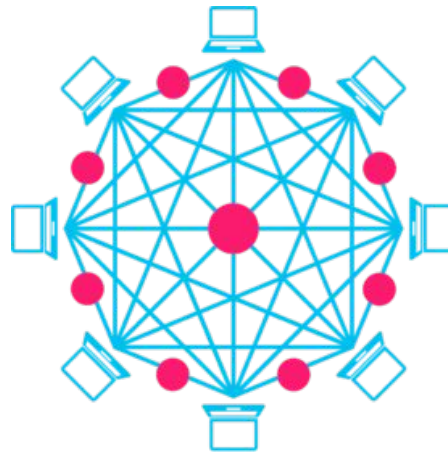




TRIBUNAL DE CONTAS DA UNIÃO

# Blockchain

Cooperation Agreement with BNDES



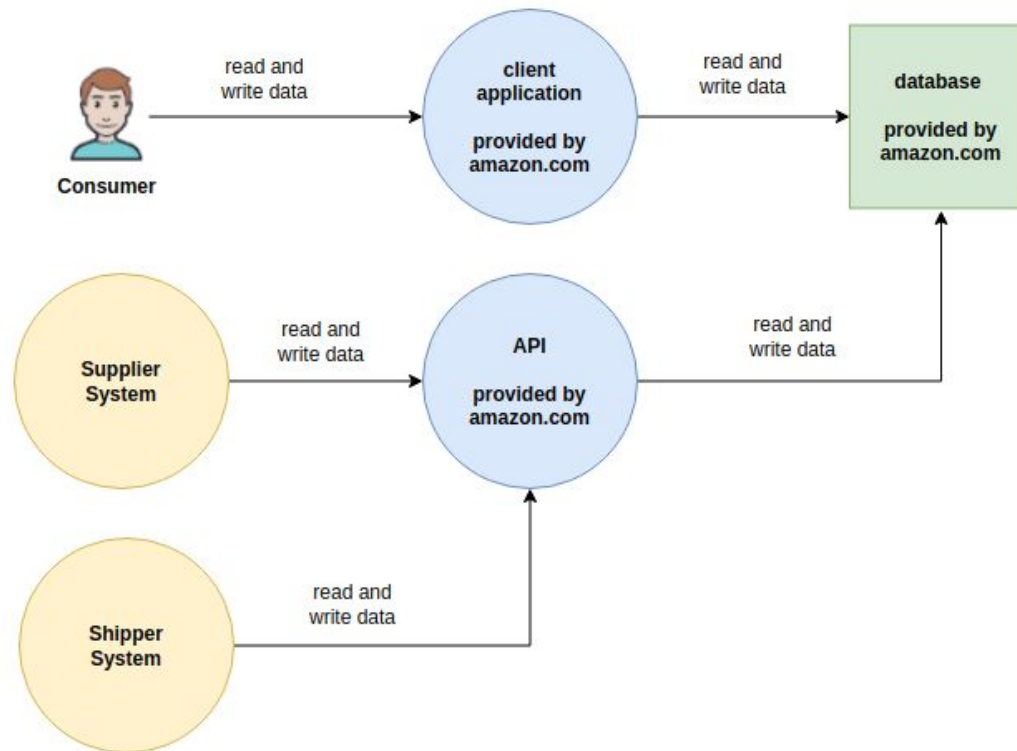
Presentation for The INTOSAI WG SDG KSDI meeting

October 14, 2022

Eldon Teixeira Coutinho  
STI - Department of IT Solutions

# Data authority: centralized is the normal

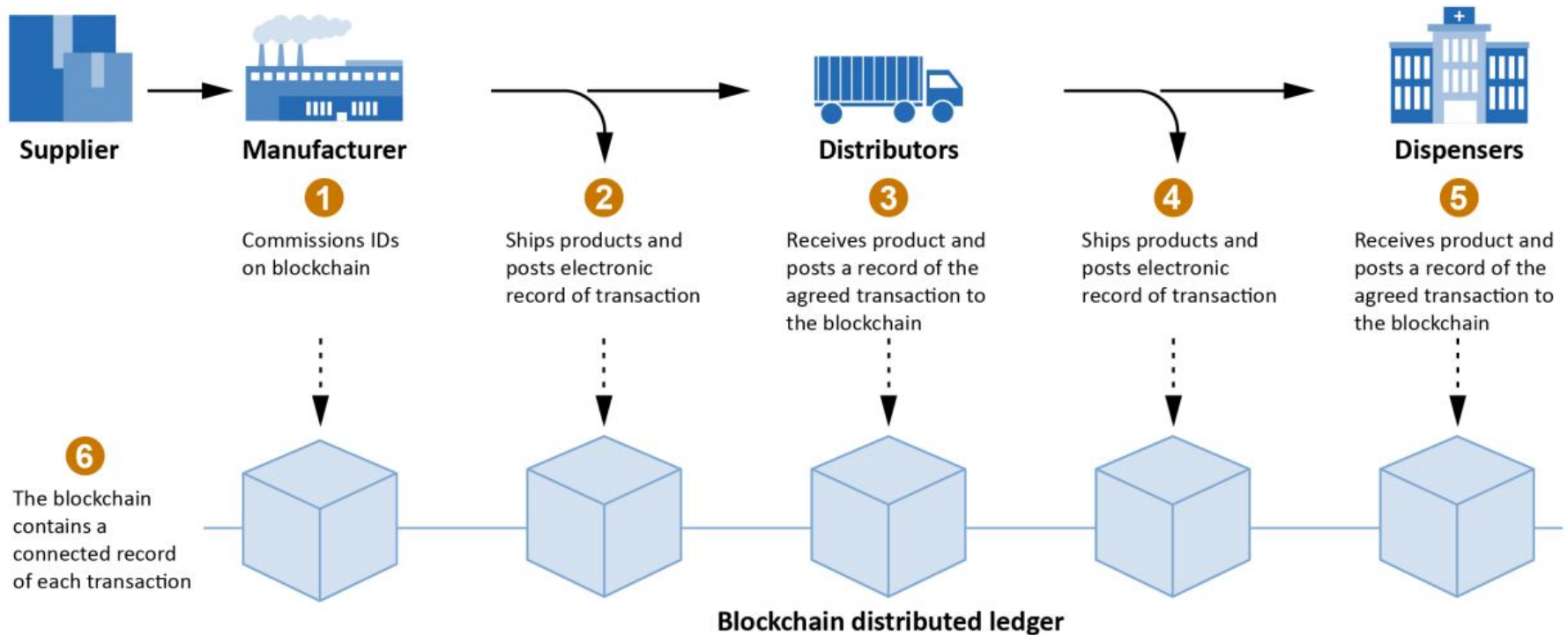
- The consumers, suppliers and shippers trust in Amazon's data
- All data from Amazon application are considered credible



# In some cases, a decentralized way is better

- We cannot assign the central authority to a single participant
- Collaborative work among participants, no central authority

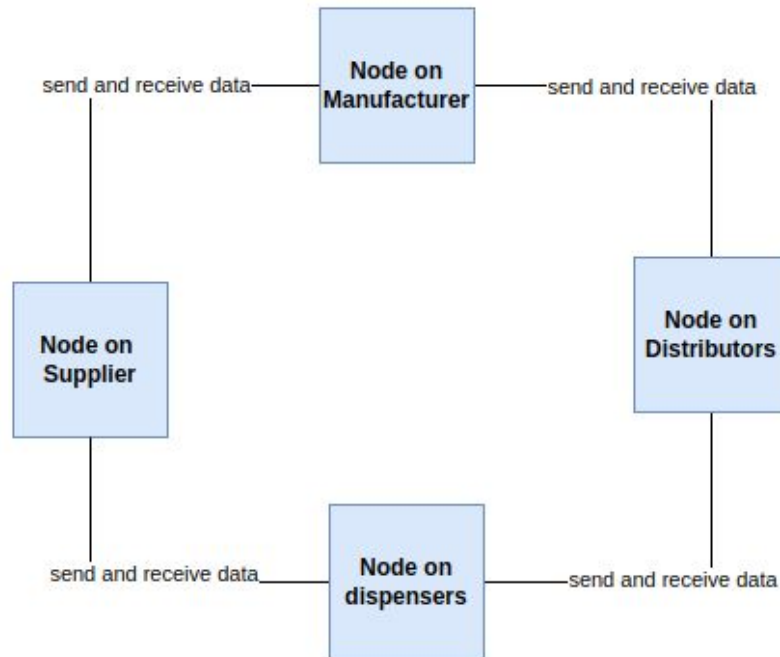
## Potential Example of a Blockchain-based Pharmaceutical Supply Chain Ledger



Source: AmerisourceBergen and GAO review of literature. | GAO-22-104625

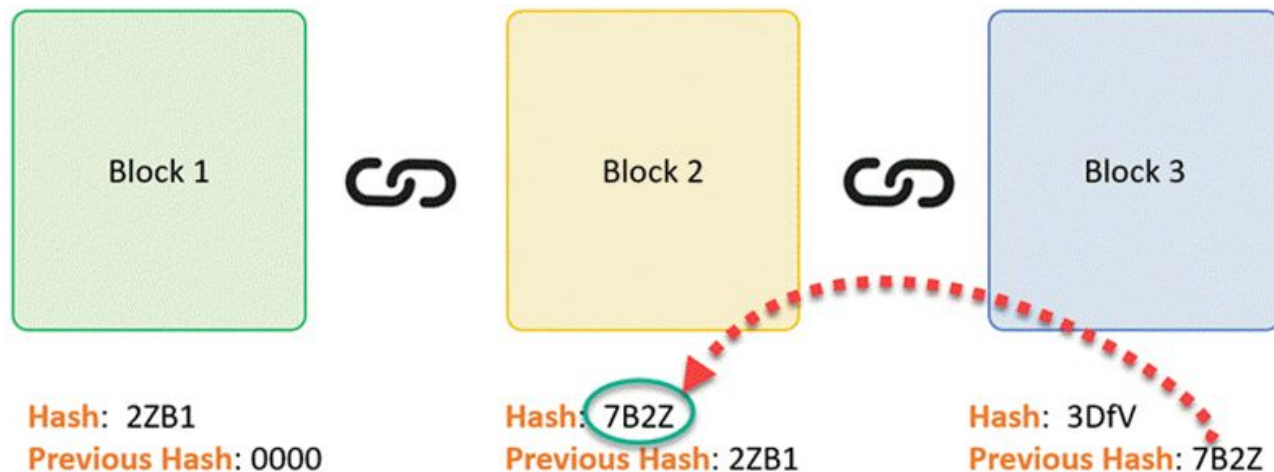
# What is blockchain? (1/2)

- A distributed database (ledger) shared among nodes
- Nodes are connected in a peer-to-peer network
- Some types of nodes have a complete copy of the ledger
- No single entity has a full control of the data



# What is blockchain? (2/2)

- Blocks are chained by a hash
- Hash is a shorter string of characters that represent another amount of data. Change data => change hash. Immutability
- Transactions in a block are addressed by a cryptography public key signed by the authors. Non-repudiation



# Cooperation Agreement with BNDES

- In 2019, Brazilian Development Bank (BNDES) invited TCU to establish the Blockchain Brasil Network - RBB as a founder
- We have been working in this project to:
  - Define a common governance
  - Foment and admit new participants in the network
  - Discuss some technical aspects regarding RBB
- Currently, the RBB is a Lab
  - We don't have any applications in production yet
- Some entities have applied to admission in RBB
  - PUC-Rio, RNP, Serpro, Dataprev, Prodest and Prodemge

# Blockchain Brasil Network - RBB

- Primary motivation:
  - Accelerate the adoption of blockchain technology in public entities, like state companies, universities, etc.
- Inspiration:
  - LACChain - blockchain ecosystem in Latin America and the Caribbean
- RBB is a infrastructure ( a "road") where applications ("trucks and cars") based on blockchain will be executed



# Why RBB accelerate the adoption of blockchain?

- Lower costs:
  - RBB is a public-permissionless, meaning we have no cost to "mining" new blocks
- Commons services can be shared among applications:
  - Notarization and identification are examples
- Shared governance
  - Define and maintain the governance in blockchain are not cheap and easy activities



# Blockchain applications in government (audit included)

- Public blockchains used by government can provide:
  - Traceability of data (tracking allocation of public resources)
  - Transparency (in some cases, citizens have direct access)
  - Non-repudiation of transactions (authentication)
  - Immutability of data (no tempering, integrity)
  - Notarization of documents (proof of ownership)
  - Reliability of data (replication of data among nodes)

# Some examples from the Brazilian government

- ANAC - Civil Aviation Agency
  - Log booking of every depart or landing
- BNDES and National Cinema Agency (ANCINE)
  - Tokens for tracking allocation of resources
- Brazilian Central Bank
  - Approval of requests from financial institutions and regulatory agencies





# Questions

Now or after  
[eldonc@tcu.gov.br](mailto:eldonc@tcu.gov.br)