**GUIDE TO INDUSTRIAL APPLICATIONS OF BLOCKCHAIN TECHNOLOGY**

**Updated to June 2022**

The blockchain is used for the verification of data transactions and their use, it includes all processes in which data must be protected, credited or distributed. Moreover, **blockchain-based** applications do not require intermediary institutions.

**Applications:**

1. **Banking and Financial services**
2. Operational Simplification

Blockchain allows real-time tracking and management of multiple parties of bank guarantees and letters of credit.

1. Automation in the fulfillment of banking conditions.

Trust in quickier and more accurate reports with an automatized fulfillment process based on immutable data records.

1. Faster settlement

Benefit from near real-time point-to-point transfer of funds between financial institutions or with individuals, eliminating friction and accelerating the settlement.

1. **Public field**
2. Safe exchange of data

Safe exchange of data among citizens and agencies help to reduce the concerns about the use of that data and facilitates broader cooperation, so that citizens can prosper and economies can grow.

1. Data Leakage Reduction

Blockchain can reduce the time, the cost and the risks of managing confidential information by providing an immutable and transparent audit trail for regulatory compliance, contract management, identity management and citizen services.

1. Overcoming the inefficiency of imperfect information

Any process can suffer from friction. Blockchains help to overcome the inefficiencies of imperfect information, the restrictive regulation, institutional inertia and unforeseen threats, including cybersecurity issues and the disruption of new business models.

1. **Health and life care**
2. Ensuring the data integrity among multiple parties

As organizations confirm the health status of their clients and employees, the blockchain networks guarantee the data integrity by storing an immutable and single version of the real data. Participants of the network can confidently collaborate through the data exchange while controlling the data access.

1. Full traceability

As pharmaceuticals are transported through the supply chain, they are recorded on a blockchain. These auditable records indicate that an item can be traced back to its origin, or to the pharmacy or seller that receives it. This helps to reduce counterfeit pharmaceuticals and manufacturers can locate a recalled product within seconds and answer quickly.

1. New levels of operational efficiency

From dispute resolution to the next steps in supply chain transactions (including the revision of medical pictures), smart contracts can automate processes to increase speed and efficiency. Smart contracts automatically take action when conditions are met.

1. Pharmaceuticals Recall Notification

KPMG, Merck, Walmart and IBM joined forces in an FDA pilot program for the Drug Supply Chain Security Act (DSCSA). The program successfully demonstrated a blockchain-based product traceability solution, which reduced the pharmaceuticals recall notification process from days to just seconds.

1. Bringing reliability and transparency to clinical trials

Boehringer Ingelheim and IBM are discovering the use of blockchain technology in a clinical trial environment. The aim is to increase trust and transparency among all stakeholders, especially when it comes to patient consent and data management.

1. Vaccine distribution network

Build trust in new vaccines, from their creation to their injection, with a network powered by IBM Blockchain. Tracking vaccine distribution at every step to help manufacturers, distributors, pharmacists and the public.

1. **Insurances**
2. Subscriptions automation

Increase speed and profitability with smart contracts.

1. Automate claim settlement  
    Reduce costs with automated claims and data verification.
2. Reduction of fraud and abuse

Avoid misuse with better traceability and responsibility.

1. **Retail trade and consumer goods**

A. Fraud removal

Digitally register media purchases in a shared, immutable ledger (blockchain).

1. Cost reduction

Optimize inventory management and invoicing

1. Increasing transparency

Automate payments, verify digital supply chain participants and more.

1. **Media and entertainment**
2. Increasing consumer confidence

The buyers’ confidence grows in the aisles and online as Blockchain verifies the autenticity and security of the products.

1. Improving supplier’s ability to meet the demand

Retail supply chain participants are able to guarantee better that they trade ethically sourced products to meet emerging consumers demands.

1. Increasing the income capacity of retail trades

From the big names to the tiny enterprises of the cities, retailers are able to promote products, gain loyalty and get information about the preferences of the consumers in entirely new ways.

1. **Supply chain**
2. More transparency in the supply chain

Supply chain networks can be limited by unidirectional, upstream or downstream visibility. Through distributed ledger technology that provides a single, shared version of the truth, IBM Blockchain supply chain solutions offer participants, with permissions, greater visibility into all supply chain activity.

1. Creating a resilient supply chain

An unexpected event can trigger a cascading series of supply chain disruptions. IBM Blockchain supply chain solutions use smart contracts that are automatically triggered when predefined business conditions are met. This provides near real-time visibility into operations and enables action to be taken in case of an exception.

1. Optimized simplified approach

The approach of new suppliers is a manual and time-consuming process for both customers and sellers in a supply chain. IBM Blockchain supply chain solutions can accelerate this process through an unalterable and reliable record of new supplier details.

1. **Manufacturing**
2. Getting a reliable source from the supply chain.

Getting source information on every component of a product with IBM Blockchain's immutable assets register. A higher degree of accuracy makes it easier to audit the process, eradicate counterfeit items and eliminate inappropriately sourced raw materials.

1. Strengthening relationships with business partners.

Effectively manage distributed supply ecosystems through increased visibility and address cost and complexity issues within supply relationships. Optimize new suppliers onboarding by reducing reliance on paper-based certifications and manual approval processes.

1. Reducing financial friction

Increase data visibility to immediately identify discrepancies and disputes between trading partners. Drastically reduce reconciliation time by automating business rules with smart contracts and reach consensus in near real-time.

1. **Automotive industry**
2. **Oil and Gas**
3. **Travel and transport**
4. **Telecommunications**

Note: The last four (4) industrial sectors have similar characteristics to the ones mentioned before.

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