ETIFOR
valuing nature

Padova University Spin-off

Università degli Studi di Padova

Using blockchain for traceability in sustainable wood supply chains

Exploring the role of technology for upscaling NBS

Connecting Nature Impact Summit

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ETIFOR SPIN-OFF → APPLIED SCIENCE

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<u>Etifor is a spin-off of the University of Padua (UniPD).</u>

The purpose of a spin-off is to transfer
the scientific knowledge into concrete solutions.

Main contents

- Background
  → The project (Digital4wood)
- What is the **blockchain**?
- What are **forest certifications**?
  → Focus on FSC
- The role of blockchain in certification process
- The companies' perceptions
- Conclusions

Background

Main results of the project «Digital4wood»

→ Partners: Etifor and FSC Italy

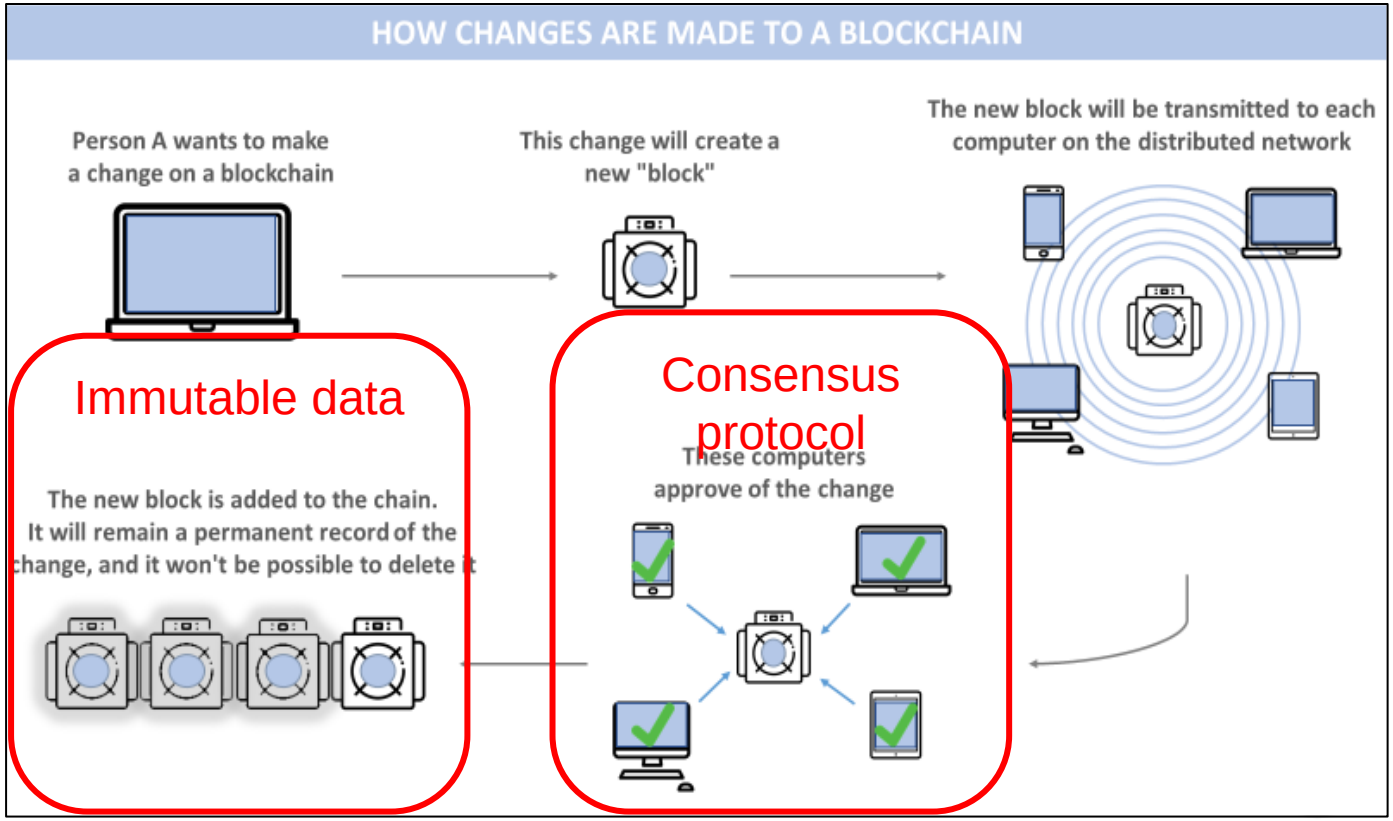
Project developed in the context of Horizon 2020 project DIVA (*Boosting innovative Digitech Value chains for Agrofood, forestry and environment)*

Project DIVA aimed to provide support to the emergence and development of new industrial digitech value chains with applications to the agro-food, forestry and environment sectors.

What is the blockchain?

- Blockchain **is a record-keeping digital technology**
- It registers transactions into a digital logbook **that cannot be changed (immutable data).**

- *These transactions are recorded in the ledger as a chain of data blocks via a **consensus protocol that defines the validity and data integrity** of each transaction before it can be recorded on the ledger.*
- *Therefore, blockchain guarantees **transparency, data security and immutability***



What are forest certifications?

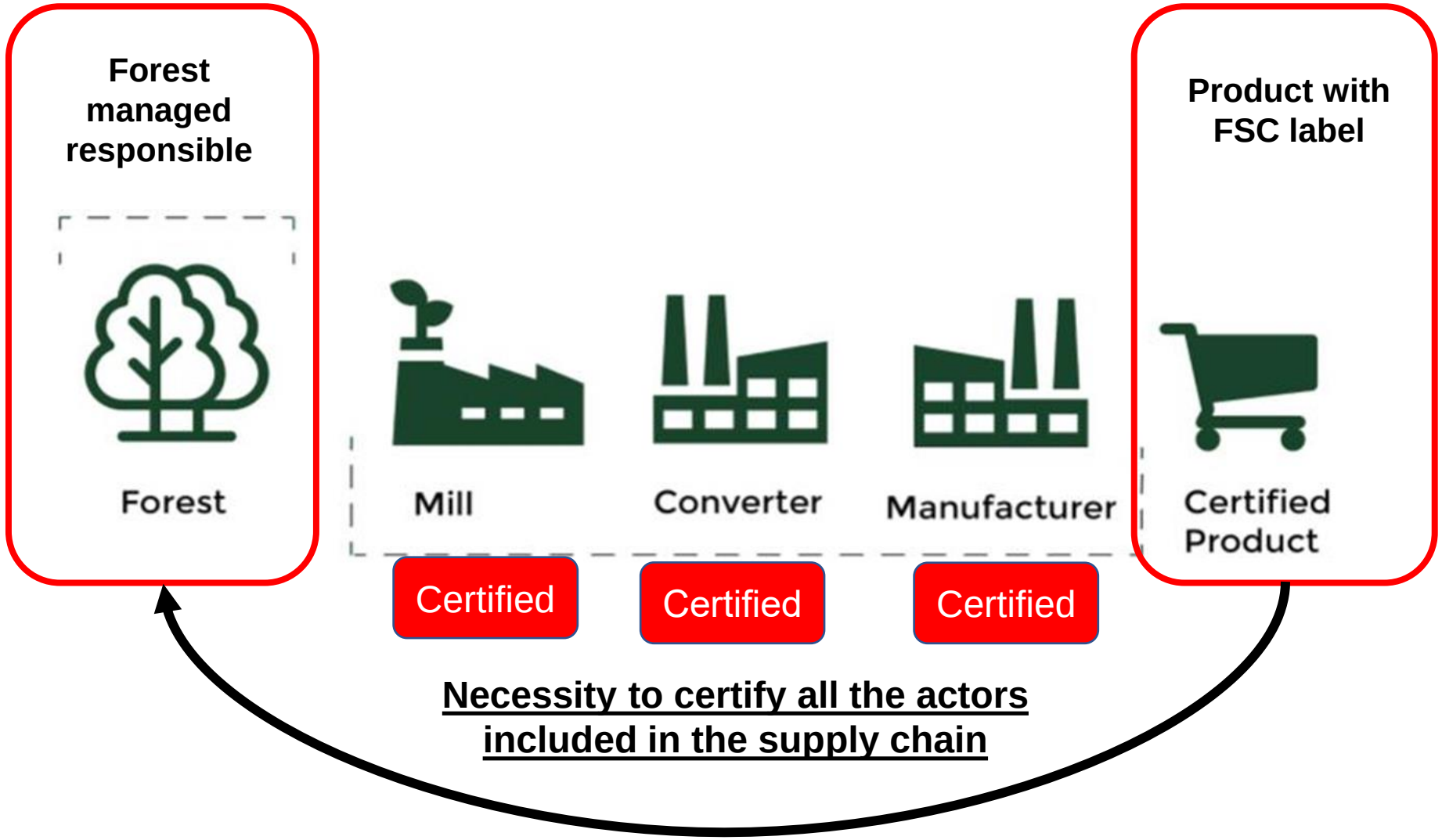
- Forest certifications are **market mechanisms (voluntary tools)** for promoting the responsible management of forests and to identify “sustainably produced” products for the consumer.
- Forest certification **are based on a process whereby an independent third-party (called Certification Body, CB)** assesses the quality of forest management in relation to a set of predetermined requirements (included in the standards)
- At international level, the major certification schemes for certified forest products are the **Forest Stewardship Council (FSC®)** and the **Programme for the Endorsement of Forest Certification (PEFC)**

PEFC™

FSC

FORESTS FOR ALL FOREVER®

All the value chain shoul be certified



FSC chain of custody certification verifies that FSC-certified material has been identified and separated from non - certified material

A system based on paper records

In FSC current system, **CoC certification** is primarily based on paper. It means that:

- **every certified company** throughout the supply chain **must keep paper records of the quantity of certified products (buy and sell)**
- Auditors (checkers) **should check in detail paper records**, collecting evidences on paper and producing additional paper-based reports

This system appears:

- **open to frauds** (in terms of volumes control)
- **expensive**, both for CBs (audits on site) and for companies

Necessity to find **innovative instruments to maximize the transparency along supply chains and reduce the certification cost**

Blockchain can change how compliance and traceability of FSC materials across supply chains are verified

Blockchain in the certification process

The integration of a chain of blocks in the certification process can guarantee, in a fast, transparent, safe and public way, the traceability of the entire chain of custody and certify its quality and history: origin, ownership, processing, storage and delivery.

Without blockchain	With blockchain
• Data and information mostly recorded on paper • Risks of fraud • Possibilities of errors • High costs for companies (maintenance of system) and for CBs (audits on site)	• Reduction of operating costs for CBs and companies • Reduction of fraud risks • Increasing stakeholders confidence • Better verifiability

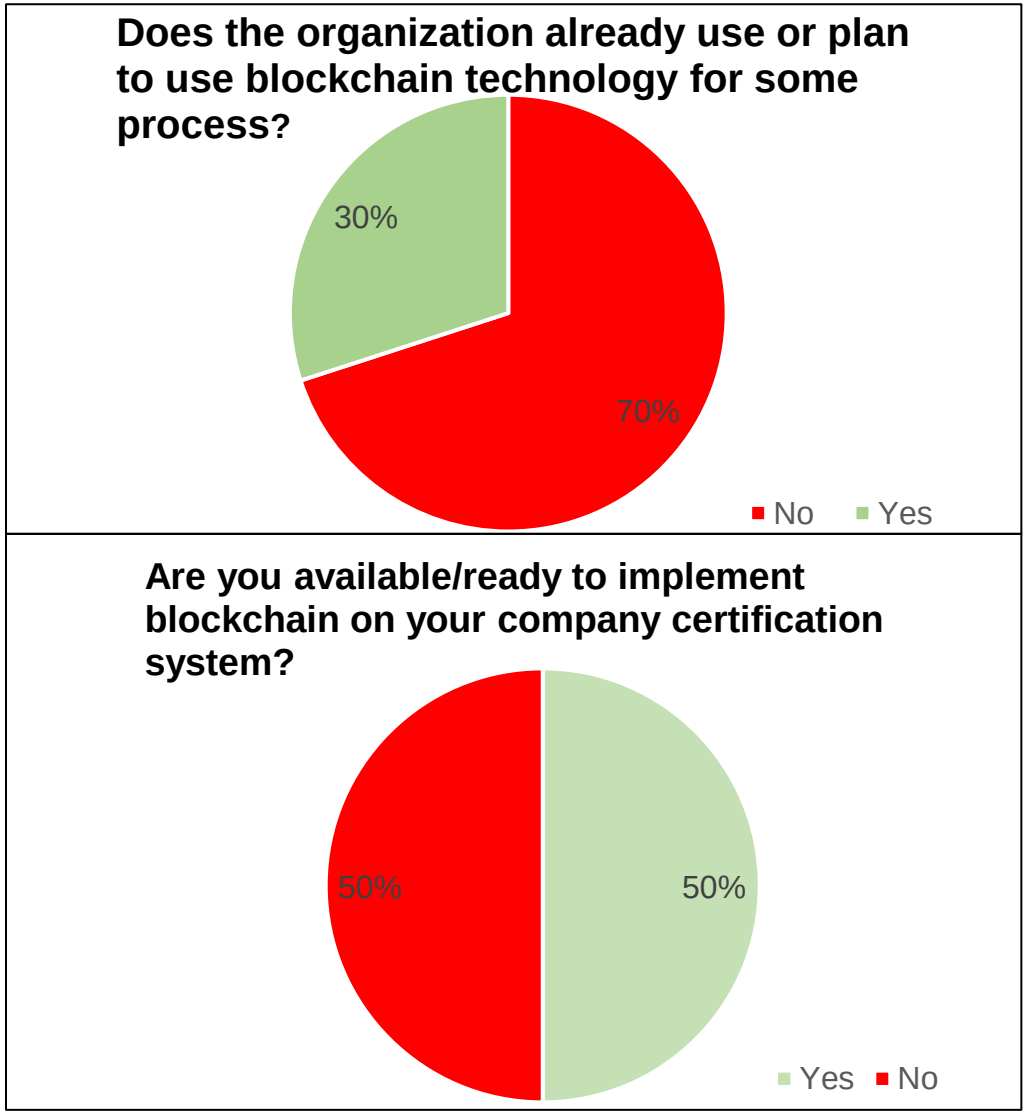
What do companies think?

Our survey (2020)
Sample = 14 FSC certified Italian companies

Main results:

- Most of companies don't use blockchain in any process activities...**limited knowledge on blockchain**

- Despite the clear benefits of blockchain utilization in the certifcation process, **half of companies are reluctant to use blockchain**



The reasons of this resistance?

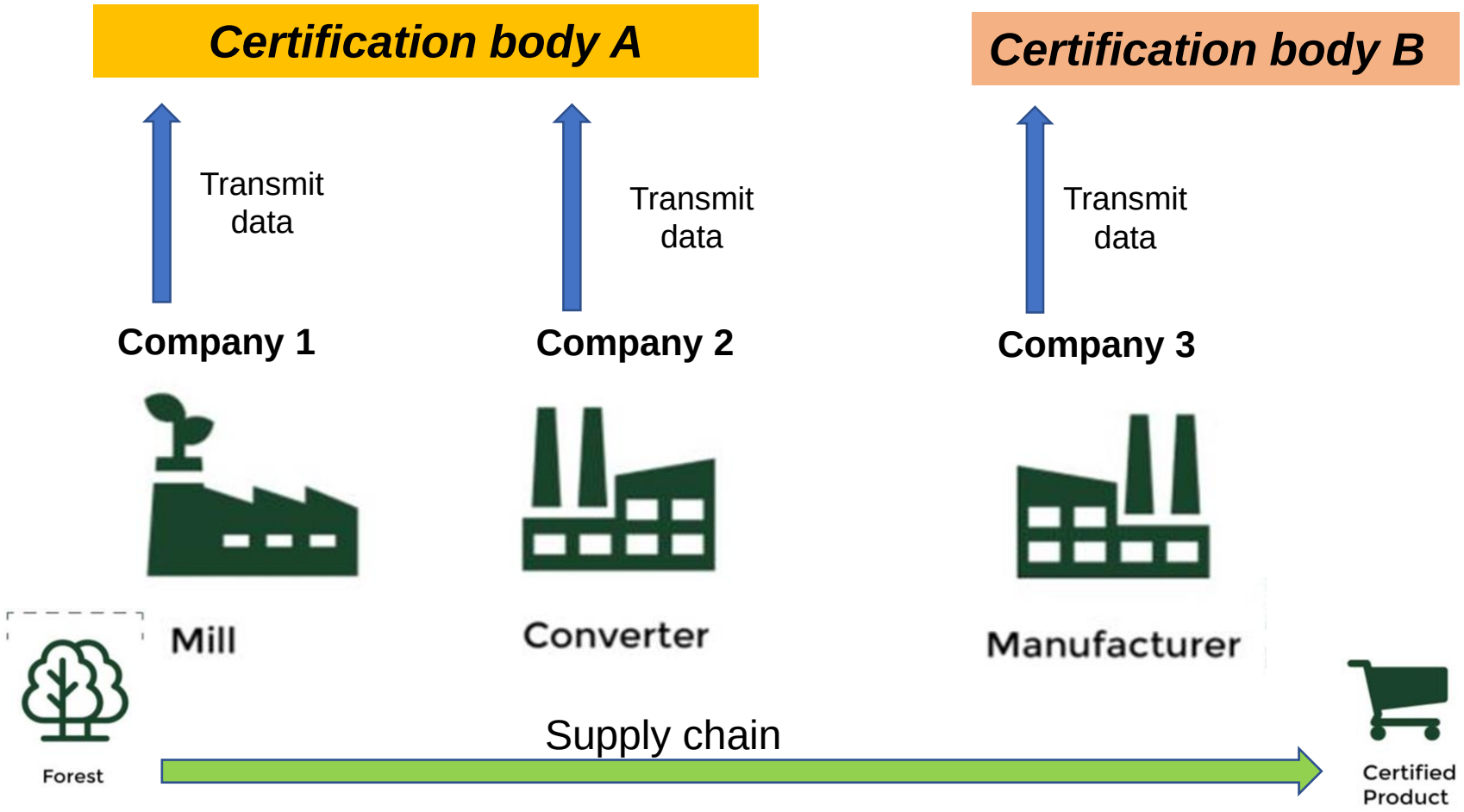
Our survey
Sample = 10 certification bodies (CBs)

Main problems

- Companies **are reluctant to enter their data** (such as volume of purchased material and its origin) on an online platform (as blockchain), despite data will be protected by a code… necessity to

- **Lack of compatibility** between company internal management system and blockchain implementation

How to integrate blockchain in FSC system?



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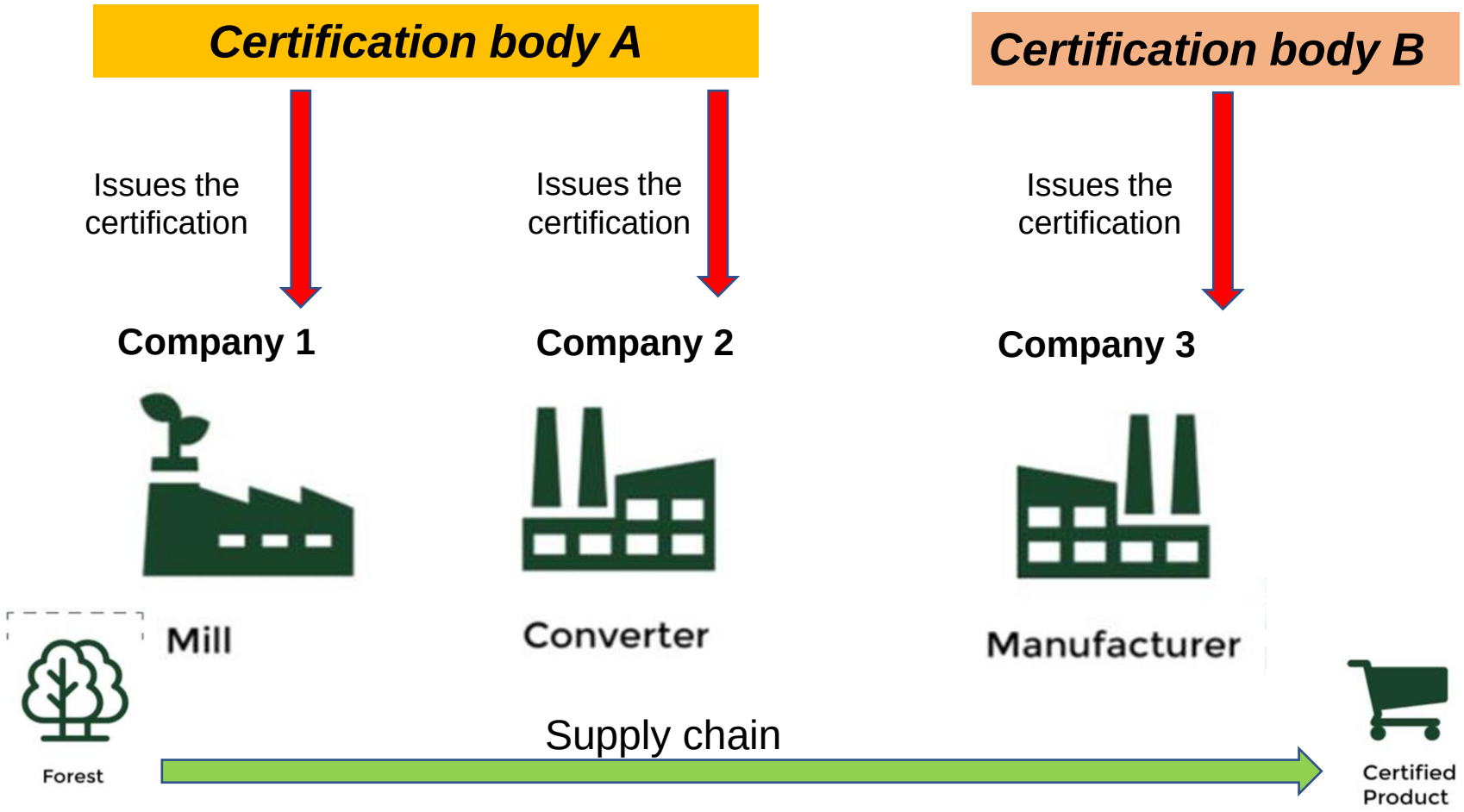

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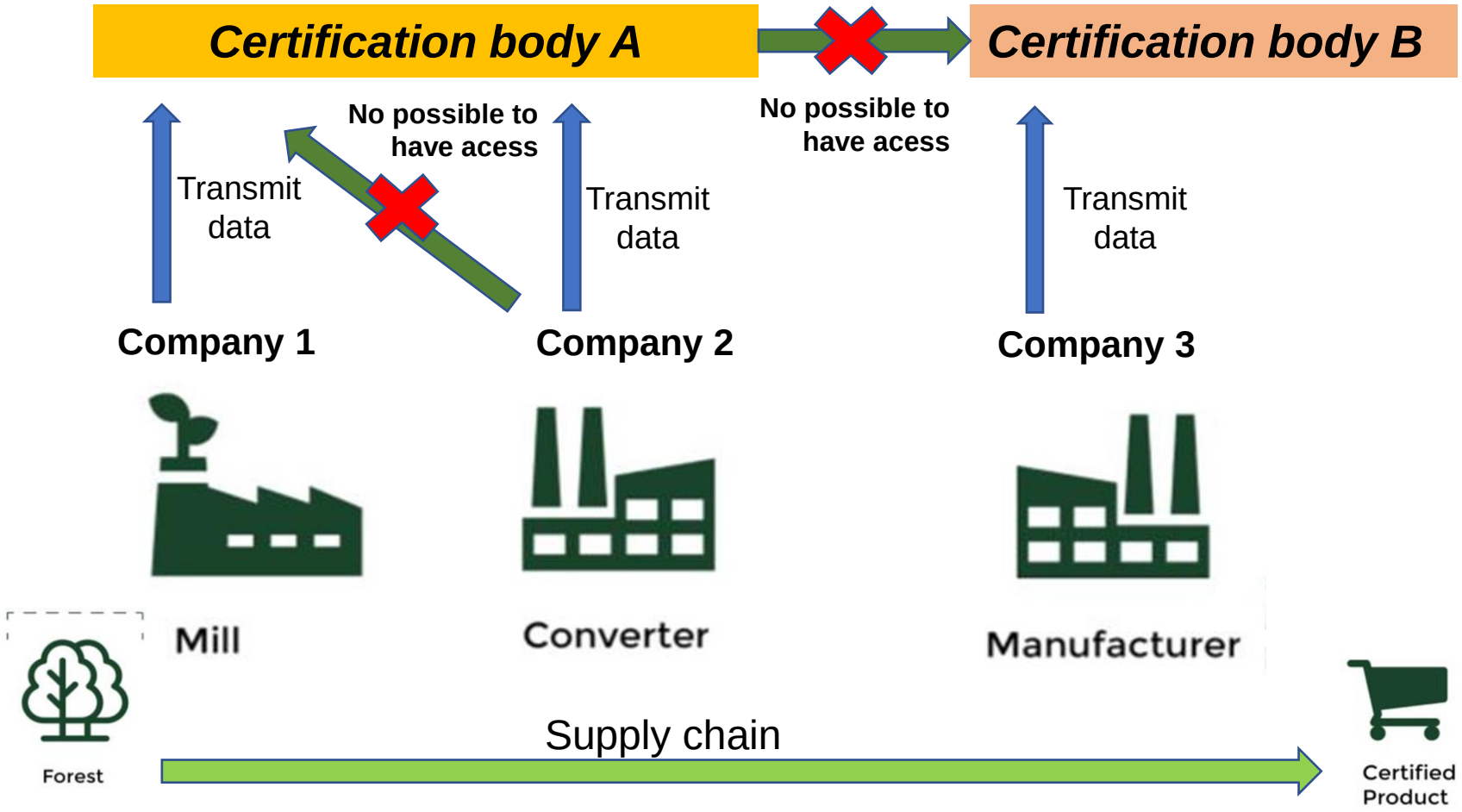

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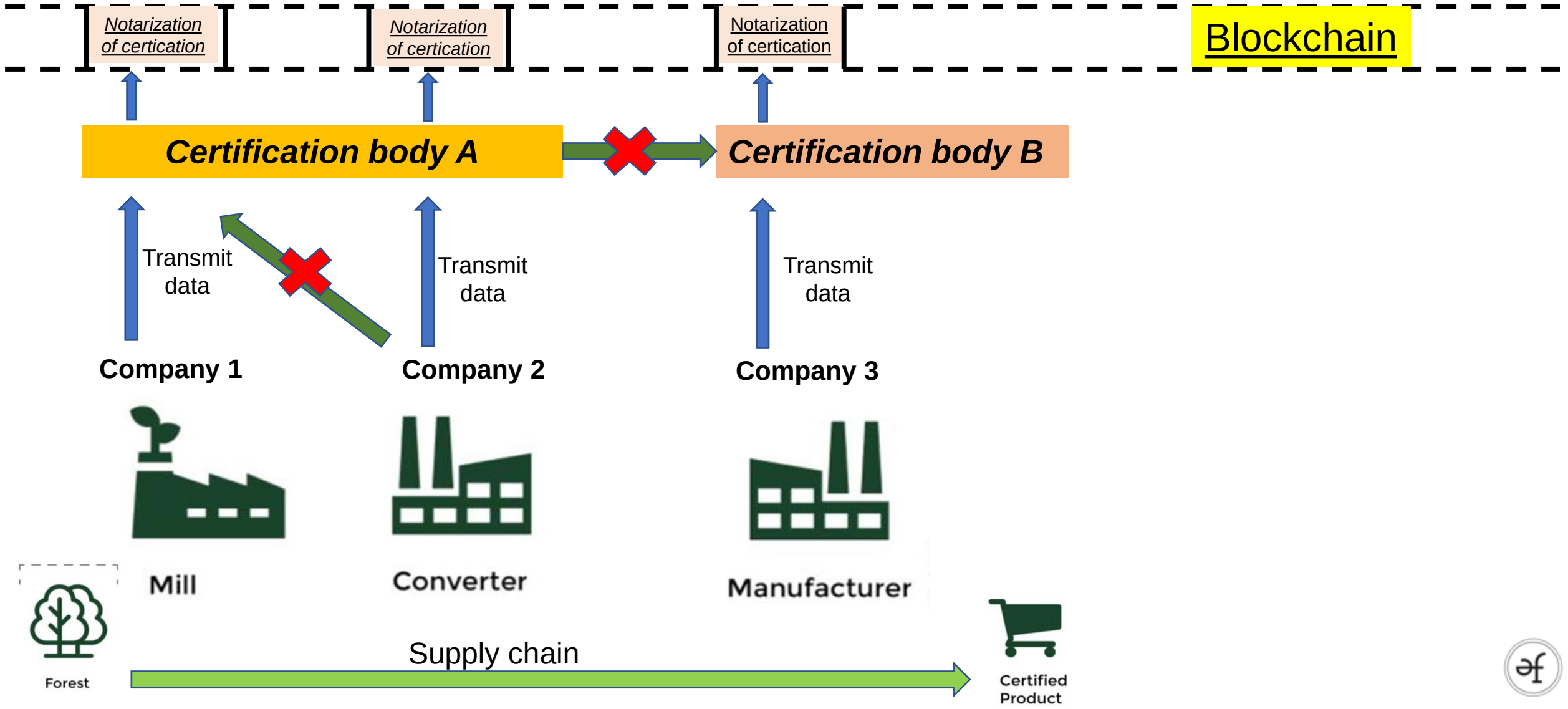

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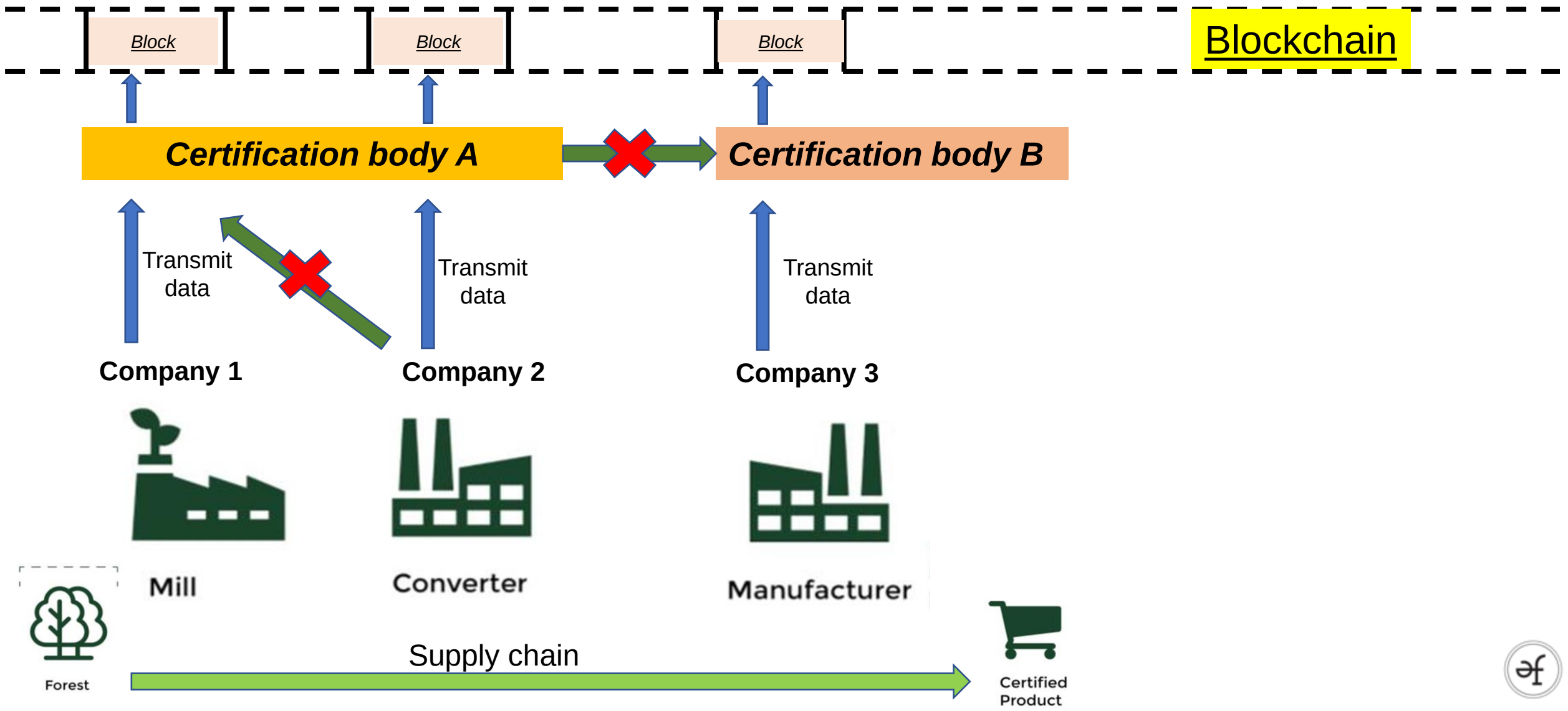

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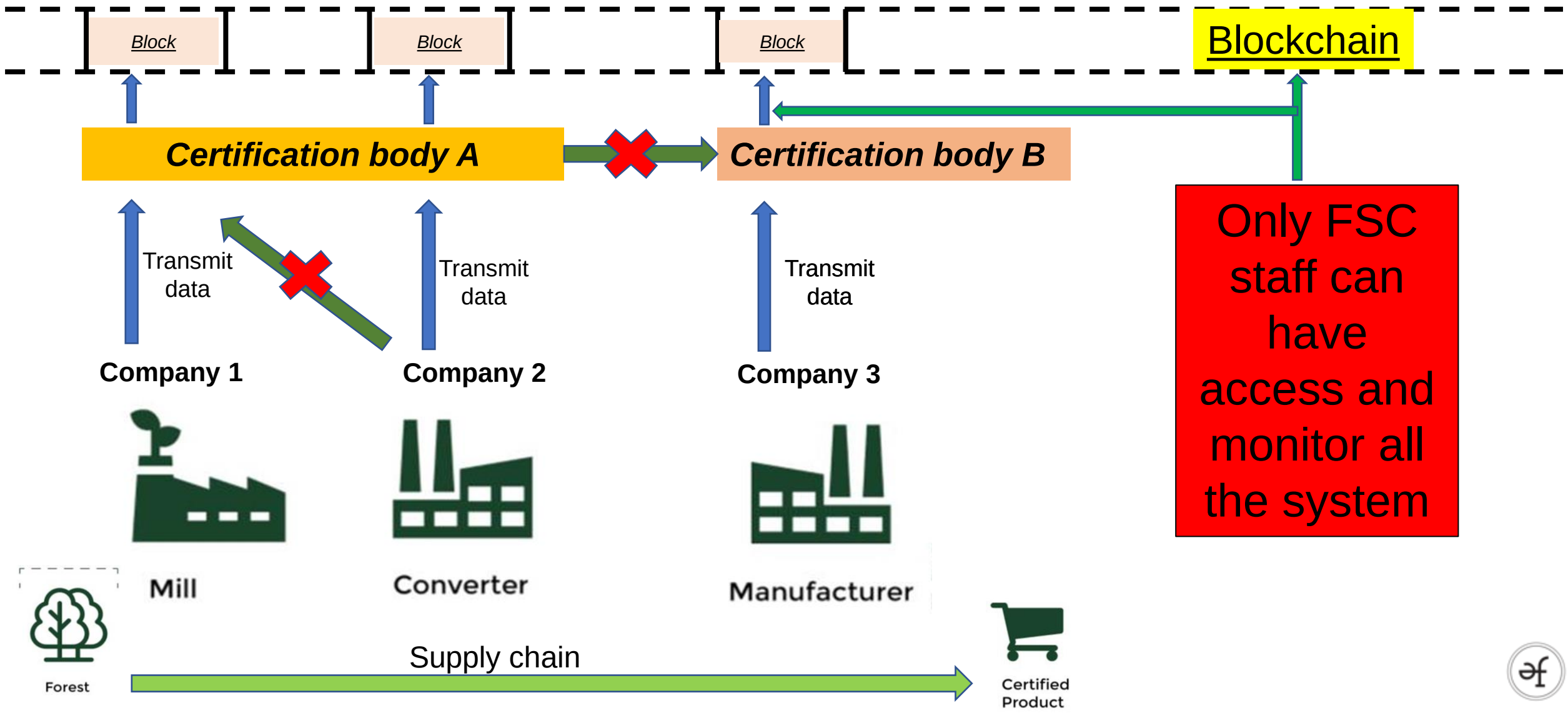

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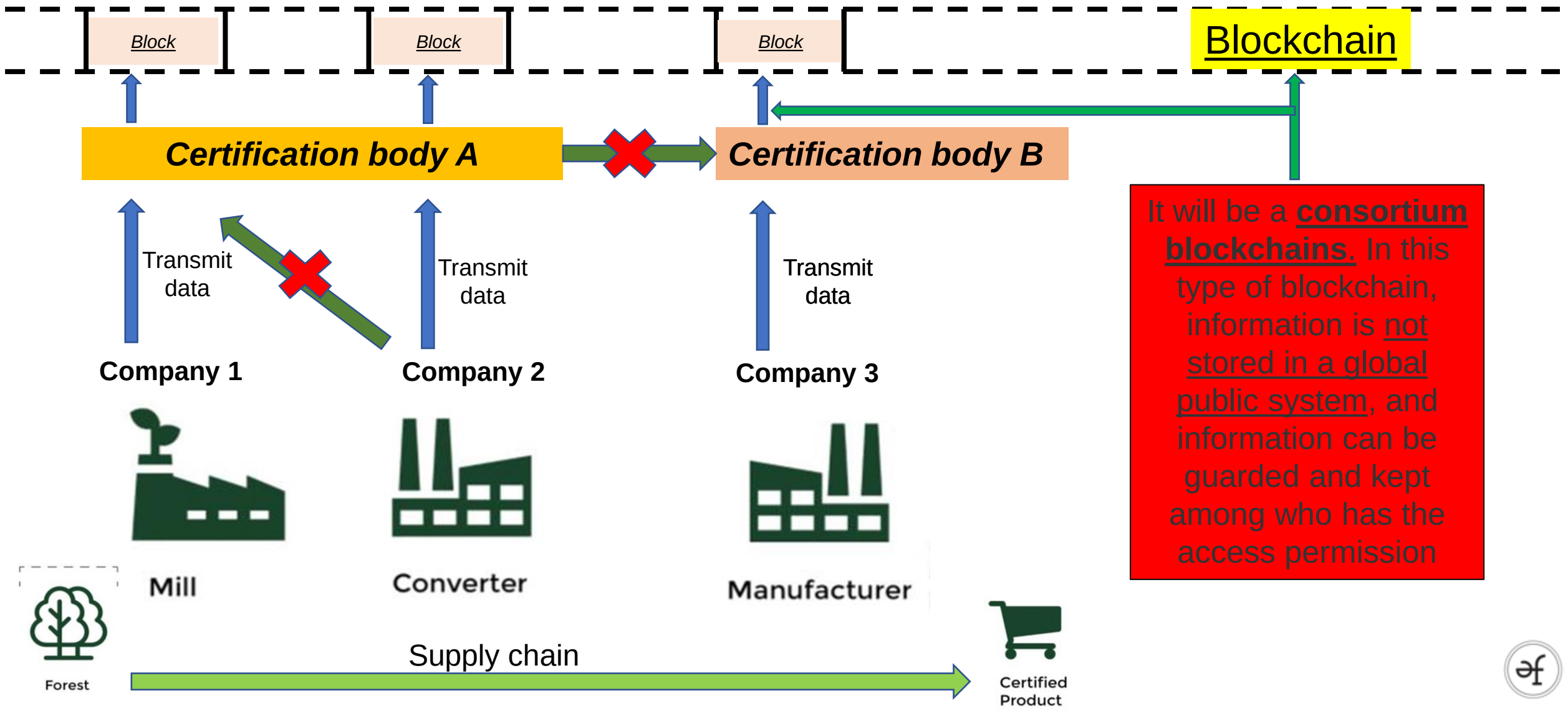

Conclusions

- All certified products have to rely on a Chain of Custody **system to keep track of products as they move along the supply chain.**

  Blockchain is a ‘decentralised ledger’ technology that keeps records of chains of data.
  → blockchain holds the potential for transforming the Chain of Custody systems making them both **more trustworthy and cheaper for companies to implement.**

  ……BUT **<u>are the companies ready to implement blockchain technology?</u>**
  <u>How to preserve data privacy and integrity?</u>

  → public blockchain where anyone can participate in the network ensures total traceability, **but it doesn’t ensure total data safety (**companies’ perceptions)
  → private blockchain where only selected actors can join the blockchain network can in the certification **system guarantee data safety and integrity (companies’ perceptions)**

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Thank you

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