

Ethereum Smart Contract for Healthcare Insurance Industry Using Blockchain

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Abstract: *The major goal of this research is to gather and analyse data in order to estimate some key statistics about microinsurance in the current Indian market. The data would be useful in developing better insurance plans to help India's Life Insurance business grow. The project's purpose is to create an Ethereum network. Ethereum Smart Contract Insurance will allow the user to obtain health insurance through a smart contract. We can set the Citizen's Data and the Citizen's Insurance Amount, as well as the Insurance Amount by the specific Doctor. and can utilise the Insurance, with the ether used being debited from the Citizen's account.*

Keywords: Microinsurance, Estimate Key Statistic, Smart Contract Insurance.

I. INTRODUCTION

The primary goal of Blockchain technology is to eliminate the problem of double spending in online transactions. Blockchain technology was first used for cryptocurrency, which is Blockchain1.0. After that, researchers began looking for ways to use Blockchain in applications other than cryptocurrency, and smart contracts were created to provide automatic transaction processing with security, which is Blockchain2.0. Blockchain3.0 refers to the use of Blockchain for IoT devices. Traditional insurance industry work in India is primarily done manually, from policy purchase through claim processing. The majority of people purchase insurance through agents. They rely on agents to pay their premiums, and claims are processed through agents as well. Insurance clients must keep track of all insurance paperwork; otherwise, they will be unable to file a claim or receive insurance benefits. In order for a claim to be processed, the insurance client must provide all necessary documentation. After all of that has been verified, the claim will be approved, and he or she will receive benefits. This process can take a long time, and beneficiaries may not receive their benefits on time. This manual procedure takes a long time, incurs additional costs in the form of agent commissions, and has the highest risk of fraud. The adoption of a blockchain solution in the insurance business will fundamentally alter the way the industry operates by allowing for speedier processing, the secure storage of information, and the reduction of costs. Blockchain technology will be employed in a variety of insurance applications, including fraud detection, insurance and reinsurance, asset monitoring, and KYC, among others. Make use of the traditional insurance sector will be drastically altered by blockchain technology; it will become a new, faster, cheaper, and more secure industry.

II. MOTIVATION & RELATED WORK

According to Survey, insurance is an avenue to provide financial risk mitigation that pays the policyholder in the event of an unanticipated unfavourable event or loss of property, despite the fact that it is currently confronted with several obstacles. However, in order to originate, maintain, and close various classes of insurance, the industry is heavily reliant on numerous processes between transacting parties. As a result, transaction processing time, claim settlement and payment time, and process execution security are all key problems. Health-care coverage: Poor individuals and most people in developing nations and around the world become more vulnerable and suffer in the event of illness due to the excessive cost of medical bills due to low or lost income. The majority of people are unable to save own assets such as land or costly decorations that can be sold to cover the expense of getting medical help if necessary. It is well known that medical bills are the cause of personal and family accounts being depleted to the point of bankruptcy. Diseases can cause

well-off individuals and their families to lose their assets and/or suffer from declining health. In theory, governments are intended to provide health insurance plans and other health-related programmes to their underprivileged citizens. In practise, the opposite is true. Embezzlement of finances, higher administrative costs, social and political influence, unstructured processes, and mischievous motives of hospital employees may all contribute to this. Medical billing is a process that is filled with difficulties.

III. PROPOSED SYSTEM

This study's approach aimed to use blockchain technology to create an automated medical insurance claims servicing system. As seen in the surroundings, medical institutions, insurance companies, and patients use it to communicate information. The blockchain centre (BCC), the competent authorities (CA), the medical institution (MI), the insurance company (IC), the bank (BK), the patient (PT), and the arbitration institution all play roles in the ecosystem (AI). Medical institutions can construct a medical alliance chain among them, which is overseen by the medical authorities. CA1. Financial institutions and insurance companies can form a financial alliance chain that is supervised by the CA2 financial authority. Members of the same alliance can share all of their data.

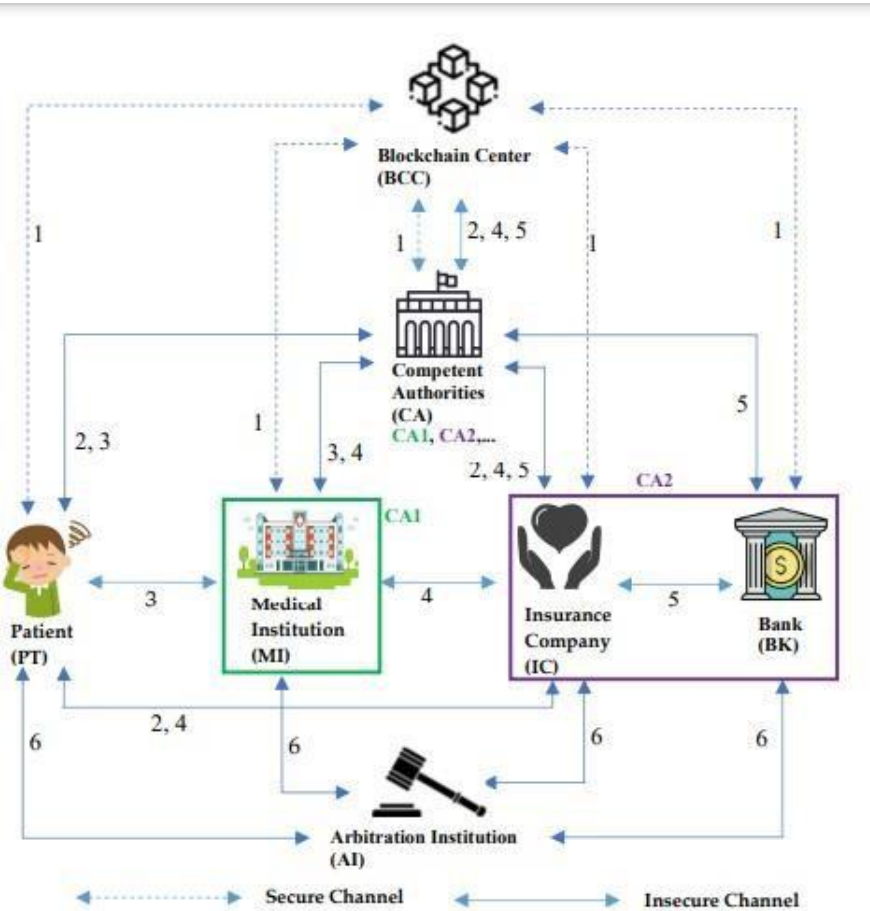


Figure 1. System architecture diagram.

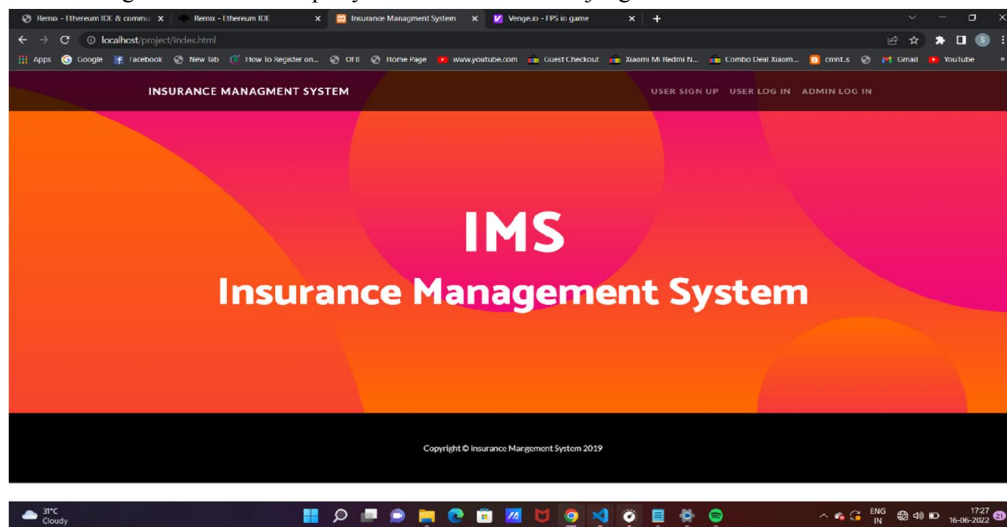
Step 1: All CA, MI, IC, BK, and PT need to be registered with BCC to obtain public and private keys for ECDSA signature and public and private keys for PKI encryption. BCC also stores all patient medical blockchain information. In addition, various CA of different natures will form different alliances with their members, and the information of the alliance members will be shared. For example, CA1 is a medical alliance, and its members are MI, while CA2 is a financial alliance, and its members are IC and BK.

Step 2: The patient PT purchases medical insurance from the insurance company IC. The IC will first verify the identity of the PT and sign an insurance contract with the PT. The PT needs to provide the IC with its BK account, and the record will be transferred to the BCC through the CA. When the PT visits the medical institution MI in the future, if the diagnosis result meets the claimed content specified in the insurance contract, the IC will proceed with the insurance claim.

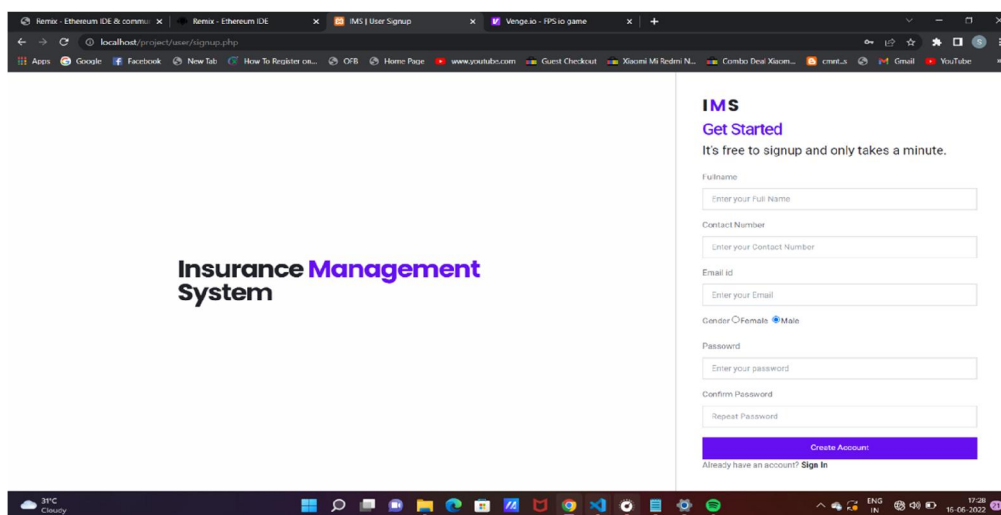
Step 3: When the patient PT visits a medical institution MI and informs MI that he/she has purchased medical insurance, the MI will first verify the identity of the PT, read the electronic medical record EMR of the PT, and then make a diagnosis, and the records will be transmitted to the BCC through CA.

Step 4: The medical institution MI informs the insurance company IC to carry out insurance claims, and the IC obtains the PT medical-related diagnosis content provided by MI. If the claims are eligible, the IC will inform the PT of the claim amount and payment time, and the record will be sent to the BCC through the CA.

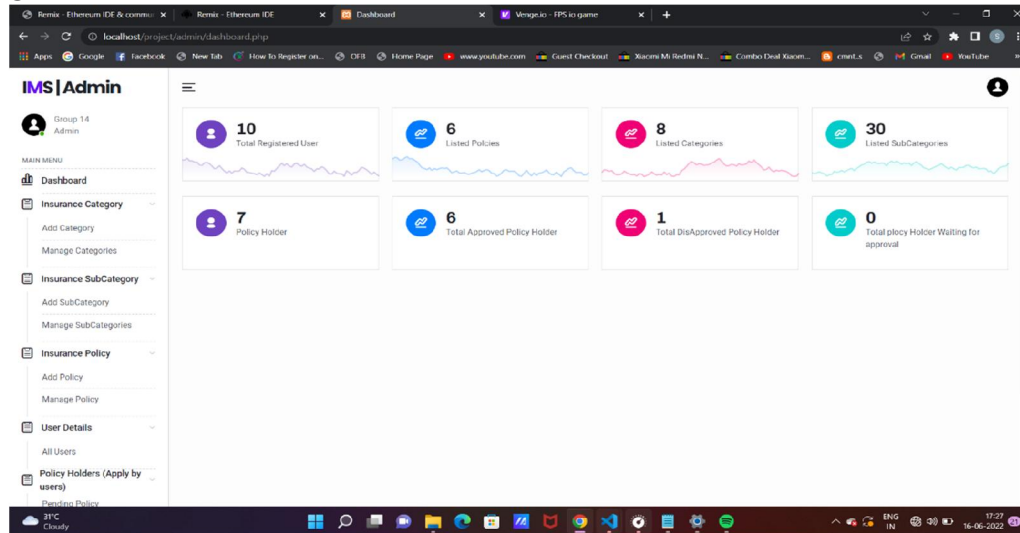
Step 5: The insurance company IC informs the bank BK to pay the patient PT, and the record is transmitted to the BCC through the CA. Step 6: In the event of a claims dispute, the patient PT can appeal to the arbitration institution AI. AI will obtain the message content of each party and make reasonable judgments.



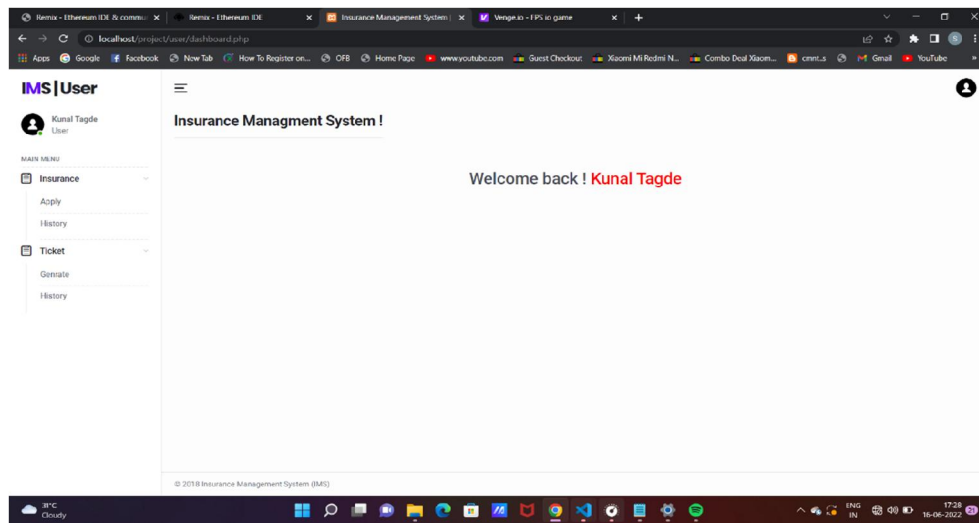
Registration:



Admin Login:



User Login:



3.1 Advantages

- Blockchain technology will facilitate automation of processes thereby eliminating the need for input in some areas of operation. For example, the Allianz group uses a system based on smart contracts (natural catastrophe swap) to improve claim management thus reducing human input. When an event happens, that meets the terms and conditions of the contract, the smart contract automatically executes payments to all affected parties with catastrophe insurance.
- Furthermore, blockchain technology will lower the risk of fraud and theft of insured property through creating a global tamper-proof registry. For example, ever ledger uses blockchain to create a global registry for precious stones. This digital ledger tracks and protects valuable assets throughout their lifetime journey. It records an asset's defining characteristics, history, and ownership to create a permanent record on the blockchain. Various stakeholders use this digital thumbprint, across a supply chain to verify the original and the authenticity of the asset.

- With continuous compilation of behavioural risk factors by insurers through connected and exchanged on the blockchain, prices will be adjusted based on real time information. The assessment of customer behaviour and risk profile will result in better pricing and customized insurance products proper risk management. The study notes that underwriting, pricing and claim management processes will become faster and more efficient by deploying rules through the smart contract leading to better solutions offered.

IV. CONCLUSION

Blockchain is secure, trusted, distributed database ledger. Use of blockchain in Indian insurance sector will make dramatic changes. Blockchain will eliminate fraud, corruption in insurance sector. Smart contracts which are written on top of the blockchain will make claim processing automatically in few seconds, insurance client will not to bother by keeping all documents and providing it on time of claim processing. Author would explore the possibility of application of blockchain in insurance sector in Indian scenario.

FUTURE SCOPE

1. In order to expand this research, future research should include more interview candidates from more insurance companies to get a better understanding of the working processes in more departments in the insurance industry. It would also be beneficial to use more respondents with knowledge of contract law to answer questions on how contract theory can be applied to smart contracts.
2. Throughout this study it was mentioned that the lack of standards for smart contract contents made it difficult to plan for the deployment and use of smart contracts. It would be helpful to understand how standards would add to the ease of creating and use of smart contracts.
3. This study has not addressed issues that arise from the application of smart contracts in a multijurisdiction setting. Research could explore the application of smart contracts in multi-jurisdiction setting.
4. Research on how contract theory could be used in practice during the creation of legally binding smart contracts, would be beneficial.

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