Identifying the Value of Blockchain

A realistic attempt to understand the blockchain technology and its value add application in industry

Buying a home

You want to buy a house in San Francisco?

- Blockchain technology and its application in everyday life.

Giving a realistic example to how the technology will incorporate itself into our daily lives.

- Property Purchase

The Importance of trust in Business

Property Purchase
- Lending Bank
- Municipal Registry
- Property Inspector
- Insurer
- Appraiser
- Buyer
- Seller's Agent

Industrial Supply Chain
- Freight
- Source materials
- Quality Inspection
- Financing
- Retailer
- Manufacture and assembly
- Consumer

Trade Finance
- Importer
- Adviser Bank
- Shipping Company
- Exporter
- Issuing Bank
- Inspection Company

We already have systems that do that

Yes, but, those systems are:

- Very **expensive** to operate and constantly reconcile, often manually
- Extremely **inefficient**, taking days to complete in some cases
- Open to **fraudulent** activity

What appears to be real-time or automated to you, the consumer, is often very manual, error-prone and labor intensive in the back end.

Aka. A 'Mechanical Turk'

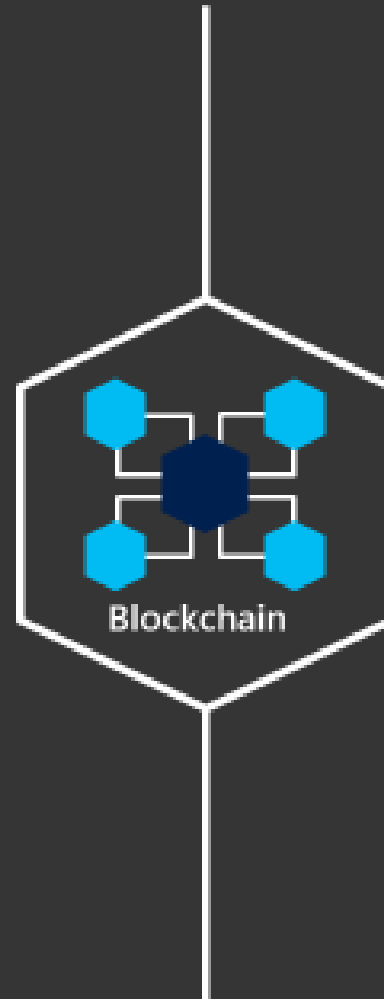# Existing methods of managing trust are time intensive and costly

Intermediaries

increase cost and reduce
direct contact with consumers

Manual verification

is time-consuming
and error-prone

Blockchain streamlines the way trust is established

Cryptocurrency

Enterprise

Cryptocurrency

Blockchain

Insurance

Manufacturing

Banking and Capital Markets

Health

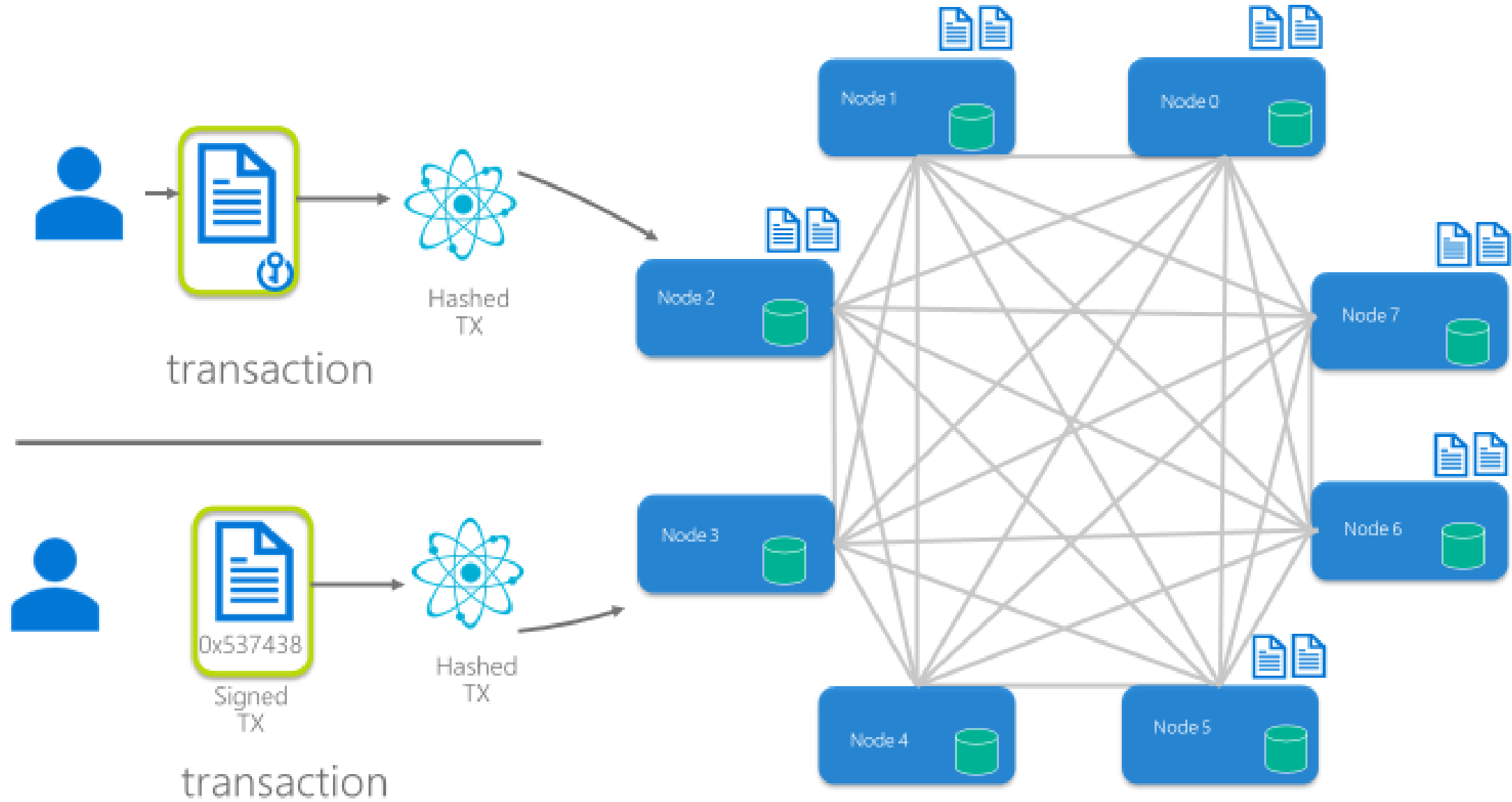Retail

Government

How does blockchain work?

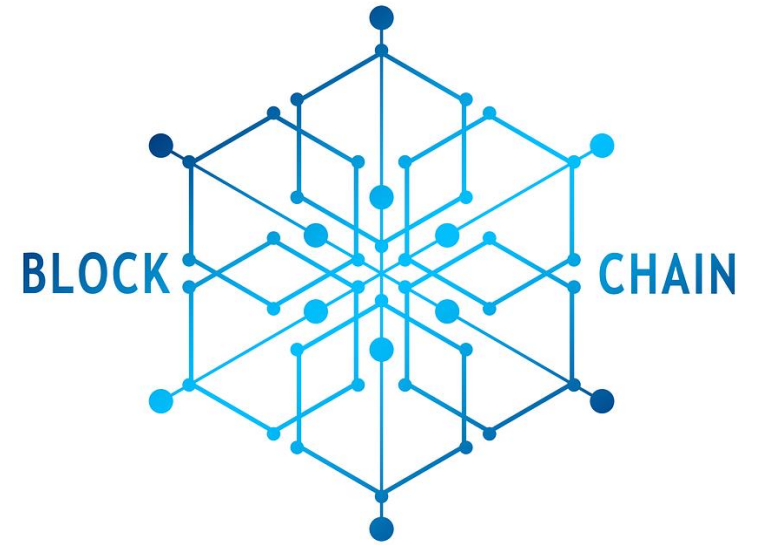Data is stored in a ledger—
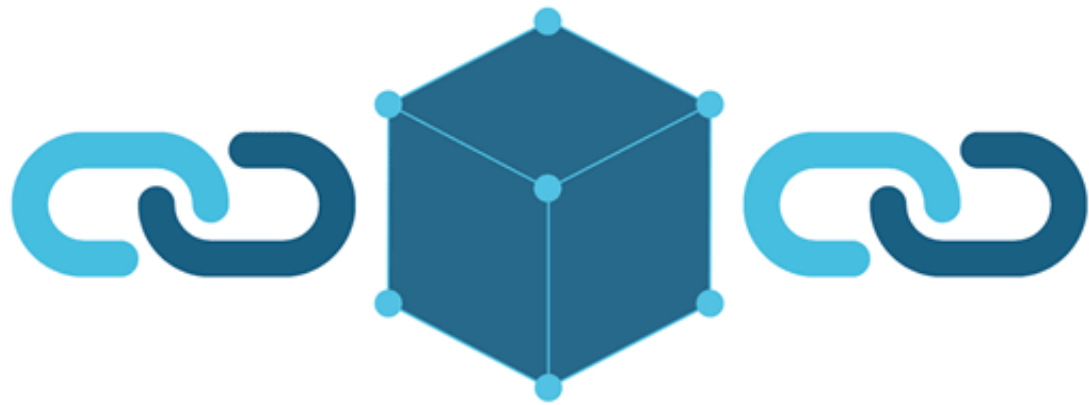a record of every transaction

Everyone in the network has an
individual, identical copy

The ledger can only be updated
by network consensus, and
information can't be altered or
deleted without the knowledge
of the whole network.
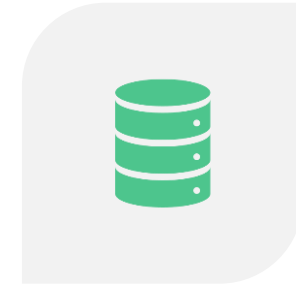
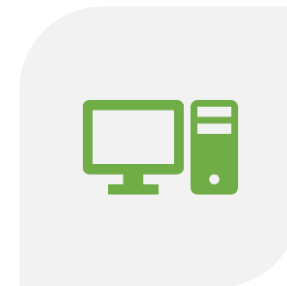# Transactions

BLOCK   CHAIN

Blockchains Shakeup

SOME COMPANIES OFFER REAL ESTATE DEALS WITH THE USE OF SMART CONTRACTS.

BLOCKCHAIN IS BEING USED FOR WEBSITE HOSTING AND DATA STORAGE.

CRYPTOCURRENCY USAGE OF THE TECHNOLOGY TO VERIFY PEER TO PEER TRANSACTIONS.

And has applications across industries

Manufacturing

Asset tracking

Real-time auction for supplier contracts
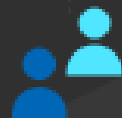
Supply chain transparency

Dynamic commodities pricing

Retail

Loyalty tracking

Product provenance

Logistics management

Digital rewards

P2P selling

Ticket purchases

Insurance

Claims management

MBS/Property payments

Fraud detection

Automated underwriting

Risk visualizations

Banking and Capital Markets

Audit compliance

Bond issuance

Trade finance

Loan syndication

Post trade settlement

Global payments

Derivatives trading

KYC/AML
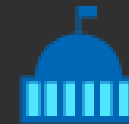
Government

Licensing and ID

Benefits distribution

Aid tracking

Military security

Copyrights

Health

Personalized medicine

Records sharing

Compliance

Agricultural authentication

Pharmaceutical purity

Asset Transfer Provenance   **Cross-Organizational Workflow**   **High Assurance Audit**

Trade Finance

Current state

- Today's solutions for managing trade finance are built on antiquated technology and processes that exist in silos. This adds significant risks, complexity, and time into trade processes, as all parties have to manually verify data. Pain points include:

• Error-prone, manual processes for creating, validating, and auditing trade data and documentation

• Siloed data that is difficult to verify, leading to multiple versions of the truth and major fraud, compliance, and audit risks

• Disconnected legacy systems that limit new business opportunities and make it difficult for small and medium businesses to gain access to financing alternatives

Blockchain's Solution

Future state

- Blockchain opens the door for streamlined trade finance, enabling participants to exchange data easily and track assets in real-time. Corda, an enterprise-grade ledger that enables banks to limit who sees what information and selectively share data with only relevant parties. The solution involves blockchain technology paired with Azure and APIs, and could be used in the future to involve technologies like AI, machine learning, IoT, and more. Benefits include:

- Simplified integration between banks, corporations, and the ecosystem of trade service providers of KYC and credit data

- Reduced risk of fraud and lower compliance costs

- New business opportunities enabled by ease of connections to new origination sources and the ability to build secure data pipelines to pools of financeable assets

Commercial Insurance

Current state

- Specialty insurance deals with high-value assets and typically requires collaboration between many parties: insurers, consumers, brokers, aggregators, platforms, reinsurers, banks, and more. This means that guaranteeing visibility and efficiency between each party is critical. Pain points include:

• Siloed information and lack of standardization of documents and policies results in time and money wasted on manually resolving different data sets

• Lack of real-time visibility into asset location and condition

• Difficulty of accurate underwriting and pricing, due to lack of clarify

• Inefficient, paper-based tracking mechanisms, resulting in time-intensive audits • High incidence of fraud and financial crime

Future state

- Blockchain's ability to provide a single source of truth provides massive operational simplification and data transparency between many parties. Furthermore, blockchain can facilitate the creation of trade consortiums that many organizations can easily join, such as the platform created by EY, Microsoft, and Guardtime.

- Benefits include:

• Reduced frictional costs and administrative burden, faster payment reconciliation, indisputable audit trails, and lower risk of fraud

• Improved data quality through real-time visibility into the location, condition, and safety of high-value assets moving around the world

• Accurate, dynamic, and fair underwriting and pricing based on better risk assessments

• Better customer service by improving timeliness of claims' processing and payments • Possible on an enterprise scale through partnership between Microsoft and Corda

Blockchain's Solution

Starbucks empowers each member of its supply chain

Challenge
- Starbucks needed increased visibility into the movement of beans across its vast supply chain
- 97% of farmers are small hold/one-acre farms that have difficulty scaling production to meet demand

Solution
- Use blockchain based smart contracts to define the responsibilities of each supply chain participant and record their activities
- Provides immutable proof-of-end purchase to farmers enabling access to higher quality credit
- Monitor the movement of beans from farm to pour using a shared, cloud-based app

Over the next two years, we will look to **demonstrate how technology and innovative data platforms can give coffee farmers even more financial empowerment**

— **Kevin Johnson**
Starbucks CEO

And reinforces trust from farmers to customers

Farmers are financially empowered...

- Understand downstream movement of their product and better forecast demand
- Receive immutable "proof-of-end purchase" from Starbucks
- Establish creditworthiness to access higher quality credit and expand operations

Starbucks receives immutable record of...

- Bean provenance
- Inventory state changes and movement

Customers enjoy increased transparency...

- Into the individual region
- The farm origin of the coffee
- Tactics used to farm their high-end coffee

Interswitch | Seamless supply chain financing

Challenge

- To bridge the gap between the existing corporate-based financing infrastructure in Nigeria and a growing number of small to mid-size enterprises in need of capital.

- Supply chain financing involves multiple counter-parties who lack end-to-end visibility, exposing lenders to risk, delaying financing, and jeopardizing projects.

Solution

- Interswitch partnered with Microsoft to develop a blockchain-based supply chain financing service that brings together major financial institutions from different countries to seamlessly manage trade finance.

Results

- Banks reduce their exposure to loss or fraud and streamline financing decisions, giving more people access to more funding, while lenders can deliver more value.

- Borrowers now secure financing in three weeks or less, so they can take on more work in less time.

- Project contractors and suppliers can better predict requirements, accelerate turnaround, and increase sales cycles and volumes.

> Armed with a single version of the truth across the supply chain, Nigerian lenders and suppliers can identify and build relationships with high performing entrepreneurs. That will help empower people to create more jobs, more wealth, and a more prosperous Africa.

— **Eghosa Ojo**
Designer Thinker and Head of Innovation at Interswitch

Interswitch

Bühler | Ensuring food safety

Challenge
- A lack of connectivity, transparency, and traceability in the food supply chain caused food waste and inefficiencies.

- 25% of all harvested grain is contaminated with mycotoxins and nearly half a billion people are at risk of consuming aflatoxin contaminated crops.

Solution
- Buhler and Microsoft developed a blockchain strategy to track grain and ensure it's handled according to regulations.

- Augmented physical machines with an AI-enabled insights platform to ensure all grains processed are toxin-free

Results
- Digitally verify that all grains are handled compliantly as they move through the supply chain, providing transparency to each counterparty through a shared ledger.

- Assess any contamination and alert all parties in real-time to avoid a public safety issue.

- Create a shared food-safety utility for the agricultural industry that could guarantee crop safety from farm to fork
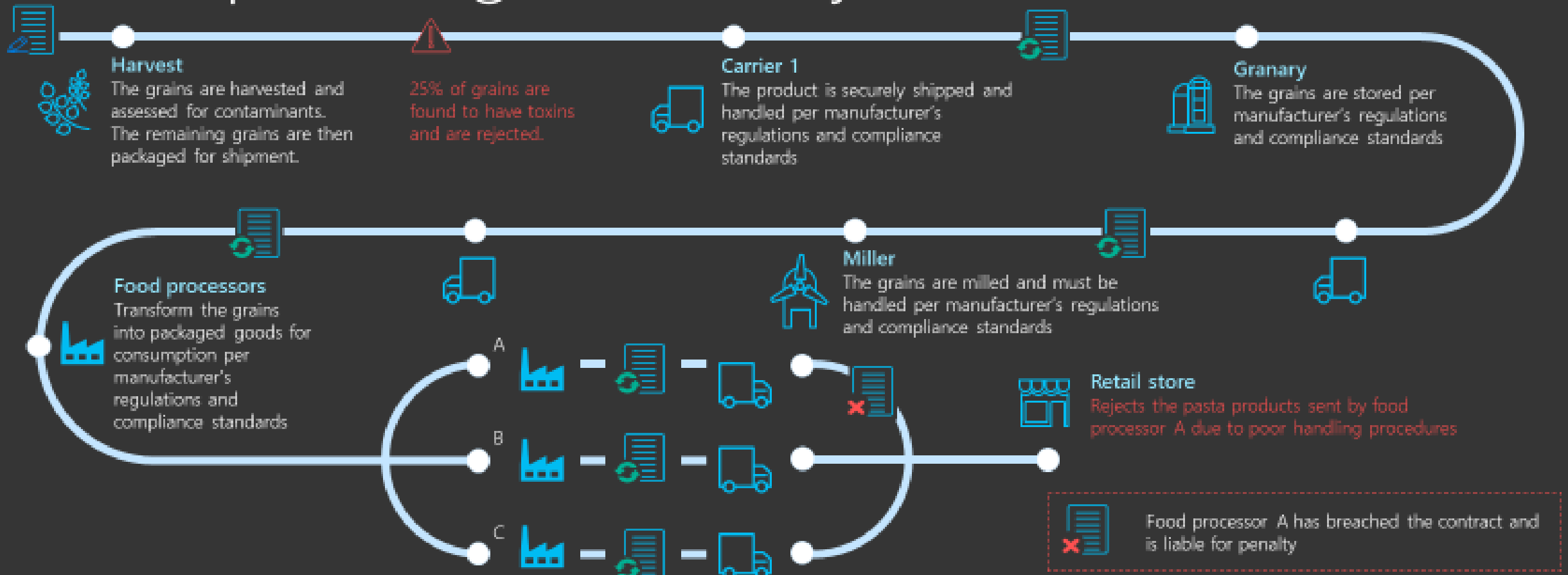
BUHLER

We're not only going to get economic results, but hopefully we can transform and save lives at the same time. It's the most exciting and valuable project I've worked on in my 40 years with the company. It's a really big thing.

— **Ben Deefholts**
Senior Research Engineer

Bühler | Ensuring food safety

Harvest
The grains are harvested and assessed for contaminants. The remaining grains are then packaged for shipment.

25% of grains are found to have toxins and are rejected.

Carrier 1
The product is securely shipped and handled per manufacturer's regulations and compliance standards

Granary
The grains are stored per manufacturer's regulations and compliance standards

Food processors
Transform the grains into packaged goods for consumption per manufacturer's regulations and compliance standards

Miller
The grains are milled and must be handled per manufacturer's regulations and compliance standards

A

B

C

Retail store
Rejects the pasta products sent by food processor A due to poor handling procedures

Food processor A has breached the contract and is liable for penalty

SHARED LEDGER

Smart contract created
Grain needs to be harvested and shipped.

Harvest
- 25% of grains have toxins
- 75% of grains are shipped

Carriers
- Grains delivered
- Compliant handling

Granary
- Grains stored
- Compliant handling

Miller
- Grains milled
- Compliant handling

Food processors
A: Pasta products
B: Bread products
C: Rice products

Retail store
A: Rejected – non-compliant handling
B: Accepted
C: Accepted

Thanks for coming!

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