



SCALE INSIGHTS

SEAMLESS EV CHARGING IN EUROPE

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WHY INTEROPERABLE CHARGING MATTERS



Smart charging optimises Electric Vehicle (EV) charging based on grid demand, while bidirectional charging enables energy to flow back to the grid. Interoperability ensures seamless integration across different providers, making EV adoption easier and more efficient.

User Convenience:

EV drivers can charge anywhere, using multiple payment options.

Cross-Border Travel:

A harmonized system enables smooth long-distance EV journeys.

Smart Energy Management:

EVs become active energy market participants, charging when energy is cheapest and helping stabilize the grid.

Achieving full interoperability is critical for the large-scale adoption of EVs and the transition to sustainable transport



KEY NEXT STEPS FOR IMPLEMENTATION

To accelerate the adoption of smart and bidirectional charging, clear and accessible information must be provided to EV users. Awareness of benefits such as cost savings, grid stability, and renewable energy integration will drive acceptance.



A **simple and user-friendly approach** is crucial. Predefined default settings for vehicles and charge points (such as off-peak charging) should be integrated into apps and home energy systems, allowing easy adjustments when needed.

Ensuring **technical standardization** is key to interoperability. Updated standards like ISO 15118-20:2022, OCPP 2.1, and OCPI 3.0 should be mandated in EU legislation to guarantee cybersecurity and compatibility. Manufacturers must certify compliance.



Users need **control over their charging data to maintain transparency and trust**. Clear regulations should define data access rights while preventing unfair competition and ensuring system efficiency.

Price transparency is essential, as many EV drivers lack real-time cost visibility. Better access to pricing information will help users optimize charging decisions and reduce expenses.

Flexibility markets should offer financial incentives, allowing EVs to store and return energy profitably. Further research is needed to ensure fair cost allocation and optimize market participation.

Strengthen cybersecurity to protect users and the grid from hackers.

Legal safeguards should enforce compliance with international security standards to prevent system vulnerabilities.

To **prevent grid overloads**, local energy demand must be better understood. Smart and bidirectional charging can reduce the need for costly infrastructure upgrades, but targeted grid reinforcements may still be necessary.

Finally, **network codes** must be updated to reflect EVs' growing role in the electricity system. Adjustments will ensure seamless integration, market stability, and efficient energy distribution.

By addressing these steps, Europe can establish a sustainable and economically viable smart charging ecosystem.