DeepTrace

Product by

Corum8

Supply Chain Solution

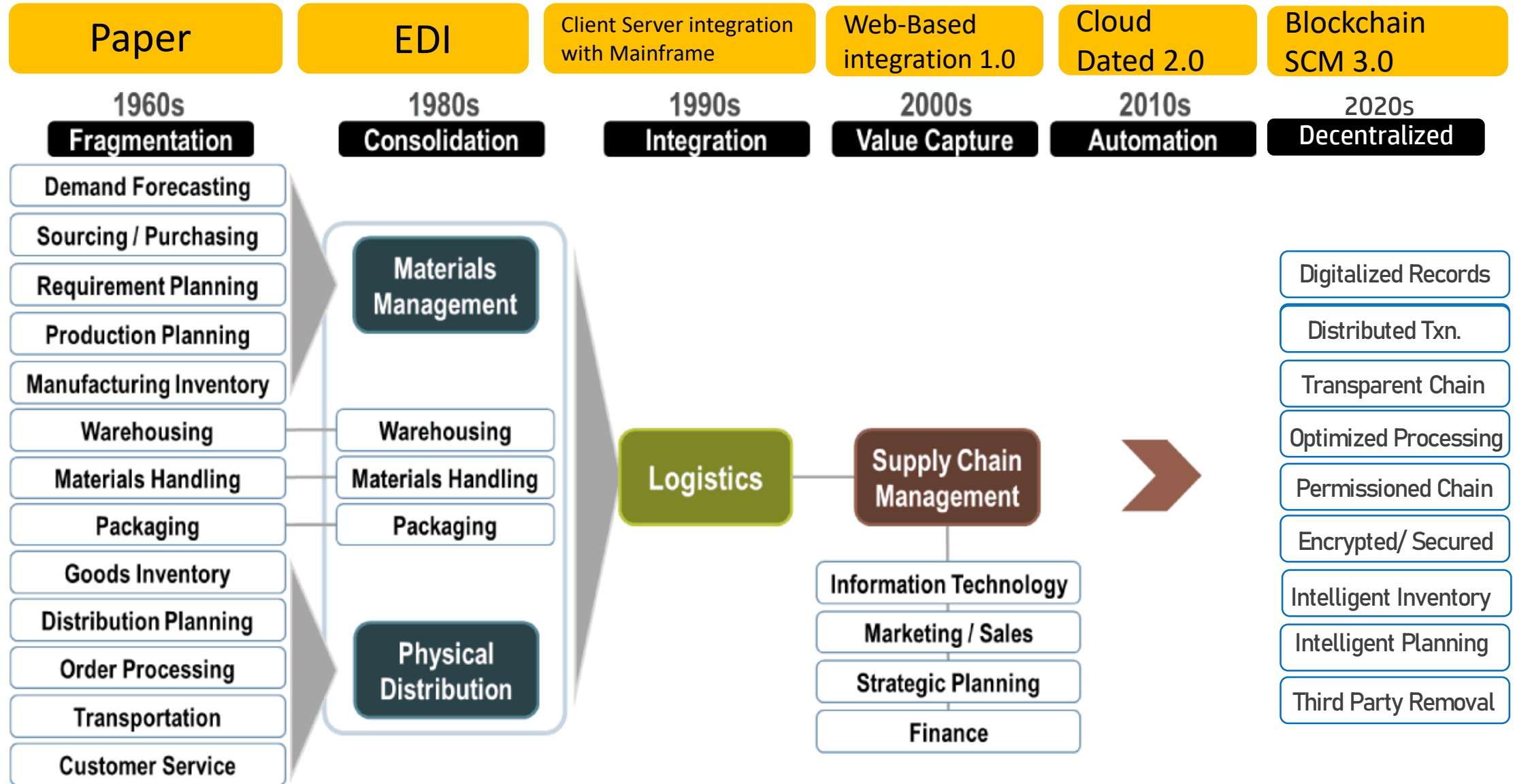powered by

Blockchain, AI & IOT

Introduction

Transparency, trust, security and traceability are the foundations of any supply chain and logistics company.
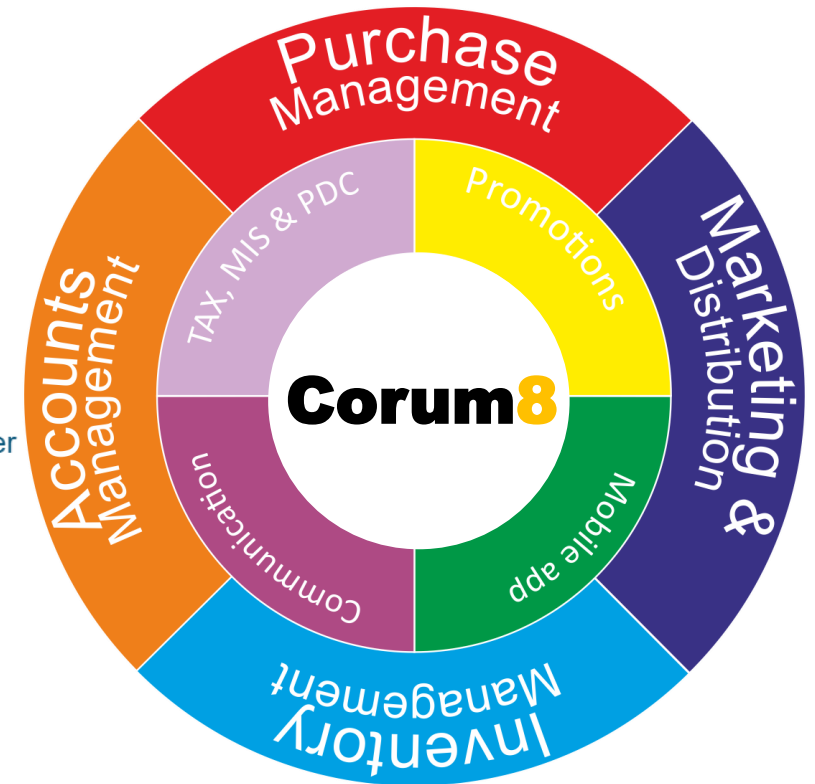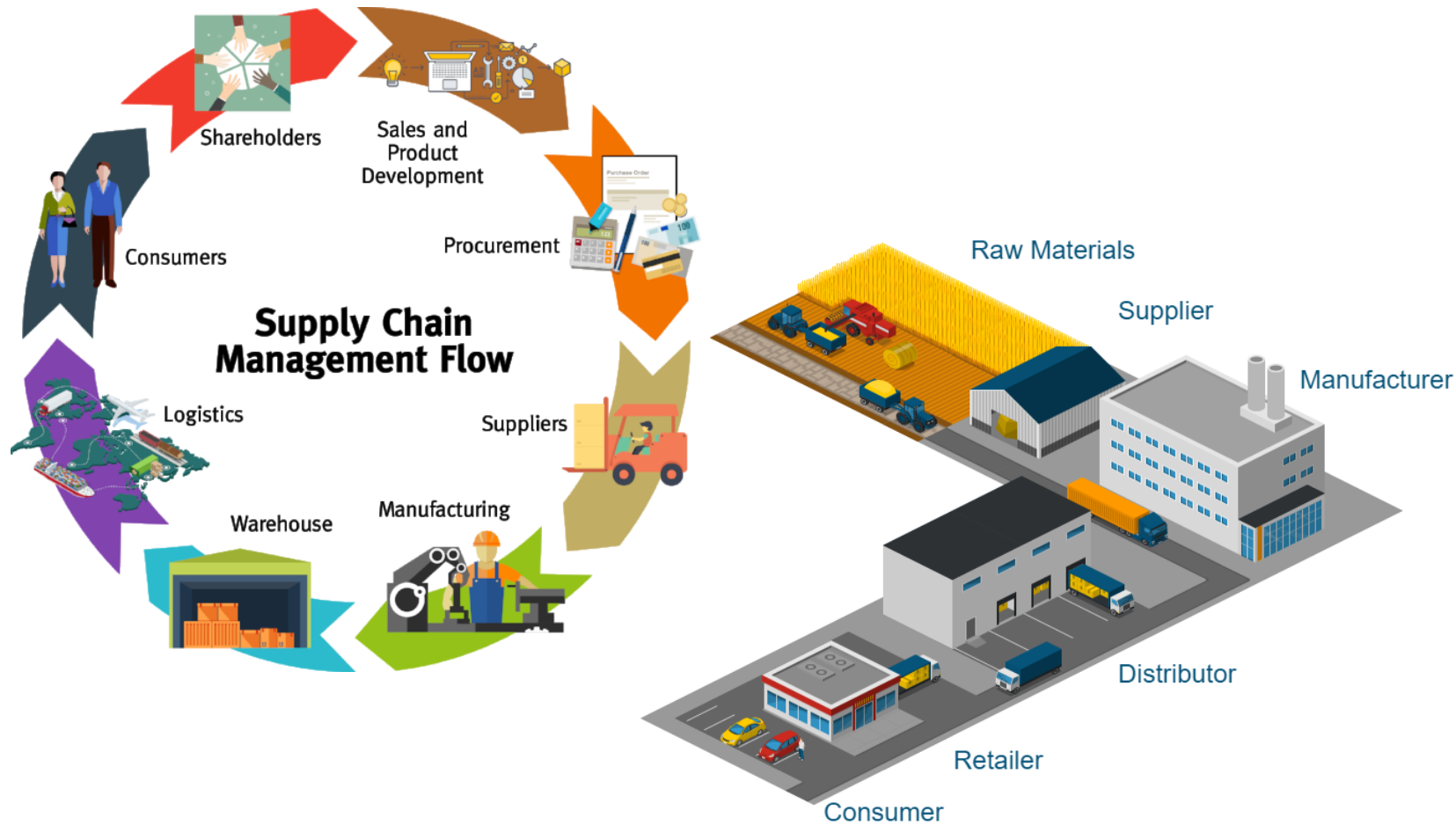
DeepTrace aims to optimize business transactions and trading relationships to achieve global scalability, automation and security keeping quality and costs in check.

History

Paper	EDI	Client Server integration with Mainframe	Web-Based integration 1.0	Cloud Dated 2.0	Blockchain SCM 3.0
1960s	1980s	1990s	2000s	2010s	2020s
Fragmentation	**Consolidation**	**Integration**	**Value Capture**	**Automation**	**Decentralized**

Paper / Fragmentation (1960s)
- Demand Forecasting
- Sourcing / Purchasing
- Requirement Planning
- Production Planning
- Manufacturing Inventory
- Warehousing
- Materials Handling
- Packaging
- Goods Inventory
- Distribution Planning
- Order Processing
- Transportation
- Customer Service

EDI / Consolidation (1980s)
- Materials Management
- Warehousing
- Materials Handling
- Packaging
- Physical Distribution

Integration (1990s)
- Logistics

Value Capture (2000s)
- Supply Chain Management
- Information Technology
- Marketing / Sales
- Strategic Planning
- Finance

Blockchain SCM 3.0 / Decentralized (2020s)
- Digitalized Records
- Distributed Txn.
- Transparent Chain
- Optimized Processing
- Permissioned Chain
- Encrypted/ Secured
- Intelligent Inventory
- Intelligent Planning
- Third Party Removal

Traditional SCM

Problems

Mutability

Slow Processing

Error Prone and Manual Work

Security Issues

Data Inconsistency

Record Keeping

Flawed and Failure Components

Management of Time Stamped Sensitive Information

Traceability and Tracking Issues

No Product Authenticity

Brand Quality Compromise

Opaque Flow

Value Proposition

DeepTrace is a distributed ledger trail application which is a shared, immutable ledger that records transactions and tracks assets— intangible or tangible. Virtually anything of value can be tracked (preferably by IOT devices to reduce manual interventions to remove human errors and overhead costs) and traded on a blockchain network, reducing risk and cutting costs for all involved. While the power of **DeepTrace** comes from its ecosystem members, blockchain enables the secure distribution and storage of the vital information that is the heart of the platform.

Solution

Product Authenticity Brand

Protection

Verifiability

Secured Payment & Tracking

Recoverability

Permissioned Sharing/ Access

Tamper-proof recording

Standardization

Privacy

Immutability

Provenance and Auditability

Workflow Automation

Interoperability

Scalability

Cost and Resource Optimization

Features

Standardization

DeepTrace is continuing to develop standardized structured documents to replace the typical unstructured documents in use today(considering structured data is digital data and unstructured data are pdfs/scans.

Interoperability

DeepTrace is a distributed ledger platform that is available to participants of any party to a SCM, anywhere in the world. The platform provides a way for all major SCM and permissioned participants to immediately contribute to and extract value from the DeepTrace ecosystem.

Permissioned Sharing

DeepTrace document permissions are determined through a combination of the organization's role and the document type. The DeepTrace platform then permits access to documents according to the permission matrix.
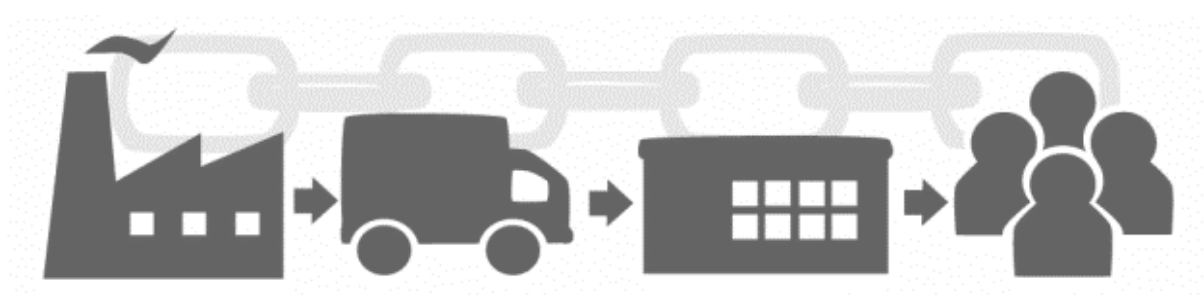
Permissioned Access

DeepTrace ensures flexibility and control over who can view, publish and subscribe to specific data. SCM milestones and documents are only accessible to authorized parties.

Tamper-proof recording

Nonrepudiation for all data submitted to the platform. All data is signed by the submitter and recorded in the ledgers of the Trust Anchors.

Verifiability

Data against the recorded proof of submission on the blockchain. Every piece of data can be verified against a hash of its original submitted content.

Provenance and Auditability

All transactions are signed and dated on the ledger..

Privacy

Data to ensure that it is only shared with relevant organizations. Only registered entities with Certificates can access the ledger. Channel Level Control Application Level Access Control.

Recoverability

The solution from the data recorded on the blockchain. All data is distributed and replicated across the ledgers of the Trust Anchors.
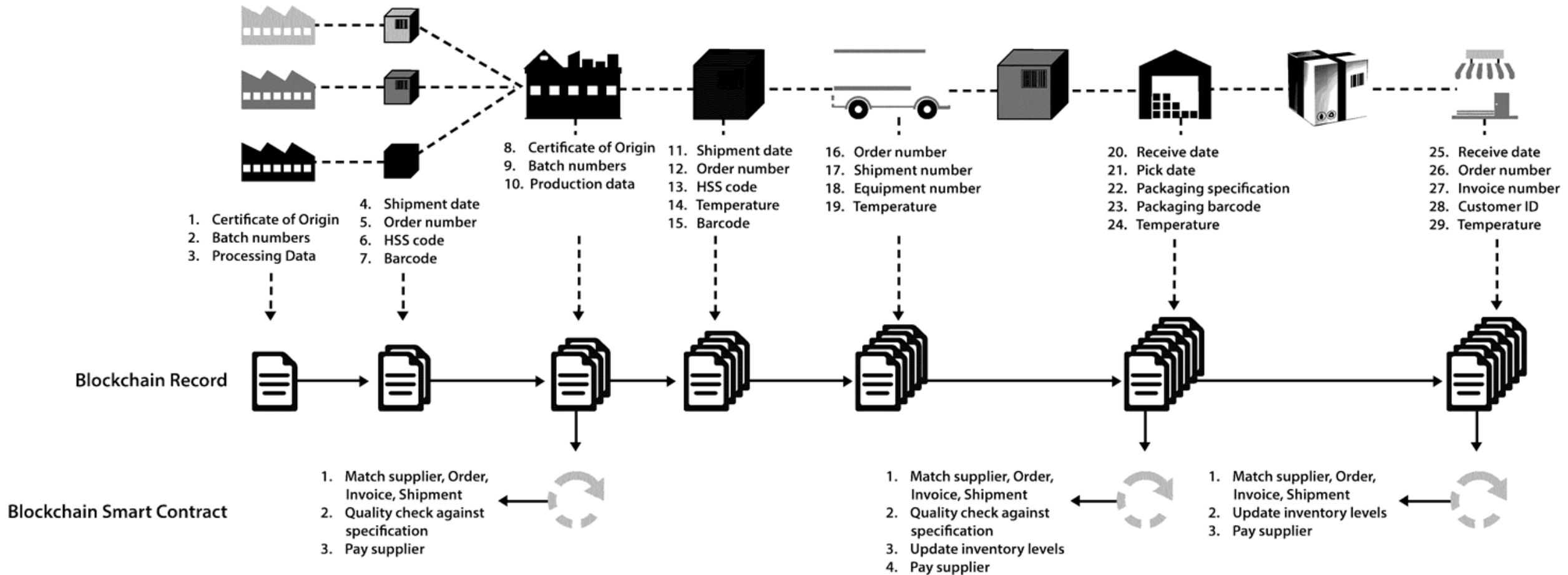
Immutability

In addition to being able to download each version of a document, DeepTrace also performs a Consistency Check to indicate a document has been verified on the blockchain. Once a document (or a version of a document) is selected, the particular document will be retrieved from the secure Blockchain Document Store and the hash stored on the blockchain will be compared with a newly generated hash. After this check is complete, the Consistency Check will indicate that the document has been verified on the blockchain and has not been altered in any way.
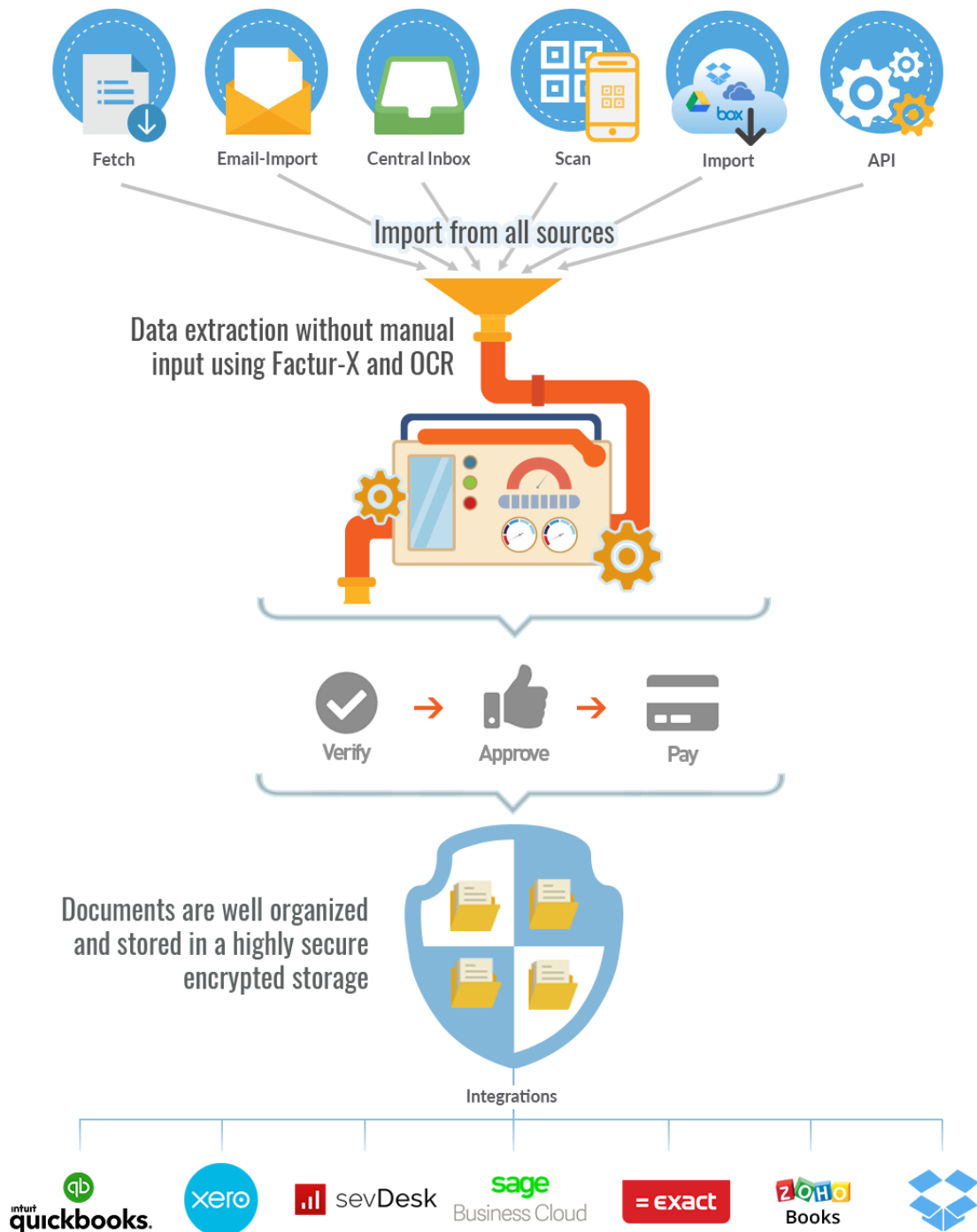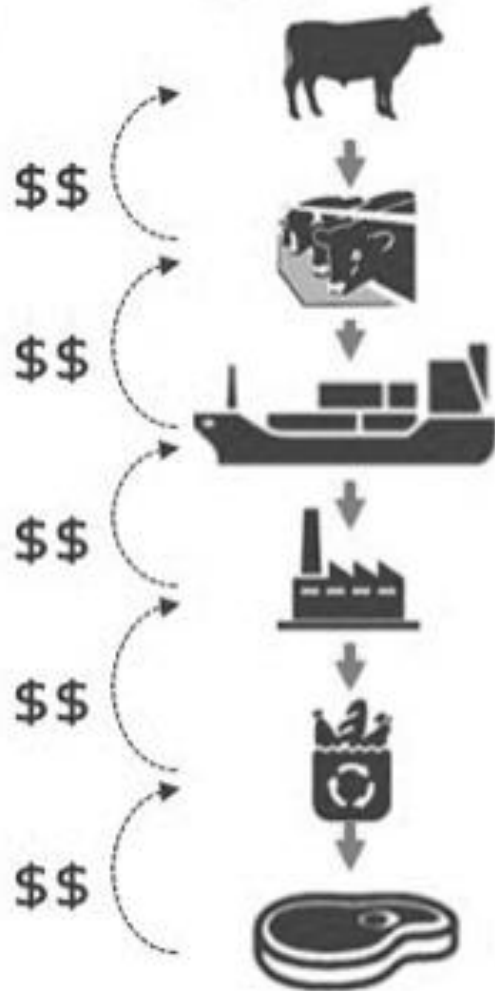
Workflow Automation

Trade documents associated with SCM in a distributed and shared repository, eliminates endless file, folder and email searching for information. DeepTrace uses the Hyperledger Fabric permissioned blockchain to guarantee the immutability and traceability of SCM related documents. Each time a document is edited or uploaded to the DeepTrace platform, a new version of the document is created and added to the document store, eliminating multiple copies and the inconsistency of identifying the latest versions.
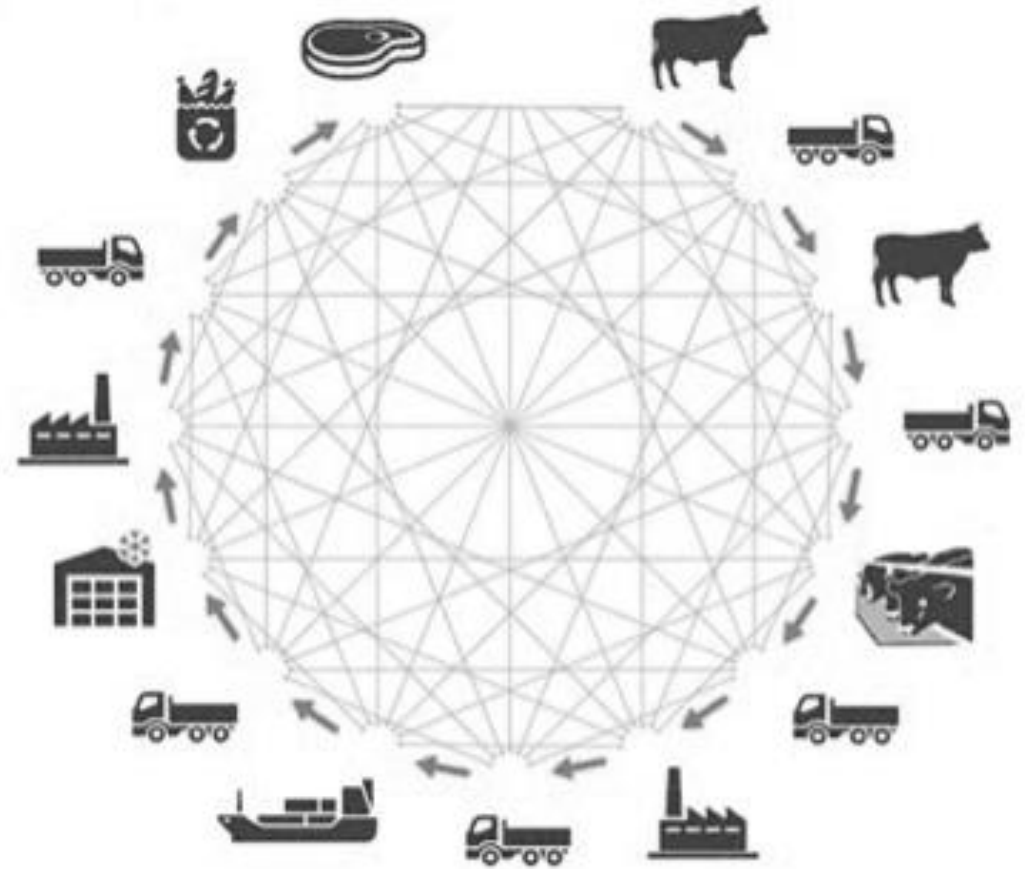
Blockchain Layer

8. Certificate of Origin
9. Batch numbers
10. Production data

11. Shipment date
12. Order number
13. HSS code
14. Temperature
15. Barcode

16. Order number
17. Shipment number
18. Equipment number
19. Temperature

20. Receive date
21. Pick date
22. Packaging specification
23. Packaging barcode
24. Temperature

25. Receive date
26. Order number
27. Invoice number
28. Customer ID
29. Temperature

1. Certificate of Origin
2. Batch numbers
3. Processing Data

4. Shipment date
5. Order number
6. HSS code
7. Barcode

Blockchain Record

Blockchain Smart Contract

1. Match supplier, Order, Invoice, Shipment
2. Quality check against specification
3. Pay supplier

1. Match supplier, Order, Invoice, Shipment
2. Quality check against specification
3. Update inventory levels
4. Pay supplier

1. Match supplier, Order, Invoice, Shipment
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The Difference...

Traditional Supply Chains Rely On Trust

Transactions On A Blockchain is Verified by All Users

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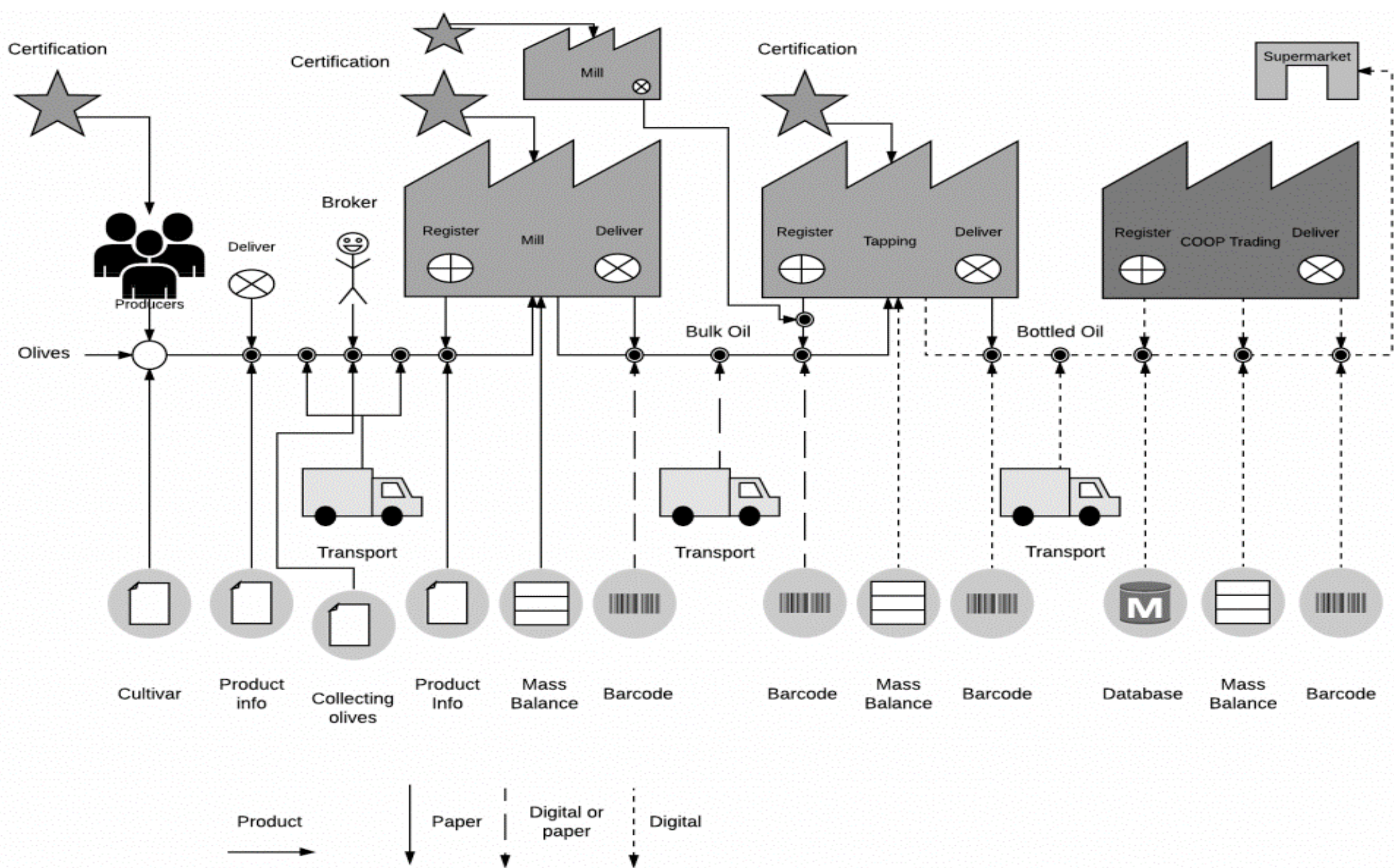# Case Study: Food Supply Chain

Certification · Certification · Mill · Certification · Supermarket

Producers · Broker · Register · Mill · Deliver · Register · Tapping · Deliver · Register · COOP Trading · Deliver

Deliver · Bulk Oil · Bottled Oil

Olives

Transport · Transport · Transport

Cultivar · Product info · Collecting olives · Product Info · Mass Balance · Barcode · Barcode · Mass Balance · Barcode · Database · Mass Balance · Barcode

Product · Paper · Digital or paper · Digital
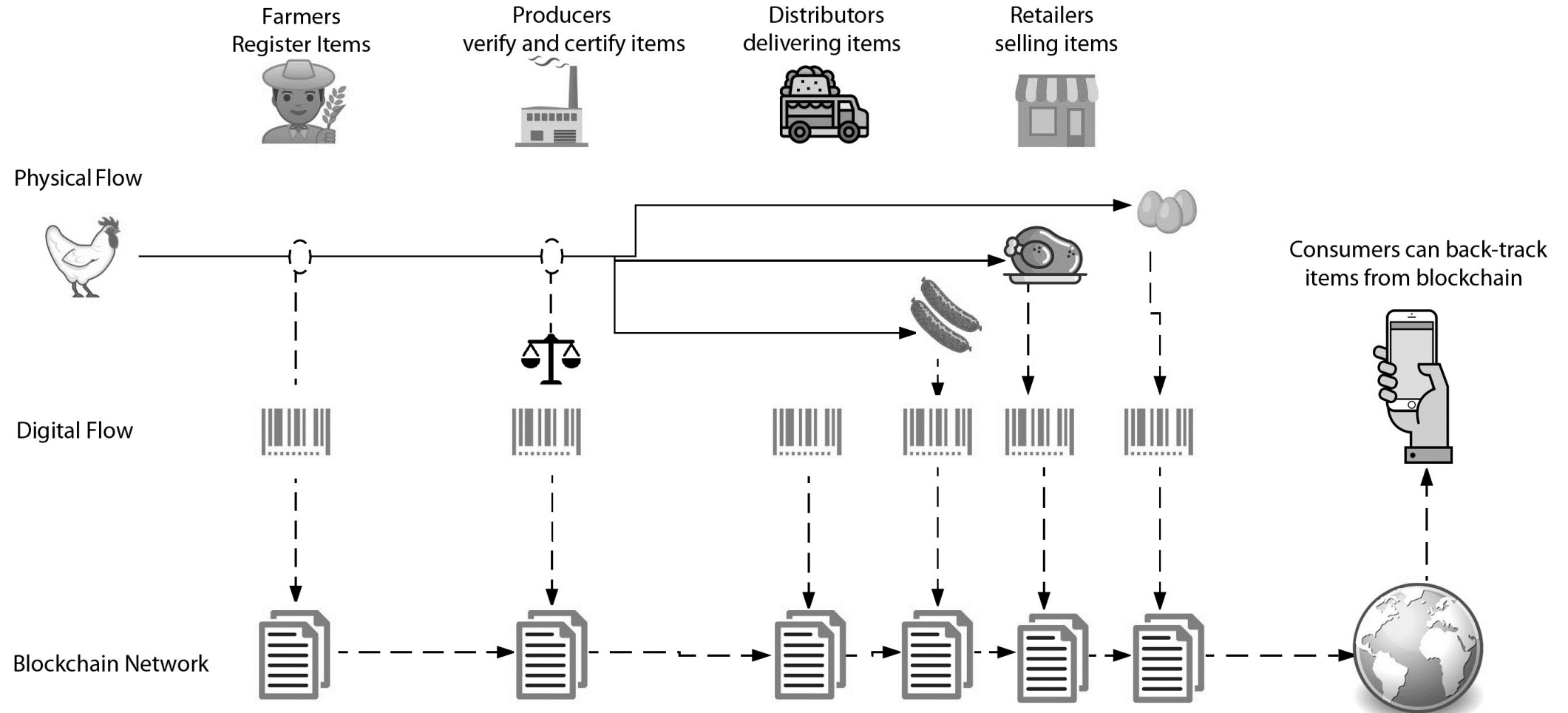
Case Study: Pharma
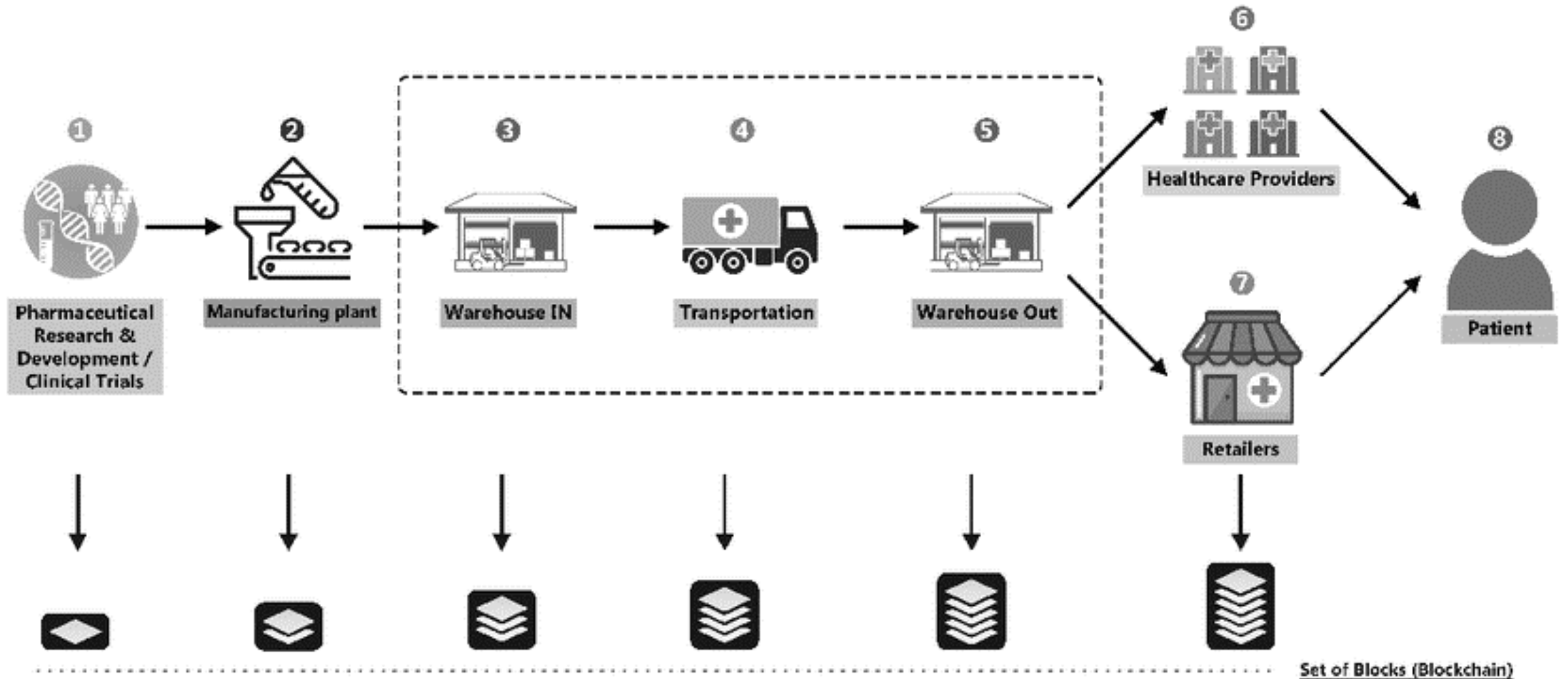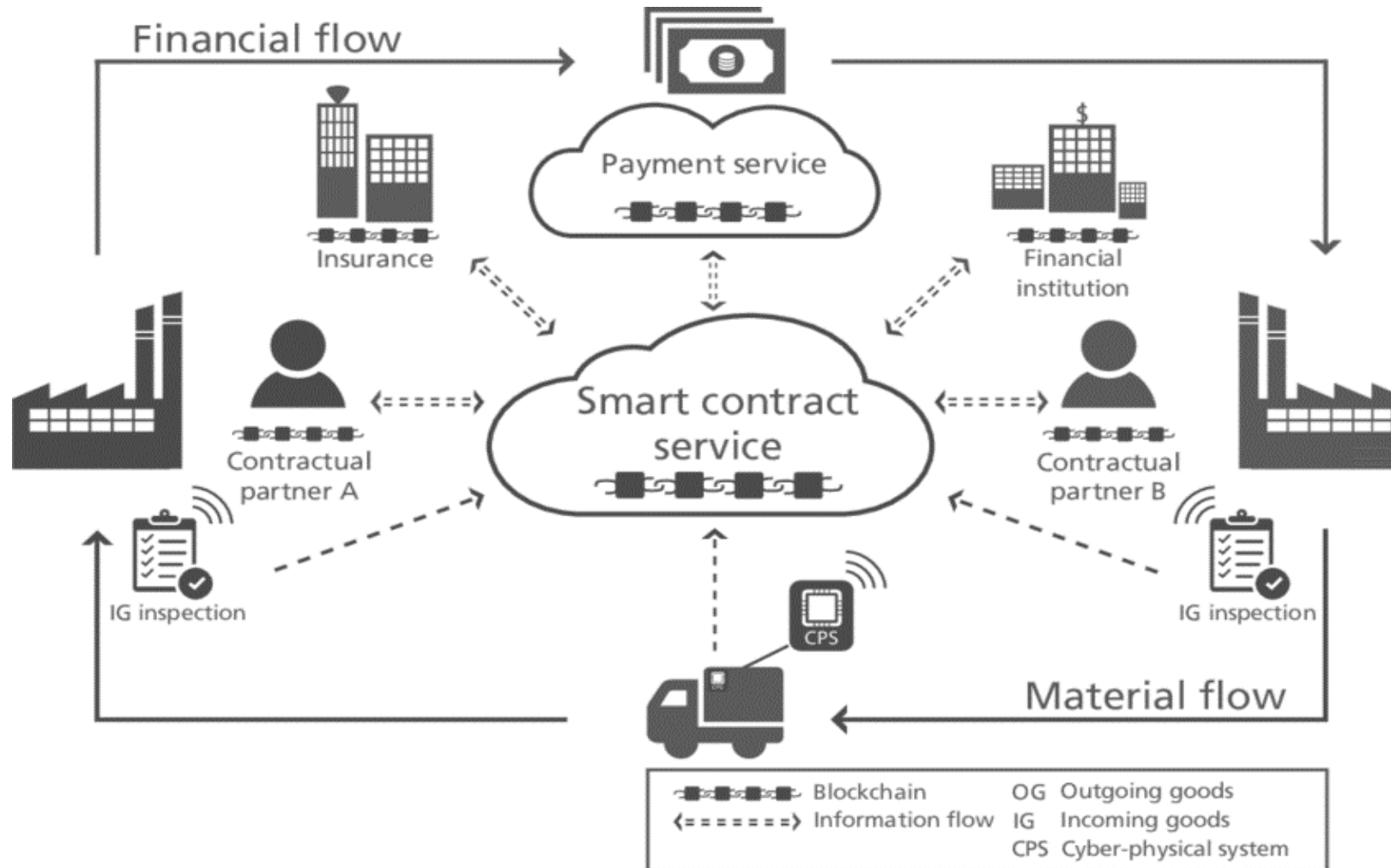
Case Study: Automotive Industry
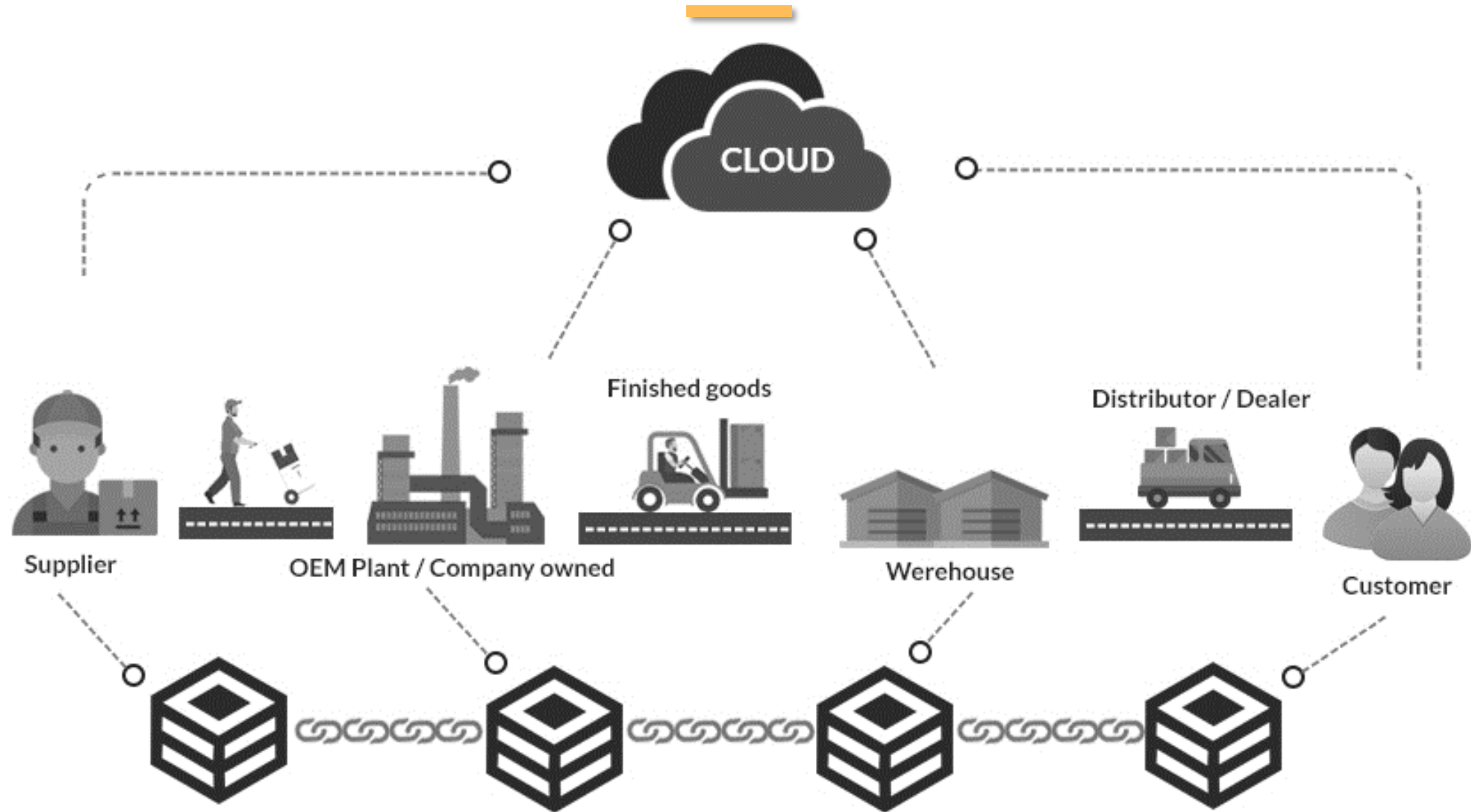
Case Study: Shipping
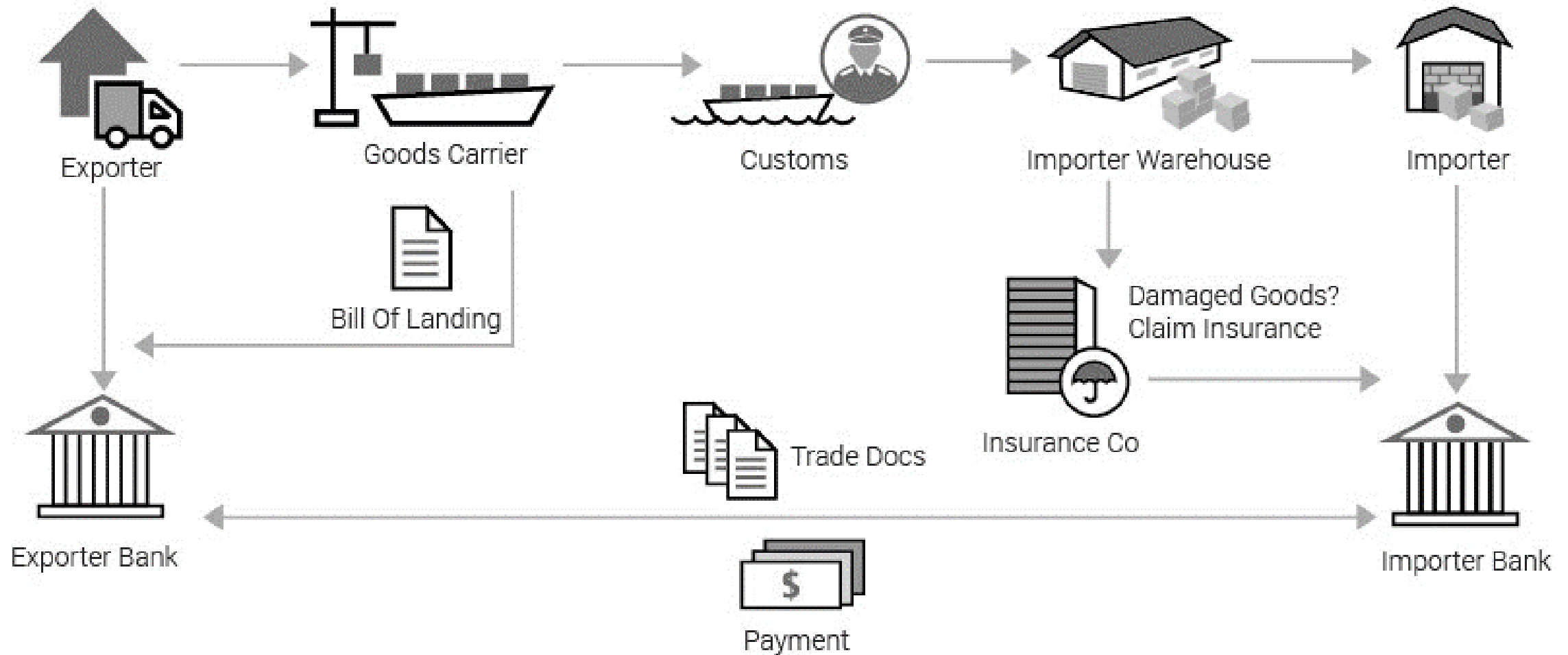
Case Study: Electronics Goods

Case Study: Ecommerce

Case Study: Logistics

MANUFACTURER

Manufacturer transmits loads to suppliers, warehouse and 3PL providers.

3PL optimizes capacity and shipments in real-time as new loads are received.

3PL provider ships loads to carriers and provides visibility to all. Carrier provides shipment status at every stage to all.

SUPPLIER LOGISTICS 3PL LONG-HAUL CARRIER WAREHOUSE SHORT-HAUL CARRIER CONSIGNEE

- Certificate of Origin
- Batch Numbers
- Processing Data
- Barcodes
- Shipment Dates

- Packing List
- Order Number
- Batch Number
- Production Data
- Shipment Specification (DIMS)

- Bill of Lading
- Routing Instructions
- Shipment Date
- Commodity Description

- Delivery Signature
- Temperature
- Shipment Status

- Routing Instructions
- Pick Date
- Packaging Specifications
- Packaging Barcode

- Receive Date
- Invoice Number
- Customer ID
- Shipment Status
- Delivery Receipt

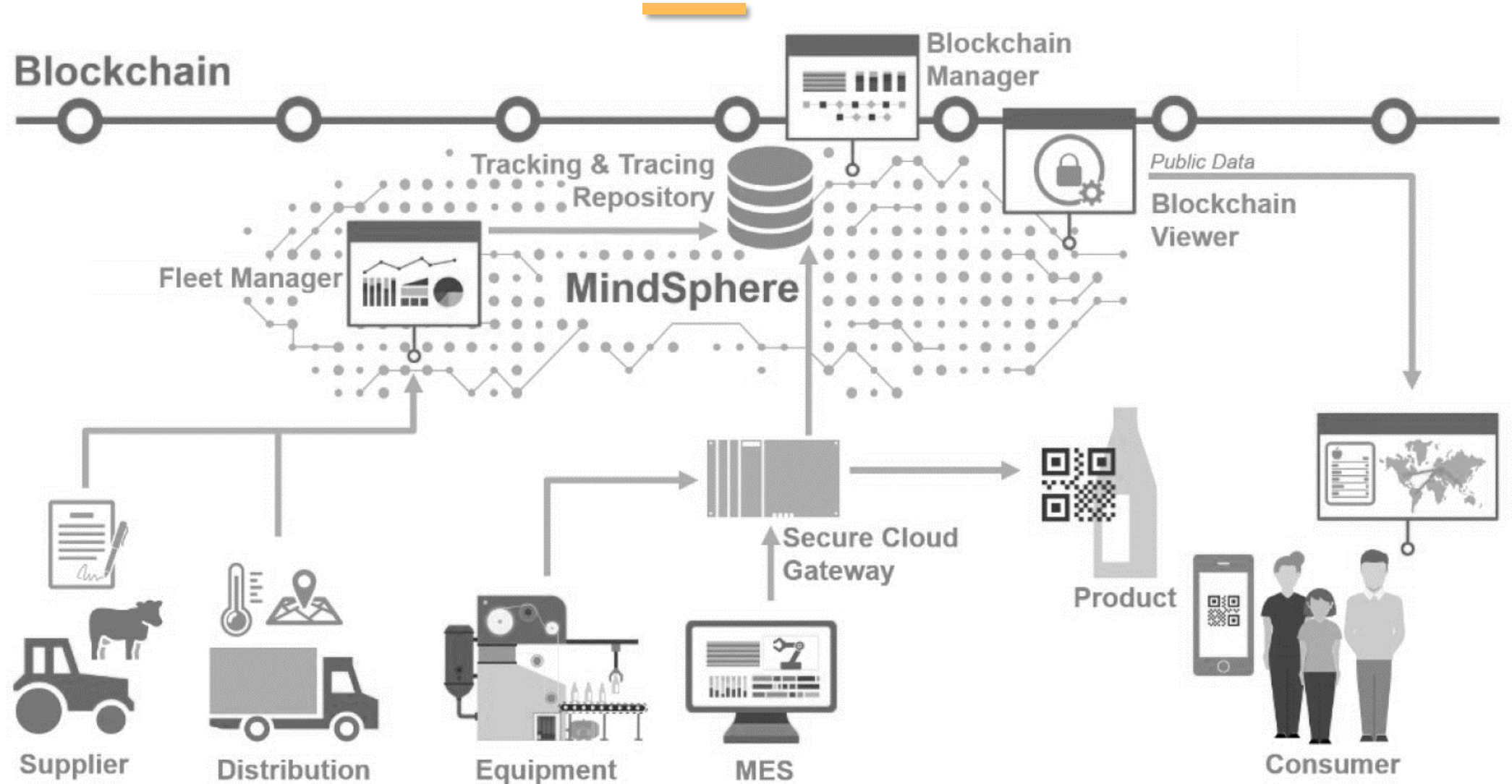## LOGISTICS BLOCKCHAIN CONSORTIUM
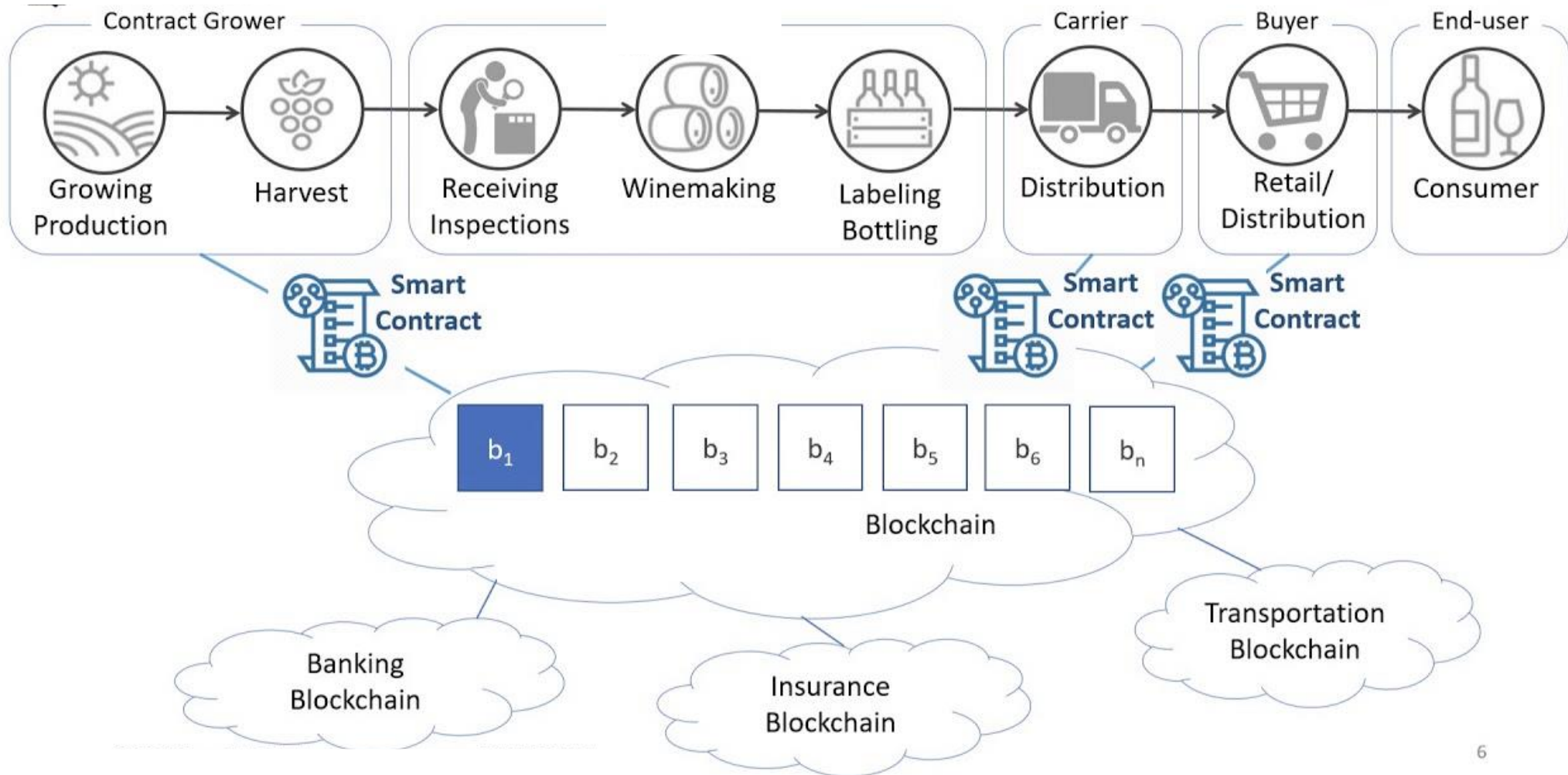
Identical encrypted distributed ledger via the Internet

Smart Contracts orchestrating shipment transaction flow based on codified parameters, process triggers and algorithms.
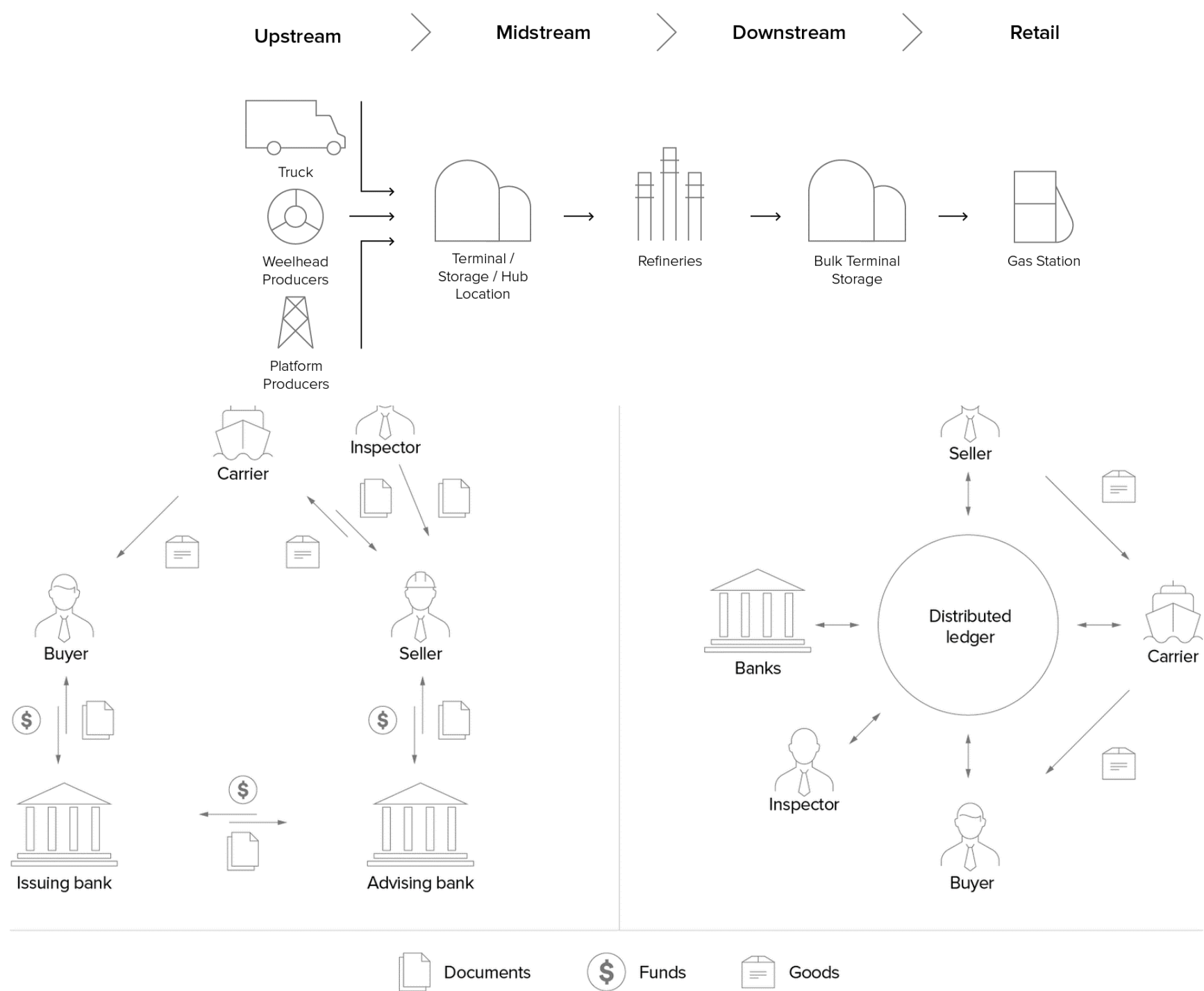
Case Study: Consumer Goods

Case Study: Alcohol
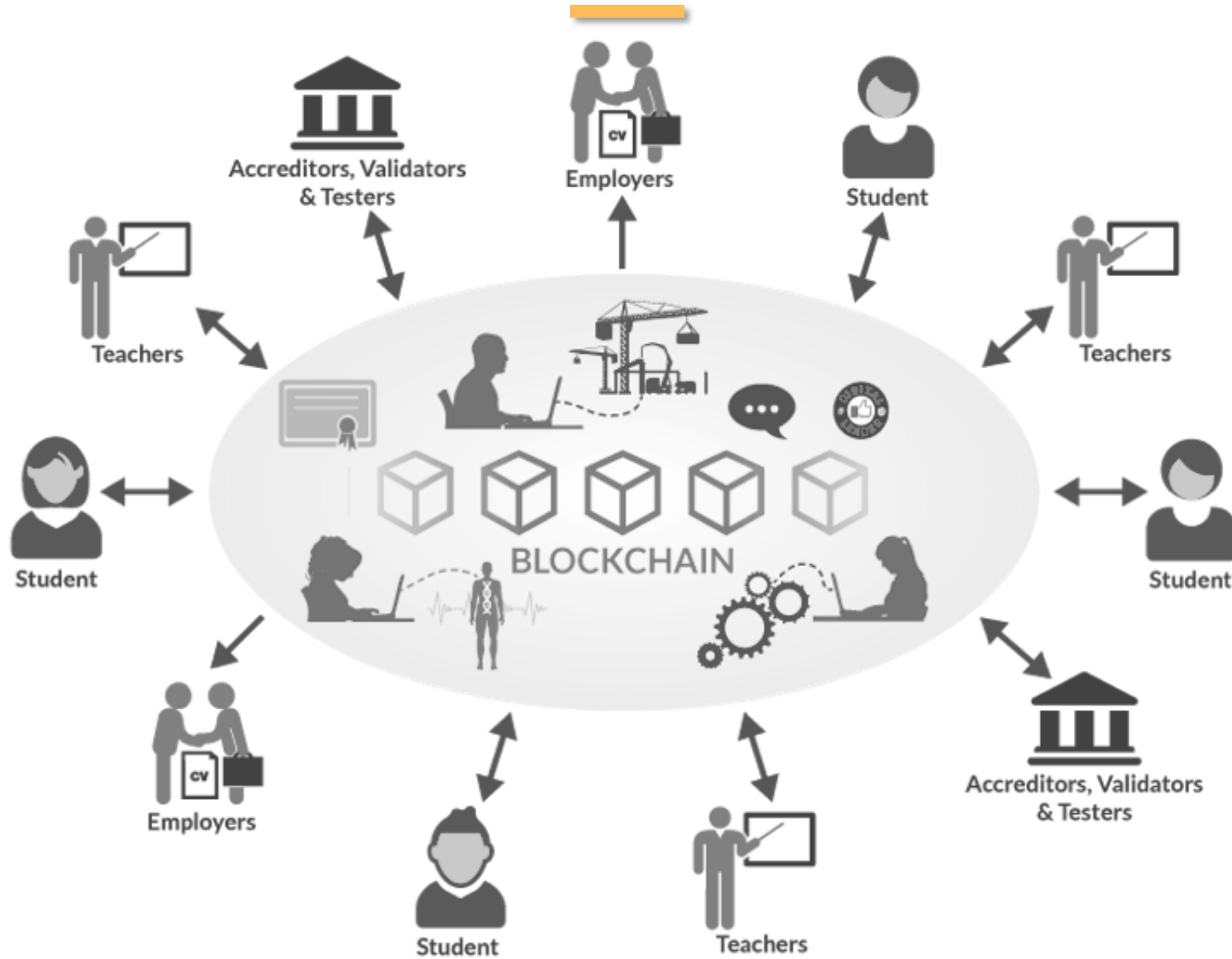

Blockchain Enabled Supply Chain

Contract Grower
- Growing Production
- Harvest
- Receiving Inspections
- Winemaking
- Labeling Bottling

Carrier
- Distribution

Buyer
- Retail/Distribution

End-user
- Consumer

Smart Contract

b_1 b_2 b_3 b_4 b_5 b_6 b_n

Blockchain

Banking Blockchain

Insurance Blockchain

Transportation Blockchain

Case Study: Oil/ Gas Industry

Upstream › Midstream › Downstream › Retail

Truck
Weelhead Producers
Platform Producers

Terminal / Storage / Hub Location

Refineries

Bulk Terminal Storage

Gas Station

Carrier
Inspector
Buyer
Seller
Issuing bank
Advising bank

Distributed ledger
Seller
Carrier
Buyer
Inspector
Banks

Documents   Funds   Goods

Case Study: Education Industry

Case Study: Financial Industry

Global Payments

Future-state process depiction
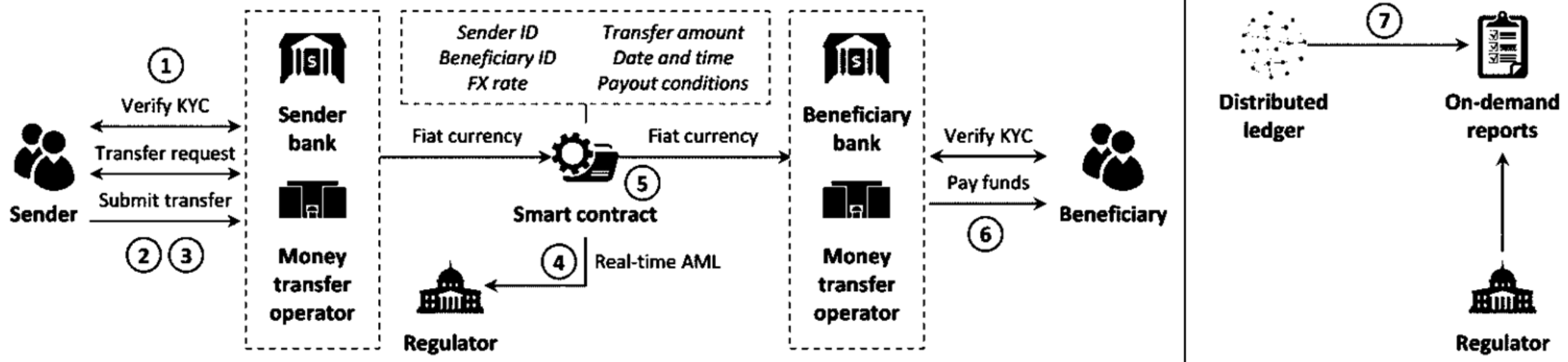
Case Study: Healthcare/ Data

Case Study: Energy

Energy blockchain

Transaction record

Energy aggregator

Memory pool

Credit bank

Transaction server (Controller)

Account pool

④ Credit

④ Credit

② Buyer→Seller: Energy coins or token

Wallet

③ Consortium blockchain

Wallet

Energy sellers

① Seller→Buyer: Energy

Energy buyers
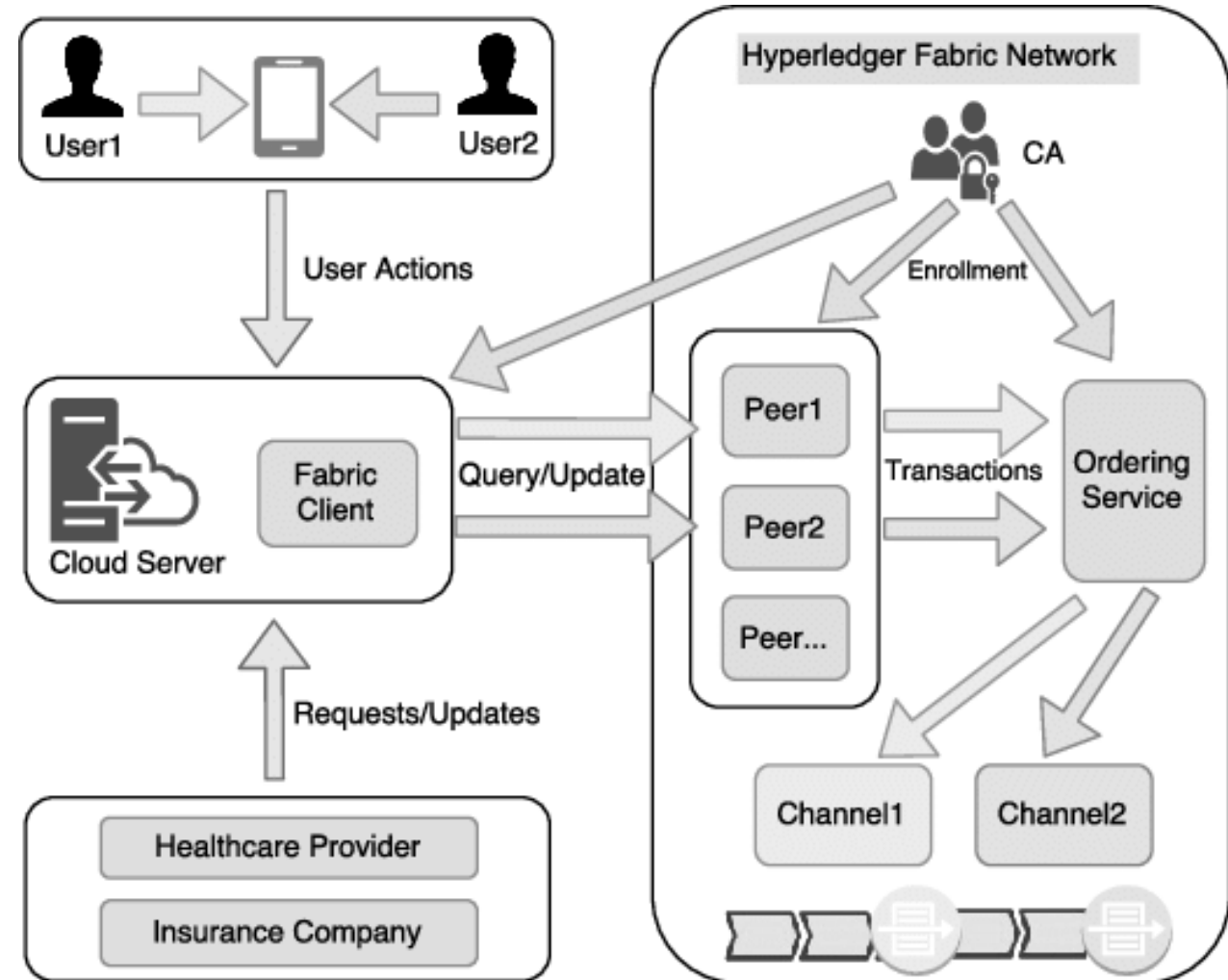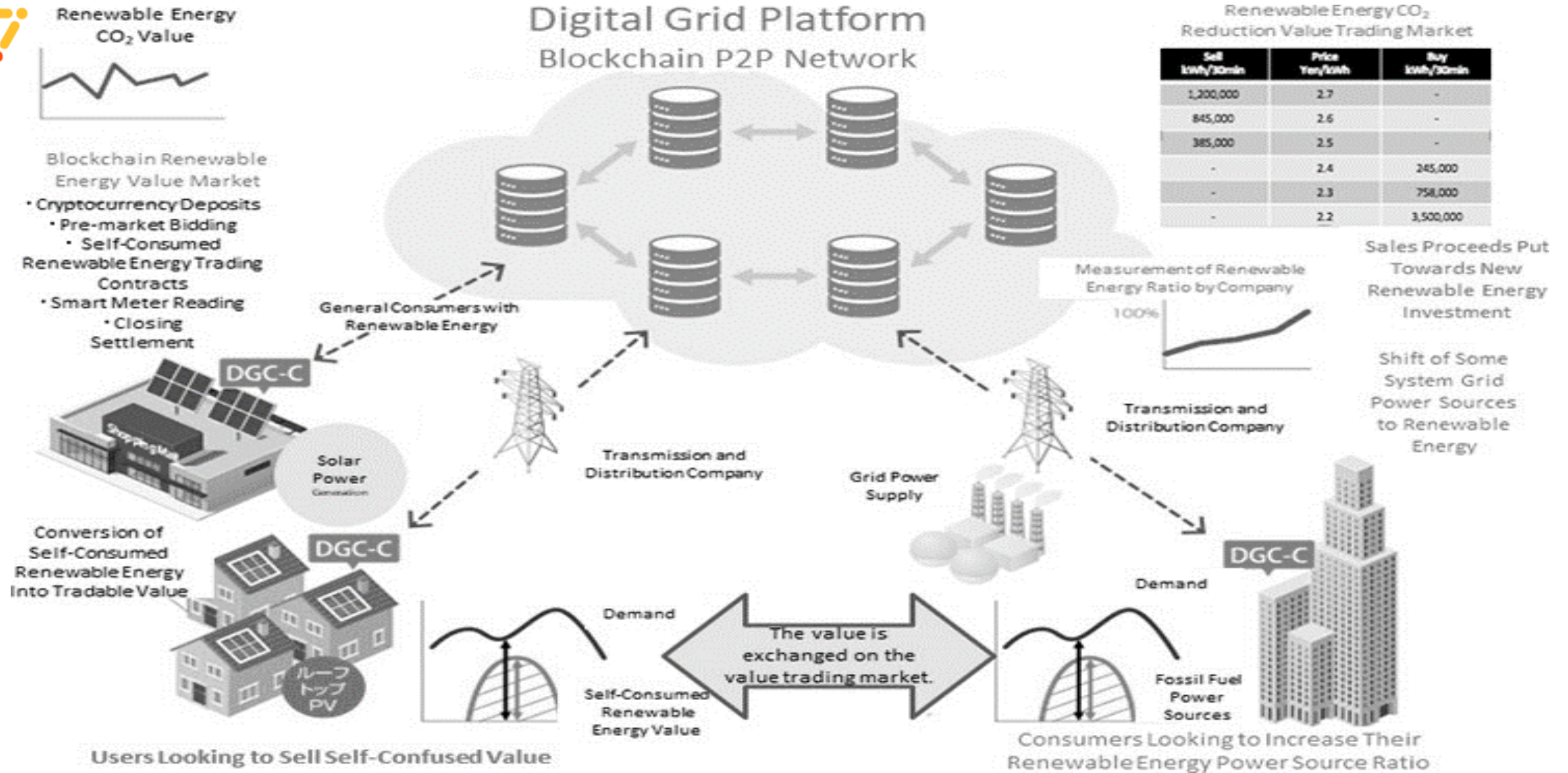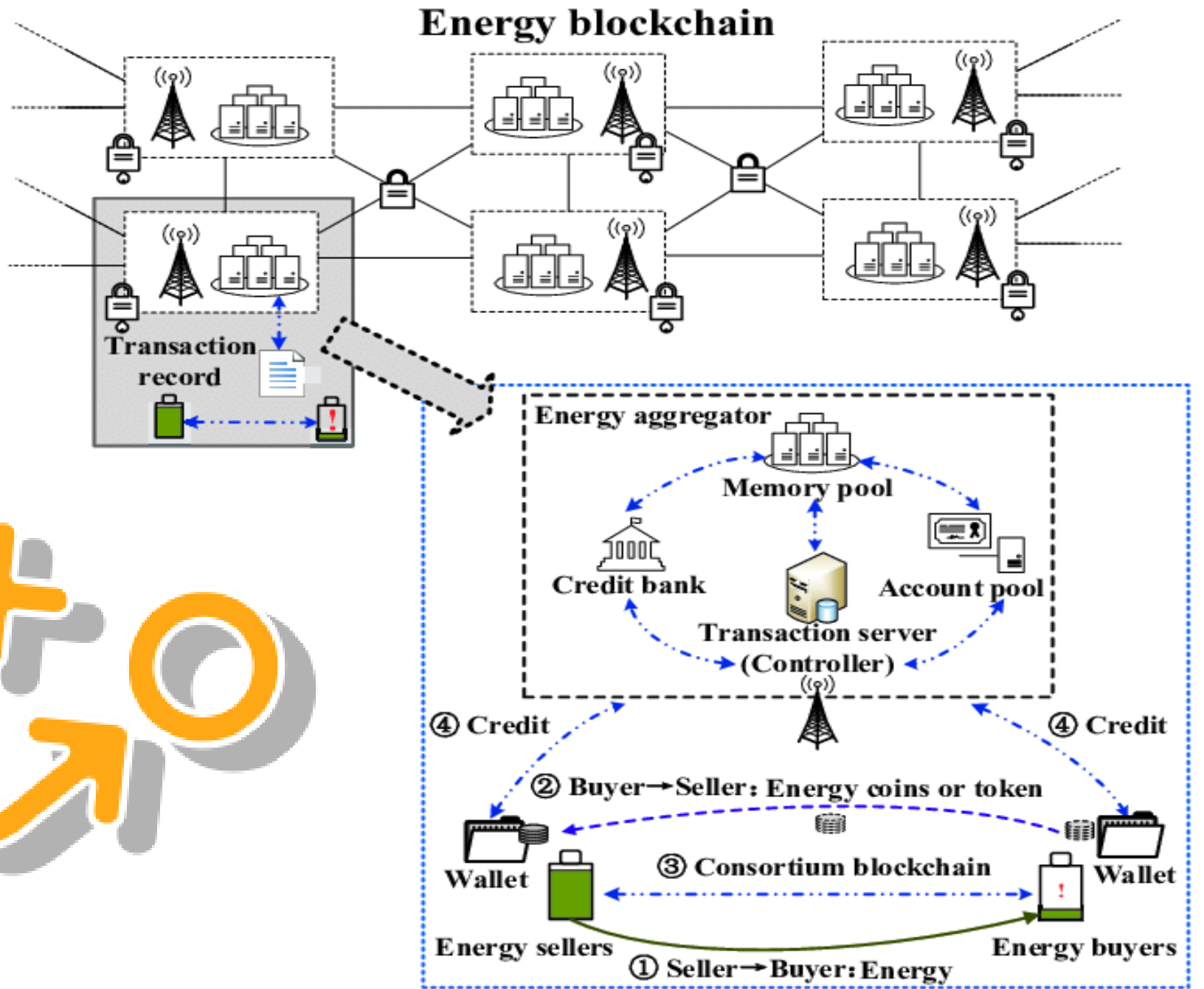
Thank You

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