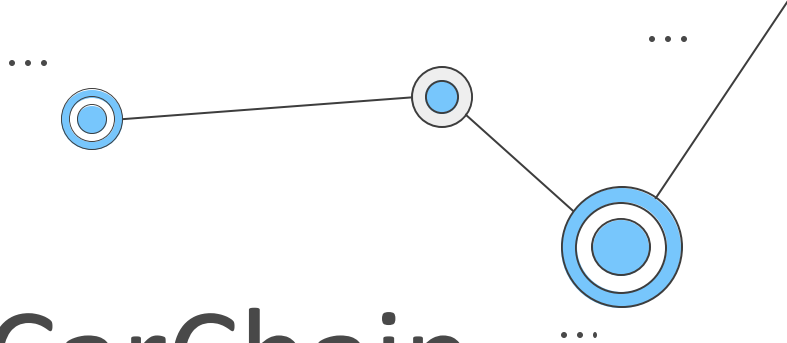


CarChain

By Team BlockParty

Dennis Bui
Xavier Poon
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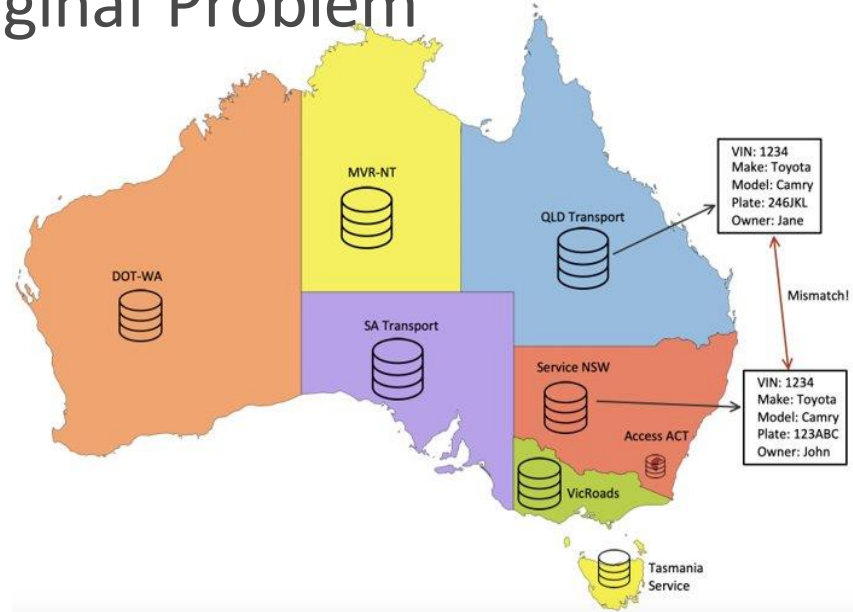


Original Problem

Problem:

Currently, Vehicle registration system in Australia is decentralised series of information silos.

- **Complete trust** required between all the states



What we set out to do:

- Develop a new Car registration system that took advantage of Blockchain.
- Streamline the overall user car registration system.

Integrity

- Car registration data cannot be modified by anyone.
- Only authorized organisations can add data to the registry.

Availability

- High likelihood that data can be accessed at anytime.
- No single point of failure.

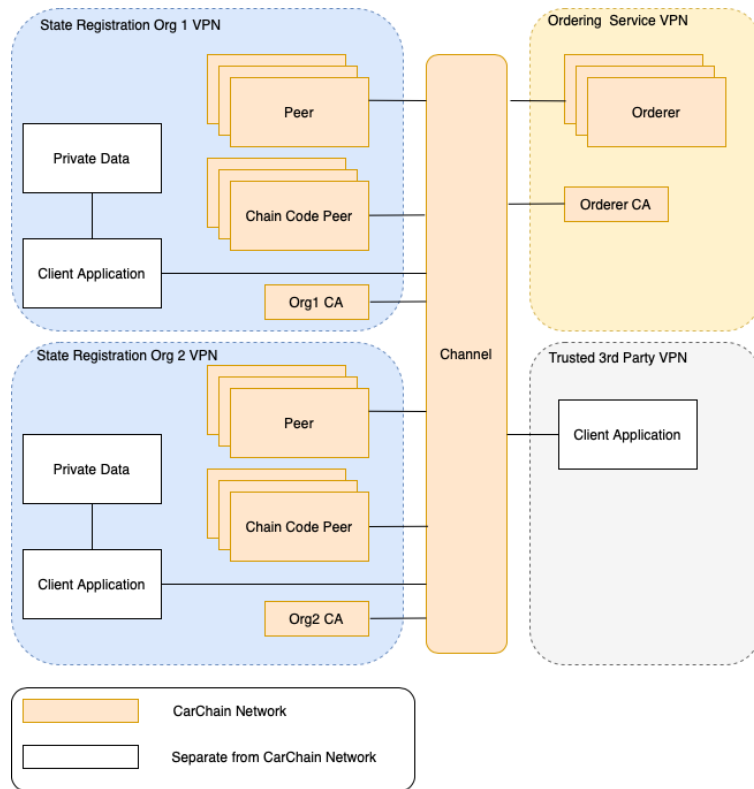
Interoperability

- Appropriate authority in different states can interact with each other through a common underlying infrastructure.

Authenticity

- Only authorized organisations and trusted third parties to access the registry.

High Level Architecture

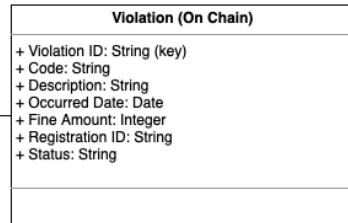
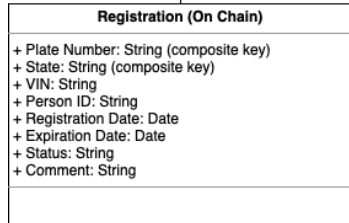
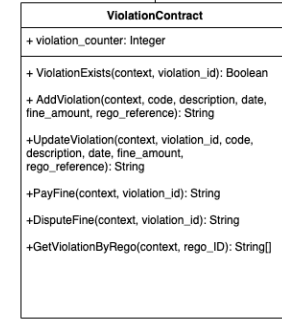
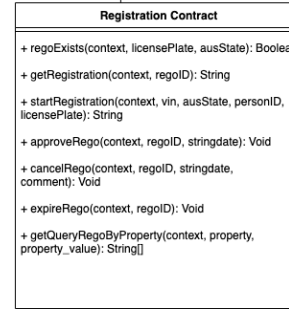
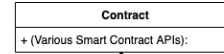
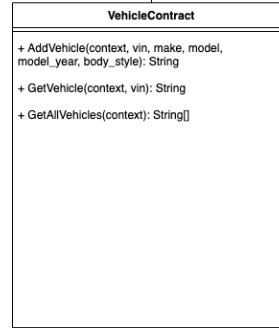
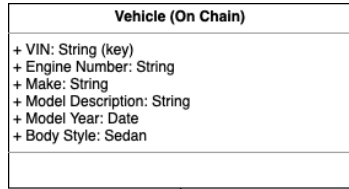


On-Chain Components

On-Chain Data Entities (Objects)

Chaincode Structure

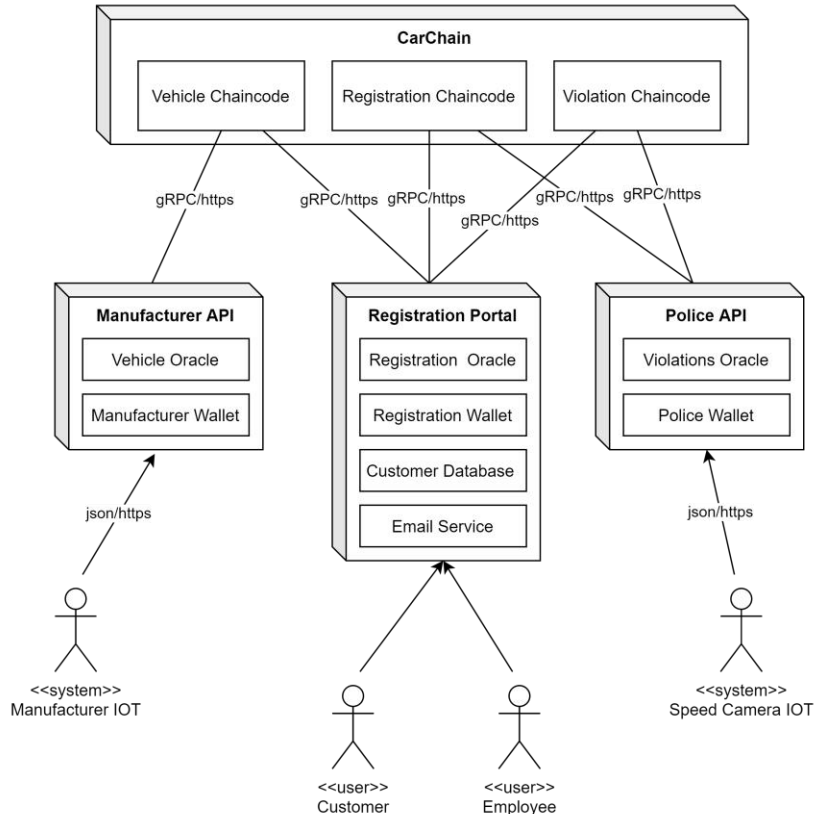
Decoupled



On-chain Functionalities

- Owners can apply for new Registration
- Only Staff can approve/decline registrations
- Owners can view and pay/dispute fines
- Only manufacturers add new vehicles to the Blockchain

Off-chain Features



Manufacturer API

- Has a **Vehicle Oracle** that facilitates communication between the blockchain and the **Manufacturer**

Registration Portal

- Has a **Registration Oracle** that facilitates communication between the blockchain and the **Customer/Employee**
- The Registration Oracle queries data from the **SQLite database** used to store sensitive customer personal information.
- Includes an **Email Service** that listens for approved registration events on the blockchain and emails the owner.

Police API

- Has a **Violations Oracle** that facilitates communication between the blockchain and the **Police/Speed Camera**

Wallet Generator

- Generates public-private key pairs and provides a certificate of authority for new members.
- The oracles use their corresponding wallets to get permission to execute the functions in the chaincode



Live Demo!

