Leveraging Chain-m for Transforming Backend Settlements for Airlines and their Partners

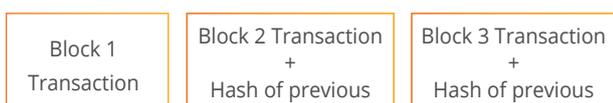**NIIT** technologies
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Abstract

Airline industry and its partner ecosystem today face some of the pressing challenges like revenue leakage, lack of trust, transparency, incorrect fares, and commission violations in the course of the backend operations. Blockchain with its advantages of visibility, data security, and traceability facilitates easy verification of multi-step transactions and enables a simplified backend process of settlement. Chain-m, our Blockchain solution offers an effective, cost-efficient proposition for enabling a simplified backend process of settlement, as an alternative to the traditional intermediary processes used for authenticating transactions.

Chain-m Solution

Chain-m eliminates the pain-points of Airlines and agencies by allowing each party to verify the records of a transaction directly, without an intermediary, maintaining trust and transparency. Each transaction, would form a block along with a unique secure code, which ties into next block, creating a chain of blocks, or Blockchain. Chain-m, as a private permissioned Blockchain, peer-to-peer network, combined with a distributed time-stamping, write-once, and append only, (implemented on Hyperledger Fabric) actually stores ticket level transactions.

The solution has three levels: view only, transact, and actions and uses a Chaincode (a smart contract consist of Business rules) to arbitrate conflicting data and automatically execute when certain conditions are met. The use of Chaincode allow parties to share control of data through approved business rules coded in Chaincode. All transactions are immutably recorded and shared on ledger so that parties can decide whether to accept or dispute the ticket transaction.

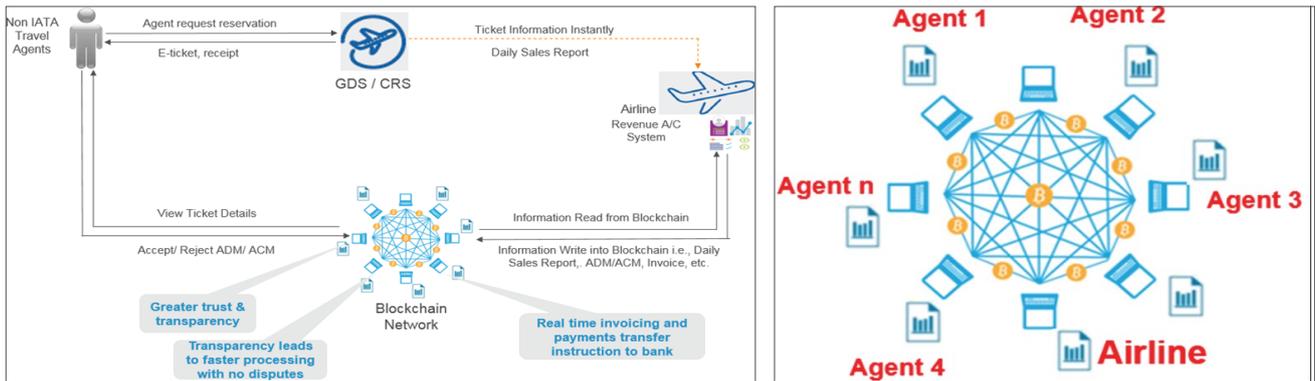| Block 1 Transaction	Block 2 Transaction + Hash of previous	Block 3 Transaction + Hash of previous

Chain-m can handle rejected or disputed airline debit memos in a timely manner in compliance with applicable IATA resolutions and regulations. All ticketing information is placed at one location, kept with private ownership and can be called upon whenever needed, and shared with permission. Data is authenticated by each party securely without revealing/changing any confidential information. All parties have a consistent copy of all transactions on the ledger.

The decentralized nature of Chain-m where information can never go 'offline' or be lost through accidental deletion or a malicious cyber-attack, ensures transactions are always traceable.

Features

- Offers a web-based user interface, for a single/weekly view of ticket level transactions

- Offers an interactive dashboard, to provide a consolidated weekly view of number tickets sold, total amount, fare amount, commission, airline debit memos/airline credit memos generated, tax amount, payment to agencies from the airline

- Supports various types of Sales RET and HOT file formats

- Offers audit trail on data on ticket level transaction and its actions

- Simplifies and automates the creation of airline debit and credit memos

- Detects rule violations, under-collection and over-collection of fares, and commission

- Handles approval and dispute of airline debit and credit memos

- Allows visibility of agreed contracts between Airlines and agencies based on private permission

- Offers paperless invoices

- Offers payment instructions to agencies with credit and debit note

Chain-m architecture and network

Delivering More Value

Transparency and Trust: Chain-m offers a single view of ticket level transactions for Airlines and agencies, ensuring that ticket level transaction details are transparent and only available to the participants involved in those transactions. Chain-m, as an immutable ledger distributed among all parties, maintains a structurally consistent, shared database of transactions, allowing participating parties to read data from the distributed ledger and be guaranteed that it is valid and reconciled. All parties hold a copy of all transactions on the ledger and have confidence that the record of transactions is correct and reliable for all parties. Greater transparency can also increase trust between airlines and their best agents,

Data security: Both Agency and Airline on Blockchain have access to the entire database and its audit trail. No single party controls the data or the information. Both verify the records of its transaction directly, without an intermediary. No one can falsify, hack the data inscribed in the blocks of Blockchain.

Check on errors: It provides a higher level of error-checking and transaction validity than regular shared databases.

Real-time validation: Chain-m calculates real-time commission, calculation and adjustment, to ensure that when an agency level debit and credit memo is generated, its details will be visible to the partner.

Peer-to-peer transmission: Any action on airline credit or debit memos is directly visible to both the parties, which results in faster transactions, with complete history available for future reference.

Efficient transactions: A lot of effort on the back-office today is spent in reconciliation of transactions among Airlines and agencies. Chain-m reduces to-fro traffic significantly.

Immutable Record-keeping: When a transaction is added to the Chain-m ledger, it cannot be changed or deleted, and it is also impossible to hide or add any fraudulent transactions.

Cost-control: Collective verification of ecosystem, a network, rather than a third party, validates a transaction. This enables cost savings across the value chain. Various agreements between parties, transmissions, and transactions are held in an encrypted format.

The NIIT Technologies Advantage

NIIT Technologies has two-decade strong deep domain experience coupled with emerging tech expertise to handle industry challenges. Our multiple cross-functional teams of certified Blockchain experts have conducted several design thinking workshops to define the most critical use cases for our clients, identified stress points based on our experience and are creating effective solutions for airline industry to make ticket transactions transparent, simple and secure.

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