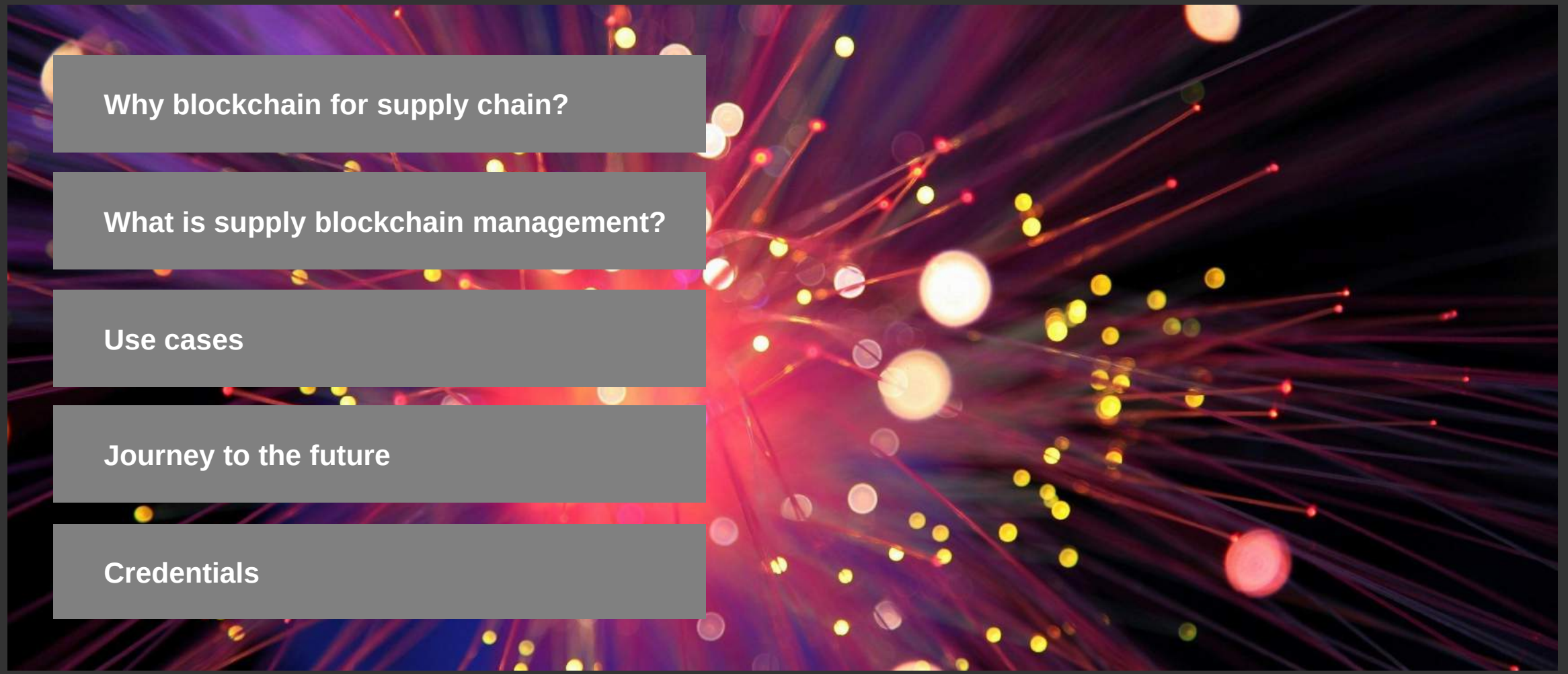
EY Global Blockchain Summit

San Francisco, CA

April 26, 2017

Building a better working world

Agenda



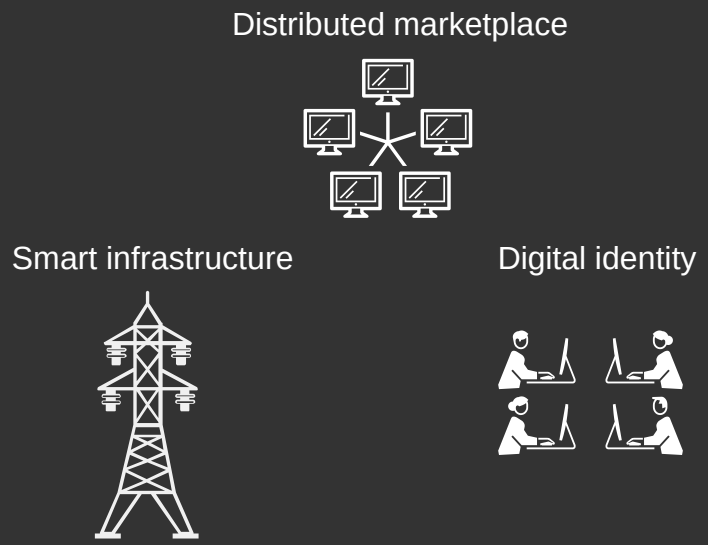
- Why blockchain for supply chain?
- What is supply blockchain management?
- Use cases
- Journey to the future
- Credentials

Why blockchain for supply chain?

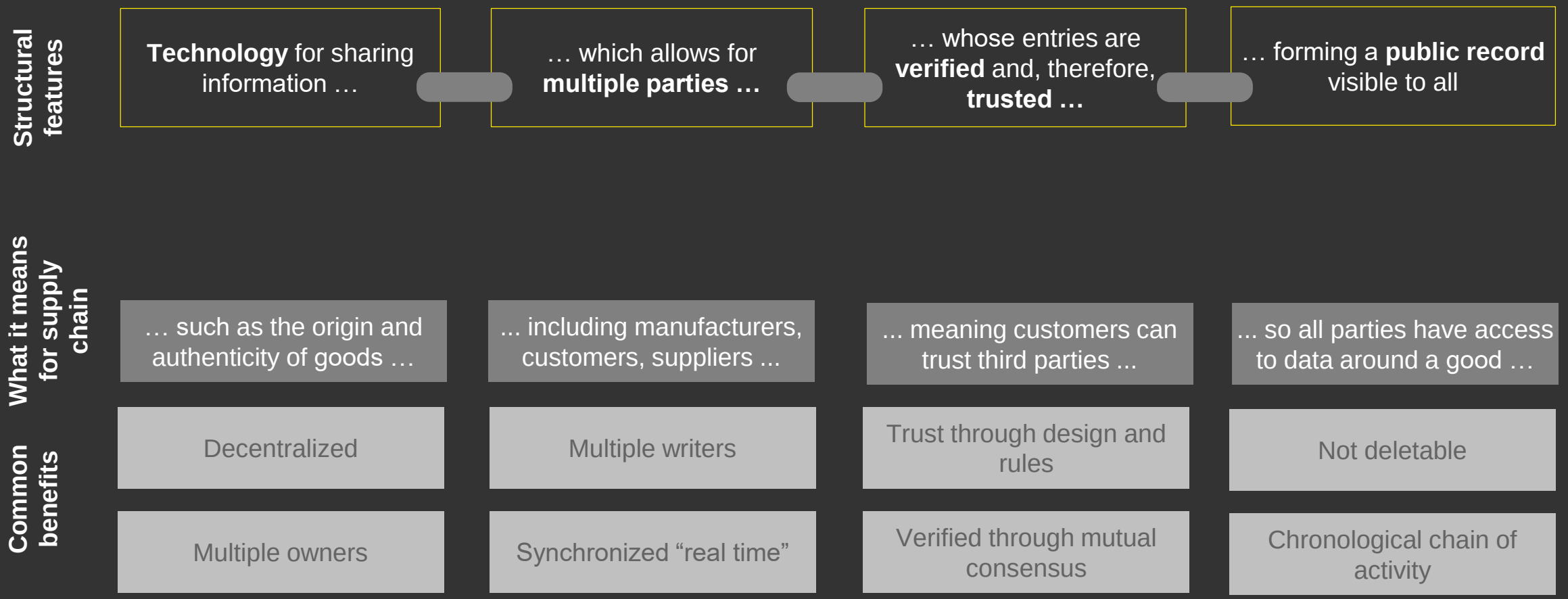
Why blockchain for supply chain?

- Blockchains in the **financial world** provide what is called **“digital continuity.”**
- In **supply chain**, most exchanges bring together different parties that **have no reason to trust one another**.
- Blockchains play a key role here and can help **eliminate duplicative and error-prone transactions —** helping create a **digital identity**.

Supply chains
Intragroup reconciliations
Interorganization reconciliations
Industry record-keeping



Blockchain can provide a solution



Blockchain opportunities across the supply chain ecosystem

Planning and forecasting

- Demand forecasting and planning

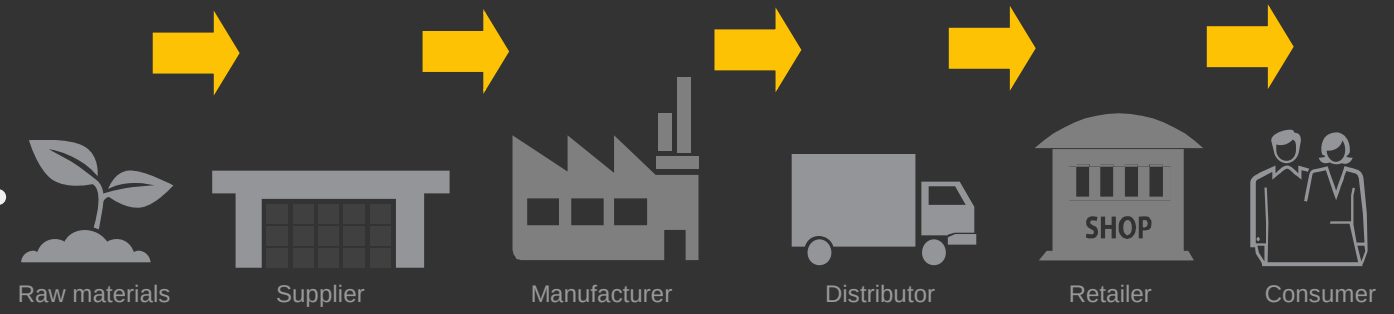
Procurement and manufacturing

- Procurement ecosystem
- Carrier contract management
- Manufacturing ecosystem

Supply chain financials

- Carrier payment
- Customer billing
- Driver pay

Chain of Things



Chain of Things

Visibility

- Control center
- Vendor-managed inventory (stock-keeping unit)

Asset management

- Lease management
- Insurance management
- Maintenance management

Execution and operations

- Brokerage and freight forwarding (international trade)
- Digital bill of lading (BOL)
- Trade compliance

What is supply blockchain management?

Customers are demanding greater trust, supply chain transparency and auditability.

Could blockchain give us the luxury of a fake-free world?

There are three types of business affected most by counterfeiting

1. Brands

2. Retailers

3. E-commerce platforms

Impacts of counterfeiting

- Loss of revenue, especially resale (10% of sales)
- Loss of market share
- Damage to brand
- Lack of trust from consumers

Why blockchain?

Allows brands to show path of a product from raw goods, to manufacturer, to distributor, to retailer, to consumer and even then to the resale market

Use case

Use case: supply chain product certification

Carve supply chain into the body of the blockchain

What could blockchain do?

Blockchain-protected supply chain framework

- The product ledger will hold the key properties of components, quality, quantity and custody at a given point in time. These attributes are stored in a secure infrastructure and can be represented in consumer-facing applications. It will be readable and linked from pre-existing data sets.
- Every relevant participant also will be an interested party in performing a quality assessment, auditing the network and getting verification from the relevant performing party. Participants are producers, manufacturers, registrars, standards organizations, customers, certifiers and auditors.

Impact:

- Incomprehensible network of product trace
- Supply chain mass contamination of products
- Counterfeit parts in product inception

A blockchain solution provides:

- Brand value for products
- Decentralized, the technology-shared architecture
- Establishment of mutual trustless trust

Use case: blockchain-powered, industrial Internet of Things (IoT)

Connect industrial assets to a protected and secure digital marketplace

What could blockchain do?

Blockchain can provide secure IoT digital marketplace

- Blockchain provides secure, machine-to-machine communication and distribution of smartly produced data.
- Its decentralized server adds a layer of security to file storage and transfer, determines roles and permissions, provides trustless peer-to-peer messaging, and offers secure and distributed data sharing and healthy equipment coordination.
- It can facilitate tracking production, distribution and consumption, and automatically detect problems to initiate a cost-effective response rapidly.

Impact:

- Data gathered in IoT network is futile
- Centralized cloud infrastructure
- Manual tracking of production, distribution and consumption

A blockchain solution provides:

- Safe distribution of smartly produced data
- Secure transfer of financially sensitive information
- Automatic installation of service requests

Use case: tracking and traceability of goods

Record trail and screen every product-trade transaction

What could blockchain do?

Blockchain can provide information around the origin of goods

- Blockchain provides an immutable, trusted and shared record of transaction data.
- With its verifiable and decentralized nature, retailers and manufacturers can track the origin and location of a product at any point along the supply chain at any given time.
- Blockchain could eliminate the burden on one trusted centralized party when dealing with multiple parties in multiple jurisdictions that are exchanging multiple physical goods and multiple documents and settlements by decentralizing the authority.

Impact:

- Lack of confidence in retailer
- Possibility for contamination
- Potential for mislabelling of goods

A blockchain solution provides:

- Reassurance to customers, particularly those with requirements, e.g., kosher and halal
- Helps avoid public relations disasters
- Helps maintain status as an ethical retailer

Use case: supply chain smart contracts

Protected, blockchain-enabled contract engagement

What could blockchain do?

Blockchain can reduce countless hours of marketplace research

- Blockchain holds the secure coding of all documentation related to a particular object — patent, warranty, provenance, registration, insurance and inspection certification — which helps in gaining control of that object.
- With this infrastructure in place, an interested user can select a car lease option, sign the documents and record the signed contract in the blockchain, thereby eliminating the need of third parties to sign for approval.
- The vehicle itself, being one of the intelligent objects in the blockchain marketplace, has ability to diagnose, schedule and pay for its own maintenance services.

Impact:

- Scores of documentation review
- File through to find vacant assets
- Trust centralized in single part for financial settlements

A blockchain solution provides:

- Automatic monitoring of parties
- Secure financial transaction verification
- Reduced time for research
- Real-time discovery, usability and payment

Chain of shipping

Situation

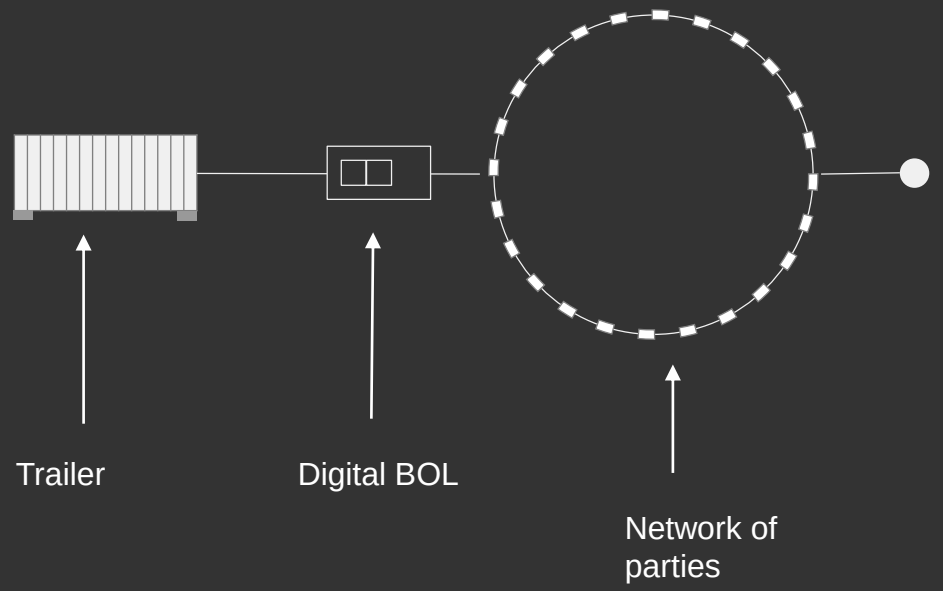
In the shipping and logistics industry, the traditional BOL systems are paper based and highly susceptible to fraud and inefficiencies.

Problem

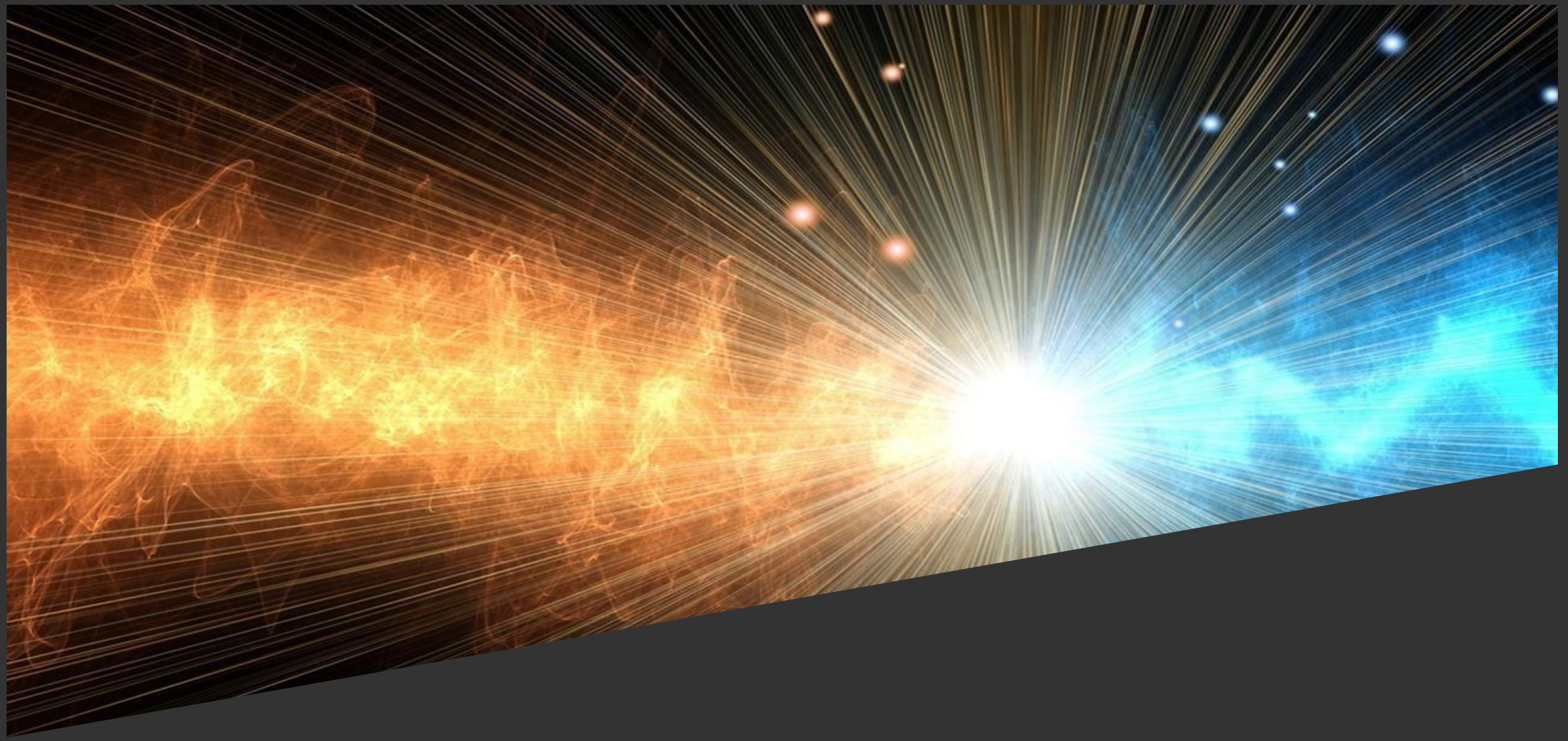
A physical BOL is a non-enforceable contract today, as well as replicable and insecure. It is not easy to share the document with contract parties and stakeholders. The terms of the contract aren't self-executing to trigger an alert via connected devices when the terms have been breached.

Solution

A BOL is a pivotal document in shipping, for both the consigner and consignee. A BOL can be digitized on a blockchain and the terms-of-shipping contract can be executed in code based on real-time data provided from IoT devices (smart agents) that are installed on shipping containers.



Journey to the future



Experimentation to implementation

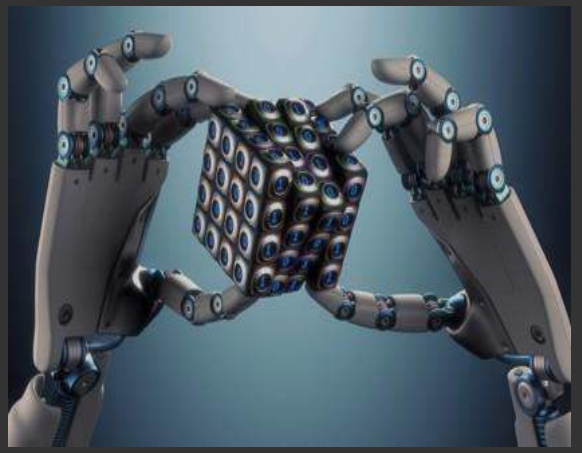
Use case selection

- Right representative
- Quick value delivery
- Set stage for revolution
- Unlock growth potential

Platform selection

- Thrust in development
- No compromise to business
- No limitations or less limitations
- Customizable
- Business network model

Advisor selection



- Blockchain and enterprise experience
- Platform and protocol assessment
- Understand your ecosystem
- Experience to monetize

Credentials

Leading manufacturing company
Blockchain proof of concept

Challenges

Our client's procurement organization has compliance issues related to third-party, pass-through pricing from its raw and packaging (R&P) suppliers to contract manufacturers.

There are defined instances where a contract manufacturer is directed to source from a specific suppliers for R&P materials. Our client has already qualified the source and negotiated pricing, with price breaks aggregating from total volume usage and specified minimum order quantities. Audits reveal a lack of adherence to the correct R&P material pricing, necessitating time-consuming and recurring reconciliation efforts on a quarterly basis.

Project approach

EY provided the following services to our client in a five-week engagement to evaluate a blockchain approach for the compliance-related issue.

- Created a working prototype that demonstrates the key features required to manage a contract manufacturer supply chain in a blockchain environment
- Built a broad business case for helping with the blockchain implementation across all of our client's contract manufacturers and other targeted areas within supply chain
- Documented the methodology design and architecture diagram, as well as functional requirements
- Built a road map based on the prototype, including next steps for a pilot expansion into the client's supply chain
- Provided the code repository and documentation of the developed prototype

Potential improvement – blockchain-enabled approach

- Significant reduction of value leakage across the contract manufacturing and supplier network
- Elimination of the price verification process
- Visibility of transaction across the entire contract manufacturing and supplier network
- Full-cost pass-through of R&P pricing each time

Key contacts

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