ChargeUp EUROPE

EV CHARGING BUSINESS FUNDAMENTALS & CHARGE POINT OPERATORS

WHAT DOES THE **EV CHARGING VALUE CHAIN** LOOK LIKE?

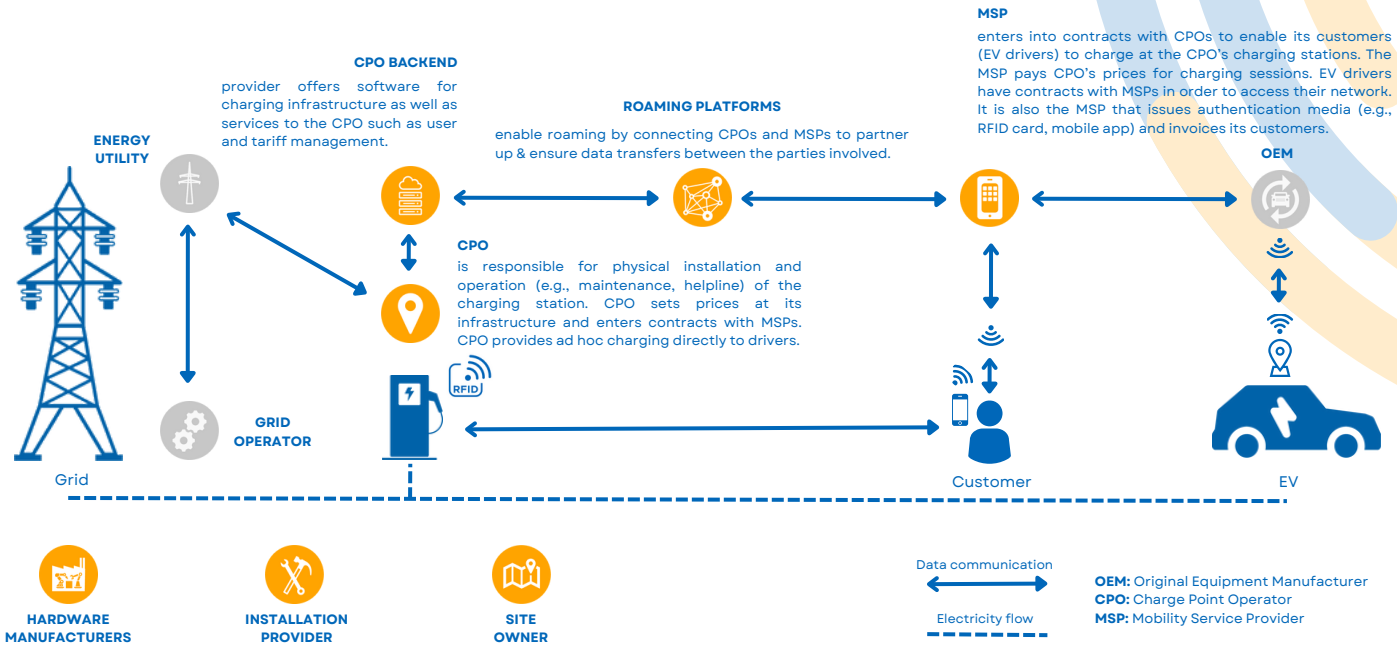
- The main roles in the EV charging ecosystem are hardware manufacturers, Charge Point Operators (CPO) (owners and/or operators of EV charging stations), software providers, mobility service providers (MSP), roaming platforms, and service/maintenance and recycling companies. Companies often combine several roles. The sector is innovating rapidly and new business models and services regularly emerge.
- The EV charging sector is part of a broader value chain, with utilities on one end and car manufacturers on the other end. Utilities, EV charging companies and EVs operate as an ecosystem with high dependencies. The success of the EV charging sector goes hand in hand with EV uptake; they are two sides of the same coin. Ensuring this ecosystem operates with fluidity is one of the top technical and commercial tasks of the sector today.
- EV charging company structures and maturities vary. There is a significant share of start-ups and scale-ups, along with larger companies that are diversifying their historical activities.

WHAT **STAGE OF DEVELOPMENT** IS THE EV CHARGING SECTOR IN TODAY?

- The industry is in a period of significant growth and maturation. Companies are currently investing heavily. Investments into charging Infrastructure will grow from €5 billion in 2021 to over €15 billion in 2030. Of this, private charging infrastructure is estimated to account for 2x the investment costs of public infrastructure.
- The sector is increasingly treated as a classic infrastructure business - high initial investment with returns over a long period, increasing as EV market share increases in each Member State.
- On average, the EV charging industry in Europe will require about 15,000 new positions per year through 2030. This will lead to the creation of more than 118,000 new jobs from 2022 to 2030, i.e. a growth of approximately +270%. The sector currently experiences labour shortages across skill ranges (technical, digital etc.).
- The industry is very dynamic and standards are under development. Standards are expected to play an outsize role in ensuring a seamless experience for EV drivers in coming years and to catalyse system integration along the value chain.

WHAT ARE SOME OF THE MAIN DIFFERENCES BETWEEN CHARGING & **REFUELING**?

- Whereas refueling can only happen at 'petrol stations', EV charging can take place wherever there is electricity – at home, work, destinations like restaurants & shopping malls, along the highway, and for fleets, buses, and trucks, depots. In most of these use cases, users charge where they are already parked, not going somewhere specifically to recharge.
- When an electric vehicle is plugged into a charging station, communication takes place between the battery in the vehicle and the charging station. In this way, the EV charging sector integrates transport and energy by digital means.



CHARGE POINT OPERATORS

- A Charge Point Operator owns and/or operates charging infrastructure for EV drivers to use. This can be its own charging infrastructure or infrastructure it operates on behalf of a landowner or other company (i.e., a company operating an EV charging location does not necessarily own the location site). This can be public, semi-public or not.
- CPOs primarily offer B2B services; however, in the case of 'ad hoc' charging, the EV driver is paying the CPO directly, so in this case the CPO is providing B2C services.
- Some companies which are CPOs are also MSPs (and vice versa) but that is not always the case.
- CPOs tend to experience high upfront costs (site design and development, grid connection costs, hardware deployment costs). Other fixed costs include capacity charges from the distribution system operator (DSO), which can be thousands of euros a month per normal power connection. Additional costs include maintenance, servicing and upgrades, customer support services, and other energy related costs.
- The economics of EV charging for a CPO is based on how much a given station, or the stations in a network are used ("utilisation rate"). The utilisation rate is in turn a function of the number of EVs on the roads using those stations.
- There is no "one-size-fits-all" design for charging locations. The layout of charging stations, type of charging technology used, power levels available at the location, and more, are commonly tailored to the specific location, use case, or geography of that location.

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