Why flexibility?

**Growth**
Flexibility is an enabler for a successful and rapid electrification

**Clean Energy Package**
EU regulation is pushing demand for flexibility to be part of the DSO toolbox

**Sustainability**
“At E.ON, we manage the largest energy grid in Europe and act on behalf of about 51 million customers. This places us in a position of responsibility and provides us with the power to enable real improvements. Firstly, in the face of climate change, we have a responsibility to clearly prioritise sustainable solutions and increase their availability. “- E.ON Sustainability report 2022

E.ON’s main sustainability impact is from grid construction, and flexibility enables optimal usage of existing infrastructure
## Business values created by flexibility

### Financial Objectives
- Postpone reinvestments
- Avoid or decrease need for investments
- Incentive for efficient use of network
- Incentive for delivery quality
- Platform License revenues
- Additional incentives for flexibility services in regulation

### Non-Financial Objectives
- Faster connections of customers
- Compliance
- Sustainability
- Goodwill and PR
The market platform SWITCH - Developed within the CoordiNet project

**Time frame:** 1st of Jan 2019 – 30th of June 2022

**No. of partners:** 23 + 10+ third parties

**Goals:**
- Demonstrate activation and provision of grid services through DSO and TSO coordination
- Define and test standard products for the market
- Developing a platform for the market and DSO/TSO coordination

The **three large-scale demonstrators** comprise of ten demonstration sites and are implemented by both **the DSO and TSO** for the networks covered within the respective demonstration areas.
Flexibility – More than a marketplace

Ref: CoordiNet, Deliverable D4.7.2 Final Report of the Swedish Demonstration
SWITCH use cases

Subscription swap
- Adjacent DSOs can trade capacity between each other

Flexibility market
- Trading between grid owner and flexibility provider

Manage non-firm connection agreements
- Send activation signals and monitor delivery

Operations support
- Temporary subscription trading with TSO
- Forecast handling

Power quality
- Markets can be built up to trade based on reactive power etc.

Sync with ancillary markets
- Integration towards the Swedish MFRR market where bids are forwarded to MFRR when not activated locally
SWITCH – Flexibility is being used all over Sweden
BeFlexible – Boosting engagement to increase Flexibility

**Financing Program:** Horizon Europe

**Total Budget:** 10,5M€

**Partnership:** 24 partners (6 DSO’s, 1 TSO) from 7 countries

**Project Duration:** Q3 2022-Q2 2026

**Goals:**

- Demonstrate and implement DSO capabilities for flexibility, based on SWITCH
- Develop and implement local balancing capabilities in built environment
- Demonstrate and implement aggregated services on SWITCH
Information exchange for conditional connections communication

Data flow in SWITCH:
1. Breach detected
2. Request is created
3. Acknowledgement is registered
4. Validation is performed

Substation A → DSO (server) → Substation B → Customer (client)

1. Breach detection with real-time metering and/or forecasting
2. Activation request sent
3. Acknowledgement sent
4. Real-time metering of assets to monitor and validate delivery

DSO (server) → Asset X → Asset Y → Asset Z
OpenADR integration

- Customers can connect to a VTN (server) hosted by SWITCH by running their own VEN (client)

- Optional but recommended due to ongoing standardization efforts in Sweden for the server-to-client communication of conditional flexibility

- Can be employed on its own or combined with OpenAPI client usage

- Some limitations apply for 2.0b, such as only simpleHTTP PULL being supported (VENs must poll for new events)

- OpenLEADR is useful both as a starting point and for implementing complete solutions

- Newest version (OpenADR 3.0) will be supported

https://www.openadr.org/specification-download

https://openleadr.org/docs/
Proprietary endpoints + standardization

**Backend – SWITCH**
API layer with endpoints for managing conditional flexibility

**Server – OpenADR**
Implementation of VTN with support for program and events suitable for conditional connections

**Integration – proprietary**
Customer with conditional connection

**Client – OpenADR**
Customer with conditional connection

**Backend – customer system**
May use OCPP or similar standard, or proprietary control software
Thank you for your attention!

David Bjarup
david.bjarup@eon.se