# Ensureit : Blockchain Based Flight Delay Insurance Platform

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**Abstract-** *The centuries-old insurance industry is expensive, slow, and fraud-prone. It takes a long while to get the matter solved between insurance companies, adjusters, witnesses, other intermediaries, and it takes dozens of phone calls, hours of effort and weeks before the claims process gets completed. One of the most recent branches of insurance is flight delay insurance. Even though it seems simple, flight delay insurance also suffers the above-mentioned problems. Even though flight delay insurance is less complex than medical insurance, the policyholder has to go through a lot of paperwork. Here, I am proposing a novel method for flight delay insurance by implementing the traditional flight delay insurance using the newly introduced Blockchain technology. By introducing blockchain technology, we can reduce the time and paperwork for flight insurances by automating the procedures which make it easy for an insurer to buy a policy.*

*Keywords*- Blockchain, Flight delay, Travel, Insurance, Sawtooth, Automated, Angular.

## I. INTRODUCTION

Nowadays the use of flights to travel long distance has increased drastically. Along with its popularity, demand for more flight schedules was unavoidable. One of the fastest and punctual travel methods fell in the crypt of delay. Based on the global average, one in five planes arrive more than 30 minutes late. In 2017, surprisingly 20% of flights were delayed, which means nearly 15 thousand flight were delayed globally each day. Not only the increase in flights contributes to this event. In 2017, a bug in Amadeus Altea, a passenger management system used by 125 airlines all over the world caused numerous flight delays across various countries.

These delay in flights are extremely frustrating for everyone involved and the burdensome process some travel insurers put their policyholders through just to make a claim makes it even more infuriating. Some policyholders regard the claims process as too much of a hassle. Many insureds feel that their claims are regarded as "guilty" and have to be proven "innocent". Insurers, on the other end, spend extraordinary resources on the handling of claims, without truly fulfilling customers' demands.

The newly introduced method can solve these problems very easily. In the newly proposed system, it will be very easy to buy an insurance policy and the claiming process is automated which make the claiming process very easy literally untouched by human beings.

Since here we are talking about automating one of the most sensational finance sectors, the process should be reliable. The data stored should be safe and secure. We can rely on the newly emerged blockchain technology to ensure data security. Blockchain cryptographically encrypts the data and store this data in a tamper proof manner.

## II. REQUIREMENT ANALYSIS

### A. PURPOSE

The purpose of this system is to build an automated flight delay Insurance claiming platform that reduces the delay and paperwork in taking and claiming an insurance policy. But the problem is that the present system still relays on a tiresome process of manual paperwork. This monotonous process makes the policyholders baffled while claiming their insurance.

By automating the existing flight delay insurance system it will be easy for a person to take a policy. They will be extricated from the measurable steps in claiming their insurance. Since the claiming process is automated the policyholders don't even need to request for a claim, they will get their claimed insurance reward to their accounts automatically.

### B. PROTOCOL DESCRIPTION

EnsureIT is a peer-to-peer decentralised automated insurance platform that helps both the insurers and the policyholders to escape from the obscure paperwork and time delay that the present system proffers them. When compared

to the traditional system the proposed system is less expensive both in terms of time and money.

As mentioned above the time consumption of the proposed system to take and claim policy is very less compared to the time consumption of an existing system to do the same.

The main constituent which accounts for this reduction is the complete automation of the procedures. Since there is no manual intervention in claiming the policy, verification is done automatically by EnsureIT. It helps the insurers along with the policyholders since there is no need for the employees to process the claims and verify the associated documents.

The automation of the traditional system not only helps in reducing the time in taking and claiming the policy but also help in reducing the cost for the process. For an insurer to approve a claim he needs to assign a bunch of his employees to dig into the bundle of paperwork that will cost a lot. This process not only wastes a large amount of time but also make the claiming process expensive. All these expenses will reflect on the insurance amount. Since traditional works are automated by removing the human intervention, the cost involved in the claiming process will be eliminated that will reduce the cost of the insurance policy and better compensation plans can be given to the customers by the insurers.

## III. IMPLEMENTATION DETAILS

A. OVERALL DESIGN

EnsureIT is a decentralised distributed platform for automated flight insurance where there is only one single client-side program that runs on every person's system who uses it. Since EnsureIT uses the newly emerged blockchain technology it is easy to implement decentralisation to this system.

EnsureIT is used by mainly two kinds of users customer and insurer. Customers can take insurance for their flight by giving common details like name of customer, date of the flight, flight number etc. API is used to get the real-time flight details which will be used to give out claims automatically.

1) User Interface :

EnsureIT is an easy to use system. One of the main aims while designing the system was to abstract as much

lower level details of the system as possible from the user. This system provides a web interface for its users. The interface is developed using Angular 6.

B. SYSTEM DESIGN

One of the best and tamper-proof way to build a distributed decentralised and automated insurance system is by Blockchain. In this project, I am using the power of Hyperledger Sawtooth Blockchain technology to create an automated insurance platform. My main intention is to show that an automated insurance platform can be built so here I am contemplating on flight delay insurance. This system has two users, policyholders and insurers.

1)Taking Insurance :

Customers need to get registered by giving their name and personal details along with their mail id. This data will be stored on to the blockchain after the data is stored successfully a public key will be generated for the customer which will be used to register the insurance policy. Policy details will also be stored on to the blockchain.

To take a policy customer need to give all the basic details if he is using the system for the first time if he is already registered he can use the public key generated to take insurance policies. When taking a policy the customer needs to give the date of travel and the origin city name and destination city name. Which will show all the available flights to the destination from the origin. Customer needs to select his flight from these choices along with the type of policy.

All these data are gathered from the customer and stored on to the chain which gives a public. This public key can be used to identify the policy uniquely. All the data about their insurance policy and account are sent to the user's registered mail. This mail also contains the customer id and the policy id which can be used by the customer to view their policy details.

2) Viewing Insurance:

EnsureIT allows the policyholders to view their policy details, the current status of the policy and all. They can see the details of there policy either using the policy id or by using their personal id. When they are using the policy id only that particular policy is displayed. On the other hand, if they are using the customer id the entire insurance history of the user is shown. EnsureIT also allows the insurers to see the entire history of claims.

3) Automated Claiming:

One of the main attraction of EnsureIT is the ease of claiming and buying insurance policies with minimum documentation. This ease of use of EnsureIT is achieved using the automated claiming architecture. Insurance data of the customers will be stored in the blockchain. The real-time data will be read from an API that gives the real-time status of the flights. Transaction processor tracks the insurance policy data repeatedly and checks whether the policy is eligible for the claim. i.e, current status and associated data about the flight is gathered from an external real-time database using an API. If the flight is delayed by more than 2hrs, all policyholders travelling in that flight will get an instant payout. Once they get the claim or the policyholder was not eligible for a claim their policy id will be removed from the checklist.

can register with their personal details, take policies, and if they are eligible for a claim the amount will be automatically credited without much human intervention.
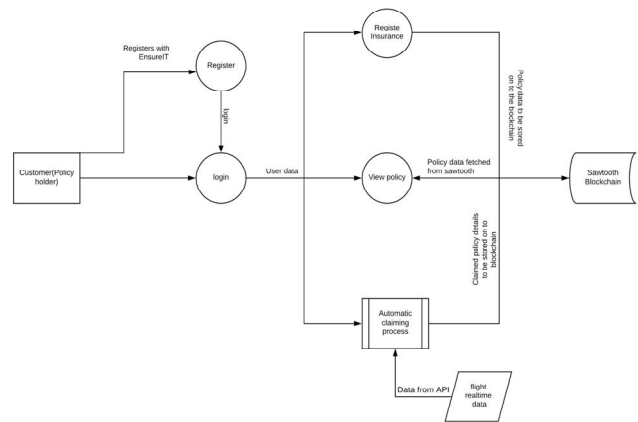


Fig 2. The complete system flow chart.



Fig 1. The outline of the Proposed system.

## IV. EXPERIMENTAL RESULTS & CHALLENGES

It is observed that the system performs all the functionalities as expected. The main intention behind this venture was to demonstrate that an automated insurance system can be made using the blockchain technology. Insureds
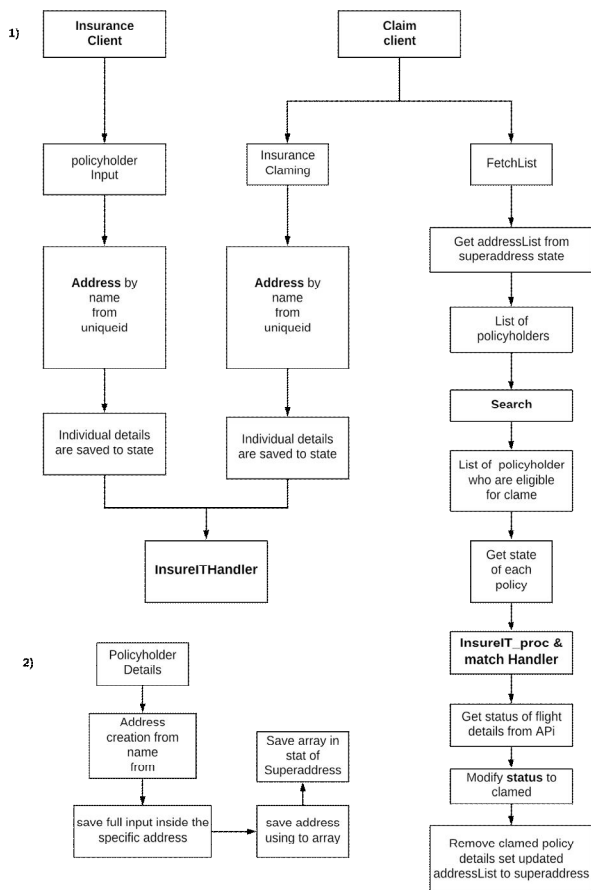
## V. CONCLUSION & FUTURE SCOPE

EnsureIT is an automated flight insurance platform that allows the customers to buy insurance policies and claim them without much pain. This project was developed with a taught to show that the insurance industries can also be automated using the newly emerged technologies, which in turn reduce the fraud and overpricing of policies. This project uses the power of blockchain technology to automate the insurance industry. Automating the process reduce time consumption for sure, but there is a much wider view to look into. Since the proposed concept reduces human intervention drastically there will be a sure reduce in money to be spent for them. The huge amount of money that was spent on the human workforce is now a profit for the company which can be used to reduce the policy amount or can be used to give better claims and all. Above all these EnsureIT will help in reducing the fraud since the data stored in a blockchain can never be altered. Also, the entire process is transparent.

## VI. ACKNOWLEDGMENT

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