

BLOCKCHAIN CONCEPT

Blockchain in the supply chain



Typical characteristics of a classic supply chain

- This is a multi-modal system with a large number of participants, where everyone is responsible for a certain part of the chain and administers his own processes within his own isolated IT system, which is governed by internal rules and is administered by people from different organizations.
- Information between parties is exchanged from various IT source systems of the participants in the logistics chain through analog (paper-based) communication and exchange.
- To ensure the guarantee and reliability of the transfer, banks usually require the provision of original documents, which can be located thousands of kilometers away.



Paper-based Communication

Problems of heterogeneous systems

- The lack of a holistic view of the supply chain or late information leads to limitations in planning and forecasting sales, production, logistics and inventory at each point in the chain.
- Worldwide handling and administration costs reach a 20% of total expenses
- A poor system response leads to a delay in payment for an already delivered product or overproduction under an already canceled contract.
- Large amounts of money are frozen due to various controversies. Every day due to disputes over payments in the transport industry are blocked in the accounts of \$ 140 billion
- Opportunities for fraud poor traceability of goods throughout the chain may lead to the use of forged documents, which will require additional efforts by inspection and security agencies.
- The same administrative work in each of the organizations is repeated many times - to update the stock balance in the supply chain, all participants update information related to the same product, each independently in its system
- Traditional workflow is too slow. On average, companies are waiting till 42 days to pay/get paid for an invoice
- Supply chain management is all about providing the right product in the right quantity to the right place and the right time. Seems simple, but experience shows that is really very complicated process



How blockchain solves those problems

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- Integrating blockchain technology into the supply chain creates a holistic view of the entire system with data that is simultaneously updated in all organizations in a decentralized, secure way, thereby increasing network transparency and flexibility, eliminating the need for double and manual data entry between organizations and reducing administrative costs.
- Analog operations are replaced by smart contracts. Delivery of goods, invoicing and signing bills of lading, carrier bills and other accompanying documents are replaced by smart contracts which are capable to dramatically increase the speed and responsiveness of the whole chain, reducing the risk of payment delays and overflowing warehouses or overproduction.
- The potential for fraud is dramatically reduced due to the safe nature of the blockchain architecture, where each block is checked by all network participants and is based on all previous blocks. This eliminates the possibility of replacing or falsifying or even moderate any kind of information.
- The fundamentally open and honest technology of building a blockchain system unites participants and events into one ecosystem, including possibly state controllers and regulators. It also serves as an effective advantage to industries where control of residuals and delivery times is critical especially for perishable products (pharmaceuticals, medicine etc.)



Inventory levels are updated instantly as products move through the network and payment is made automatically upon the delivery

The main advantages of using blockchain in supply chain management



- Increased flexibility and responsibility. Instant update information for all network participants eliminates paperwork.
- Accelerating processes and realtime problem resolution flexibility with embedded smart contracts. For example, incomplete submission or delay may automatically initiate an action to adjust prices.



- Reduced cargo and stock blockages while increasing service levels. Real-time data naturally helps improve forecasts and planning, which requires less resources to maintain the same level of service
- A common estimate is that storing 1 dollar of inventory, costs up to 20 cents. These expenses take into account both the cost of capital and the rapid depreciation of technological products.



Increased control and increased security. Blockchain technology eliminates a single central control and it is extremely efficient and scalable, at the same time it is almost impossible to be modified. This leads to a dramatic reduction in fraud, illegal or unethical practices.



• Reduced transaction costs. Reducing the number of operators and procedures, compared with the analog form of relations, as well as the elimination of double data entry into the system. A qualitative add value to inventory of good.



Simplified scheme of delivery of goods from the manufacturer to the recipient

AS IS



Simplified scheme of delivery of goods from the manufacturer to the recipient



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Case: automation of control, workflow and payment in logistics chains

How does the transaction take place?

Each participant in the chain has access to tracking trade transactions (movement of goods, customs status, accounts and time) in a closed decentralized program (blockchain). A letter of credit scheme is used, which means a payment guaranteed by a bank, which passes as soon as certain conditions of smart contracts are fulfilled.

The system is synchronized, saving and encrypting the latest data on the contract, so that all parties always receive updated data of current transaction status. The events and documents of the supply chain are exchanged in real time. The essence of its work is that the various stages of the transaction can be encoded in a smart contract and, as soon as certain conditions are met, a new state/status is launched in the contract.

The movement of goods is tracked by CPS. Data also being collected from sensors about goods condition. Such sensors can be equipped to vehicles, and each unit of cargos. The use of IoT in such deliveries can be expanded - for example, by installing humidity and temperature sensors on a product.

Such sensors allow you to connect to the process and with third-party participants. For example, insurance companies, introducing individual control over the vehicle or cargo. If they show sharp jumps in certain indicators, the smart contract will "notify" the insurance company that the goods may have been damaged or stolen.

Neither party can change, delete, or add an entry without the consent of the other supply chain members.



Case: automation of control, workflow and payment in logistics chains

Reduced inventory while increasing service levels

As soon as the goods are transferred to the next participant in the chain, the smart contract is updated, the owner of the goods changes, and the payment is authorized.

Increased control and increased security

Blockchain is scalable!

"Moving from paper documents and manual processes to electronic tracking in a distributed program reduces the risk of errors, and also reduces those processes that previously took days to minutes".

Blockchain technology eliminates a single central control and it is extremely efficient and scalable, at the same time it is almost impossible to damage or turn off. This allows you to dramatically reduce the scale of fraud, illegal and unreliable actions.

Reduced transaction costs

Reducing the number of operators and procedures, compared with analog input, as well as the elimination of double data entry into the system. Reduce time spent on operating activities. Qualitatively new level of inventory. Payment takes place using the blockchain system



Case: automation of control, workflow and payment in logistics chains

Traditional trading process vs. blockchain-based process	Traditional trading process	Blockchain - IoT - Smart Contracts process
Transparency: all supply chain partners update real-time data in one system.	NO	YES
Cost Effectiveness: All transaction and shipping documents become secondary. No risk of duplication or loss.	NO	YES
Customizable: Individual Insurance Policies	NO	YES
Convenient: all parties work in the same register of documents and accounting, all online and instantly	NO	YES
Security: verifiable and immutable data to reduce the risk of fraud	NO	YES

Case: automation of control, workflow and payment in logistics chains

Today, Blockchain technology is tested by WalMart, Maersk, TransInvest Holding AG and more than 9,000 logistics companies.



Since 2016, the port of Rotterdam, the largest trading port in Europe, has been testing the technology of Blockchain logistics, and this could be the starting point for developing the level of transparency in the industry

BitRezus can offer such solution to a transport consortium of companies based on private or hybrid or permissioned blockchain protocol.



Case: automation of control, workflow and payment in logistics chains

SICNING Memorandum of understanding

The document is a confirmation by the parties of mutual interest in The development of blockchain technology.

Consider the possibility of introducing blockchain technology into the company's management processes

Workshop for the development of BUSINESS CASE

Display of all current processes, including weaknesses.

Discussion of the use of blockchain in the internal and external processes of the company.

Comparison of processes, compliance with regulations and rules.

Calculation of financial benefits from the introduction of a new system (business case).

Identify gaps and opportunities for system optimization The choice of priority areas of development.

3 Signing PROF OF CONCEPT

Signing a PoC with a detailed technical description.

Developing new processes with scenarios and responsibilities that close current gaps.

Development of technical specification for blockchain integration.

Determining the stages of the project management and financial support.

Pilot Implementation

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Planning and implementation of a new system with a phased approach.

Determining the priority of launching pilot processes based on the principle of least risk but most value.

Pilot planning and budgeting Launch a pilot project to confirm / deny the overall concept.

Monitoring and comparing results with business case objectives

Deploy the system to the remaining processes.

Why to choose BitRezus?

We have created a unique blockchain ecosystem, which allows you to use blockchain technology stack in every industry

- Unified protocol of release, storage, transfer of financial assets
- Infrastructure in the form of a distributed network with a public registry
- System accounts with public and private keys
- Set of security systems
- Built-in programming language for creating services



Contact us

We have a team of strong programmers and Technology Consultants who can Help you with the PoC (proof of concept) and MVP Visit our website : <u>https://bitrezus.com</u>