

Statement of Charging Interface Initiative e. V.

Achieving Multi-PKI Interoperability at 2023 CharIN Festival
February 2024

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Plug&Charge via ISO15118 in North America:

Today, many automotive OEMs and charging network operators use the Hubject V2G Public Key Infrastructure (PKI) to provide Plug&Charge with ISO 15118 for their customers. The Hubject V2G Root certificate is used to facilitate a seamless and secure authentication via TLS between the EV and the EVSE and currently the only widely adopted V2G-PKI for Plug&Charge in North America.

To provide more options to the market, other V2G-PKI providers are expected to emerge in North America. SAE Industry Technologies Consortia (SAE ITC), an affiliate of SAE International has been working to launch the Electric Vehicle PKI (EVPKI) Consortium, creating a framework and establishing guidelines for a PKI platform for the eMobility industry. The EV PKI Consortium will be open to members of the EV public charging industry, and it is also expected that other V2G-PKI providers will join the consortium. As such, there will be multiple V2G-PKIs available and it is critical that all available PKIs can be interoperable to ensure a consistent, seamless and secure charging experience for the EV driver. To that end, the Multiple PKI subgroup, operating under the CharIN North America Charging Interoperability (NACI) task force was created to advance interoperability between the EV and EVSE in a multi-V2G-PKI environment.

Multiple PKI Subgroup Charter – Ensuring interoperability in a multi-V2G PKI environment:

The Multiple PKI subgroup's primary objective is to demonstrate interoperability between multiple V2GPKIs with cross-recognition. At the CharIN Festival event at Lincoln Electric in Cleveland, OH in November 2023, the focus was testing for TLS authentication with 3 different V2G-PKIs. In 2024, testing with multiple MO/V2G-PKIs for contract certificate authentication is planned. Later in 2024, the subgroup will create guidelines to operate a Certificate Trust List (CTL) for Plug&Charge for North America.

Successful demonstration of multi-PKI interoperability at CharIN Festival:

The objective of testing was to demonstrate the technical solution for interoperability between multiple PKIs via cross-recognition. Some details on the test scenarios at Festival are shown below:

- 3 EV OEMs and three EVSE manufacturers signed up to participate in the testing
- 3 V2G-PKIs were used; Test certificates were provided by each PKI provider prior to Festival to the participants
- Each EV installed V2G Root certificates from all 3 PKIs
- Each EVSE installed the certificate chain from the one of the 3 V2G-PKIs

Successful TLS authentication with cross-recognition was demonstrated between each EV and EVSE, proving that interoperability can be established by the EV for multiple V2G-PKIs without any proprietary software changes required in the EV and the EVSE.