NUS National University of Singapore

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Decentralized Shared Driverless Vehicle Platform

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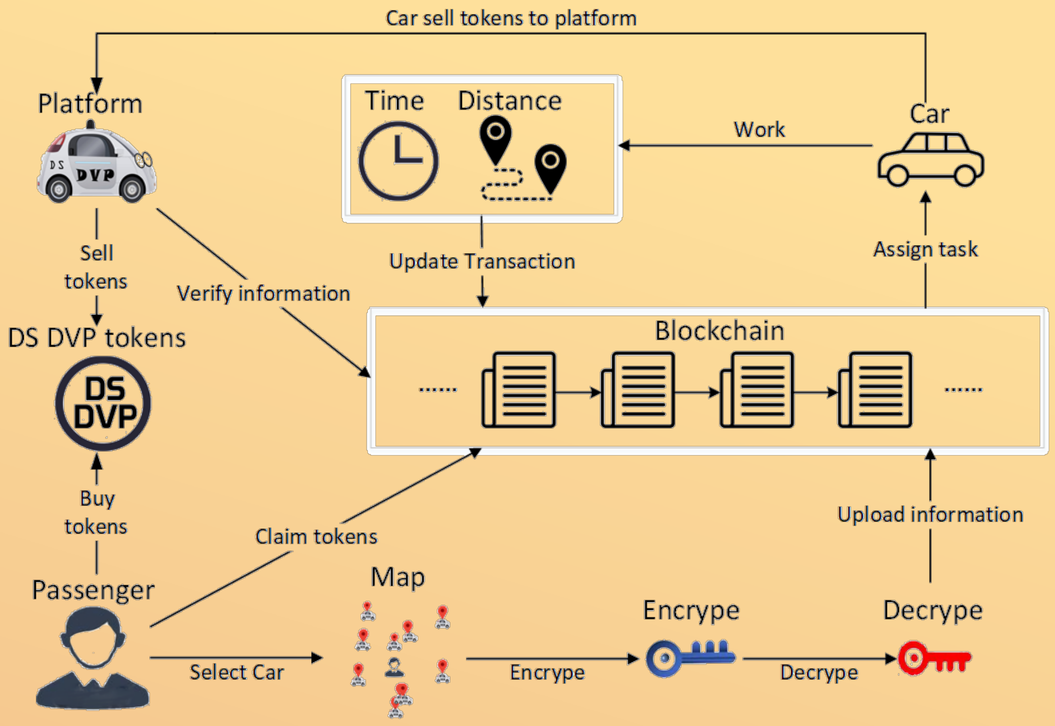
Introduction

In the future, driverless cars and IoT technology will be popularized. So when the driverless vehicle is idle, there will be a waste of resources. Our platform use blockchian to make full use of this resource. The owner of the driverless vehicle can register on our platform and pick up passengers when the vehicle is idle. When the owner needs to use the car, the idle state of the vehicle will be lifted, and the vehicle will automatically return to the designated location of the owner.

Travel Information Protection



In the flow chart above, we use asymmetric encryption mechanism to encrypt the passenger‘s travel information and then sent it to the car and upload it to the block chain. When the car receives the passenger’s information, it decrypts the cipher text with its own private key and recalculates the hash value and if the verification is successful , it will go to pick up the passenger. This methods can effectively protect the user’s travel privacy from being stolen by third parties. Besides, we also use digital signatures to ensure that information is not maliciously altered during transmission. In addition, using block chain to store the owner's information can ensure the authenticity of owner's information, which provides more security for passengers’ personal safety.

- **Less Cost**

Driverless vehicles and passengers work together to maintain a decentralized network without extra costs.

- **Privacy Safe**

Without displaying the data, we can automatically match the corresponding the need of users through the smart contracts, so as to achieve complete confidentiality of private data.

- **Credit Mechanism**

Smart contracts can auto execute. This technology replaces the traditional credit intermediary and provides a new kind credit guarantee mechanism for both owners of the cars and the passengers.

- **Monopoly**

Existing platforms are centralized and even evolve into monopolies. As the platform charges more and more intermediate fees, the price of users taking taxis is increasing.

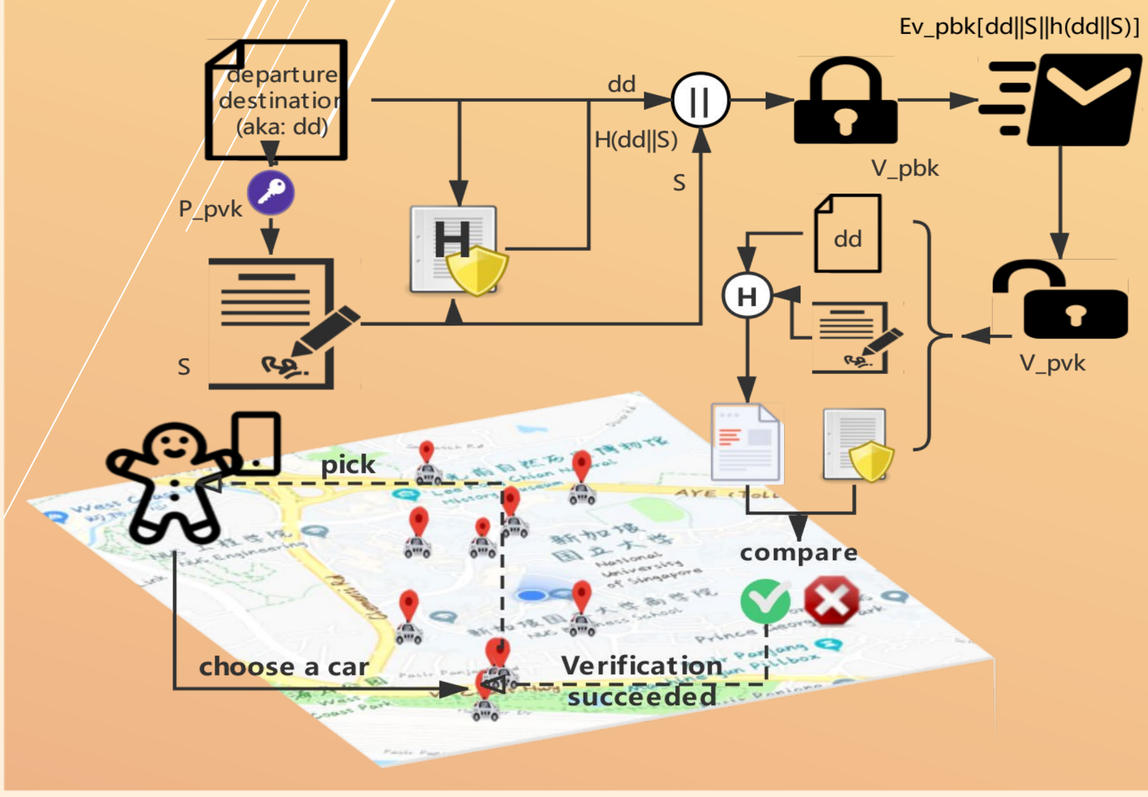
- **Privacy Leakage**

During the service process, many private information is exposed to the platform, so there is a risk of privacy leakage.

- **Less Regulation**

The platform itself is not easy to regulate for both drivers and passengers. As a result, there is always news about taxi drivers committing crimes.

Operational Process



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