
Road Charge Pilot System Architecture

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Agenda Item #12

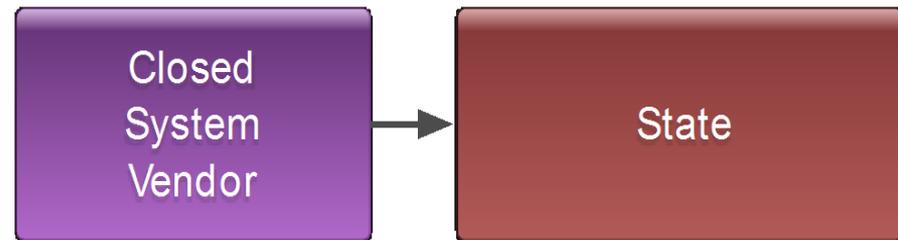
TAC Meeting #3, March 27, 2015

Irvine, CA



Closed Systems

- ◆ A closed system for road charging is a self-contained system in which one organization selected by the state provides all user hardware. Another organization—a state agency or an organization selected by the state (perhaps the same organization as the hardware provider)—manages user accounts and remits collected charges to the state
- ◆ Used in toll collection for tags, and transit fare collection for smartcards
- ◆ Easier to start than an open system
- ◆ Does not require a large market to start, unlike open system
- ◆ Can lead to vendor lock-in and consequent high prices
- ◆ Can support manual and automated methods
- ◆ Simple system architecture:



Open System

- ◆ An **open system** for road charging would allow multiple organizations to participate on all levels, typically in a manner that approximates an open market
 - ✧ In an open system, any qualified company could provide mileage reporting hardware, and another group of qualified companies could provide account management services to motorists
 - ✧ Companies are free to enter the market at any time, so long as their equipment or services meet standards set by the state
- ◆ Based on a set of common standards for hardware and services
- ◆ Require some effort to start, and require a minimum market size
- ◆ Lower cost than closed systems in the long run
- ◆ Can support manual and automated methods
- ◆ System Architecture:



Open System: Mileage Reporting

Includes two components:

- ◆ In-vehicle road charge device
- ◆ Either in-vehicle *or* external data collection system
 - ✧ Data collection system receives data and transmits it to an account manager in a standardized communications format

Having a data collection system outside of the vehicle allows the road charge device to communicate in a compact proprietary format:

- ◆ Many usage-based insurance devices and telematics platforms transmit data in a proprietary format to an external server, where it is processed



Open System: Account Management

Account management:

- ◆ Takes in mileage data
- ◆ Updates user accounts based on mileage data
- ◆ Sends invoices to customers
- ◆ Receives payment from customers
- ◆ Provides customer service
- ◆ Sends payments to the state
- ◆ Reports road charge data to the state for accounting purposes

May be a privately run commercial account manager:

- ◆ Commercial account managers may provide value-added-services to customers
- ◆ May reduce cost to the state
- ◆ May reduce risk to the state

Also may be useful to have a state account manager



Open System: Account Management Oversight

- ◆ Account management oversight is a state function comprising compliance and enforcement of the road charging system
- ◆ Main functions:
 - ✧ Verify that all potential subject vehicles are registered for the road charge
 - ✧ Verify that all account managers pay the correct amount on a monthly basis
 - ✧ Perform or oversee certification, recertification, and auditing of account managers

