I-DELTA Application Scenario 1: Transparent Aerospace Supply Chains

Current Conditions & Challenges

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 of 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.

Conclusion

A solution is required to solve two fundamental problems in aerospace supply chains:

- Digitization of requisite documentation
- Shared database participation by diverse stakeholder-set

Proposed Solution

Seizing the opportunity to re-invent and lead the industry's documentation process, Mavennet has designed a solution that builds up from base-level components to completed aircraft. Mavennet will offer participation in its blockchain solution to all stakeholders in the aerospace supply chain from component part manufacturers, to assembly, wholesalers and end-customers.

Mavennet's solution enables component, sub-assembly, assembly and aircraft manufacturers to put their documentation on the blockchain as well as enable regulatory compliance sign-offs by authorized signatories. With the immutability of the Mavennet Platform, users can ensure that time-stamped documentation is available in near real-time along with assurance that the documentation is the latest version for that part as well as approved by a qualified and identifiable individual.

With Mavennet's platform, users will be able to track a part as it is used down-stream from the manufacturer. They will be able to see if a part has been moved from one vehicle to another or even discarded. Furthermore, they will be able to trace where similar parts are being used. This is extremely helpful in the event of a part failure so that a company can minimize risks as soon as they are identified.

The Benefits

- Greatly reduced efforts to retrieve relevant documentation for each part reducing the process from months to seconds
- Enable compliance with regulations so that efficiencies can be gained both at source as well as downstream
- Increased access to documentation so that all partners in the ecosystem can see relevant documentation without help from external stakeholders

I-DELTA Application Scenario 2: Blockchain Technology Stack

Mavennet has built a private instance of the public Aion network called Aion for Enterprise (AFE). AFE enables high transaction throughput and interoperability between multiple blockchain platforms. This solution gives users the best of all words, including access to both private and public blockchains as well as access to heterogeneous blockchain networks.

AFE's primary value propositions are:

- Interoperability with public Aion and other public and private blockchains
- High transaction throughput
- Hybrid modular architecture between AFE and Aion public that can serve any business need
- Global ecosystem of enterprise clients and developers

AFE uses Aion's Multi-Tier Bridging Protocol (MTBP) to enable cross-chain transactions between their enterprise solutions and any other private or public blockchain. This is done by running special nodes in the connecting blockchain to listen for cross-chain transactions. When a cross-chain transaction is made, these nodes generate a smart contract that sends the transaction to the Bridge Cluster of nodes. The Bridge Cluster builds an internal snapshot of AFE and the connecting blockchain and proposes the cross-chain transaction simultaneously on each. The transaction is then communicated to Aion Clients, which bundle bridge transactions and submit a Bridge Contract to AFE to finalize the cross-chain transaction.

With its pBFT consensus, AFE provides high transaction throughput of over one thousand transactions per block and new blocks added every 2 to 3 seconds. Comparing this to the transaction throughput of the Aion public network of 70 transactions per second, one can see how pBFT makes the Aion interoperability offering more applicable for enterprise clients who demand commercial transaction speeds.

Further, Mavennet’s hybrid public-private architecture uses a common suite of products and tools for building enterprise applications and decentralized applications (dApps) on public Aion. This enables AFE and Aion public to be used in conjunction to serve any business need.

Mavennet Ecosystem

The Mavennet team previously built enterprise blockchain solutions for reputable clients including Moog (Fortune 1000 aerospace and defense manufacturer), TMX (Toronto-Montreal Stock Exchange), Vodafone (multinational telecommunications conglomerate), banks, governments, and others. Along with deep technical expertise about how AFE drives efficiencies in various industries, Mavennet's global network of enterprises and development partners ensures that they have the resources to build any enterprise blockchain solution.