Track 5 | Session 6

透過 Amazon Managed Blockchain 與 Amazon QLDB 打造區塊鍊應用

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Amazon Web Services

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How we think of blockchain

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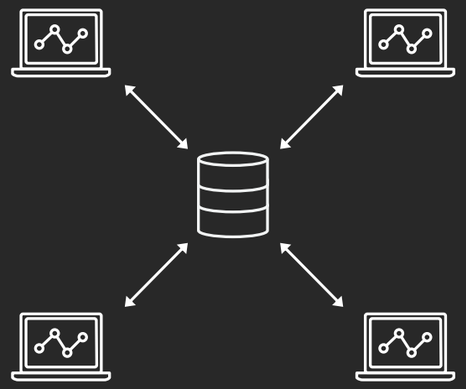
Centralized trust

1 Ledgers with centralized trust

2 Transactions with decentralized trust



Healthcare

Verify and track hospital equipment inventory

DMV

Track vehicle title history

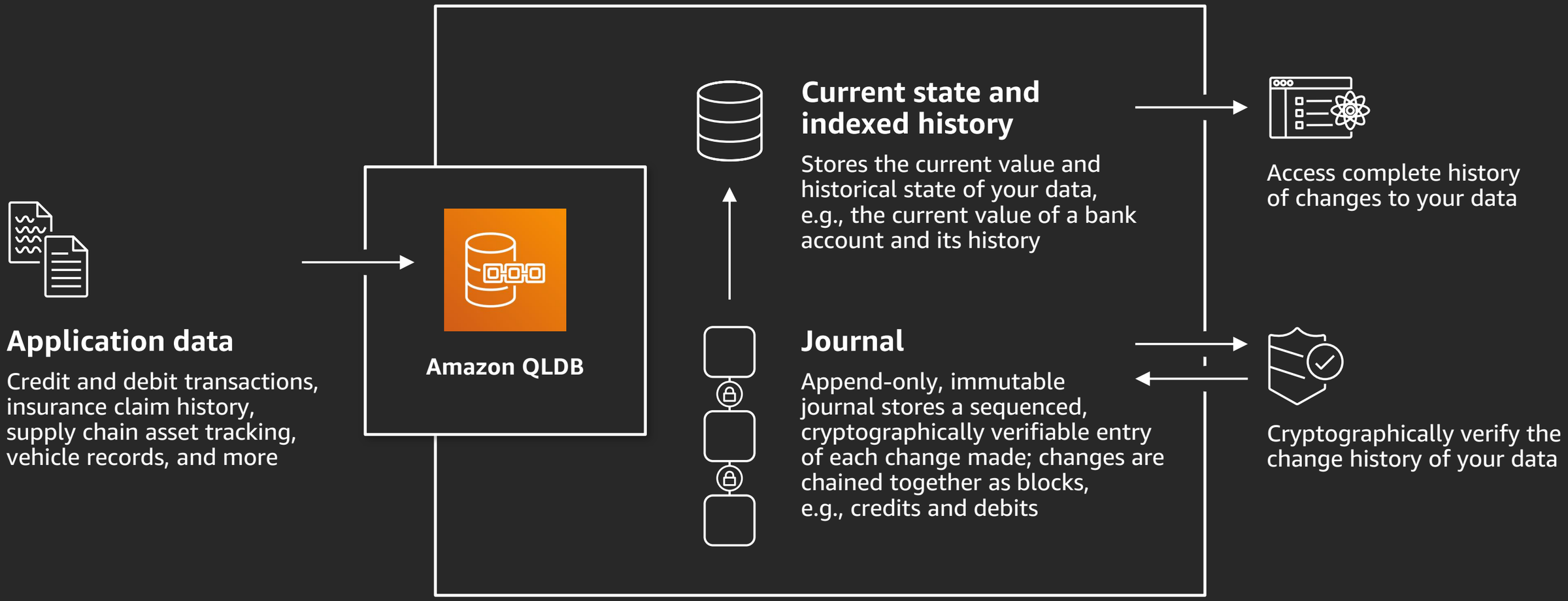
Manufacturers

Track distribution of a recalled product

HR and payroll

Track changes to an individual's profile

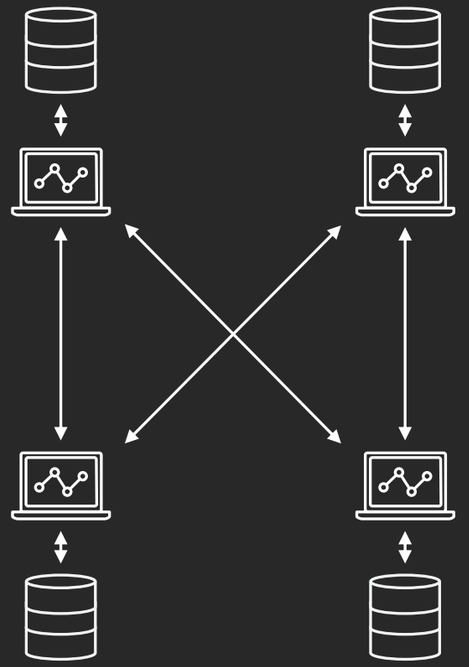
Amazon Quantum Ledger Database (Amazon QLDB) for centralized trust



- ✓ Immutable
- ✓ Verifiable
- ✓ SQL-like query
- ✓ Serializable ACID txns
- ✓ Document data model
- ✓ Serverless and scalable

Decentralized trust

1 Ledgers with centralized trust



2 Transactions with decentralized trust

Financial institutions

Peer-to-peer payments

Mortgage lenders

Process syndicated loans

Supply chain

Transact with suppliers and distributors

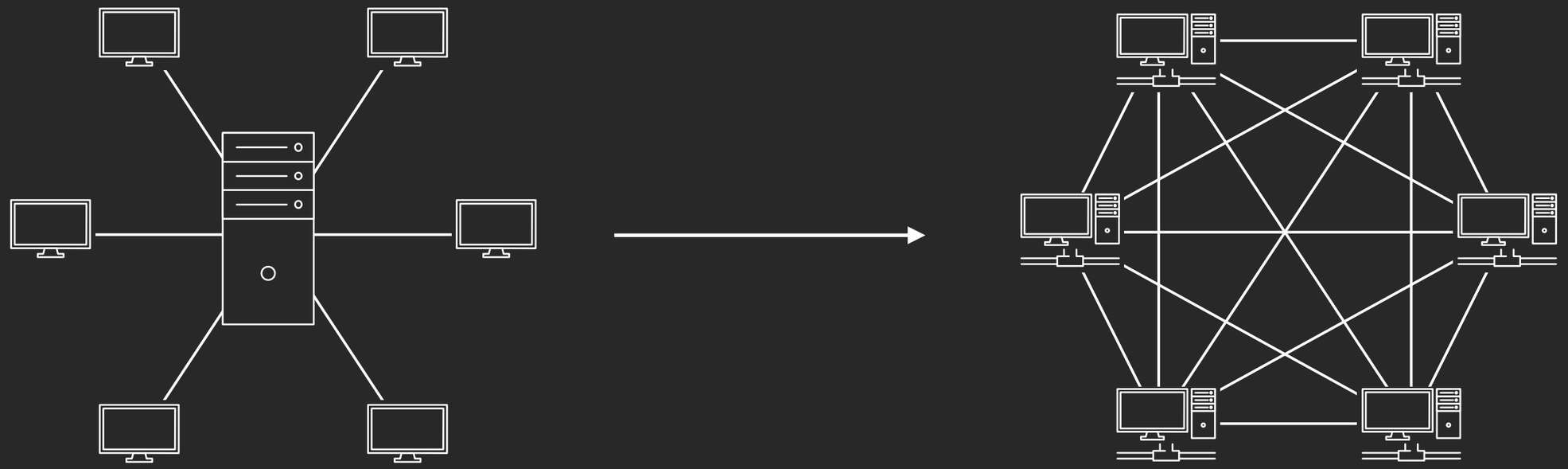
Retail

Streamline customer rewards

Blockchain builds trust in a network

Eliminates the need for central authority in business networks with three main components:

Distributed ledger, consensus mechanism, and smart contracts



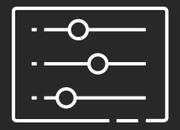
Difficult to create blockchain networks

- Provisioning hardware
- Complex to configure software and networking
- Need to secure certificates and access control
- Monitoring and management of complex systems
- Adding and removing members
- Governing the network
- Scaling performance as the transaction rate grows

What is Amazon Managed Blockchain

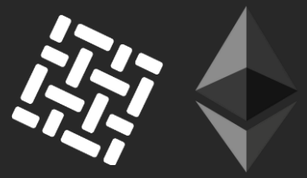
Amazon Managed Blockchain is a fully managed service that makes it easy to create and manage scalable blockchain networks using popular open source frameworks: Hyperledger Fabric and Ethereum

Managed Blockchain features



Fully managed

Create a blockchain network in minutes



Open-source variety

Support for two frameworks

Decentralized

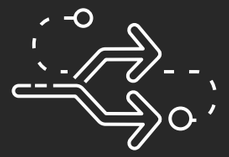
Democratically govern the network

Reliable and scalable

Backed with Amazon QLDB technology

Low cost

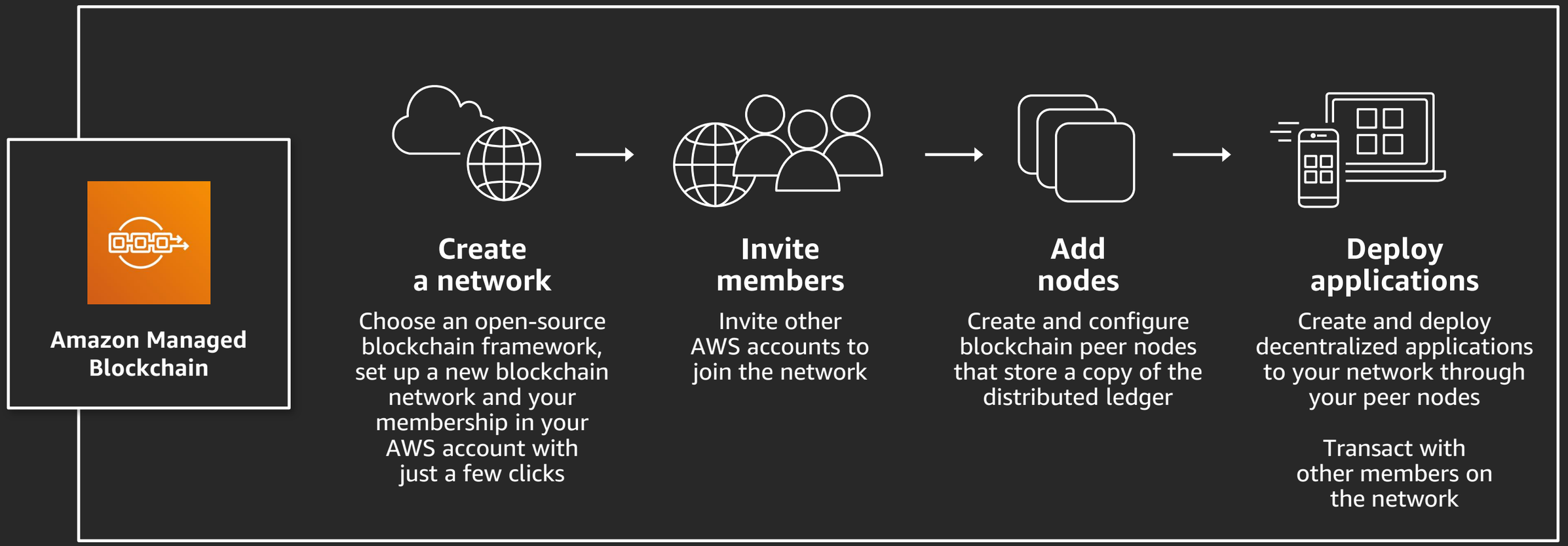
Pay only for resources used



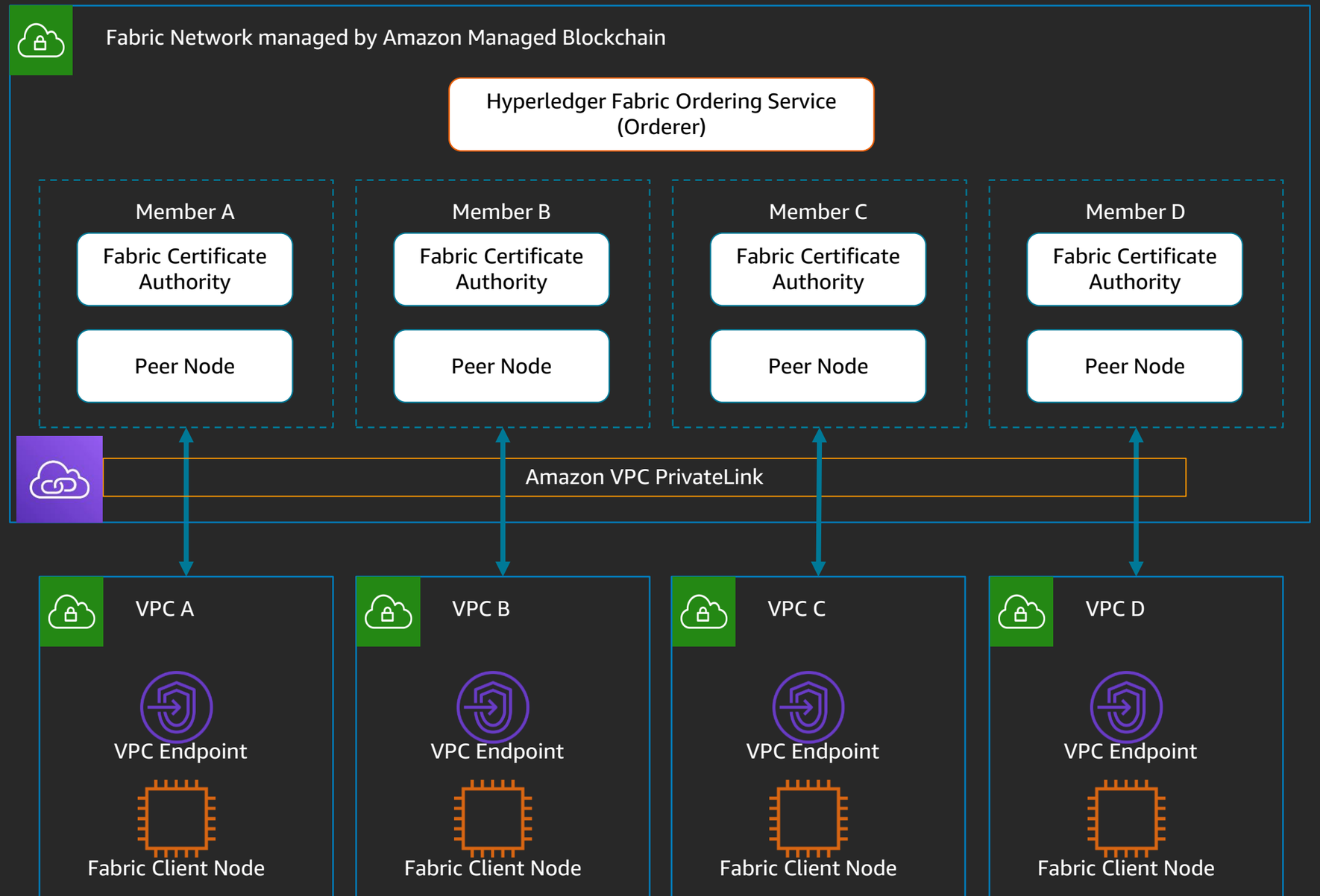
Integrated

Easy to use with AWS services

How Amazon Managed Blockchain works



Basic components of a Hyperledger Fabric blockchain running on Managed Blockchain



Reliable and scalable

Augmented Hyperledger Fabric

Ordering service

- Core component of a Fabric network to guarantee delivery and order of transactions
- Open-source production grade networks use Apache Kafka for this component
- Managed Blockchain uses Amazon QLDB technology, increasing durability and reliability

Certificate authority

- Open source uses a “soft” HSM
- Managed Blockchain uses AWS Key Management Service (AMS KMS) to secure the certificate authority service

Who owns the network?

Distributed ownership

Networks are decentralized and can remain active even after the initial creator leaves

Members vote to invite and remove members and configure network rules

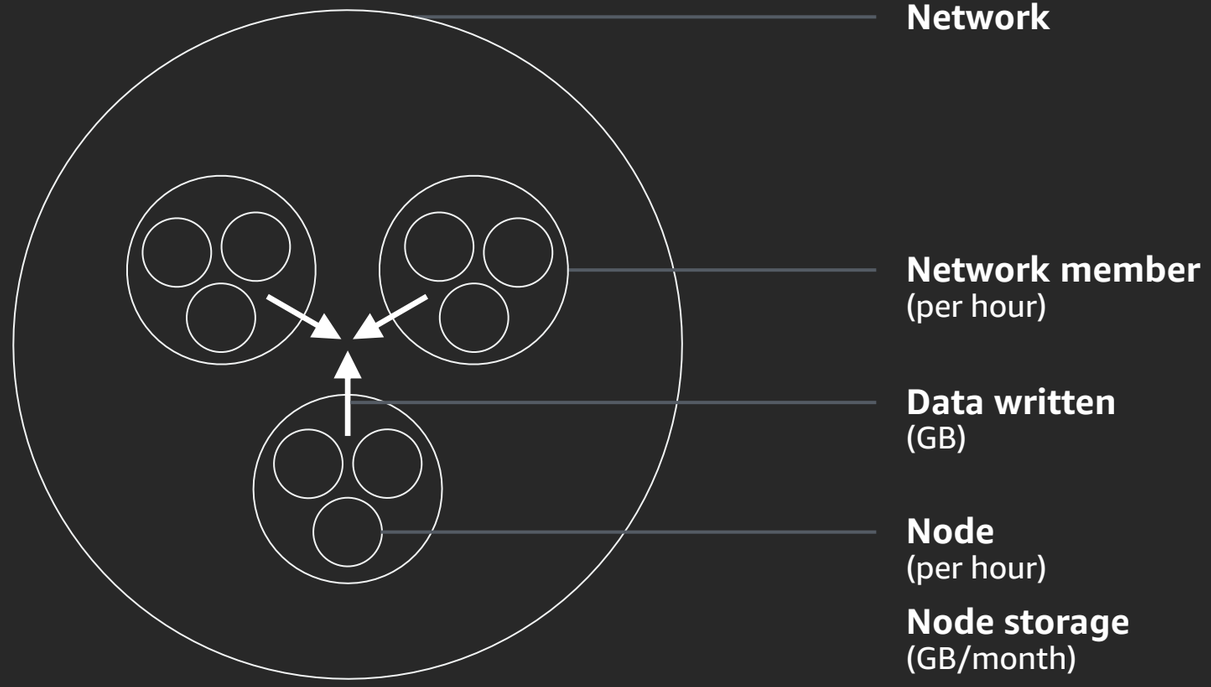
Each member pays for their resources

Voting and proposals to govern the network

- Networks are decentralized and can remain active even after the initial creator leaves
- Members vote on who to invite and remove
- Network voting rules to determine how a proposal is approved

Pricing dimensions

- Pay-as-you-go with no up-front costs
- Per-second billing
- Each member pays for their own resources and the data written to the network
- Standard data transfer rates



Low cost

Type of membership

Starter edition

- Test and small production networks
- bc.t3.small and bc.t3.medium
- Ordering service provisioned has **lower** transaction throughput and availability than that in a Standard Edition network

Standard edition

- Production networks
- bc.t3, bc.m5, and bc.c5 instance families
- Ordering service provisioned has higher transaction throughput and availability than that in a Starter Edition network

Membership pricing is different for each edition

Blockchain in many industries

Proof of Ownership

Documents/Contracts

Digital Security Trading

Food and Beverage

Mortgage Loans

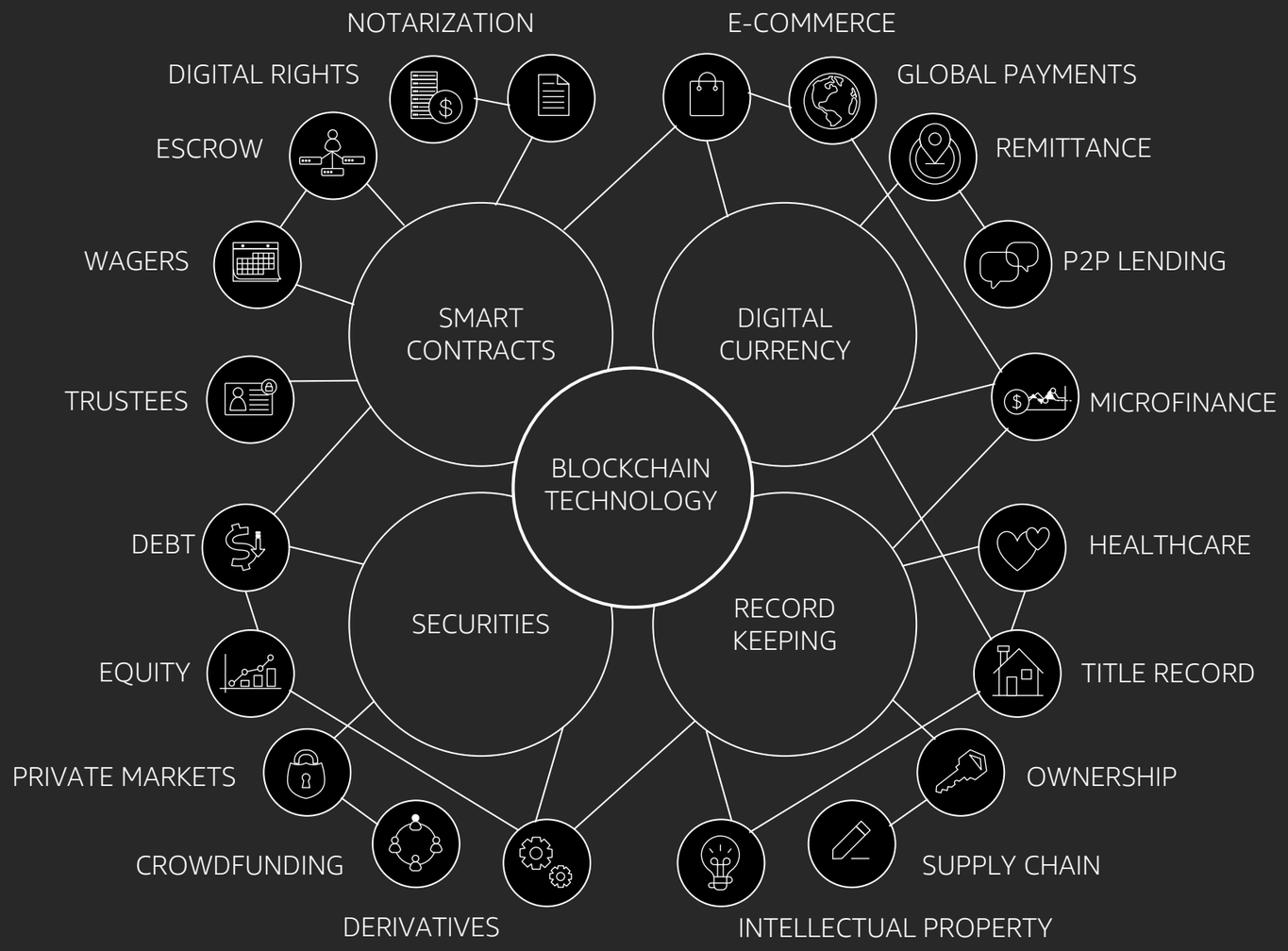
Voting Mechanisms

Patient Records

Corporate Governance

Customer Rewards

Insurance



Capital Markets

HCLS

Real Estate

Legal

Agriculture

Gaming

Transportation

Supply Chain

Digital Advertising

Power/Utilities

Retail

Content Rights

Enterprise customer's perspective on blockchain

Key benefits of blockchain

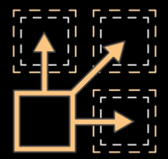
De-centralization

Transparency

Customer needs

Collaboration with stakeholders using transparent data

High compatibility and stability along with a variety of services

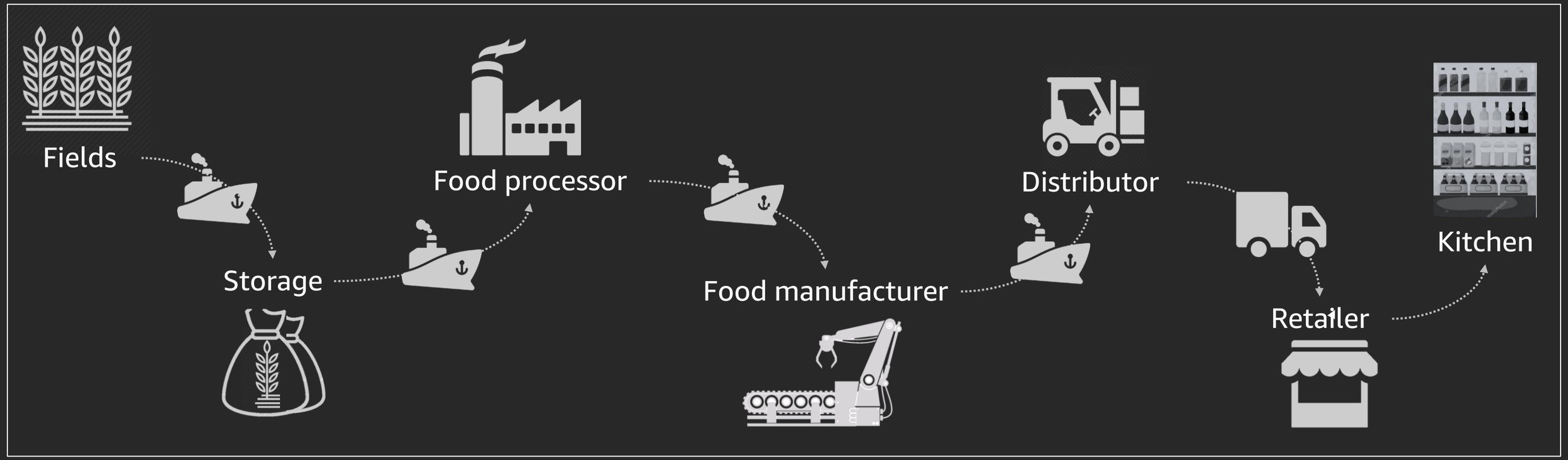


Minimize unnecessary efforts on business operation and expansion

1. SCM (Supply Chain Management)
2. Content license & copyright management
3. Payment/ authentication
4. BaaS (blockchain as a service) platform service

Nestlé	TEUwork/ ANKO
CJ OLIVENETWORKS SonyMusic	
Singapore Exchange Limited (SGX)	Guardian
256 Lambda Blockchain	

Challenges in the SCM (supply chain management)



1. Total resources required to manage supply chain
2. Challenge in integration of IT systems between our company and vendors
3. Challenge in immediate communication

Why blockchain for supply chain?

- Distributed ledger
- Guarantees immutability
- Publicly available
- Enable product traceability in each step of the supply chain
- Tracing important information
  - ✓ Temperature
  - ✓ Quality of goods
  - ✓ Shipment and delivery dates
  - ✓ Safety certifications

Manufacturer

Confirm order and ship beer

Shipping Company

Deliver the beer to beer pub

Beer Pub

Check the ordered count of beer

Customer Story

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Innovation challenges

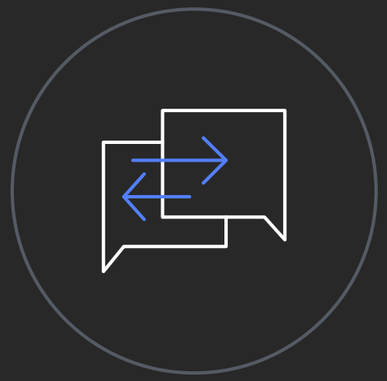
How does Nestle deliver superior tasting products, and what role does technology play?

Deliver superior taste

Reward best practice

Promote collaboration

Business opportunity and technical challenge



Share coffee tasting attributes like location, plantation type, processing method, coffee grade, freshness and roasting level

Real-time data collaboration help better anticipate demand

Showcase best in class practices from farming through to packaging

Consumer value ⟵ Real-time data collaboration ⟶ Industry needs

Nestlé Supply Chain Management on AWS Managed Blockchain

https://www.chainoforigin.com/

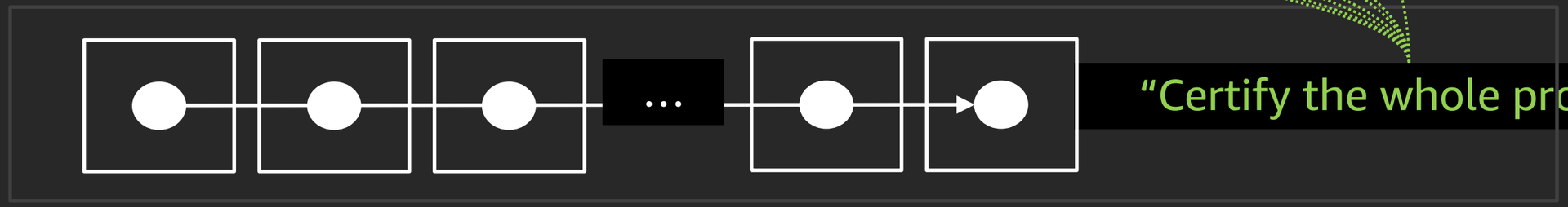
48h





Farm — Dry & wash — Ship ✓ — Roast — Grind — Package (label) — Retail ✓ → Customer

Blockchain



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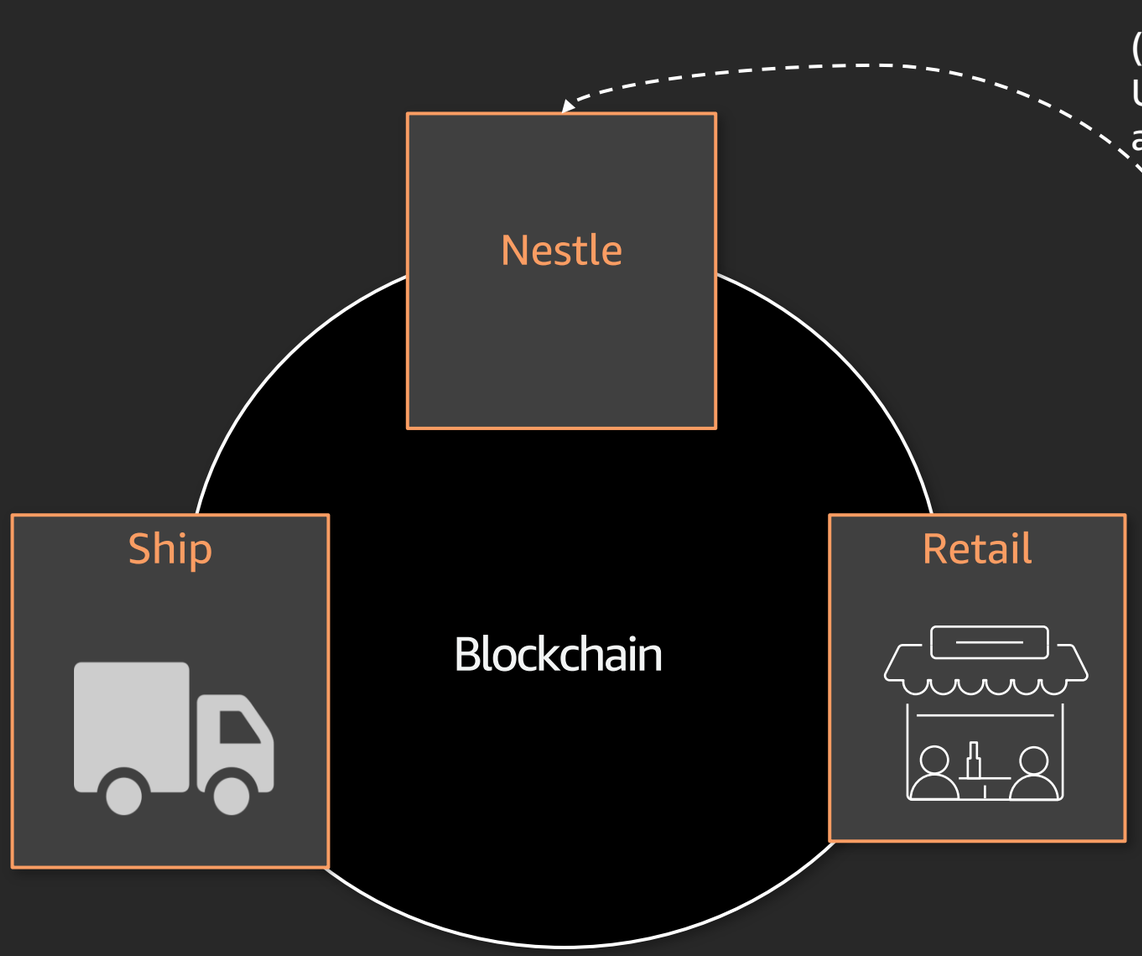
Nestlé Supply Chain Management on AWS Managed Blockchain



Farmer

"I can record where this coffee came from with Dapp"

Customer

SCAN TO DISCOVER

"I know the origin of this coffee"

"I trust it is delivered within 48 hours of roasting"

"I certify the whole process of this coffee"

Free image source: https://pixabay.com/

Nestlé built the Chain of Origin

Brand mission: provide consumers a transparent process that provides unique flavor profiles and distinct user journey

Personalization

Utilising technology to provide a fully trackable and 1:1 personalised user journey

Collaboration

Using data collaboration as a method to deliver artisan coffee that talks to its provenance

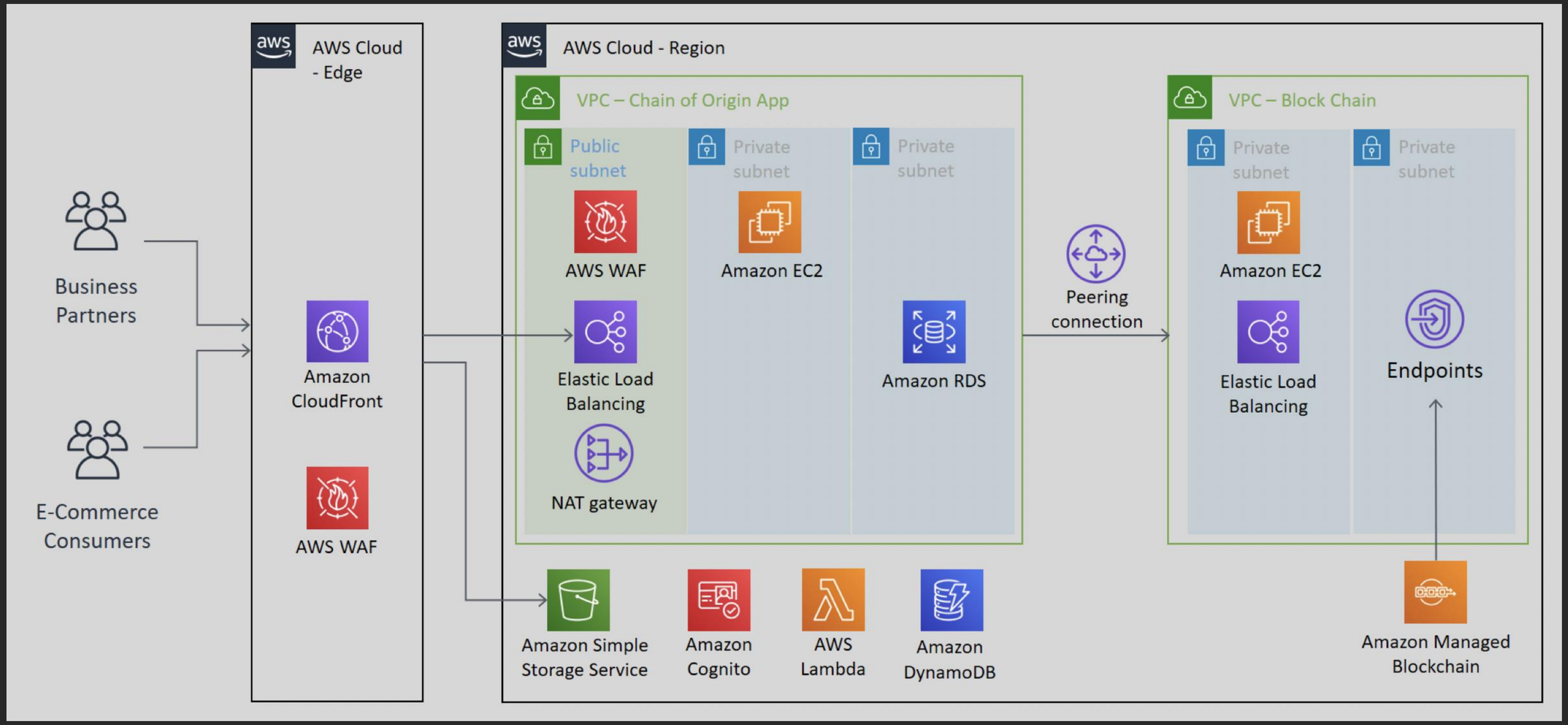
Freshness

Fresh ingredients and unique production process to provide consumers with a flavor experience like no other

Subscription

Creating a direct to consumer offer that giving better control over quality and user experience

Nestlé's architecture on AWS



Amazon Managed Blockchain customers

Why customers chose Amazon Managed Blockchain

- Support for Hyperledger Fabric
- Ease of use
- Low cost
- Integration with other AWS components

Thank you!

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