EVS32 Symposium
Lyon, France, May 19-22, 2019

Putting the EV driver first; the importance of roaming, open networks, and feature standardization.

Mark Braby

ChargePoint

mark.braby@chargepoint.com

Summary

The transport sector in Europe is at the verge of a substantial transition in order to fulfill sustainablility and environmental targets set at EU and international levels. As part of this transition, electric mobility will play a significant role and will help reduce local air emissions and ultimately decarbonize the energy system in Europe. The expansion of electric mobility will create a new fueling ecosystem of which a seamless experience for drivers is crucial for mass adoption. A user-friendly charging experience will assist in overcoming barriers to purchasing electric vehicles, and ultimately lead to mainstream usage of EVs as the primary form of transportation. In order for this to happen, charging network providers and facilitators will need to come together to provide an environment that is conducive to EV mass adoption and results in the virtual cycle of :

EV + simple charging experience = happy driver equals more EVs and charging station sales and higher utilization of charging infrastructure

As part of this, E-roaming across networks has been and will continue to be instrumental in delivering a seamless driver experience. All over Europe, a number of initiatives aimed at fostering interoperability between EV networks have been developed. However, in order to be truly attractive and competitive for the European consumer, the e-mobility eco-system needs to continue to adapt to enable the best possible driver experience and make regulatory adjustments to create optimal market conditions for a large uptake of electric vehicles.

Keywords:

AC-DC, Charging, Efficiency, Regulation, User behaviour

Bloomberg predicts that by 2040, 55% of new car sales in Europe will be electric[1] with estimates that forecast that the majority of vehicles on the road globally could be EVs shortly thereafter.

But if it's clear that the ultimate destination is electric, the journey is much less so. How, specifically, are we going to arrive at the clean, efficient electric tomorrow?

Stakeholders such as national governments and multinational businesses down to local councils, local employers and consumers must play their part to drive and facilitate a fully electric future. Collaboration is the key.

The EV driver and the driver experience is an important piece of the puzzle when it comes to ushering in the mass adoption of e-mobility. EV drivers want to charge their EVs at any time, everywhere they go, where they live, work and shop.

Currently, EV drivers do not have a coherent and consistent charging experience across various EV charging networks. The roaming landscape in Europe is complex and the use of various interfaces and platforms creates additional cost and hassles for drivers.

In order for e-mobility to be attractive and competitive, some adjustments are required to create the right market conditions for a large uptake of electric vehicles. One of them will be the adjustment of the regulatory framework to enhance the drivers experience and relieve range and charging anxiety. Additionally, the framework should fortify the cost assumption for owning and operating an electric vehicle and fuelling through e-roaming.

EV drivers traditionally have a contract with one or more e-Mobility Service Providers (eMSP, or an entity that facilitates access, authorization, and payment processing on a charging station), who in turn have contracts with Charge Point Operators (CPOs, or managers of charging infrastructure). This means that an EV driver can only use the charging infrastructure of a CPO if its service provider (eMSP) has a contract with the CPO that enables charging. This has posed barriers to the uptake of a successful EV market.

ChargePoint recommends that the following steps are taken that will result in a transparent fuelling experience that ultimately benefits the driver.

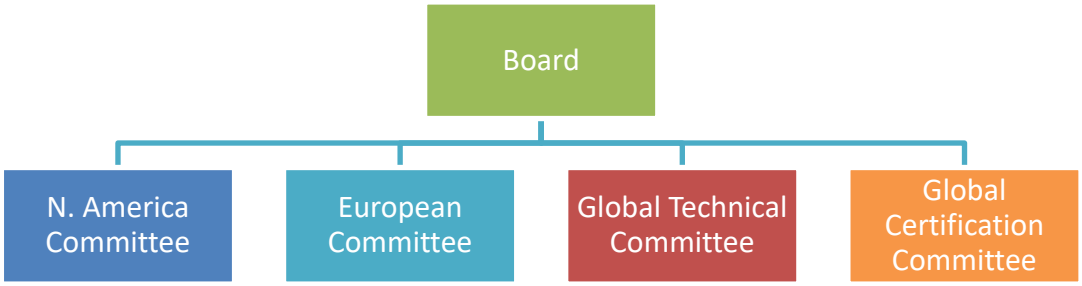
STEP 1: INTEROPERABILITY THAT DOES NOT TAX THE DRIVER

Interoperability can be organized either through direct, bilateral agreements between eMSPs and CPOs or through e-roaming platforms that facilitate integration and exchanges between eMSPs and CPOs (but not yet payment clearing). A number of e-roaming providers or platforms have promoted solutions to reduce complexity and transaction costs in the market, while helping to reduce the number of technical connections needed and facilitate contract negotiations (examples are Hubject and Gireve). Both bilateral agreements and the platforms should be cost effective for participants, as any costs levied in these exchanges will undoubtedly be passed on to the driver. ChargePoint advocates for free roaming through bilateral agreements and the platforms in order to avoid any fueling "tax" that would be realized by the driver.

STEP 2: FORMALIZE A GOVERNING BODY FOR STANDARDS

E-roaming should be harmonized across Member States, and in this regard, it should be mandatory for all market players to roam with others who offer reciprocal services. More precisely: mandatory symmetric roaming for integrated CPOs and EMPs and roaming to be left up to market forces for pure EMPs or pure CPOs. Furthermore, roaming should operate only with open standards and protocols. Industry platforms dedicated to protocol development should be open, transparent and should collaborate with all stakeholders active on the European market to ensure transparency.

To facilitate these goals, an industry association should be established that not only unifies EU Member States, but ideally establishes a global standards presence. Within this industry association, the following structure could be established to ensure technical and certification standards that span borders (and oceans).



The Board would be made up of elected officials (elected by members of the governing body) that regulate the various committees and manage the entity.

The Technical Committee would complete implementation guides to be used by all market participants and publish an open source implementation module for integration and security standards.

The Certification Committee would develop the tools for protocol and security standards as well as host interoperability events for testing of these standards.

The Regional Committees would publish branding guidelines for the member networks and RFID cards (so drivers could easily recognize the standard), would respond to local policy topics, and promote local interoperability events where participants can test each other's cards, readers, and apps.

There would also likely be the need for a Marketing Committee in order to harmonize relationships both internally and externally and to communicate to the broader industry and outside stakeholders the mission and progress of the industry association.

STEP 3: STANDARDS HARMONIZATION

At the heart of the industry association's mandate is the standardization of a roaming protocol to drive security standards. Ensuring all market participants (eMSPs and CPOs) are utilizing the same standards are imperative to ensure every driver has the same experience when approaching and using a charging station.

This can be broken down into the roaming standard, which establishes the communication means and information that is shared between network participants, and security standards, which protects the driver information that is being managed by network participants.

There are several roaming protocols that have been developed (OCPI, OICP, OHCP) and it is essential the industry standardize on the best out of this group and ensure all participants utilize the standard.

In terms of security standards, we recommend minimum security requirements for authorization and protection of driver data that each CPO and eMSP must adhere too. From our early experience in the EU market it will take some work to raise the current level followed by industry participants to a minimum standard that adequately protects drivers and their data.

STEP 4: STANDARD FEATURES THAT FOCUS ON THE DRIVER

Uniform feature development should evolve in order to make the charging experience simple and to keep drivers happy. ChargePoint is driving towards standardization of a number of features that are currently missing in the European market and will help to improve the driver experience:

(1) Ability to find stations from within a car or app
With the proliferation of digital devices, it should be standard that drivers can find stations through a mobile app (or an integration of this functionality into an EV's head unit) and start or stop a charging session remotely. At this juncture, many of the CPOs do not allow this functionality. Standardizing this functionality would allow for ease of transaction and result in a superior experience for the driver.

(2) Ability to start a charging session without an RFID card
Carrying around an RFID card to authenticate and authorize a charging session could be viewed as antiquated in a digital era that allows for mobile wallets and NFC communication. Driving a baseline of being able to authorize and authenticate via a mobile app or wallet or remotely by customer support representative should be standard for eMSPs and CPOs.

(3) Pricing transparency & pricing pass through by the CPO
Pricing can be very confusing for drivers for a couple of reasons:

(a) At times the pricing is not clear to the driver
(b) eMSPs sometimes negotiate special rates with CPOs and the eMSP the driver uses determines pricing.

We believe pricing should be very clear and set by the CPO. The eMSP should pass the pricing the CPO wants to charge the driver 1:1 without any transactions costs or taxes on the driver. This is similar to other fueling market places and allows the CPO to charge what they want (rather than having the pricing distorted by an eMSP).

(4) Indication of whether the car is actually charging
With the current implementation of the roaming protocols by many CPOs and EMSPs, it is not apparent if the car is charging or if there is an issue with the station and electrons are not flowing. This can result in a frustrating and confusing charging experience if something is wrong with the station and the driver is unaware.

(5) 24/7 driver support
Certainly, in the onset of the market when there is a new fuelling paradigm, there should be around-the-clock support for drivers to ensure charging sessions can be executed efficiently and ensure drivers have their EV fuelled.

Ensuring these minimum features standards are in place ultimately eliminates the need to register for multiple accounts and ensures a seamless experience for the driver. Having such features in place to utilize open networks will greatly benefit the EV driver giving him/her confidence that they can charge following a single process everywhere they go.

In all, following this four-step process will ensure an open, transparent charging marketplace that will result in an excellent driver experience. This will benefit the industry as a whole and assist in the global adoption of EVs by the mainstream consumer.

References

[1] Bloomberg

Authors

Mark Braby

Mark Braby leads the Strategic Partnerships team at ChargePoint, with a focus on the European market. This includes managing ChargePoint's investors, Auto OEM vertical, and Open Network strategy. Mark came out of the clean tech industry, working in strategy and business development for Enphase and running Bosch's project finance team focused on executing commercial scale solar projects. Prior to that Mark worked in finance, both in the corporate and investment banking as an equity analyst. Mark has degrees from Miami University (BS) and Duke University (MBA), and currently resides in Munich with his family.