# Designing an Architecture of a Blockchain Platform for Asset Finance and Leasing

AngularJS   Blockchain   Finance   Hyperledger   IoT
Node.js

A provider of asset finance solutions turned to Altoros to design an architecture for its new car-sharing platform based on blockchain.

## About the project

Brief results of the collaboration:

✓ The customer validated its business idea, elaborating the solution's architecture for an asset registry and a car-sharing app on blockchain, featuring a number of IoT scenarios.

✓ The company built up an optimal stack, working out a project roadmap and a detailed specification, as well as optimizing its development cycles.

## The customer

Headquartered in the US, the company is a global provider of IT solutions for asset finance and leasing. The customer has been operating in the US, Europe, and Pacific Asia for 40, 25, and 20 years respectively. The company has subsidiaries in eight cities across the globe, employing 1,300 professionals. The customer's portfolio features systems targeted at facilitating retail and finance activities for the automotive industry.

## The need

The customer wanted to develop a blockchain-based platform for the automotive industry comprising two components: an asset registry and a car-sharing app. The asset registry would enable a pool of parties—auto manufacturers, car dealers, body shops, leasing and financing companies, insurers, and regulators—to establish a supply chain, track provenance, manage car service history and legal status, etc. Powered by IoT data, the car-sharing app would allow for renting/sharing vehicles across a network of members, as well as track mileage, map optimal routes, etc.

In partnership with Altoros, the customer sought out blockchain-specific expertise to validate the proof of concept, as well as research an optimal technology stack. Under the project, Altoros assisted the company in working out the solution's architecture, network design and deployment, as well as consulted on successful approaches to development and testing.

## The challenge

Building up a technology stack. The Altoros team evaluated the potential of Hyperledger Fabric and Ethereum to implement the customer's business ideas on blockchain. Hyperledger Fabric proved to be the best option in this case, providing:

✓ the possibility to create a permissioned blockchain network that grants access to sensitive data for authorized parties only

✓ better transaction-per-second performance and real-time data streaming

✓ a permissioned network complying with the GDPR (for the car-sharing app)

✓ no inherent overhead costs for data mining

Documentation and recommendations. Our engineers came up with a detailed specification, maintained a project roadmap, and delivered recommendations on optimizing a development life cycle.

Elaborating an architecture. When designing an end-to-end system architecture, engineers at Altoros modeled an asset registry and a car-sharing app as a blockchain implementation across all levels. These included user access, smart contracts, chaincode, monitoring, and security layers. The experts on the team developed a network of nodes and VMs, as well as thought over where the network should be hosted, how individual peers should be grouped into nodes, how to enable tokenization and off-chain/on-chain storage, etc.

Researching IoT integration. To ensure that the customer would be able to implement IoT scenarios of demand—door locking, car sharing, mileage tracking, and route mapping—the team at Altoros proposed two integration options. The first one implied direct connection of IoT devices to a blockchain network, while the other would leverage an IoT service that manages a network of devices and serves as a link to the blockchain network.

The developers also researched the market for IoT solutions that may address the customer needs, comparing a number of IoT offerings: from IBM (IoT Connected Vehicle Insights, Watson IoT, and Watson IoT Blockchain Service) and two other vendors (Particle.io and IOTA). The team also suggested options for hardware and an operational system to employ.

## The solution

Collaborating with Altoros, the customer successfully validated its business idea and elaborated the solution's architecture. With the professional blockchain consultancy, the company was able to research and build up an optimal technology stack with no inherent overhead costs, work out a network design and deployment, as well as get familiar with established development and testing practices.

## The outcome

Partnering with Altoros, the customer automated manual processing of financial reports, cutting time spent on each document analysis from 12 minutes to 10 seconds. Achieving 99% of precision, the delivered solution enabled the customer to optimize its analyst team by focusing it on more important business tasks.