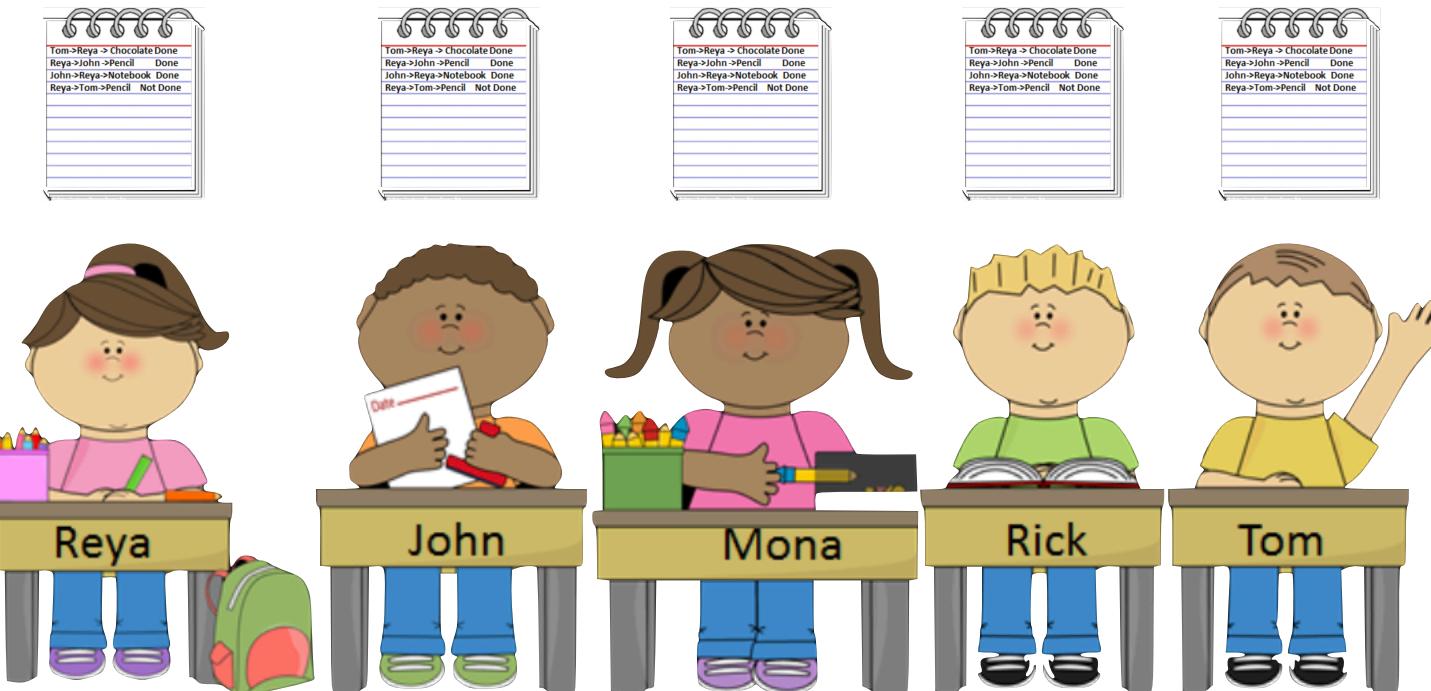


# BLOCKCHAIN EXPLAINED

**Valid hash = block data (+ nonce) + magical number**



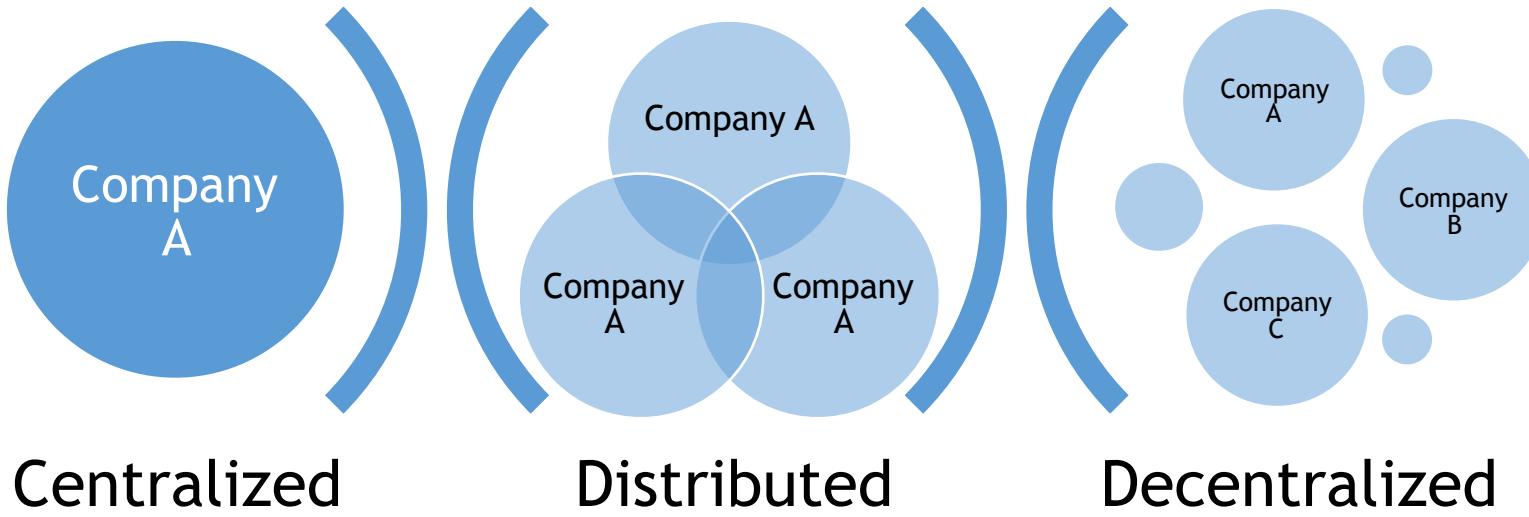
# BLOCKCHAIN EXPLAINED



Source: @vijay.betigiri

# COMPANY EVOLUTION

## COMPANY EVOLUTION



# CENTRALISED GOVERNANCE

INTERVIEW

## Hein Deprez: 'Geen causaal verband tussen overlijdens en Greenyard'

'Drones bewaken de kwaliteit van onze diepvriesgroenten'

### Wat doen jullie op dit moment?

Hein Deprez: 'We roepen alle producten terug die mogelijk besmet zijn. We worden bijgestaan door experts, zoals academici en medewerkers van de voedselagentschappen. Er is rechtstreeks contact tussen Greenyard en het Europese en Hongaarse voedselagentschap. Zij communiceren met de andere voedselagentschappen in Europa.'

### Onderzoeken jullie buiten de Hongaarse fabriek ook nog andere Greenyard-vestigingen?

Deprez: 'De experts onderzoeken de Hongaarse fabriek en andere diepvrieslocaties van Greenyard. Daarnaast intensificeren we onze testmechanismes in de fabrieken. Dat doen we uit voorzorg, als een goede huisvader.'

Uit De Tijd, [www.tijd.be](http://www.tijd.be)

trAse

# C E N T R A L I S E D   G O V E R N A N C E

Het Voedselagentschap had Veviba vaker moeten controleren en de export van dat bedrijf moeten verbieden, vindt minister van Landbouw Ducarme.

**'Veviba had het makkelijk'**



© Photo News

Uit De Standaard, [www.standaard.be](http://www.standaard.be)

## CENTRALISED GOVERNANCE

### Amazon-medewerkers manipuleren data voor cash

16 september 2018 23:30

✉ f in ↗

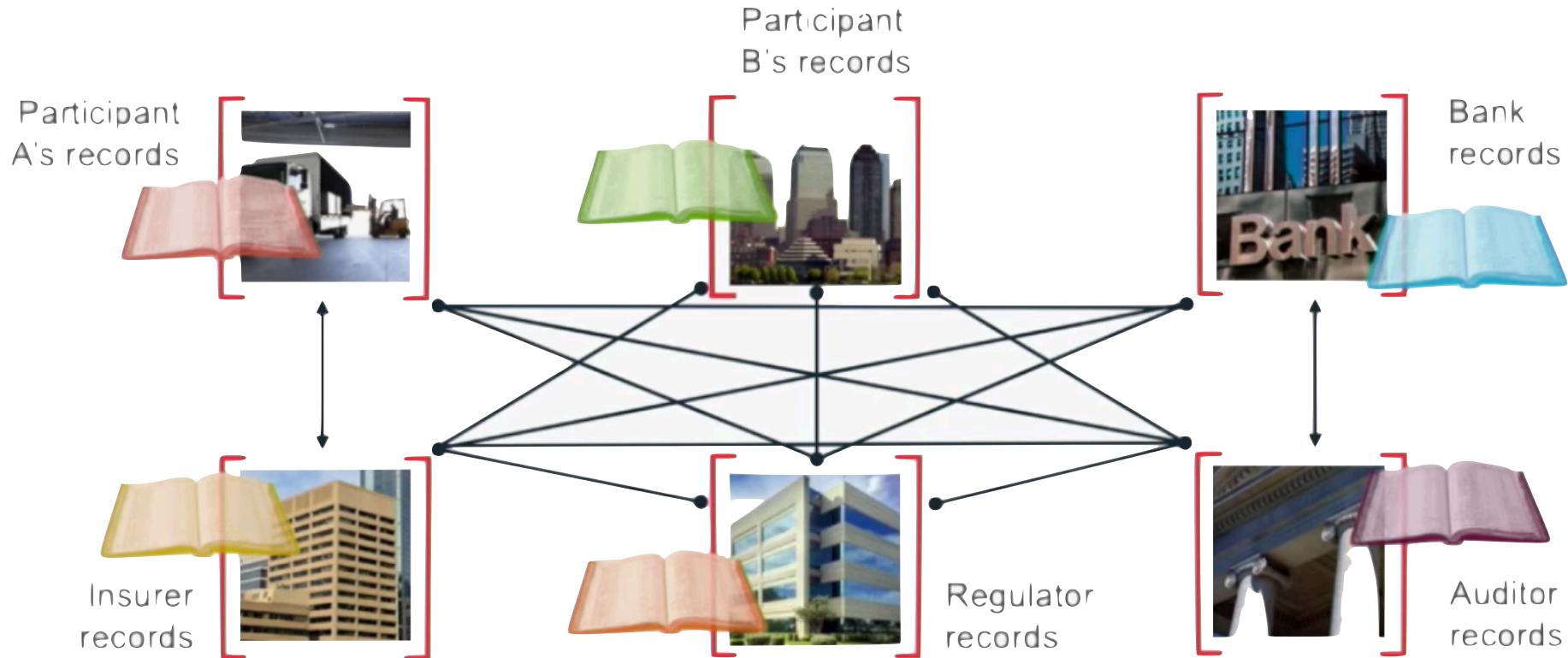


©REUTERS

In ruil voor betalingen van **80 tot 2.000 dollar** bieden tussenpersonen in China de diensten aan van Amazon-medewerkers die confidentiële data verschaffen over bijvoorbeeld populaire **zoektermen**, waarmee productverkopers op het platform hun visibiliteit kunnen verhogen.

De medewerkers verwijderen ook **negatieve recensies** tegen 300 dollar per recensie, met een minimum van vijf recensies. Dat schrijft The Wall Street Journal.

## C E N T R A L I Z E / D I S T R I B U T E D

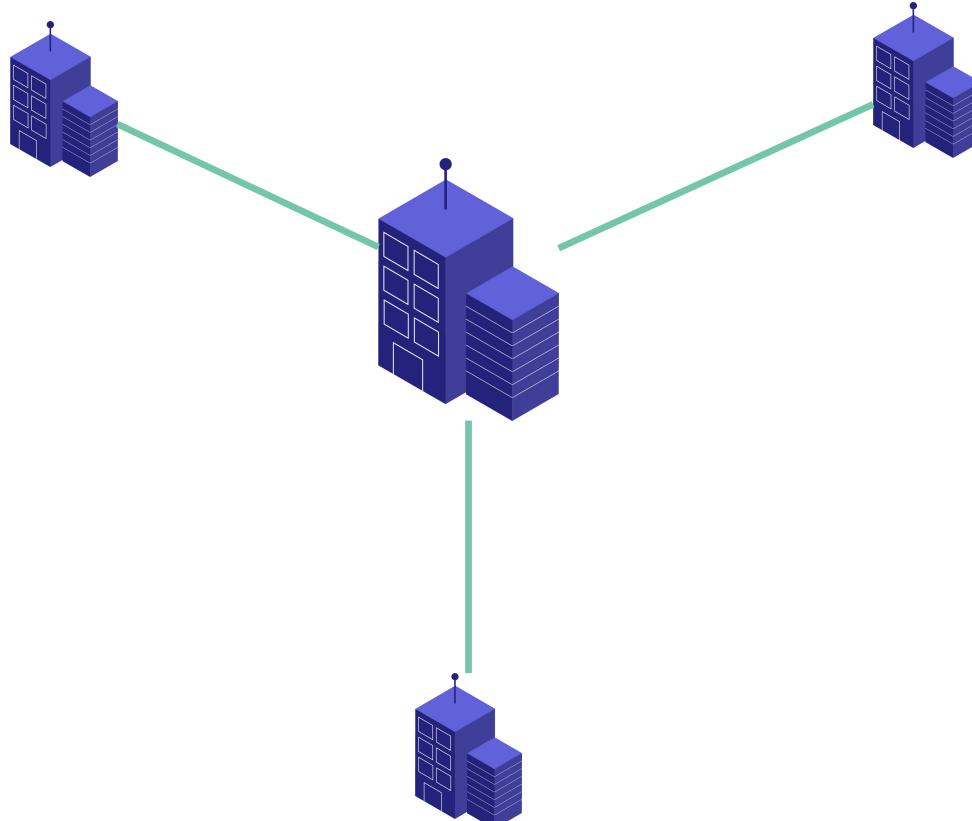


... inefficient, expensive, vulnerable

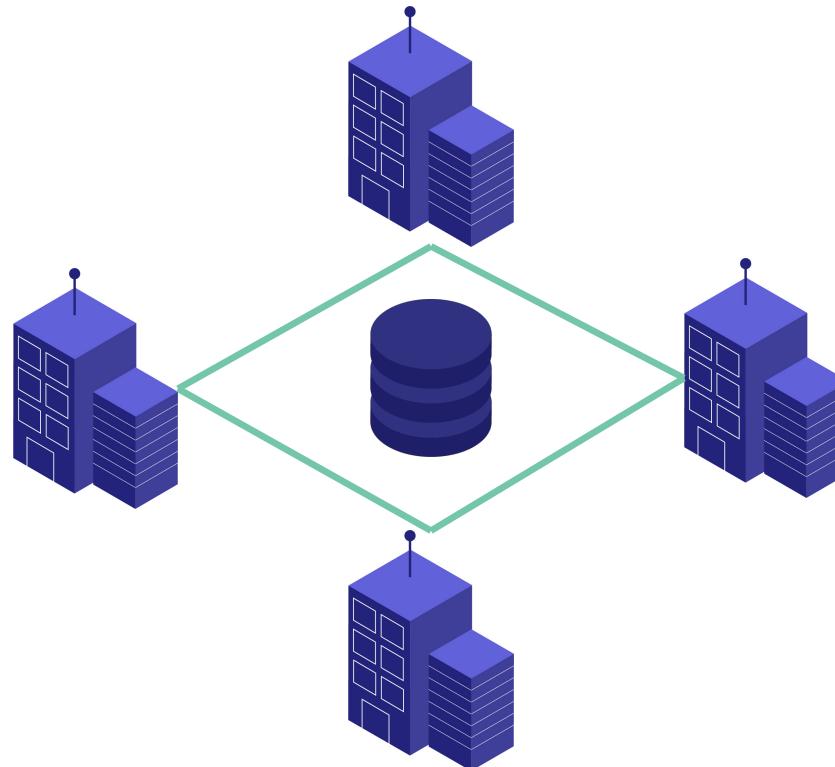
## D E C E N T R A L I S E D   G O V E R N A N C E

Multiple, independent parties  
govern a certain system  
as a whole

# DECENTRALISED GOVERNANCE



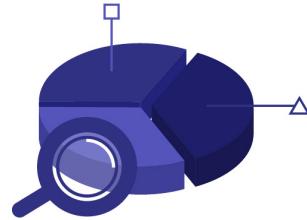
# A U T O M A T E D   D E C E N T R A L I Z E D   G O V E R N A N C E



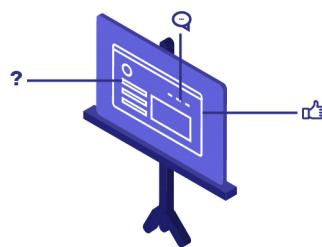


# HOW DO WE APPLY BLOCKCHAIN

# HOW WE APPLY DECENTRALISED SYSTEMS



Ideas?

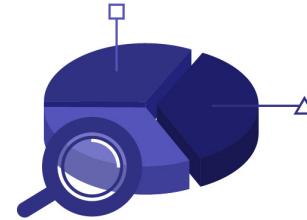


How to...?



Who?

# HOW WE APPLY DECENTRALISED SYSTEMS



**Ideas to concepts**

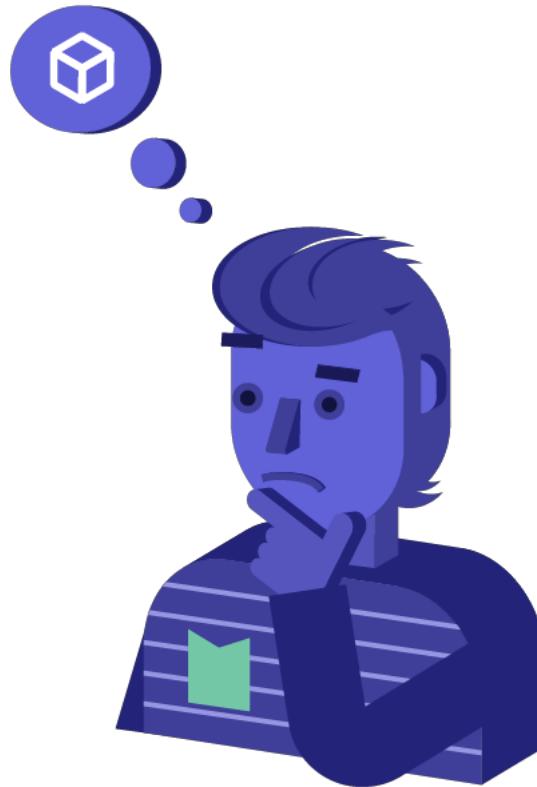


**Pilot definition**



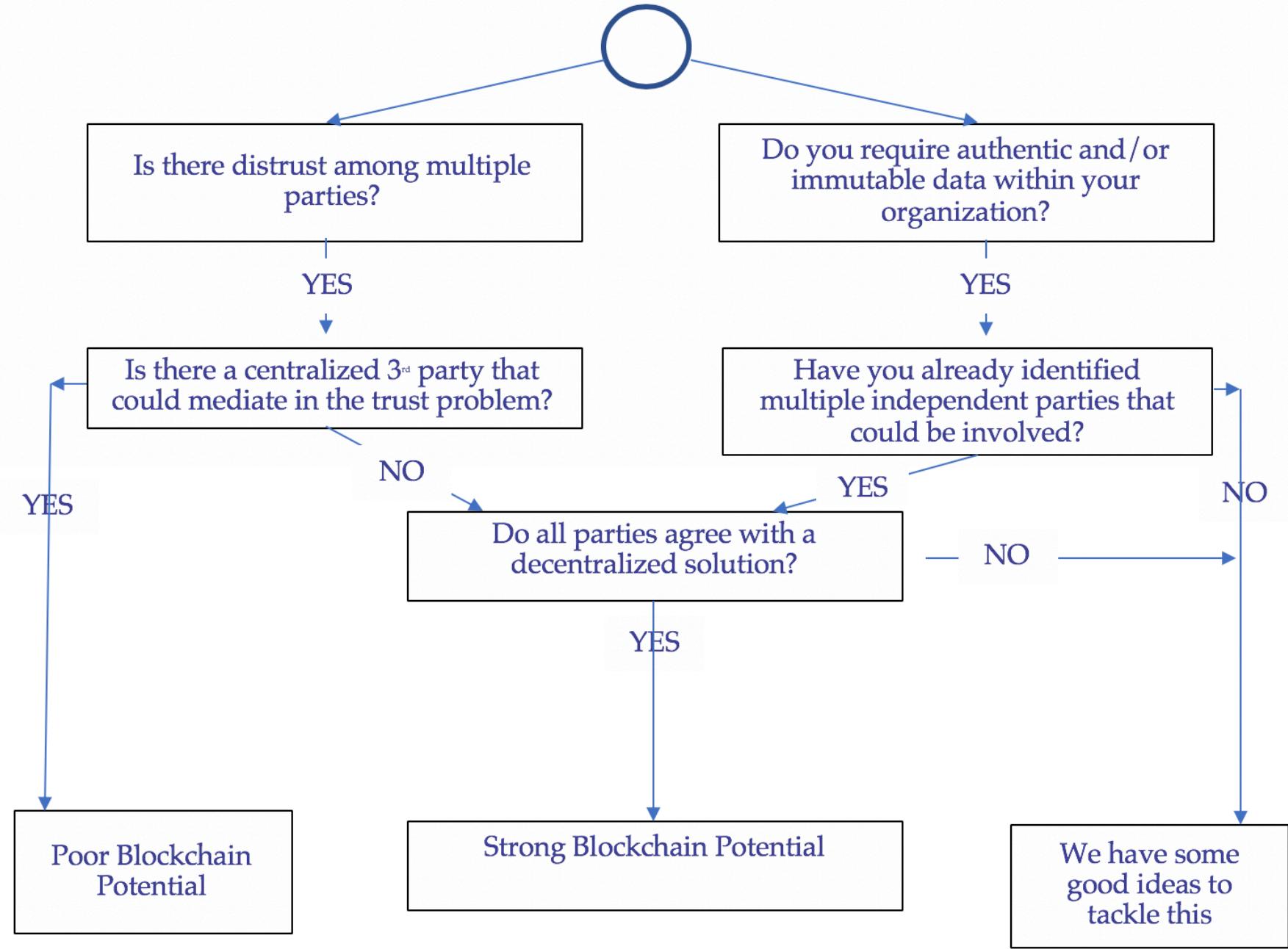
**Knowledge transfer**

## EXERCISE: IDENTIFYING USE CASES



# Validating the case

Blockchain Decision Diagram



# Blockchain

Become a new kid on the blockchain.

# Blockchain 1.0

Centralised

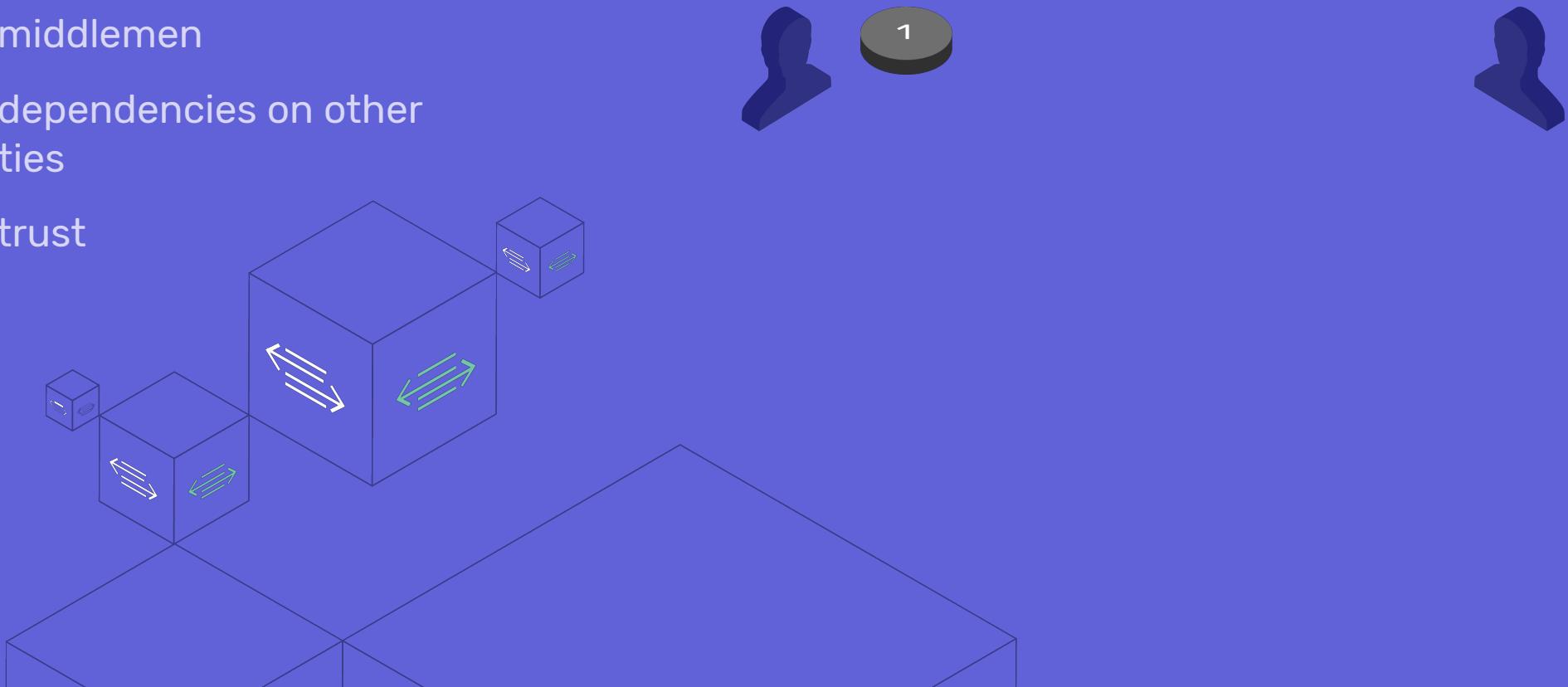
- Bank as truth provider
- Dependency on bank!



# Blockchain 1.0

Peer-to-peer?

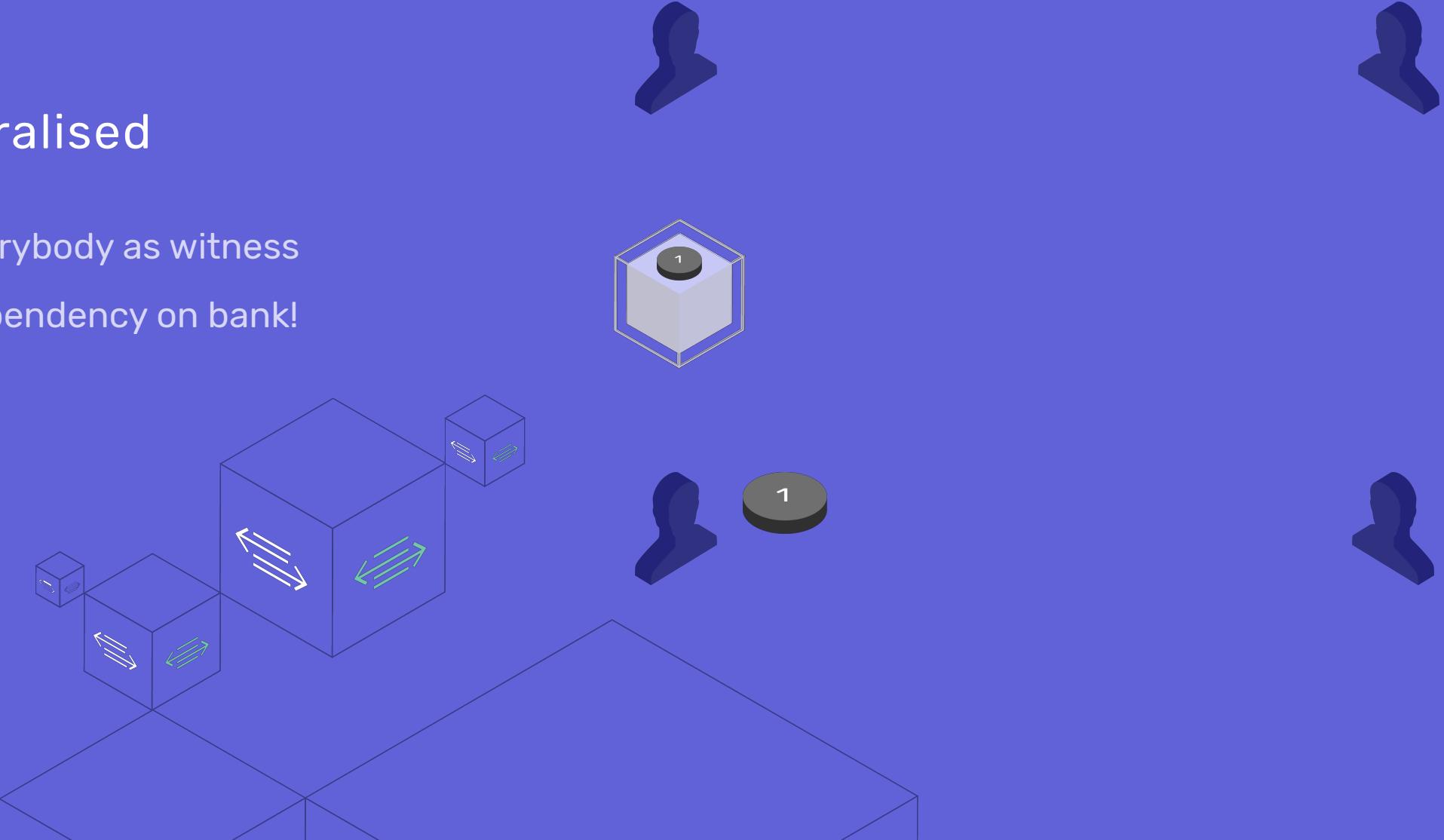
- No middlemen
- No dependencies on other parties
- No trust



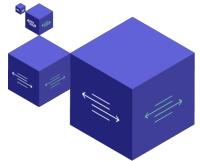
# Blockchain 1.0

Decentralised

- Everybody as witness
- Dependency on bank!



## Blockchain 1.0 Summary



Decentral



Unmodifiable

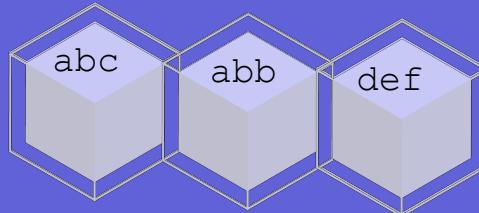


Digital  
signature

# Blockchain 2.0

## Decentralised data

- No owner of the data
- Everyone verifies integrity
- Audit trail
- No trust needed



# Blockchain 2.0

Decentralised process

- No owner of the process
- Everyone executes the process
- Audit trail of executions
- Smart Contracts



# Smart Contracts

- Transactions between accounts (ETH)
- Every activity that has an economic or governance aspect, can be done via a Smart Contract.
- Smart Contract = High-level programming that is complied down to EVM bytecode and deployed on the Ethereum Blockchain for execution.
- Smart Contracts are public!



# Everledger

## Welcome to the digital vault of the future.

What?

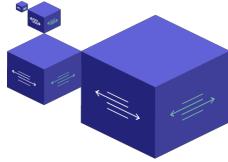
- **Blockchain vault**  
Everledger is a global startup that uses the best of emerging technology – smart contracts and machine vision to assist in the reduction of risk across the supply chain and open marketplaces.
- **Fraud reduction**
- **Asset tracking**
- Cfr. Blood diamonds

FIND OUT MORE

How ?

- Public storage of assets
- Decentralised data

## Blockchain 2.0 Summary



Decentralization  
of Data



Immutable  
Data



Translate  
Agreements to  
Smart Contracts

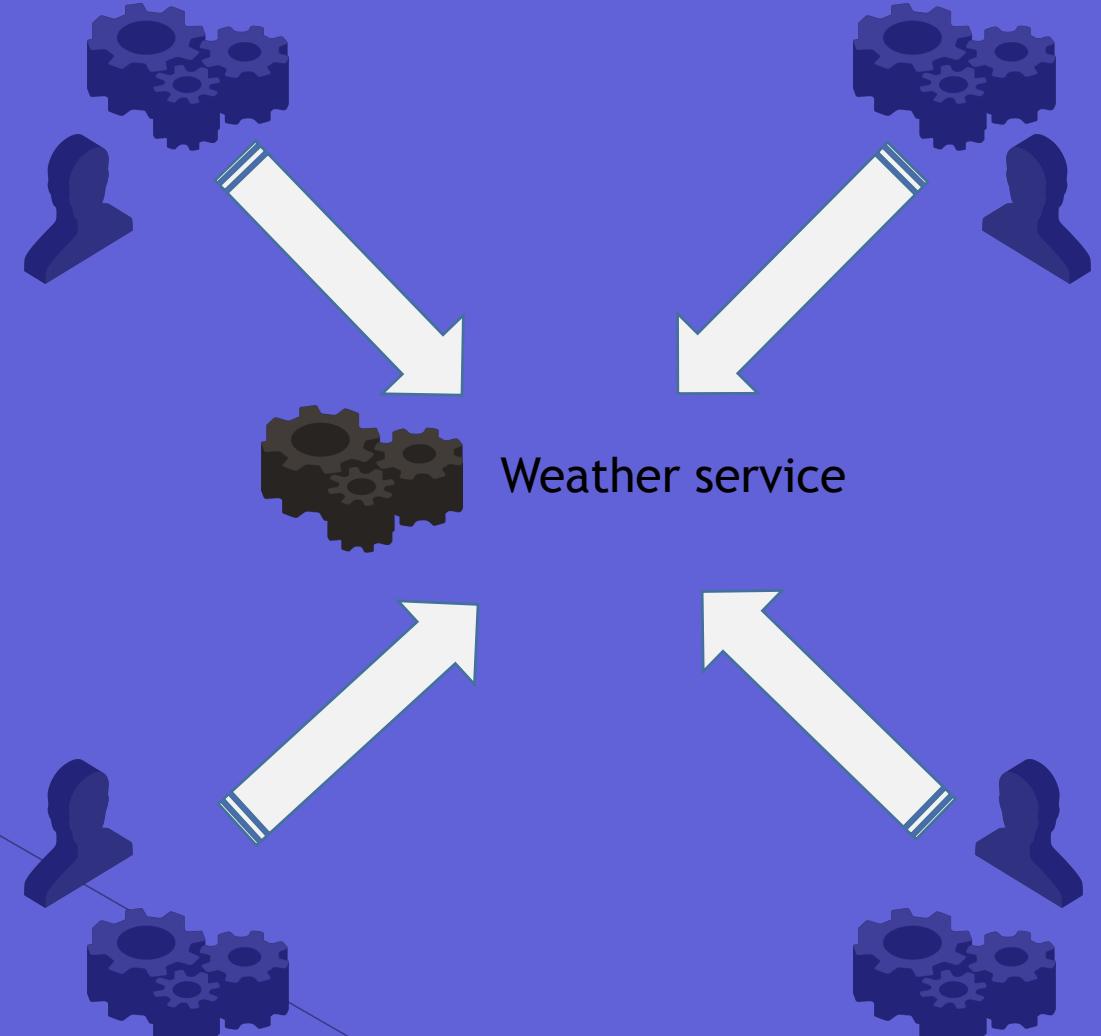
# Blockchain 3.0



# Blockchain 3.0

## Overall Integration

- Verified integration with external services
- Cryptlets // Oracles



# Kuehne+Nagel

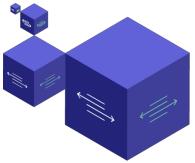
## Container tracking & sealing

- Decentralised security
- Decentralised identity
- Difficult to tamper
- International lawsuits necessary?

## Why Blockchain?

- Decentralised
- Digitally signed
- IoT connection

## Blockchain 3.0 Summary



External  
data



Prevent unwanted  
access and  
manipulation



Automation

# Transparency

## TRANSPARENCY: PUBLIC / PRIVATE

	PERMISSIONLESS	PERMISSIONED
PUBLIC	BTC, ETH, WAVES	EOS, Ripple
PRIVATE	Holochain, LTO Network	Hyperledger

# BLOCKCHAIN TECHNOLOGIES

Private

Permissioned

Public



HYPERLEDGER  
**FABRIC**



ethereum



IOTA



NEO  
smart economy



HYPERLEDGER  
**INDY**

## P R I V A T E P E R M I S S I O N E D B L O C K C H A I N S

- Shared Ledger
- Smart Contracts
- Privacy
- Trust



# Questions?



# trAse

