Real-Time Upstream Emissions of Electric Vehicles During Recharge

An aggregator's perspective

UNECE Workshop, 27 May 2021

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tiko Energy Solutions

An architect of the energy transition

- Founded in 2012, operating one of the world's largest Virtual Power Plants since 2013

- Part of the Engie Group since 2019

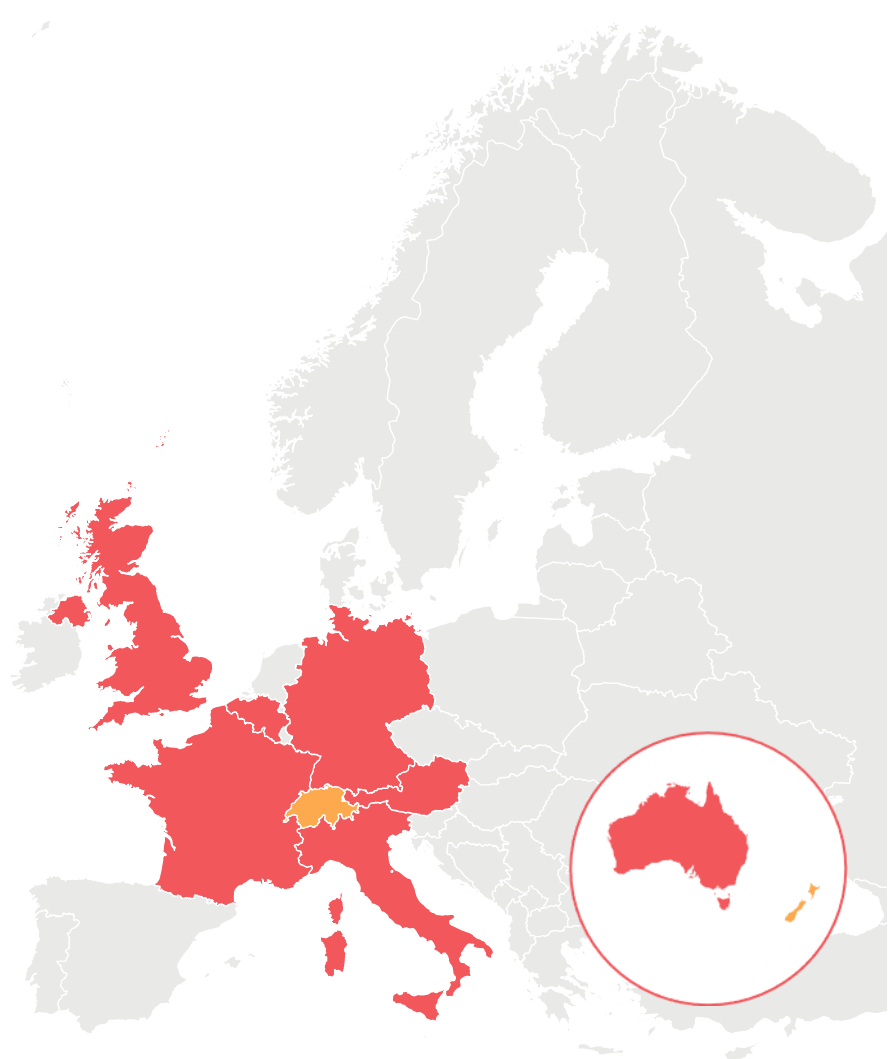- 60+ employees, working from our HQ in Zurich, and our Design Centre in Milano

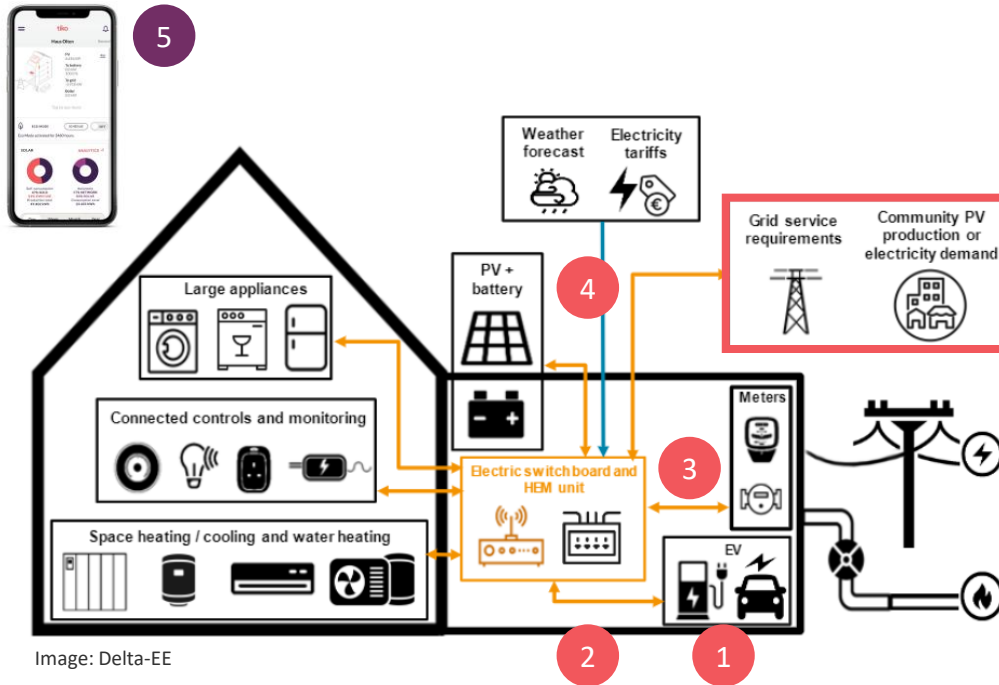- Operating in Europe, but also in Australia and New Zealand

- Technology provider for Home Energy Management, Smart Charging and VPP

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Data in HEMS

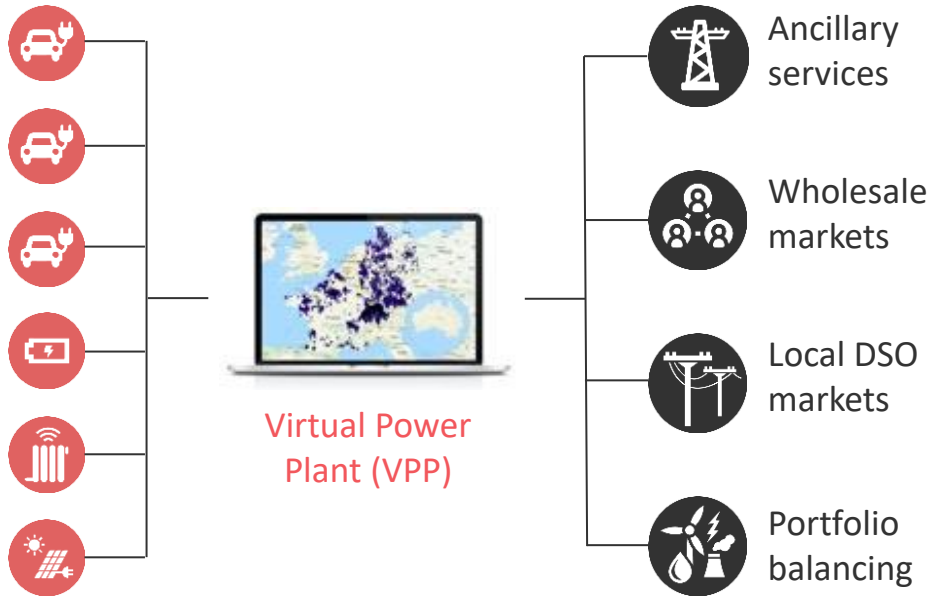## Data flows in Home Energy Management Systems

Image: Delta-EE

Critical points in the data chain

1. Connection from the car to the wallbox

2. Connection from the wallbox to the HEMS gateway/cloud

3. Connection from the Smart Meter to the HEMS gateway/cloud

4. Additional data for optimization (forecasts, tariffs, CO_2 content)

5. Cybersecurity, data privacy and reliability

Data in VPP

Data flows in Virtual Power Plants

Virtual Power Plant (VPP)

Ancillary services

Wholesale markets

Local DSO markets

Portfolio balancing

Critical points in the data chain

1 Connection from the assets (HEMS gateway/cloud) to the VPP backend

2 Connection from the VPP to different markets (TSO, energy provider, DSO)

3 Cybersecurity and reliability for large-scale aggregation of assets

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Real-time upstream CO_2-emissions

Thoughts from an aggregator's perspective

- The ICE age is over. CO_2-wise, it is more important WHEN you charge your car than how much you drive it

- Reliable and accountable real-time data on CO_2-emissions of electricity from the market is still lacking

- Availability of real-time emissions data could raise awareness, create trust, and emotional attachment to the local energy transition

- Cost-optimized charging might be the same as CO_2-optimized charging soon

- Calculating (real-time) CO_2-reductions does not capture the full value of smart charging for the renewable system

- Reliability and cybersecurity remain crucial for all data-driven business models

Recommendations for policy makers

1. Provide real-time CO_2-emissions of electricity, e. g. with Guarantees of Origin in a 15min resolution, on local, regional, and wholesale level

2. Provide standard protocols for better interconnectivity

3. Guarantee (easier) access to markets for pools of decentralized assets

4. Implement strict rules for cybersecurity without hampering innovation

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Together we're stronger

The energy revolution needs to come from the people, for the people.

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Thank you for your attention!

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