

CASE STUDY: ENABLING TRACEABILITY ACROSS SUPPLY CHAIN WITH BLOCKCHAIN



WHO WE WORKED WITH

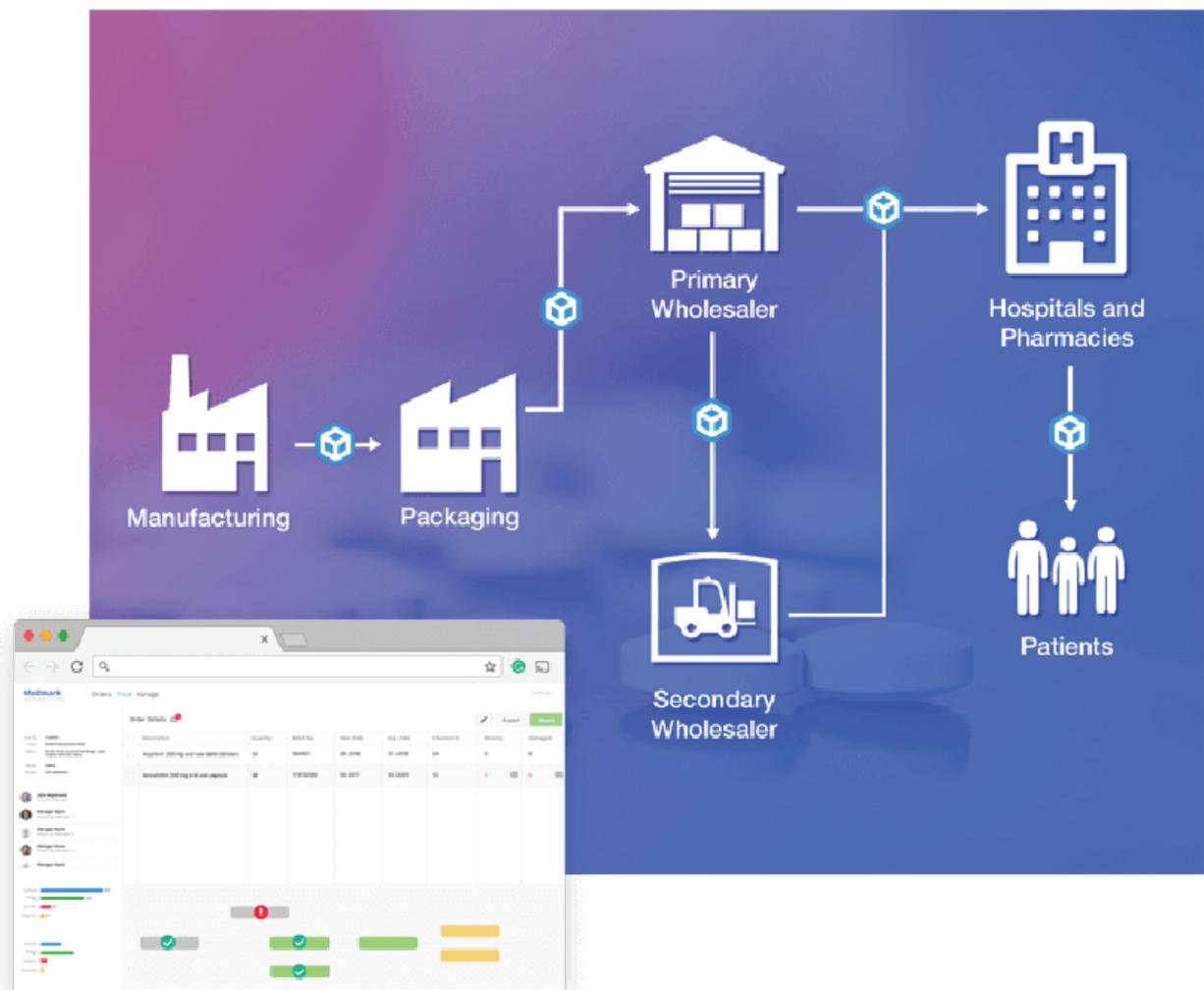
The award-winning startup, TraceRX from Richmond, US, wanted to reinvent the humanitarian aid supply chain with blockchain.

WHAT THE COMPANY NEEDED

Our client was looking to build a distributed ledger platform to enable end-to-end traceability across the supply chain of medicines. The existing supply chain process is insufficient to track the shipment at every stage of distribution. They wanted to develop a secure Pharma Supply Chain platform backed by the blockchain to bring trust and traceability to the ecosystem.

The solution aimed at solving two critical problems:

- Theft: Theft of medicines in the supply chain and replacing them with counterfeit medicine was the biggest problem. The client wanted to improve the accountability of medicines delivery.
- Recall: The procurement manager couldn't trace the medicines which can expire within the supply chain at various locations. The client wanted to improve traceability and recalling of drugs.



HOW WE HELPED

TraceRx selected LeewayHertz to embark on their journey in 2017. With our deep understanding of the blockchain platforms, we decided to build a permissioned blockchain-based supply chain platform using Hyperledger Sawtooth. The journey started with requirement gathering and identifying the stakeholders, role and technology interfaces. Our team of blockchain developers built a Proof-of-Concept for super-admin to track the shipment from one site to another. Visual and technical designs were created to get early feedback from the end customers. With a usability field test, we were able to validate early if the platform can work in remote locations.

LeewayHertz developed the permissioned blockchain solution and also the following user interfaces:

- Web Portal for Admin, Procurement Manager, and Security Auditor built on MEAN stack.
- Native Android app for the auditors.

WHAT THE COMPANY GOT

Since every involved member can track the supply chain, time spent on fulfilling requests dramatically reduced. It improved the inventory management process to redirect a medicine in case of an emergency. Data integrity is maintained throughout the business processes as product tracking is shared with all the stakeholders. The company can manage inventory levels by receiving real-time notifications whenever medicines or drugs are scarce or get expired. By reducing the delivery delays and offering end to end traceability, it significantly improved the delivery rate of the medicine shipments and recalling of drug batch.

CHALLENGE

When WHO decided to send medicines to the remote areas of South Africa, it required traceability to ensure that the medication reaches the people in need. Due to infrastructure limitations, lack of traceability, and centralized controlled ecosystem, it was not possible to achieve complete transparency. It eventually caused thefts and made it impossible to recall a bad batch. Before the introduction of the blockchain, the pharma supply chain market was dealing with a lot of issues, including recalling, inability to keep a track and increasing thefts. Procurement Managers were not able to trace the medicines at every step of the shipment. So, they did not have real-time traceability

of the location of the medicines. The inability to track the medication led to recalling and costing high expenses to the drug manufacturers. Moreover, partial traceability in the system also caused theft. Medicines were replaced with fake counterfeit drugs, leading to the high risks of death or wrong

WHY WE NEED BLOCKCHAIN IN PHARMA SUPPLY CHAIN?

PROBLEMS



RECALLING

Procurement manager is unable to trace the medicines which are going to expire at various locations in the supplychain



THEFT

Theft of medicines in the supply chain and replacing them with the fake counterfeit medicine is the biggest problem of pharma industry.



STOCK MANAGEMENT

Medicine lying at a store house is not being mobilised to the location where there is scarcity of the medicine.

PROCESS

Medicines are procured from different pharma vendors at the warehouse and procurement manager creates an order and assign it to the country manager

1

2
Country manager receives the order and checks-in all the medicine assigned to him using an mobile app.

2

4
Field manager checks-in the order and assign the medicines required for distribution to distribution officer

4

3
Regional office checks-in the medicines and assign it to the field office

3

5
Distribution officer distributes the medicines to the related NGO/hospital/ agency

5



treatment.

SOLUTION

Our client believed that blockchain could remodel the way international aid is distributed by bringing more trust and transparency to the system. From manufacturing to delivering and distributing medicines to NGOs, hospitals or other agencies, every stakeholder within the network can trace the captured information at every step of the supply chain process.

Since the information stored on the distributed ledger remains unaltered at all times, it is now possible for all the stakeholders of the system to trace back the records of pharma drugs across the supply



Track and Trace



Secure Communication



Recall Requests



Admin Controls



Analytics Reports

chain. Smart contracts reduce the burden on a single entity by automating the transactional logic when the specific business conditions were met. Also, the blockchain-based supply chain ecosystem notifies members of the network in case the delivered quantity exceeds or falls short of the specific quantity, enabling them to manage the inventory of the medicines quickly.

IMPACT

With a blockchain-based solution, our client and their customers experienced transparency in the transfer of the drugs between different parties in the supply chain. Our client's digital transformation journey enhanced turnaround times, efficiency, accuracy, and operational readiness.

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TRACERX WON RICHMOND SCORECARD AWARD

ABOUT LEewayHERTZ

Established in 2007 and headquartered in San Francisco, we are one of the first organizations to deliver a commercial app for the iPhone. Our team of Certified User Experience experts and Developers has designed and produced over 100 digital platforms for startups and enterprises. Being

an award-winning custom software development company, we have expertise in delivering digital platforms within timely deadlines and fixed costs. Having a team of experienced blockchain developers, we develop blockchain-based applications on Ethereum, Hyperledger, EOS, Corda and Hashgraph.