**SPONSOR CHALLENGE**



**Blockchain assisted roaming for EV charging $9,965**

Problem: Interoperability of entities taking part in the EV charging landscape, as well as standardization of how these entities share relevant information in a safe and controlled manner would be a key driving force for electric vehicle adoption.

Consider a private ecosystem where you have EV owners (EVOs), energy storage companies (ESCs), and EV charging operators (EVCOs) that manage EV charging stations. In this context, an EVO is someone who has the capability to also generate energy (i.e. owns solar panels), and stores the excess energy to be used later for his/her EV charging.

When EVOs create new energy, that energy is tokenized in a digital asset form and transferred for storage with a desired ESC.For this to be possible, an EVO has to request an agreement with the particular ESC. Once this agreement has been approved, the transfer of energy is made possible. Once an EVO completes the transfer of e2nergy, the ESC updates the energy token by confirming that it stored this energy.

ESC charges EVOs the storage costs when the energy has been consumed, and these costs are calculated arbitrarily. EVOs have proof of ownership over their energy tokens, that is also confirmed by an ESC, and with this combined proof of ownership they are able to access their stored energy assets and use it to charge their EV at an EVOs charging station upon showing that proof.

For this to be possible, an ESC has to have an agreement with an EVCO, thus, each EVCO maintains a list of ESCs that it has an agreement with. When an EVO stores energy with a particular ESC, he/she is aware of which EVCOs can be used to charge his/her vehicle. For every EVCO and ESC that have an agreement, PO creates a private communication channel, where the majority of entities has to sign every transaction.

The EVCO consumes the proof of energy ownership - energy tokens, and allows for charging to occur for a certain time period (amount of owned energy implies maximum charging time). At this point the ownership of the energy is transferred completely to EVCO, which completes the energy cycle for this ecosystem - what happens with the energy from now on is not important.

The entire ecosystem is managed by a platform operator (PO) and the PO can invite new EVCOs and ESCs into the private blockchain ecosystem. EVOs feel safer doing business knowing their share of energy tokens are part of public blockchain. Now, consider a use case where an EVO is part of one such private ecosystem in Denver, and wants to use EVCOs facilities from Chicago, which is part of another such private ecosystem. For enabling that convenience, interoperability of those POs needs to be ensured. While these two POs are not willing to share information via private blockchain channels, they are willing to accept proof of energy ownership that is stored on a previously agreed upon public blockchain.

Desired outcomes: This challenge requires creation of an interoperability framework between EV charging POs, as illustrated in the problem description, using a combination of private and public blockchains. It needs to be showcased by creating at least two private PO ecosystems and building an interoperability framework on top of them.

*Things To Keep In Mind*

* Technologies: Private blockchain (Hyperledger Fabric on ChainRider), Public blockchains (Dash APIs on ChainRider).
* Private blockchain (Hyperledger Fabric on ChainRider.io), Public blockchains (Dash APIs on ChainRider.io)
* Build at least two private Hyperledger networks and demonstrate exchange of digital assets between them using Dash network.

**Prize**

$2000 ChainRider.io credit to each the challenge participating teams; $5000 ChainRider.io credits for the winning team; Winning team gets invitation to present their solution at the 2nd Annual Global Power & Energy Blockchain Conference, October 23rd - 25th, 2019| Atlanta, GA.

Travel to the 2nd Annual Global Power & Energy Blockchain Conference, October 23rd - 25th, 2019| Atlanta, GA is optional; travel and accomodation expenses are not covered but entry ticket to the event are provided ($695 value) to each member of the winning team.

**Appointed Judges**

Ryan Taylor, Sasa Pesic