

Empowering the next level of e-mobility

CharIN – Charging Interface Initiative e. V.

EU – CharIN position papers – 2020 & 2021

Payment Systems for EV Charging

In the event that the customer does not have a contract with an Electro Mobility Service Provider, the “ad-hoc” payment solution allows a convenient recharge without the need to signup to any new contract.

- **“Ad-hoc” payment can be made directly and easily by the customer using credit or debit card details already today. Mandatory additional hardware installations on the charging points should be avoided.**
- **Cash payment solution on charging points should be avoided.**

Price Display

Access to charging networks should be open and free from discrimination for all MSPs and not be restricted via exclusive contracts. Each MSP is free to establish prices for its services in an increasingly competitive market.

- **Prices for ad-hoc charging should be presented at first glance, directly on the display of the charging station or via web/smartphone application. This provides a basis for comparison between, and full transparency of charging services for the EV drivers. The ad-hoc prices should also be made transparent before EV drivers start their journey, e.g. on the operators website.**
- **Prices for contract-based charging are displayed by the MSP on the web/smartphone application in full transparency**

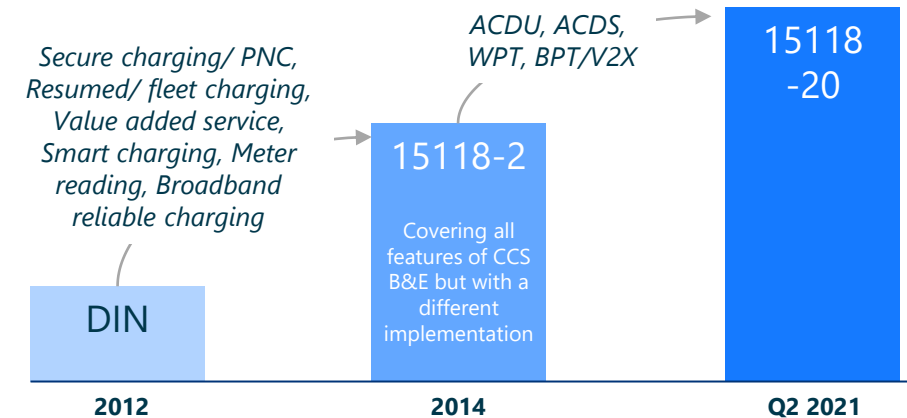
EU – CharIN key positions – ISO15118 & PKI



Standards:

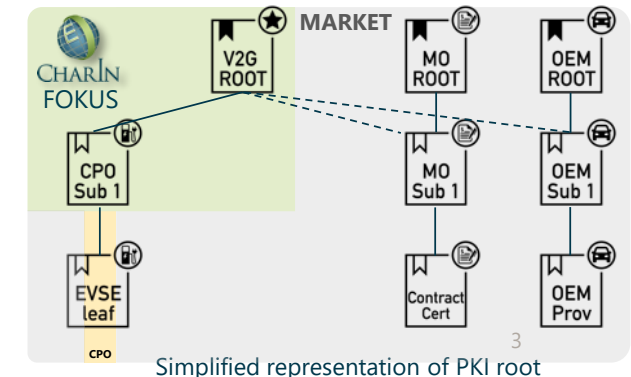
1. The **ISO15118** is a **future-proof standard** for **communication exchange between EV and EVSE** and for the e-mobility **eco-system**.
2. ISO 15118 as a key element **continuously increasing** local and network charging **efficiency** and **simplicity**
3. ISO15118 implementations are **already in the market in 2020**. **ISO15118 market share will increase substantially** in the future in many electric **vehicles and infrastructure** and is the global technology enabler towards an acceleration of mass market e-mobility.
4. **Plug and Charge and Grid Integration** are two **key features** of the ISO15118 roadmap.

ISO15118 Continuous feature growth



Public Key Infrastructure:

1. Strive for a **single European root CA** operated by CharIN as **neutral party**
2. Provide a **fair, open** and **non-discriminatory setup** in which new parties can access the market and which is **widely accepted** by the industry.
3. The PKI will be reviewed and updated on a defined regular base



Simplified representation of PKI root

CharIN key positions – Create certainty and acceptance.

1

Commitment of key stakeholders (OEMs, CPOs, etc...) to ISO 15118

- ✓ **All vehicles** (DC & AC, BEV & PHEV)
- ✓ implementation of use cases

2

Interoperability & cooperation. Certainty. Fair competition.

- ✓ **Freedom of choice** for customers
- ✓ Activate/deactivate **Plug and Charge** (PnC) functionality
- ✓ Free **selection of EMSPs** in any vehicle
- ✓ **Multiple contracts** per vehicle
- ✓ **Transparent processes** and **fair terms & conditions** for all market participants

3

Independent, open, neutral and secure Public-Key-Infrastructure (PKI)

“Plug and Charge” topics addressed in CharIN



Task Force PKI

- ✓ **open for everybody** – CharIN member and non-member
- ✓ **Technical discussions and definitions** on **security** topics and **interoperability**
- ✓ **Weekly** meetings

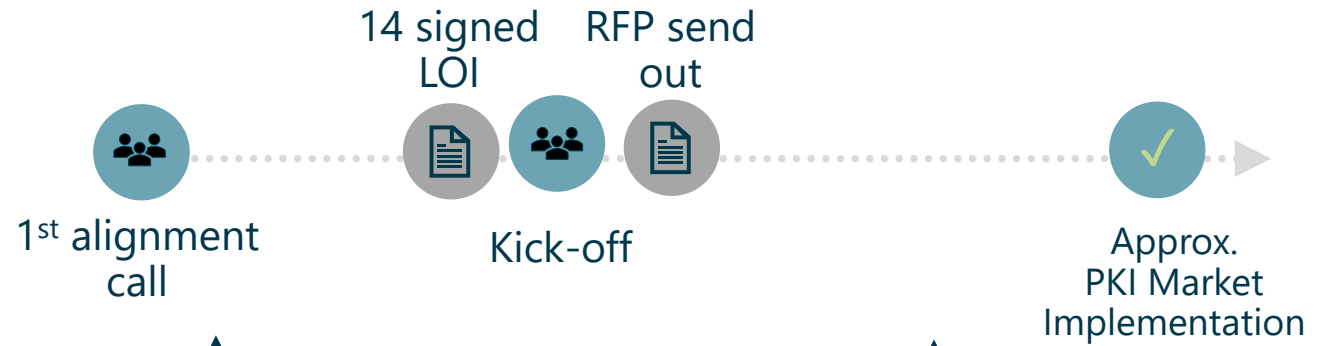


“Plug and Charge” Market Implementation Project

- ✓ Open **for committed parties** (financially and resource wise)
- ✓ Technical and market **implementation** of a **fair, open and non-discriminatory** Public Key Infrastructure (**PKI**) setup
- ✓ Several sprint meetings a week and **full group meetings** approx. **once a month**

Plug and Charge activities in CharIN

Timeline



Task Force PKI

Kick-off



Publication:
Certificate Policy Guideline



Approx. finalization:
Interop Document

Plug and Charge activities in CharIN

Task Force PKI



Task Force PKI

Framework of TF PKI

- Open for everybody – CharIN member and non-member
- Technical discussions on security topics and interoperability
- Started in November 2019
- Weekly meetings each Wednesday 4 – 5 PM CET

Results of the last 12 month

- Publication of Certificate Policy Guideline on [CharIN Website](#)
 - Recommended practices / guidelines for PKI implementation in systems related on ISO 15118
 - Used as Baseline for Certificate Policy in Plug and Charge Europe Project
- Currently working on Interoperability Document
 - use cases of the communication and certificate flow from all actors involved in the PnC environment.
 - ISO 15118 and VDE application guide as reference
 - Finished approx. q2/q3 2021
 - Used in Plug and Charge Europe Project for pilot phase and E/E testing

Active TF Members



Plug and Charge activities in CharIN

Project: Plug and Charge Europe



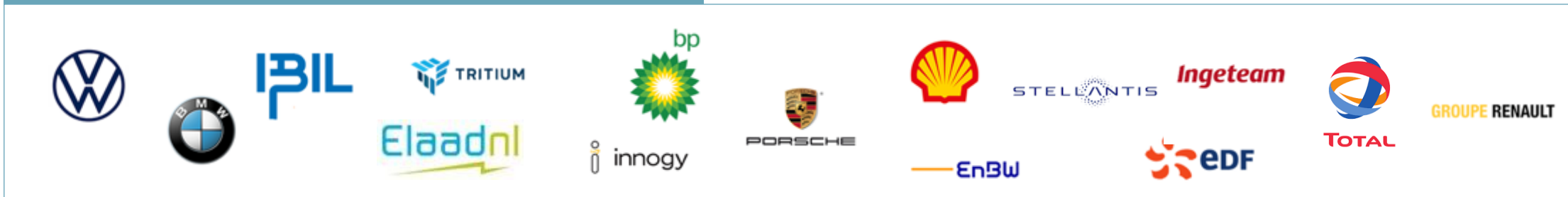
Framework of PnC Europe

- Open for committed parties
 - Financial commitment max. 50k € per company
 - Contribution of resources
- Practical implementation of Public Key Infrastructure
- 6 alignment calls with interested companies till project start
- Project start March 3rd, 2021
 - 2 sprint meetings each week
 - full group meetings approx. once a month

Results of the last 12 month

- 15 committed parties with signed Lol agreeing on defined Objectives
- Request for proposal send out for PKI Service Provider (open till end of May)
- Consolidated and Aligned press release for project start
- Currently working on:
 - market rules and governance for an open PKI
 - KPI's for PKI Service Provider evaluation

Committed Companies (as of April 26, 2021):



Plug and Charge activities in CharIN

Project: Plug and Charge Europe | Motivation



Current situation

- Currently one operating V2G Root CA which might **not be excepted** by all actors in PnC ecosystem (OEM, eMSP, CPO, EVSE) within Europe
- Several more V2G Root CA's might come into the market

⚡ Risks

- ⚡ Numerous isolated and non-interoperable market solution.
- ⚡ Segregated markets
- ⚡ Higher complexity and costs
- ⚡ Higher likelihood of malfunctions @PnC
- ⚡ Eventually decreases the market acceptance of the customer



Solution

- Strive for a single European Root CA operated by CharIN as neutral party
- Provide a fair, open and non-discriminatory setup in which new parties can access the market and which is widely accepted by the industry
- Set up an accepted organization to operate the Root CA approx. by end of this year



Advantages



Large European community with increasing business potential by attractive PnC functionality.



Accelerate the market rollout of PnC

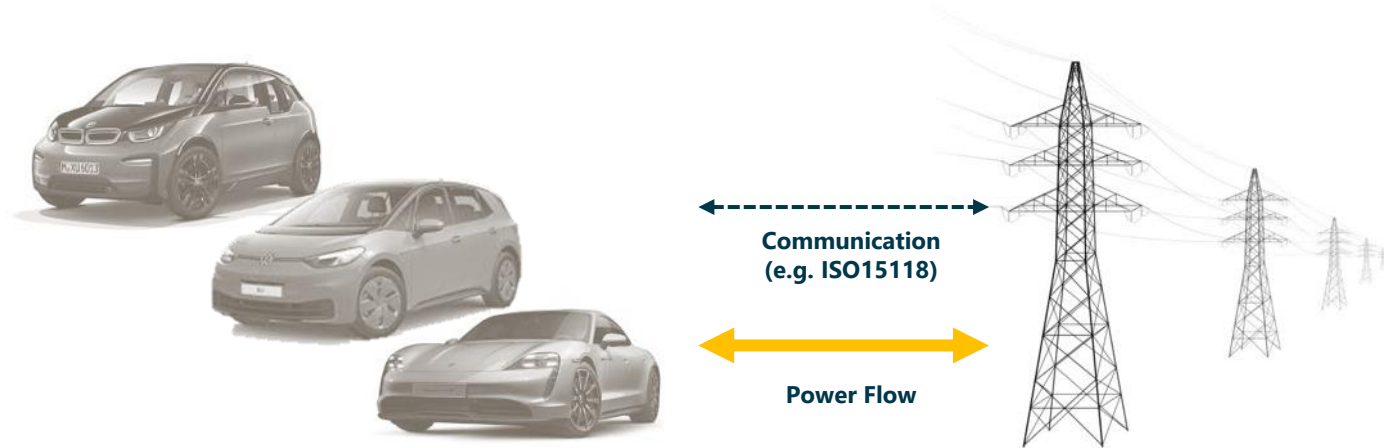


The **expertise from all relevant players within the PKI** (CPO, EMSP, EVSE, OEM) will assure a high level of security



Lower costs for the market players than operating multiple, individual Root CA's

Bidirectional Power Transfer / Grid Integration



Bidirectional Power Transfer and Grid Integration are **core topics within the CharIN focus groups** – and are continuously discussed and **developed since 2016**.

CharIN recommends:

- that **grid integration** functions shall be **embedded into the ISO15118** standard. Furthermore, **additional standards like EEBus, IEC61850 must be considered**.
- An **overall framework** for grid integration functions **shall be developed and supported** by the AFID process. Standard specific details shall be discussed within CharIN and other affected standard groups.

Securing genuine consumer choice and equal market access for providers with agreement on the ISO15118 standard among the industry

Success factors for e-mobility ecosystem:

- ✓ Free, open and fair pan-European market access, ensured by respective regulation
 - ✓ Creating frameworks and conditions with and beyond the primary focus of ISO15118
 - ✓ Enables new business-cases for all stakeholders to get long-term predictable planning environment
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Status Quo without an agreement on ISO15118 and framework conditions:

- ⚡ Fragmented charging market with different implementations between OEMs, CPOs and EMSPs
 - ⚡ Risk of the development of insular charging-eco-systems
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Potential positive impact of ISO15118 on the future European Charging market:

- ✓ Future-proof solution including extended functionalities such as Plug & Charge or Bi-directional charging offering a standard for all actors (OEMs, CPOs, EMPs, grid operators...)
 - ✓ Agreement on an ISO15118 roadmap among all actors enables a long-term predictable planning environment
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! **There is an immanent need to agree on a roadmap for the ISO 15118 standard an ecosystem among all actors in the industry for the successful roll out of electric mobility.**
