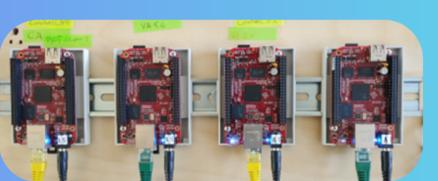# ev4eu Danish Demo

Two sites:

Risø

Bornholm

1. The hardware (EVSE and controllers)

The **EVSE** has been developed by Circle Consult.
It features **two plugs**, **led status indicators** and internal **meter** for each plug.
Secure communication with the controllers is achieved through **AWS**.

The controlling algorithm runs on **BeagleBone Black** controllers. It can be either centralized or distributed.

2. User interface
Android/iOS app

After connecting the EV, the user is asked to input the **required energy** and the **available time**. After the payment, charging starts.

Create Charging Session

Desired kWh (between 0-100)
Choose how many kWh you want to charge.

Choose time of departure
Choose your estimated time of departure.

51.30 kr

Pay & Start Charging

Outlet Connected
Outlet id: 1991
Charging rate: 0 W

Consumed 15.87 kWh
Desired 20.00 kWh
Remaining 4.13 kWh

Departure 12:40
Departure in 00:00:00

Modify Session
Press this tile to modify your current charging session.

» Stop charging

3. Priority system

Depending on user input, we compute a **priority** (ρ) for each charging session to decide which should be given precedence.

$$\rho = \frac{E_{required} - E_{charged}}{t_{departure} - t_{now}}$$

4. Smart Control

Different **smart algorithms** can be used to control the charging process:
- **RES following**
- **Frequency regulation**
- **Peak shaving**

5. Logging and visualization

Data acquired from the **chargers** (power setpoints and measurements, priority, status) and from the **PCC** (frequency, power setpoints and measurements, voltage and current measurements) are continuously **logged on Energidata.dk**.

Real-time data is visualized on a **dashboard**, both for the Risø and for the Bornholm location. From there, it is possible to see the power reference and absorption on the different phases for both the PCC and the individual plugs, together with priorities and energy provided.

BORNHOLMS ENERGI & FORSYNING

DTU

CIRCLE CONSULT

CB Campus Bornholm

Funded by the European Union