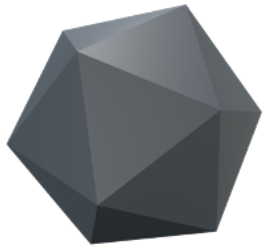


Blockchain.dcwebmakers.com

Comprehensive Review of Hyperledger Use Cases

By Matt Zand



DC WEB MAKERS

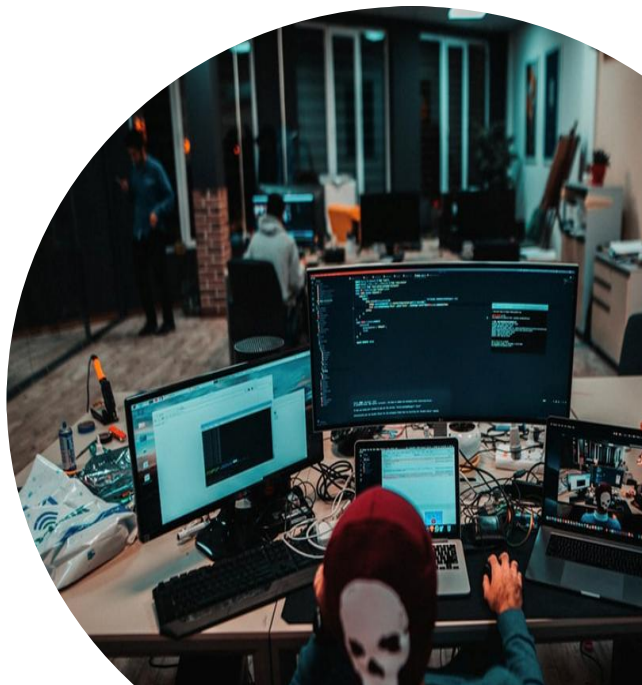
Introduction to Hyperledger Use Cases

21 use cases of blockchain

- **Matt** is a serial entrepreneur and the founder of 3 successful tech startups: [DC Web Makers](#), [Coding Bootcamps](#) and [High School Technology Services](#).
- He is a leading author of [Hands-on Smart Contract Development with Hyperledger Fabric](#) book by O'Reilly Media.
- He has written more than 100 technical articles and tutorials on blockchain development for Hyperledger, Ethereum and Corda platforms.
- He has a master's degree in business management from the University of Maryland.
- Prior to blockchain development and consulting, he worked as senior web and mobile App developer and consultant, angel investor, business advisor for a few startup companies.

Prerequisite

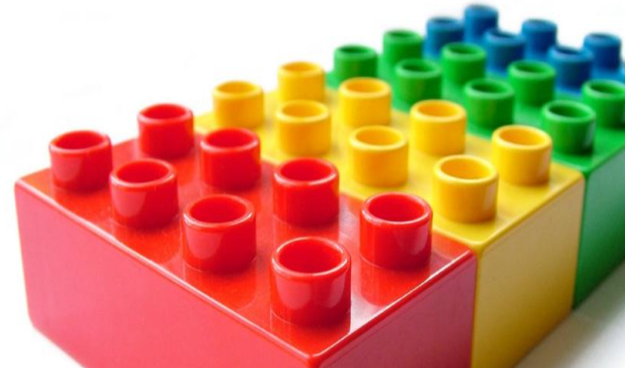
None



Topics

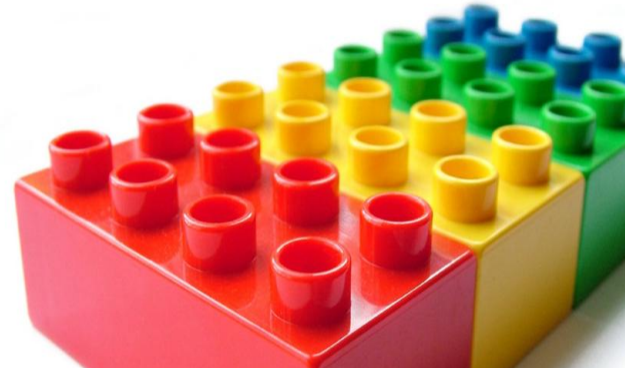
I- Hyperledger Overview

- Hyperledger Family
- Hyperledger Fabric



Topics...

II- Hyperledger Use Cases



I- Hyperledger Overview

Hyperledger Family and
Hyperledger Fabric

- Hyperledger Fabric versus the Hyperledger family
 - Distributed Ledgers
 - Libraries
 - Tools
 - Domain-Specific projects

- Distributed Ledgers



- Libraries



- Tools



- Domain-Specific projects



- [Hyperledger Fabric](#)
 - A Distributed Ledger Technology (DLT) and smart contract Engine
 - Hyperledger Fabric is a Linux community based blockchain product, <https://www.hyperledger.org/projects/fabric>
 - Hyperledger Fabric is an enterprise-grade permissioned distributed ledger framework for developing solutions and applications.
 - Hyperledger Fabric offers a permissioned approach to consensus, and it preserves privacy.

- Hyperledger Fabric
 - Most Blockchain are single ledger.
 - As the name implies, Hyperledger Fabric is a multi-ledger Blockchain.
 - The multiple Hyperledger ledgers are called channels that allow two or more users to conduct transactions in private.
 - Hyperledger Fabric smart contracts are called Chaincode, and are usually written in JavaScript or Go.

- [Hyperledger Fabric V2](#) book highlights
 - Overview of blockchain, Hyperledger family and Fabric components
 - Develop, test, debug and deploy smart contracts
 - Deploy Fabric on cloud platforms like Azure, AWS, Oracle and IBM
 - Survey of Fabric V2 features and hands-on guides for migration to V2
 - Build end-to-end Pharma supply chain with Fabric V2
 - Work with Hyperledger Aries, Avalon, Besu, and Grid

- Private business grade blockchains need:
 - Distributed Ledger
 - Data seen only by those who need to see it.
 - Permissioned roles
 - Can manage any type of asset or data
 - The ledger is only available to those who need to see it
 - Immutable
 - Known users
 - Visibility based on role
 - Few nodes with known users
 - Smart contracts

II- Hyperledger Use Cases

Review of 21 practical use
cases of Hyperledger

1- Financial Services

- Trade finance
- Know Your Customer and Money Laundering Prevention
- Financial asset tokenization

2- Higher Education

- Verified credentials
- Track and protect intellectual property infringement
- Fair allocation of financial grants and admission process

3- Entertainment

- Hyperledger can be used to manage information assets such as music files or images.
- Use smart-encoded, blockchain-powered file formats to ensure that artists and others, are receiving their fair compensation.
- Ensures that all parties are credited and/or paid

4- Energy

- Energy industry has many use cases for Hyperledger.
 - Decentralizing Energy Retail.
 - Tracking unused energy that can be used by other customers. The blockchain would also exchange payments for the use of excess energy.

4- Energy...

- The main benefits of blockchain in the energy sector are:
 - Reduced costs
 - Environmental sustainability
 - Increased transparency for stakeholders while not compromising privacy

5- Supply Chain

- Hyperledger is heavily used for supply chain management.
 - Supply chains are made of independent vendors with a common customer.
 - The vendors only share some of their data.
 - All participators in the supply chain can input required data including locations, lot numbers, deliveries etc.
 - The transparency of the blockchain make this readily reportable and traceable.

6- Law Enforcement

- Law Enforcement can also use Hyperledger.
 - The immutability of the blockchain makes it ideal for evidence tracking.
 - Blockchain can also provide immutable diaries or notes of the steps taken during investigations.
 - The transparency of the blockchain also provides advantages to the legal system.

7- Identity Management

- Identity meta-data and attributes can be hashed and stored on a blockchain.
- Identity Information could be available when needed and only shared with those who need it.

8- Elections and Voting

- Each elector would have 1 vote token per office up for election.
- When ready to vote, the elector would send ownership of his/her vote token to the supported candidate.
- The Hyperledger would tally the votes in real time, and the votes can be reported at any time.

9- The Publishing Industry

- Intellectual property/copyright management
- Revenue models (making money) and revenue distribution (sharing the money)
- More efficient production and collaboration processes- print supply chain and piracy tracking

9- The Publishing Industry...

Note that the use cases such as IP commercialization, protection and management via Hyperledger are applied to other digital assets such as music/video contents or patents.

10- The Aviation Industry

- Maintenance and operation in aviation industry
- Airline industry
 - 1- Ticketing by reducing dependence on intermediaries and reallocate industry value.
 - 2- Loyalty programs
 - 3- Security and identity of employees
 - 4- Simplify revenue accounting and payment reconciliation.

11- Record keeping

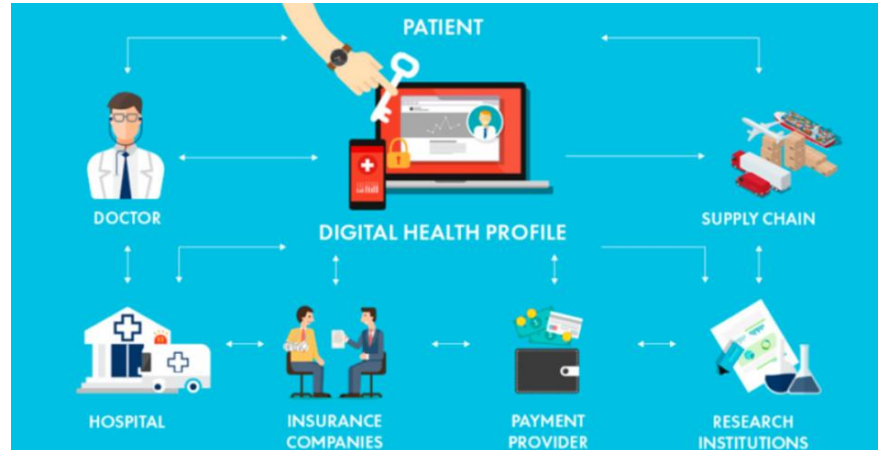
- Ownership assets can be permanently and immutably stored in Hyperledger.
 - This use case can also greatly serve the developing world where documented registration often does not occur.
 - The ownership assets such as:
 - Deeds
 - Licenses
 - Birth and death certificates
 - Certificates of insurance
 - More ...

12- Loyalty Programs

- Loyalty points can also be tokenized.
- Blockchain loyalty applications provide:
 - More Flexibility
 - Fraud Reduction
 - Reduce Program Costs
 - Increased Availability
- Another advantage involves making loyalty tokens redeemable not only from the issuer, but also, anonymously, from other participating merchants.
- This allows issuers to understand where their customers are using the tokens.

13- Healthcare

- Healthcare is also another natural use case for Hyperledger.
- Patient data can be secured on Hyperledger and only made available as needed to:
 - Physicians and other health care providers
 - Hospitals
 - Insurance companies



14- Sports and Esports

Here are 3 areas in which sports/esports can use Hyperledger:

- Enhancing fan interaction and experiences by incentivizing engagement
- Providing new revenue models through tokenized teams and enhanced loyalty programs
- Creating new markets for sports betting and collectibles trading

15- Settling Disputes

- Hyperledger applications: can validate ownership, are secure, support digital signatures and are transparent and timestamped.
- Hyperledger applications can greatly aid settling disputes.
 - Advantages include saving the public and individual money and time.

16- Internet-of-Things (IoT)

- The current state of the IoT is that it is greatly insecure. Users log into Internet connected devices; therefore, the devices are vulnerable.
- Hyperledger applications provide a way to secure IoT devices.
- Users are able to store user information on Hyperledger and using public and private keys in order to access to IoT devices.

17- Human Resource Management

Here are 6 areas in which HR professionals can use Hyperledger:

- Digital record management
- Employment contract automation via smart contract
- Subcontractor management

17- Human Resource Management...

- Cybersecurity protection for personal and financial data
- Promotion and performance assessment automation via smart contract
- Using digital ID for verifying credentials of job candidates

18- Real Estate Trading and Rental Markets

- In the US, realtors charge a broker fee, typically 5 to 6% of the selling price, for bringing a seller and a buyer together to make a real estate transaction. Lawyers also charge for providing legal services to a buyer or seller.
- A real estate blockchain network matches untrusted buyers/sellers or tenants/landlords for a deal. The scripted legal document, a smart contract, replaces most legal services provided by a real estate lawyer.
- No escrowing accounts are required since blockchain combines transaction and settlement into one action.

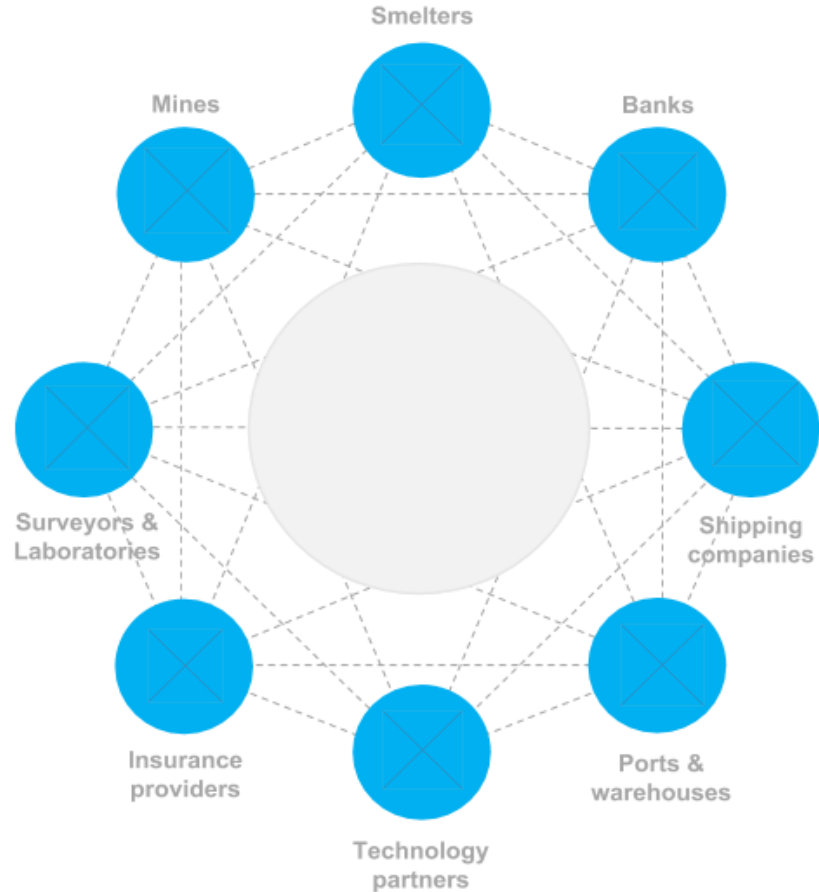
19- Fashion and Luxury Retail

Fashion and luxury retail can use Hyperledger for:

- Improvement of sustainable practices
- Redefinition of customer experience
- Brand authenticity
- Enhancement of consumer trust
- Improved data management
- Reduced costs and settlement time

20- The Mining Industry

There are many parties involved in a typical mining supply chain



20- The Mining Industry...

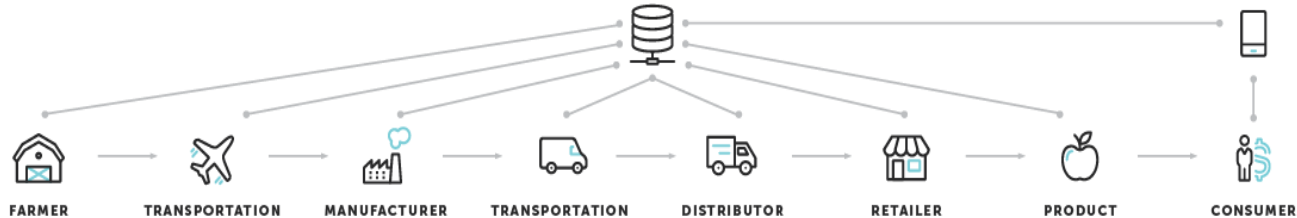
Hyperledger can be used in the mining industry for:

- Developing comprehensive end-to-end tracking of ores and minerals.
- Engineering, construction and handover of the mine sites
- Compliance and mining lease management
- Mineral provenance
- Mining equipment OEM

21- The Agriculture Industry

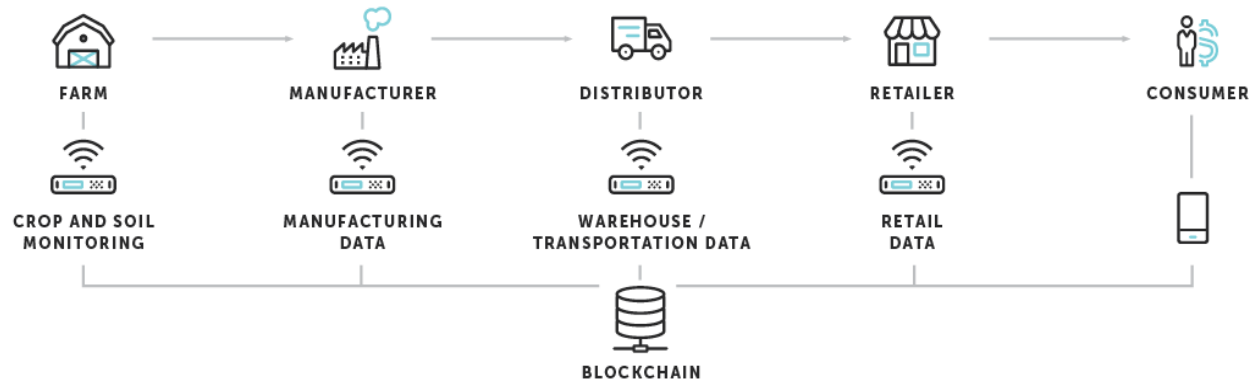
Use Case 1: Traceability from Seed to Shelf

From seed to shelf, a blockchain-based supply chain solution tracks goods with unique identifiers (QR codes) that are scanned at each location to create a digitally traceable end-to-end journey.



21- The Agriculture Industry...

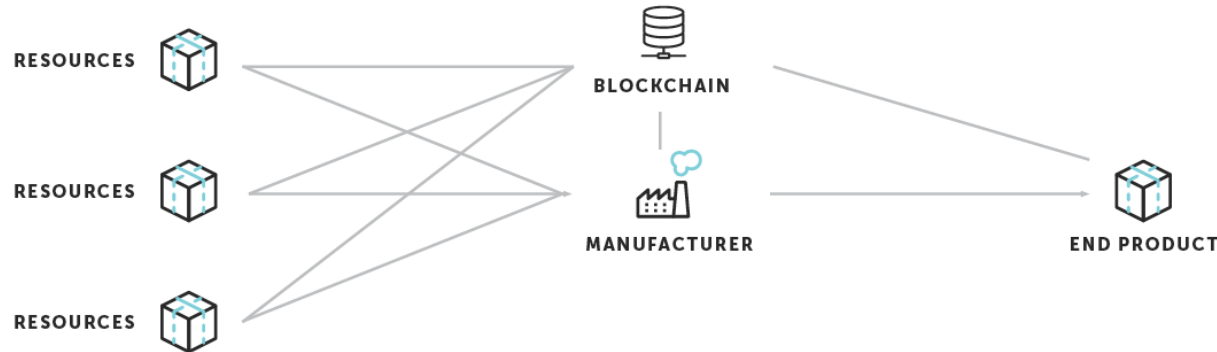
Use Case 2: Compliance & Quality Control



21- The Agriculture Industry...

Use Case 3: Inventory Management

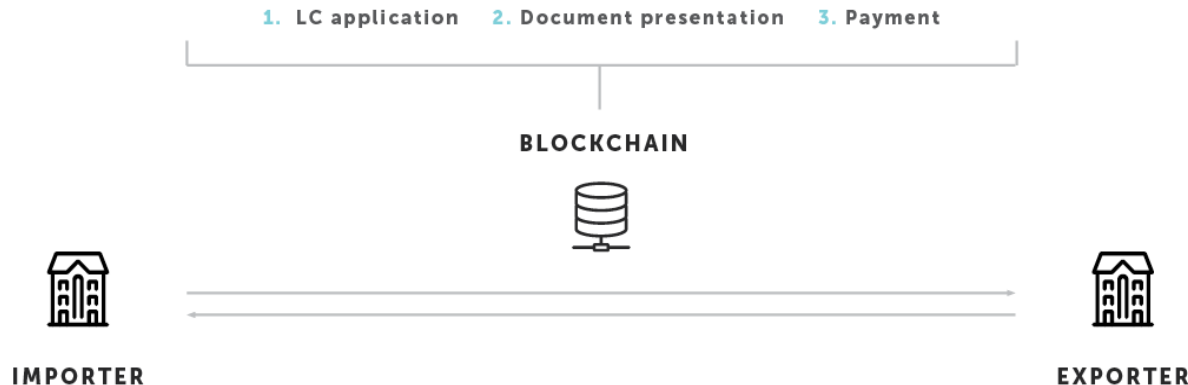
Scanning unique identifiers (QR codes) on each batch/product triggers transparent updates to the blockchain-based inventory system, where data is stored securely on a distributed ledger.



21- The Agriculture Industry...

Use Case 4: Trade Finance

Managing all communications and exchanges on the blockchain provides transparency for all parties involved. Smart contracts provide improved cash flow with automatically triggered payments once terms are met.



Take Away

What you learned in this
webinar?

Resources

- [Security Tokens versus Initial Coin Offerings](#)
- [Comprehensive overview and analysis of blockchain use cases in many industries](#)
- [History and Evolution of Blockchain Technology from Bitcoin](#)
- [Overview of Blockchain evolution and phases from Ethereum to Hyperledger](#)

Resources...

- [Blockchain Management with Hyperledger for System Admins](#)
- [Hyperledger Fabric and Composer for Developers](#)
- [Intro to Blockchain Cybersecurity](#)

Resources...

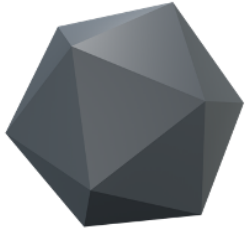
- [Learn Solidity Programming by Examples](#)
- [Introduction to Ethereum Blockchain Development](#)
- [Learn Blockchain Dev with Corda R3](#)

Contact

- You can reach me directly via email at mzand@dcwebmakers.com or LinkedIn at <https://www.linkedin.com/in/matt-zand-64047871>
- For more webinars, join our Meetup community: <https://www.meetup.com/coding-bootcamps/>

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Thank you



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webinar