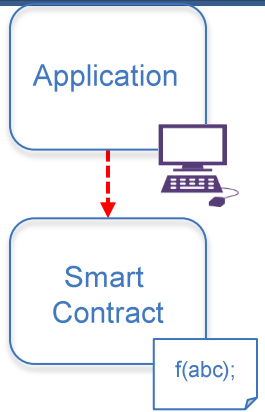
Actors in a Blockchain Solution

Blockchain Architect		Responsible for the architecture and design of the blockchain solution
Blockchain User		The business user, operating in a business network. This role interacts with the Blockchain using an application. They are not aware of the Blockchain.
Blockchain Regulator		The overall authority in a business network. Specifically, regulators may require broad access to the ledger's contents.
Blockchain Developer		The developer of applications and smart contracts that interact with the Blockchain and are used by Blockchain users.
Blockchain Operator		Manages and monitors the Blockchain network. Each business in the network has a Blockchain Network operator.
Membership Services		Manages the different types of certificates required to run a permissioned Blockchain.
Traditional Processing Platform		An existing computer system which may be used by the Blockchain to augment processing. This system may also need to initiate requests into the Blockchain.
Traditional Data Sources		An existing data system which may provide data to influence the behavior of smart contracts.

Ledger Example: A Change of Ownership Transaction



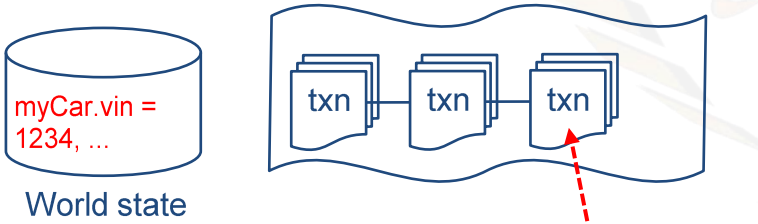
world state stores the most recent state of smart contracts / output of transactions

Transaction input - sent from application

```
invoke(myContract, setOwner,
       myCar, Matt)
...
```

Smart contract implementation

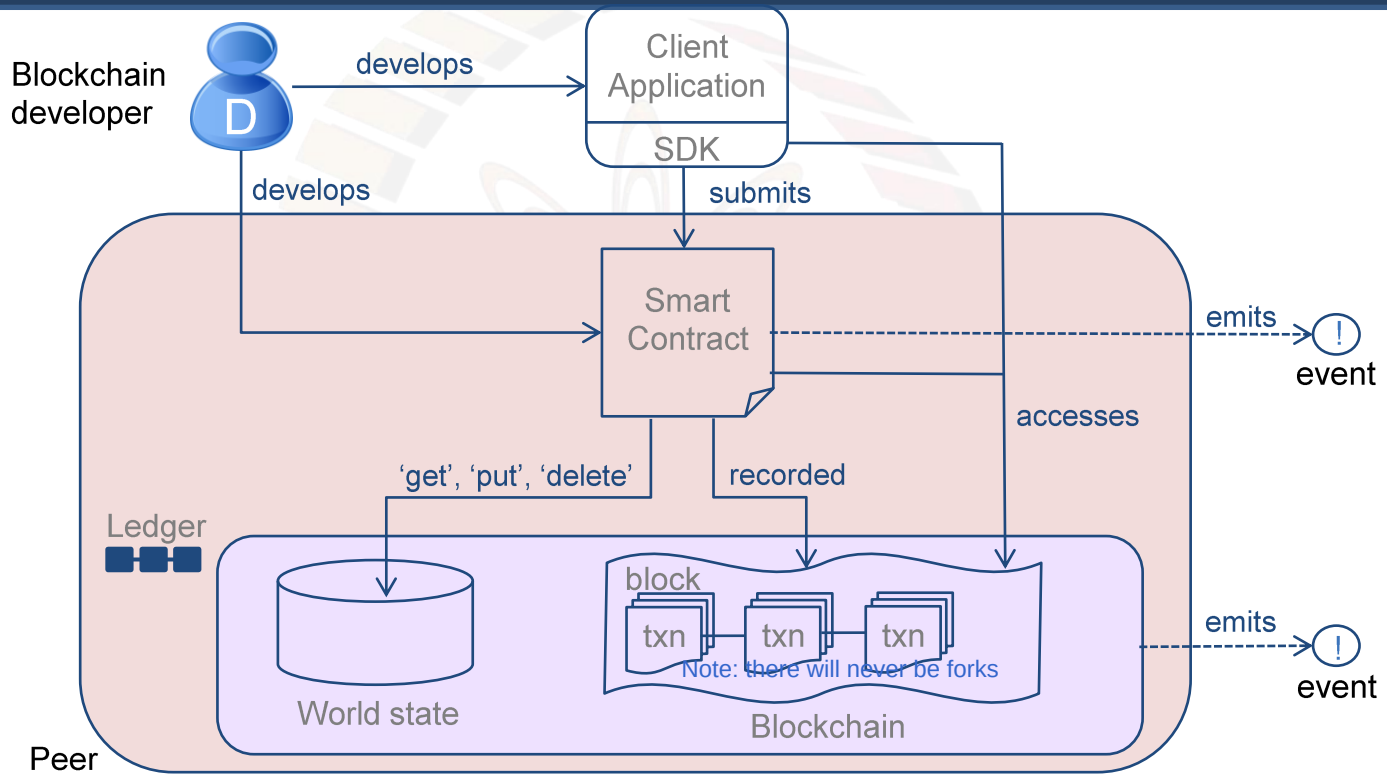
```
setOwner(Car, newOwner) {
  set Car.owner = newOwner
}
```



World state: new contents

myCar.vin = 1234
myCar.owner = Matt
myCar.make = Audi
…

How Applications Interact with the Ledger



Blockchain Events

- In computing, an event is an occurrence that can trigger handlers
  - e.g. disk full, fail transfer completed, mouse clicked, message received, temperature too hot…
- Events are important in asynchronous processing systems like blockchain
- The blockchain can emit events that are useful to application programmers
  - e.g. Transaction has been validated or rejected, block has been added…
- Events from external systems might also trigger blockchain activity
  - e.g. exchange rate has gone below a threshold, the temperature has gone up, a time period has elapsed…