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SMART CONTRACTS AND THEIR GROWING IMPORTANCE

INTRODUCTION

Smart contracts are computer protocols that allow for the digital verification, control, and execution of contracts. Smart contracts are built on the blockchain technology, which processes all of the transactions in a contract, eliminating the need for middlemen.

Smart contracts are like regular contracts, set rules and penalties around an agreement and enforce those commitments automatically. Many smart contracts can be used simultaneously, even though they can function separately.

Objects are the main components of a smart contract. The signatories, who are the parties engaged in smart contracts who employ digital signatures to accept or reject the contractual terms; the topic of agreement or contract; and the particular terms are the three main items in a smart contract.

How does it work?

In five phases, the working concept of smart contracts can be examined:

1. **Offer:** The transaction process begins with the first party making an offer. The first party creates its terms in the form of a "if-then" statement, which is then stored on the blockchain.
2. **Negotiation:** Any party on the blockchain may see the conditions, allowing two parties to discuss contract terms.
3. **Approval:** The contract cannot be changed by any party after the two parties agree on terms and triggering events such as the due date, expiration date, strike price, or other circumstances.
4. **Satisfying Conditions:** Smart contracts can self-verify the conditions that are set inside a contract by understanding real-time data once each party authorises the contract.
5. **Transaction:** The transfer of assets such as stock, real estate, information, intellectual property, and digital/nondigital funds occurs when the triggering event occurs.

IMPORTANCE OF SMART CONTRACTS

Smart contracts are a new technology that has the potential to boost efficiency in a variety of sectors. As the technology improves, more businesses will be able to use it to cut expenses and facilitate quick and safe transactions.

The smart contract market has grown at a 32 percent compound annual growth rate (CAGR) to reach $300 million by 2023, because it is:

- ✓ **Cost Effective:** When agreement details can be seen publicly and digitally, smart contracts can take the role of agents who mediate agreements. Smart contracts, for example, can replace attorneys in legal procedures that rely on traditional torts, property, civil procedure, evidence, or contract analysis by automating laborious operations.
- ✓ **Backup:** All documents saved on blockchain are copied several times, allowing for the restoration of originals in the event of data loss.
- ✓ **Time Saving:** It takes longer to conclude a contract because of the middlemen and paperwork involved in typical contracts. Smart contracts can be performed more quickly since they do not require the use of middlemen.
- ✓ **Secure:** Because of its decentralised structure, blockchain technology makes transactions safer. For example, if hackers wanted to modify the dollar amount in a transaction, they'd need to control at least half of the blockchain's computer power. Though the technology does not render the system impenetrable, it does make the procedure more difficult.
- ✓ **Accurate:** Because smart contracts are written in computer code, fewer parties will make human mistakes throughout the contract drafting process.

USE OF SMART CONTRACTS

Smart contracts have a wide range of applications. The following are some examples:

- ➢ **Healthcare:** With a private key, blockchain can store patients' encoded health records. Due to privacy issues, only specified persons would have access to the documents. Similarly, smart contracts may be used to conduct research in a private and secure manner.

  All patient hospital receipts may be recorded on the blockchain and shared with insurance providers automatically as evidence of service. Furthermore, the ledger may be utilised for a variety of tasks, including supply management, drug supervision, and regulatory compliance.
- ➢ **Insurance:** With a compound annual growth rate of 85 percent, the worldwide market for blockchain in insurance is anticipated to reach $1.39 billion in 2023. When specific circumstances occur, smart contracts can enhance insurance procedures by automating claims.

  Consider the following scenario: CGHE has introduced an insurance product named Yellow, a flight delay insurance product that leverages smart contract technology to handle claims. When a delay of more than two hours happens, the smart contract is connected to worldwide air traffic databases, and payment is immediately triggered.
- ➢ **Government Voting System:** Smart contracts create a safe environment for voting, making it less vulnerable to tampering. Smart contract votes would be ledger-protected,

making them very difficult to decipher. Furthermore, smart contracts have the potential to improve voting turnout, which has historically been low owing to an inefficient system that requires voters to queue, show identification, and fill out paperwork. Voting may expand the number of participants in a voting system when it is transferred online using smart contracts.

- **Clinical trials:** Researchers are utilising genetic data and different simulations to identify improved treatments and cures for illnesses. Encrypgen, for example, utilises smart contracts to send DNA data from patients to researchers for clinical trials. This blockchain system integrates DNA data with payment data on the blockchain, making data access, payments, and keeping track of who has accessed which DNA data easier.
- **Copyright:** By documenting the ownership and other features of digital copyright assets such as digital ID or fingerprint on the blockchain, smart contracts may assure royalties to the intended contributor.
- **Property Ownership:** Property ownership may be accelerated via smart contracts. Contracts for property ownership changes can be programmed and implemented automatically. For example, if the buyer pays the seller, the smart contract can swap ownership of the item immediately based on the payment information on the blockchain. In 2017, *"Prophy"*[1], for example, facilitated the world's first smart contract property transaction. The couple's first purchase was a $60,000 flat in Ukraine.
- **Supply Chain Management:** Supply chain management is the management of the flow of products and entails the active streamlining of a business's supply-side activities. In a supply chain network, as an item reaches the ultimate destinations, the ownership status of the item changes. Everyone in the supply chain can trace the whereabouts of an item using IoT sensors and smart contracts, thanks to smart contracts. Smart contracts can determine the position of an object if it is lost throughout the process. Smart contracts may also automate all of the normal operations and payments, reducing the need for vast volumes of paper to be sent around because everything is virtual.

  The following terms may be included in a smart contract between a manufacturer and a retailer:

  a) The cost of producing a product,
  b) The time it takes for an order to be received and sent.
  c) Clauses of penalty and bonus
  d) Terms of payment for compensating bills

- **Games:** *"CryptoKitties"*[2] is a blockchain-based video game. This is an example of how individuals may use the Ethereum network to store and exchange digital goods. Ether tokens may be used to buy and sell cats to other users. Because CryptoKitties are kept on the blockchain, you can keep your CryptoKitties even if the firm closes down the app or bans your account. The price of a CryptoKitty called Dragon is around $170,000.
- **Data Marketplace:** A *"Data marketplace"* [3]is a platform that allows users to purchase and sell various sorts of data sets and data streams from a variety of sources. Buyers can purchase data streams through an automated smart contract on some innovative

[1] Propy Real Estate Transaction Automated
[2] Cryptokitties
[3] AIMultiple Data Marketplaces: What, why, How, Types, Benefits, Vendors

data marketplace platforms. Vendors such as *"Datapace"*[4] and *"Ocean Protocol"*[5] are examples.

LIMITATIONS OF SMART CONTRACTS

- **Difficult to change:** Changing smart contract processes is almost impossible, and any coding flaw may be time-consuming and costly to fix.
- **Possibility of loopholes:** Parties will deal fairly and not benefit unethically from a contract, according to the concept of good faith. Smart contracts, on the other hand, make it difficult to ensure that the terms are followed exactly as agreed.
- **Third Party:** Despite the fact that smart contracts aim to eliminate third-party participation, it is impossible to do so. Third parties have a different role in conventional contracts than they do in traditional contracts. Lawyers, for example, will not be required to write individual contracts; nevertheless, developers will want their assistance in understanding the provisions in order to construct smart contract software.
- **Vague terms:** Smart contracts aren't always able to manage ambiguous terms and conditions since contracts involve phrases that aren't always understood.

CONCLUSION

One of the most significant issues that businesses face is a lack of trust when dealing with third parties. Organizations act carefully and spend considerable time and money on intermediaries when concluding agreements due to a lack of trust and transparency.

In instances when contract conditions may be seen openly, smart contracts can help by eliminating the intermediaries. Using blockchain technology, these contracts increase trust and transparency between two parties. They make it possible to create contracts that are both immutable and accessible.

[4] Datapace Data Markpetplace Powered by Blockchain
[5] Ocean Protocol Data Marketplaces with Blockchain Superpowers