

# BLOCKCHAIN AND SUPPLY CHAIN IN TURBULENT CONTEXT

BLOCKCHAIN CAPABILITIES FOR DISASTER RISK REDUCTION  
MANAGEMENT - PART 2

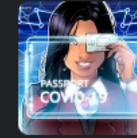
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Jean-Fabrice Lebraty

# ILLUSTRATIVE JANUARY 2021 EXAMPLES

## [Blockchain-based COVID-19 passports to begin trials in Q1](#)

Cointelegraph · Yesterday

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Reuters · 7 days ago



## [IBM harnessing blockchain to deliver verifiable Covid-19 vaccine and health passes](#)

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## [Another Use for Blockchain: Tracking COVID-19 Vaccines | Robinson+Cole Data Privacy + Security Insider - JDSupra](#)

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## [The impact of blockchain in the midst of the COVID-19 pandemic](#)

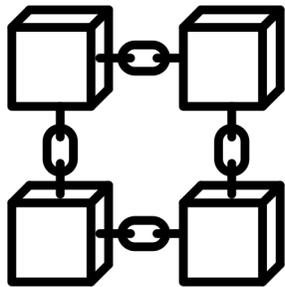
TechTarget · Dec 29



## [CargoChain Partners with FileVision on VaxTracks—Visibility Tracker for the COVID-19 Vaccines](#)

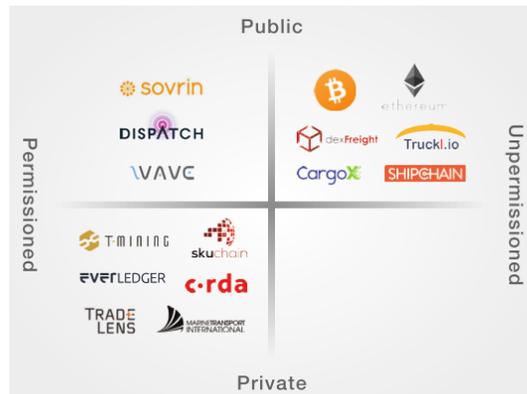
# BLOCKCHAIN TECHNOLOGIES

A blockchain is a permanent Distributed Transactional Ledger that can include contract programming possibility. It's also a cryptographic based data structure that is replicated and shared among the members of a network.

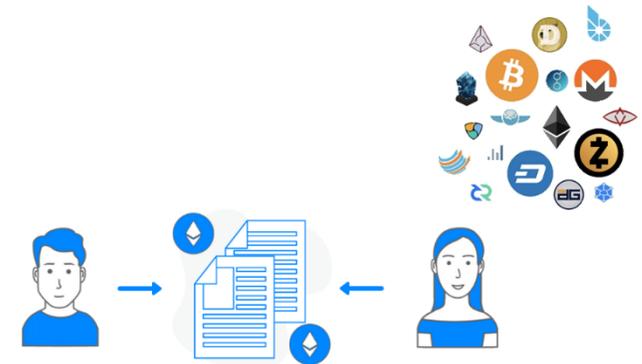


Main features :

- Distributed
- Immutability
- Transparency
- Automation



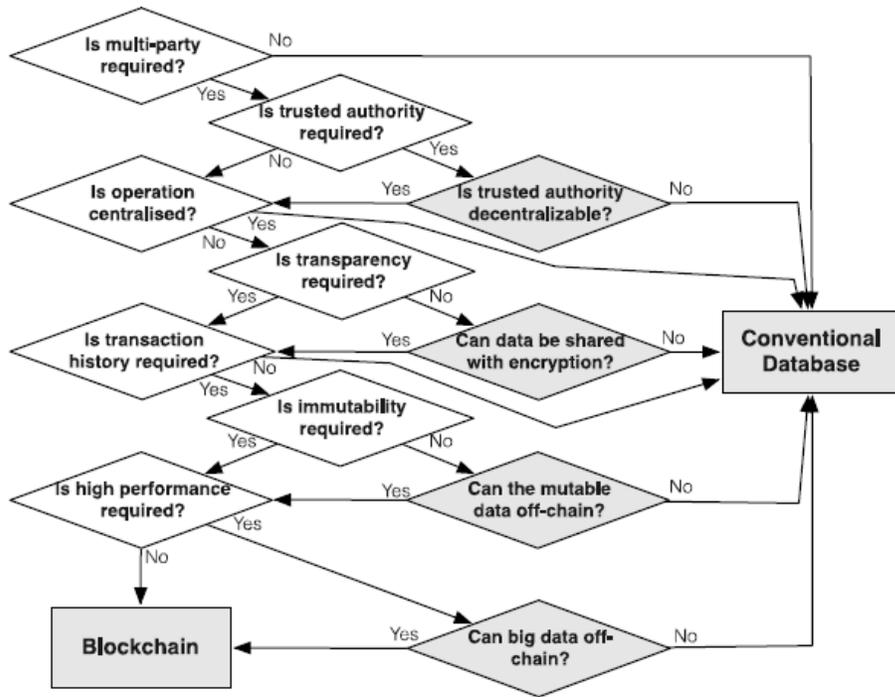
Public-private  
Permissioned-less



- Smart contract
- Token, ICO
- ...

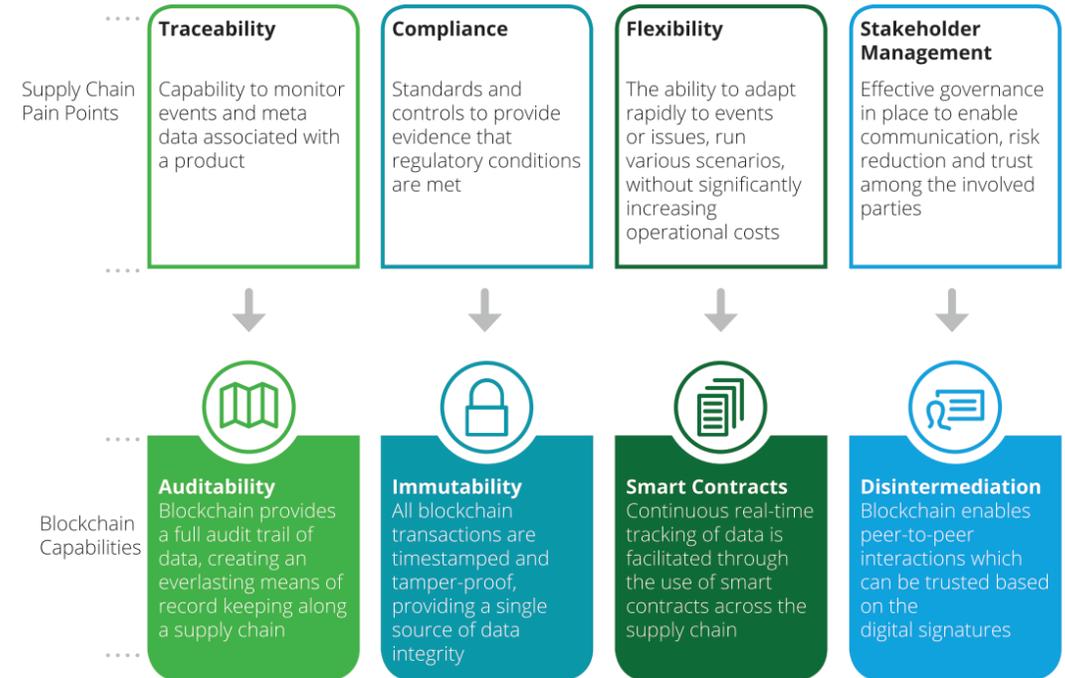
# BLOCKCHAIN & SUPPLY CHAIN OPPORTUNITIES

## Scholars' perspective



Suitability evaluation (Lo, Xu, Chiam, & Lu, 2017)

## Practitioner's perspective



(Kehoe et al., 2017)

# BLOCKCHAIN & SUPPLY CHAIN

## COVID-19 VACCINE SUPPLY CHAIN

### Weaknesses (internal to supply chain)

- Lack of visibility over members (e.g. pharma. company) and their services
- Demand planning
- Lack of traceability of sensitive or valuable products
- Respect transport conditions
- Product integrity proof

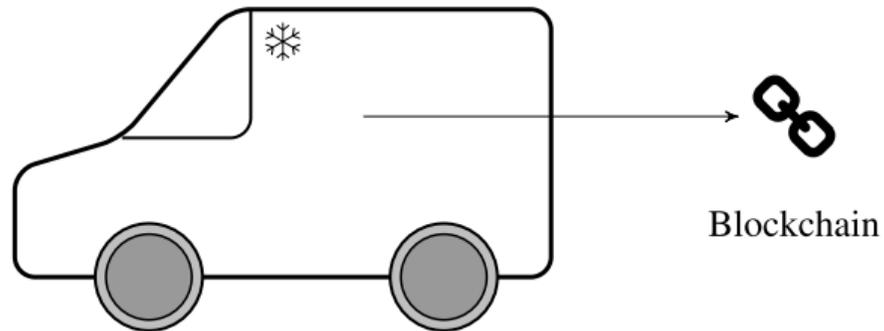
### Opportunities (supported by blockchain)

- Digital profiles of members into a blockchain
- Secured automation with smart contracts
- A blockchain combined with IoT to track products in real time (eg. Ambrosus Smart Container)
- On-chain immutable certificates

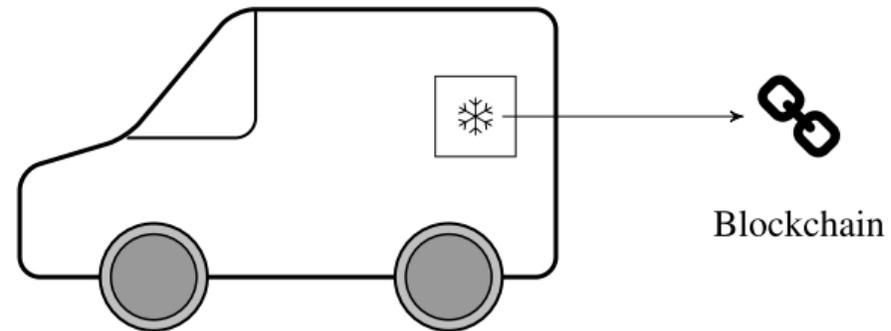


# BLOCKCHAIN & SUPPLY CHAIN SOCIO-TECHNICAL CHALLENGES

Problem: Ensuring a reliable link between the physical and digital world



(a) Intended Scenario: The supply truck is refrigerated.



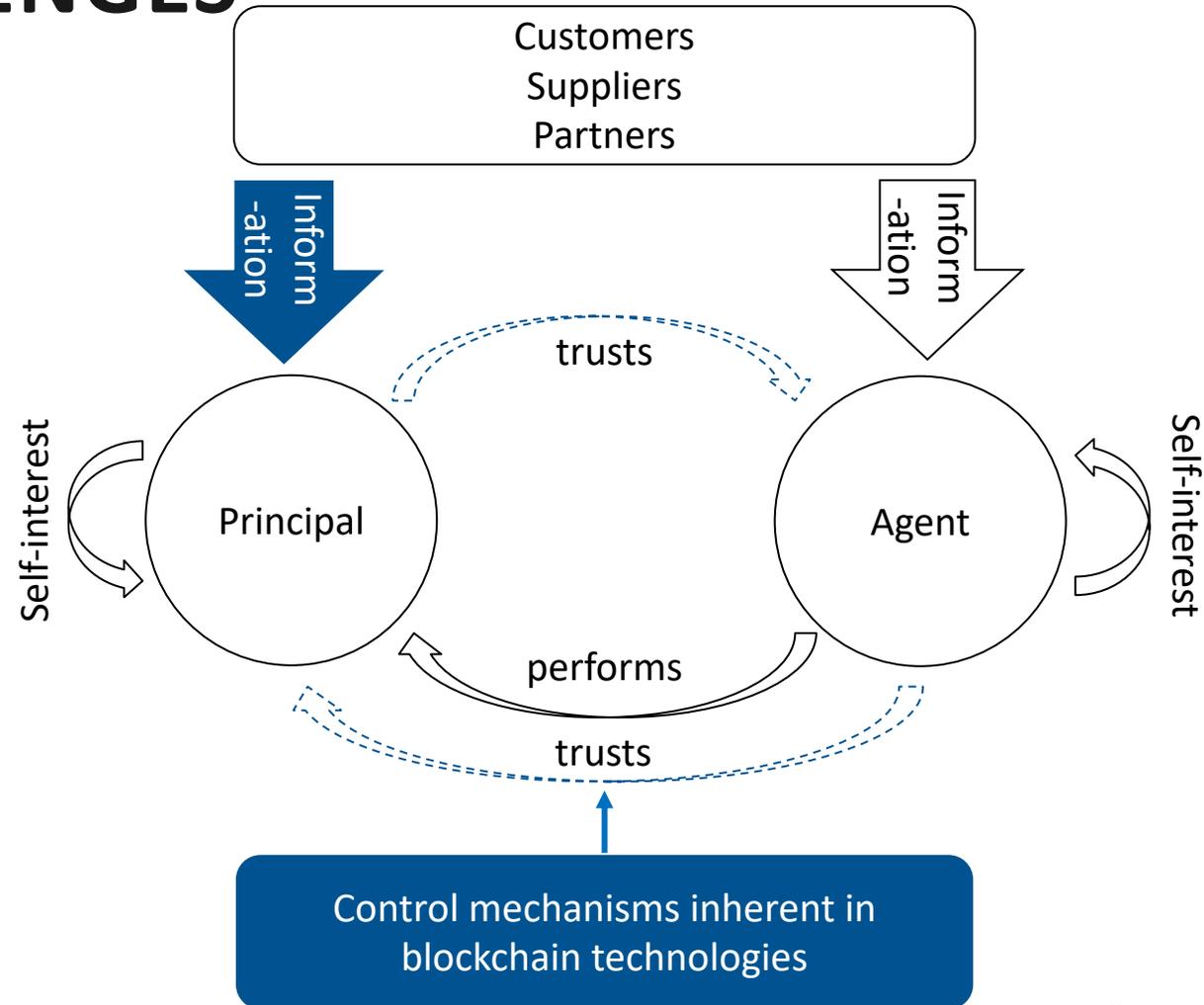
(b) Attack Scenario: The trusted sensor is in a cooled compartment, while the rest of the truck is unrefrigerated.

# BLOCKCHAIN & SUPPLY CHAIN

## SOCIO-TECHNICAL CHALLENGES

Blockchain technologies can :

- reduce information asymmetry;
- reduce (but not eliminate) the principal's trust in his agent;
- degrade the agent's trust in the principal.



# REFERENCES

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