

안전한 관광 서비스를 위한 블록 체인 플랫폼의 인터워킹 메커니즘

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Interworking Mechanism of Blockchain Platforms for Secure Tourism Service

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Abstract

Recently, data security and convenience are critical requirements to the interaction and collaboration of tourism service systems for the tourism industry. However, there are still many challenges for current tourism service systems to fulfill these requirements since they have inconsistent structures with different access control models and security policies. Blockchain has the potential to evolve the conventional tourism industry benefiting by its unique features such as data privacy and transparency. This paper mainly aims the interworking mechanism of heterogenous blockchain platforms for secure tourism service. We propose interworking scheme to connect multi-blockchain platforms for enhancing data integrity in the tourism industry. A proof of concept design and implement based on Hyperledger Fabric and Winding Tree.

Keywords: Blockchain, Tourism Service, Hyperledger Fabric, Winding Tree

1. Introduction

The most significant impact of blockchain on the travel industry is an increasing level of disintermediation, which had become a significant issue since the early 2000s when online travel agencies (OTAs) became popular [1]. There are some projects and business models in the tourism industry that are under development, and these works are useful for demonstrating the possibility of using blockchain for tourism [2]. The critical element of any blockchain system is the reality of a permanent tamper-proof. It can be perceived as an aggregation of the encrypted system, which mainly deals with a set of transactions. Blockchain provides a guarantee to the transaction that has been executed and verified. In this paper, we propose a decentralized tourism service platform focus on transaction process along

with the trading partners across different domains. The proposed system is built on two different blockchain platforms, which are interconnected with each other. Although the coevolution of blockchain and tourism studies is still in its infancy, this paper explores the potential applications of tourism blockchain to improve efficiency and bring automation, to revolutionize robust business solutions in the tourism industry.

2. The Composition of the Transaction Process

A decentralized tourism service platform is designed based on Hyperledger Fabric [3], and Winding Tree [4], where each transaction happens in the process is recorded in a secure network. Hyperledger Fabric is responsible for payment transactions and identity authorization. Winding Tree

is responsible for managing travel products in the network. It provides product inventory management, which enables global customers to trade with hotels and airlines on the blockchain network. The proposed system enhances the transaction security and keeps the data transparency since the smart contract will only accept requests from authorized users. Fig 1 show the interworking configuration of Winding tree and Hyperledger blockchain platforms.

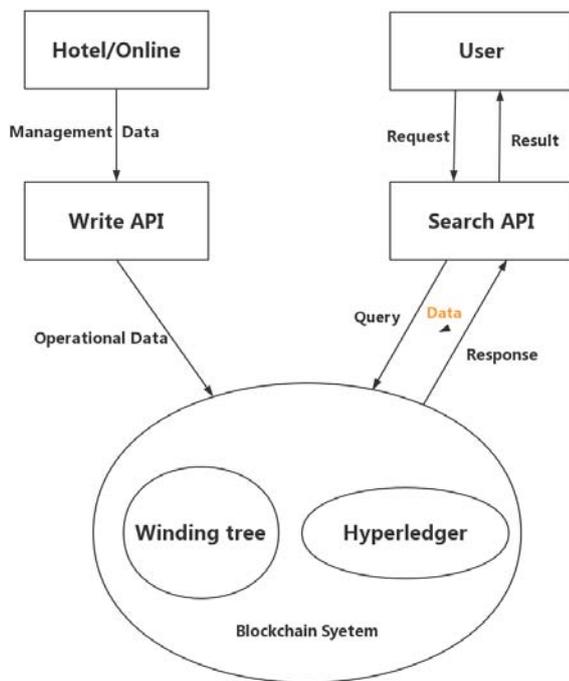


Fig 1. Interworking configuration of Winding tree and Hyperledger blockchain platforms

3. Conclusion

The potential of the blockchain and cryptocurrencies has already been found out by the financial sector and big companies. The tourism industry can use blockchain to assure the accessibility and extensiveness between the various stakeholders. It can be inferred that the use of block technology in the tourism industry is of great significance. In this paper, a blockchain-based

tourism service platform has been designed and implemented using the Hyperledger Fabric and Winding Tree. It can be expected that the impact on the business sector will be substantial by the blockchain technology and that many of these effects will flow on to the tourism industry. In future, we will implement and evaluate the interworking mechanism of Winding tree and Hyperledger blockchain platforms

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