European Commission

Support Study on the development of a governance framework for the EU Public Key Infrastructure (PKI) based on the standard ISO 15118

Executive Summary

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Directorate-General for Mobility & Transport (DG MOVE)

Directorate B — Investment, Innovative and Sustainable Transport

Unit B4 — Sustainable & Intelligent Transport

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This publication is a final report by PwC EU Services of the *Support study on the development of a governance framework for the Public Key Infrastructure (PKI) under the standard ISO 15118* as part of the implementing framework contract MOVE/ENER/SRD/2020/OP/0008 Lot 6. The document has been elaborated by PwC EU Services in close collaboration with industry experts identified in this publication, and it reflects the results obtained during the elaboration of the study. The document does not imply a policy position of the European Commission and the European Commission is not liable for any consequence stemming from the reuse of this publication. More information on the European Union is available on the Internet (http://www.europa.eu).

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Executive summary

The Support Study aims at providing assistance with the planning and **preparation of secondary legislation** (i.e., delegated/implementing act) under the new **Alternative Fuels Infrastructure Regulation** (AFIR)[1]. It describes the **preferred governance and architecture framework for a EU Public Key Infrastructure** (PKI) based on the standard ISO 15118 for the communication between the EV and the recharging infrastructure, including the identification of the policy, governance and technical elements to support it.

To achieve this, PwC carried out the study in **two-phases (Phase 1 & 2)**. In Phase 1, PwC consulted the PKI project developers and service providers involved in the Sustainable Transport Forum (STF) Sub-group on Governance and Standards to help outline and reach an **agreement on the high-level characteristics** of the preferred PKI governance and architecture in the EU. The characteristics are as follow:

- EU-regulated approach (common definitions and minimum market requirements)
- Multi Root-CAs architecture model;
- Interoperability through a Certificate Trust List (CTL) system;
- Mixed approach to governance (i.e., public and private entities involved).

Building on the foundations set in Phase 1, the **Phase 2 of the Support Study, with the support of a dedicated working group of experts constituted in the remit of the STF Sub-group on G&S completed five deliverables** required to set up and operate the EU PKI ecosystem for e-mobility, considering the characteristics summarised above.

The deliverables of this final report are:

- **Deliverable 1** - **Architecture, governance, and operating model** for a EU PKI ecosystem based on ISO 15118 (considering both -2 and -20);
- **Deliverable 2** - **Relevant standards and technical aspects** of the PKI to allow interoperability across multi V2G Root CAs;
- **Deliverable 3** - **Market rules** for the EU PKI ecosystem for e-mobility;
- **Deliverable 4** - **Mutually recognised set of criteria** for Root CAs, subscribers and the CTL of the EU PKI ecosystem for e-mobility;
- **Deliverable 5** - **Implementation plan** for the preferred governance and architecture model;

In terms of main achievements of the study, the most relevant are as follows:

- The **generation of consensus** in a wide and diverse group of stakeholders starting from diverging views on the PKI governance and architecture for the EU, including the concrete use case of Plug & Charge;
- **Definition of the main features of a future EU PKI ecosystem for e-mobility** in relation to ISO 15118;
- Development of an agreed upon **set of definitions for the EU PKI ecosystem for e-mobility;**
- **Definition of a proposed governance and architecture** framework for the potential future EU PKI ecosystem for e-mobility;
- Definition of a **clear way forward to fill the standardization gaps of an interoperable architecture based on the CTL**, including:

[1] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023R1804&qid=1695369930667

    - New **European Commission standardisation request** to ETSI to cover the EU PKI CTL requirements;
    - **Agreement to work with EU industry through the OPNC taskforce** within CharIN to address other relevant standardisation aspects;
    - **Upcoming coordination with STF Sub-group on Governance & Standards for further endorsement and submission of OPNC** to international standardization organization (IEC or ISO).
- **Draft of a new full set of market rules for the EU PKI ecosystem**, its participants (PKI Systems, PKI operators, Root CAs, OEMs, CPOs, EMSPs, Certificate Pools and Services), and the EU Governance components (ePEGMB, CTL, TLM, ePOC, EPEOB), considering input by relevant stakeholders;
- **Definition of the structure of the delegated/implementing act** under AFIR for the establishment and operation of the EU PKI ecosystem for e-mobility and the draft contents of the related annexes.

The Support Study aims to represent the overall development of an innovative work, based on an open public and private dialogue and cooperation, that could serve also as a **reference for other regions** for the creation of **open and freely competing e-mobility markets** based on common rules and definitions. In order to bring forward the progress achieved during this Support Study we have identified a series of steps, listed below, that will be necessary in order to s**et-up the EU PKI for e-mobility** and **ensure its full implementation**:

- **Fine-tuning and conclusion with industry experts on** a number of outstanding technical aspects that are in advanced state of development after the Support Study **(i.e., security policy, certificate policy and onboarding guidelines);**
- Adoption by the EC of the **relevant delegated and implementing acts** in support of the EU PKI ecosystem for e-mobility;
- Set-up of **an expert group for the future e-mobility PKI governance and management body;**
- Development by European/International Standardisation Organisations and market actors of the **CTL technical specifications** and **relevant protocols** for the functioning of the EU PKI ecosystem;
- Start of the **technical work on the EU PKI CTL interoperability by EC (or delegate such as JRC).**

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