Baggage Tracking and Theft prevention Smart system using Block chain Development

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Abstract

Increasing number of airline passengers and their requirements tends to force the aviation industry to meet the operational challenges. One of the major challenges is rising number of mishandled baggage and its theft. Block chain technology helps aviation industry in handling baggage's in transparent and easily accessible way by storing and processing luggage data in clear and effective way. Blockchain stores the meta-data and manipulates it thus enables the client to receive live tracking information about the baggage. To address the baggage handling challenges Blockchain adopts hybrid solution by combining RFID (Radio Frequency Identification) and barcode technology together which provides clear visibility throughout the baggage journey and ease baggage identification and tracking.

Problem Statement

Considering the key idea of how a real-time baggage tracking system work using Blockchain and real time tracking, assuming the air passenger journey (and that of their baggage). Various ground personnel or actors come in and out of the scenario, with everyone performing their task. The first thing, is boarding. A real-time baggage tracking system would make it possible to receive an RFID tag for each of your items, adding to this beacon-like GPS tracker for extra precaution. Then, your baggage is carted off to the airport's baggage handlers in a giant room, with its own automated system, before being tossed onto a roller-coaster of a conveyor to be loaded onto the plane.

All baggage handled by the airport would loaded into the right plane based on the RFID tags on the suitcases. An airport employee would be responsible for making sure all baggage is loaded on the plane, and passengers could use a mobile app to determine if their baggage is traveling with them.

A passenger expectation may vary since intentions perspective of every passenger is different to cover all expectations of air passenger regarding baggage since which prior requirement discussed in this paper mobile app alerts make them feel secured and safe regarding their baggage during their journey.

With a real-time baggage tracking system, passengers could locate and track their items using a mobile app and know that everything's arrived along with them even before they reach the baggage carousel. Blockchain technology is prepared to handle data collected between multiple parties using varied platforms with high integrity. This baggage tracking system uses a decentralized Blockchain database that tracks the movements of all features, through the departure airport to the plane (and other planes) to the arrival airport, which would definitely upgrade passenger comfort.

Objectives

- Intended towards the development of Air-baggage theft prevention and detection system using RFID based techniques
- Mobile application would be developed that would be integrated with the Airline server

Methodology

Baggage handling involves various steps which are as follows

Step 1. Get or receive bag from the air passenger,

Step 2. Move the bag and store till the flight is ready,

Step 3. Sorting machines sorts and loads in the right flight,

Step 4. Make sure the bag and passenger are in same flight,

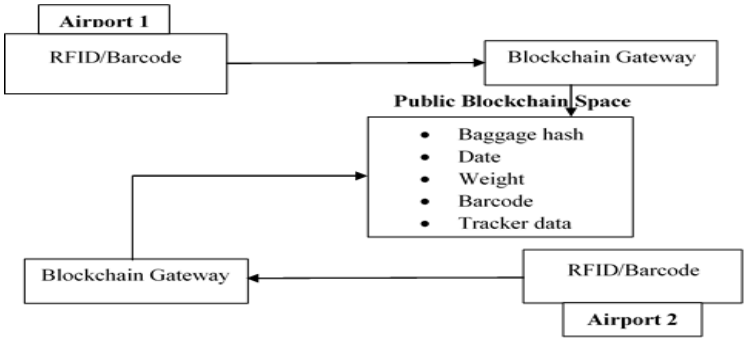
Step 5. If there is connection flight transfer the baggage correctly,

Step 6. Deliver the baggage to the passenger at the destination check c point.

There are high possibilities for change of luggage or loss of luggage during these steps to track and locate the baggage at any point of journey RFID technology is deployed.

A tag or label is attached to the passenger's baggage and a radio transmitter sends a signal to the tag and receive its response. The tag attached has to respond to signal from the transmitter so that the receiver can get information about the baggage. Tracking devices are used for tracking the movements and location of an object RFID technology works in a similar fashion. RFID baggage identification is helps in error – free monitoring of bags placed in sorting room, in the conveyer belt, baggage collection place, when loading baggage to the plane.

Block chain RFID enables: Automatic baggage scanning and Identification, Locating the baggage and estimating the time of baggage transportation, Alerts when the baggage gets loaded in correct aircraft, With the alerts ensuring there no loss or mishandling of luggage, Identifying and locating the baggage from check in time and tracking its journey until it reaches the checkout, Alerts when the baggage leaves the flight, Identifying the baggage in baggage collection point in the destination.



Hybrid RFID and barcode architecture for air baggage handling

Results

Reducing the baggage mishandling, lost luggage problem and reduced time delays in locating airbag gages and ensuring greater visibility and customer satisfaction are primary focus of this work which are reasonably achieved by deploying the hybrid RFID/Barcode technology is proven by the statistics analysis. The experiment is carried out in the windows environment by collecting the SITA data for ten years from 2002 to 2014.

Publications

1. Smart Airline Baggage Tracking and Theft Prevention with Blockchain Technology, Test Engineering Management, Volume: 83, May 2020.

2. Airline Baggage tracking using Hybrid Sensing and Blockchain Technology, International Journal of Future Generation Communication and Networking, Volume: 13, August 2020.