

Problem Statement

Problem 1

In industries that demand high-quality parts, they also demand detailed and accurate documentation with the associated quality sign-off processes. The Airline industry has strict compliance protocols to standardize quality management. These regulations require that all the more than 2,000,000 parts per aircraft, have the exact documentation including proof of sign-off by qualified staff members no matter where in the supply chain the part was manufactured, stored or maintained.

The aerospace value chain is comprised of thousands of suppliers. Overwhelmingly, each supplier retains their own isolated ERP system. In the event of tragedy, audit or other component tracking requirements, the process of isolating said part can take months in some instances. Aerospace supply chains are extremely fragmented, with thousands of stakeholders, transacting billions of parts.

Why is blockchain/DLT the solution to that problem?

A DLT solution is required to solve this problem for two fundamental reasons:

- Blockchains enable digitization of requisite documentation
- Blockchains enable shared database participation by diverse stakeholder-sets

Standardized documentation requirements will enforce regulatory compliance.

Shared database participation by relevant stakeholders will ensure all transaction data throughout the supply chain is captured and easily traceable.

If blockchain/DLT is the solution to that problem, what are the challenges?

By far the biggest challenge is enrolling all relevant stakeholders. Aerospace manufacturers rely on thousands of suppliers. Onboarding each individually would require significant time and resources. A blockchain-based supply chain solution for the aerospace sector is only valuable if most stakeholders in the value chain participate (suppliers, manufactures & airlines). This can be best understood through the concept of network effects, whereby every additional user of a platform increases the value of said platform to all other users.

Problem 2

Integration between the physical and digital realms.

On-ramping each of the >2M component parts of a plane from the physical to digital world threatens the authenticity of every physical-digital pairing.

QR codes or other digital indicators can be easily removed, damaged, applied to improper parts or duplicated. Failure to accurately depict physical goods in a blockchain database, eliminates all value that such a solution would otherwise create.

Why is blockchain/DLT the solution to that problem?

Blockchain itself does not solve this problem. However, integrations between blockchain stack's and supplementary technologies provide a simple answer to this complex issue.

Using the camera on a cellular device, stakeholders can take a picture of any part. Based on the physical composition of each part, a unique digital identifier is created and time-stamped.

Regardless of damage or homogeneity between similar parts, all inputs can be uniquely identified. If individuals attempt to upload the same part twice, a duplicate identifier will be generated, and immediately rejected. This provides assurance to all stakeholders that parts were not duplicated or misrepresented digitally.

If blockchain/DLT is the solution to that problem, what are the challenges?

N/A – blockchain itself does not solve this problem. However, supplementary technologies integrated with blockchain do.