



ETIP SNET

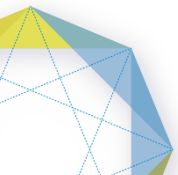
**European Technology and Innovation Platform
Smart Networks for Energy Transition**

Parallel Session 2:
**Cooperation between energy
system operators**



Cooperation between energy system operators

WELCOME AND INTRODUCTION	<ul style="list-style-type: none">- Nikos Hatziargyriou – ICCS- Rita Dornmair – B.A.U.M. Consult
99 SECOND PITCHES	<ul style="list-style-type: none">- Nikolaos Bilidis – European Dynamics Luxembourg SA (INTERFACE project)- José Pablo Chaves Ávila – Comillas (COORDINET Project)- Biljana Stojkovska – National Grid ESO (Power Potential Project)- Lorenzo Zanni – Zaphiro Technologies SA (SCCER FURIES REeL Demo project)- Eric Lambert – EDF R&D (TDX-ASSIST project)
PANEL DISCUSSION	<ul style="list-style-type: none">- Natalie Samovich – ENERCOUTIM (ETIP SNET WG1 Chair)- Alexander Wiedermann – MAN Energy Solutions (ETIP SNET WG 3 Chair)- Nikolaos Bilidis – European Dynamics Luxembourg SA (INTERFACE project)- José Pablo Chaves Ávila – Comillas (COORDINET Project)- Biljana Stojkovska – National Grid ESO (Power Potential Project)- Lorenzo Zanni – Zaphiro Technologies SA & Mario Paolone – EPFL (SCCER FURIES REeL Demo project)- Eric Lambert – EDF R&D & Ioana Pisica – Brunel University London (TDX-ASSIST project)



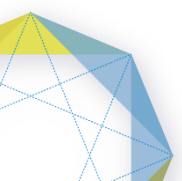
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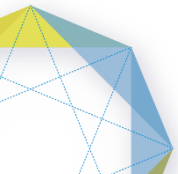
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***→ Parallel session 2:
Cooperation between
energy system
operators***

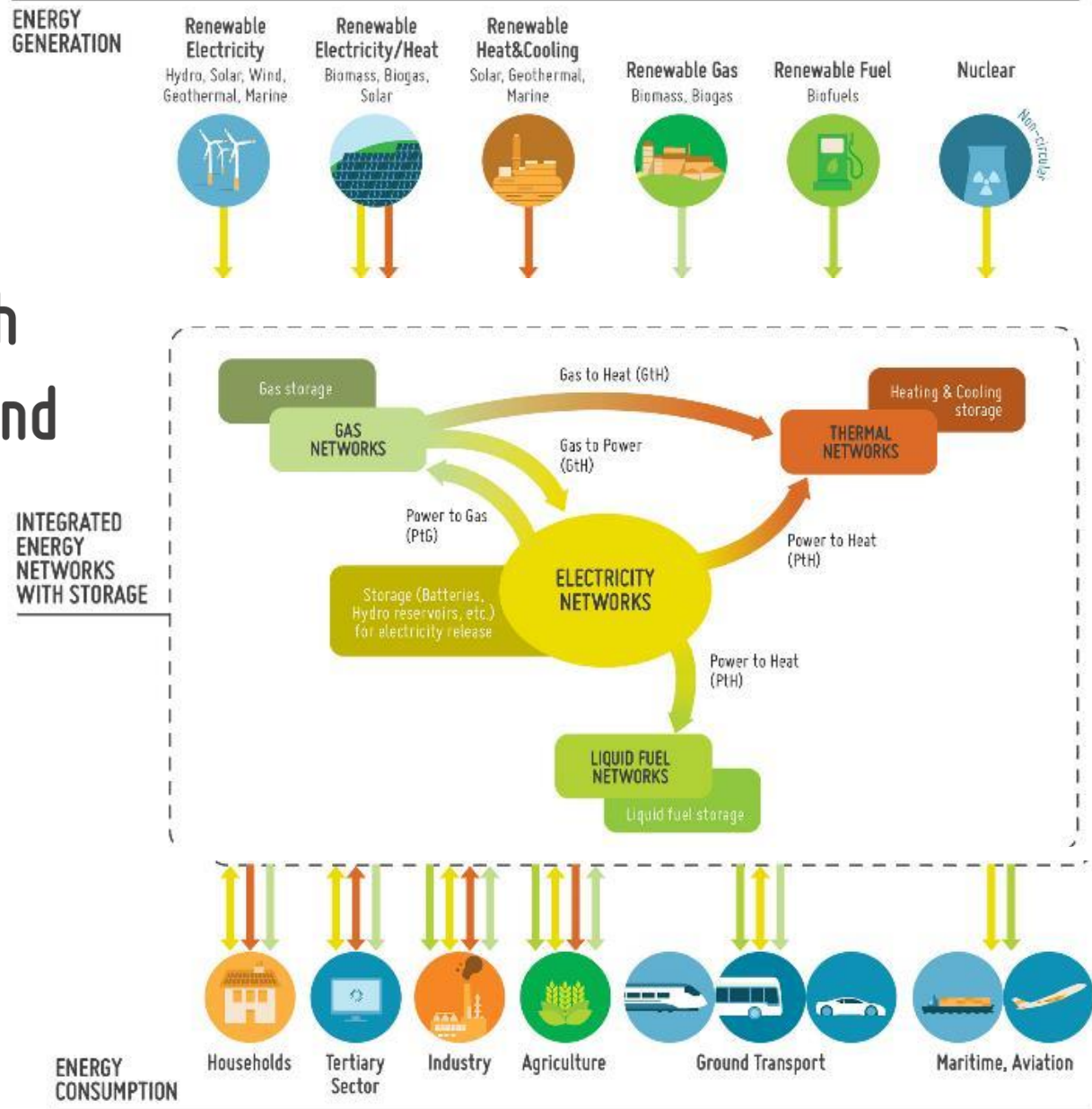


Join the conversation on Slido

- *Which sector are you from?*
- *In which country is your company located?*
- *Which of the following research areas represent you the most?*



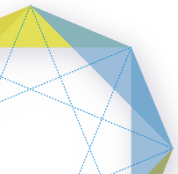
The future integrated energy systems with conversion and storage devices

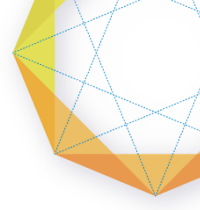


99-second pitch

99 SECOND PITCHES

- **Nikolaos Bilidis** - European Dynamics Luxembourg SA (**INTERFACE project**)
- **José Pablo Chaves Ávila** - Comillas (**COORDINET Project**)
- **Biljana Stojkovska** – National Grid ESO (**Power Potential Project**)
- **Lorenzo Zanni** - Zaphiro Technologies SA (**SCCER FURIES REeL Demo project**)
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INTERFACE PROJECT

Nikolaos Bilidis –

European Dynamics Luxembourg SA



INTERFACE

Nikos Bilidis – European Dynamics SA

ETIP SNET – 11th Regional Workshop

21 April 2021, Virtual

INTERFACE Factsheet

IEGSA Platform

- Project Grant Agreement No. 824330
- Budget: 20.9 M Euro
- Grant: 16.8 M Euro
- Duration: 4 Years

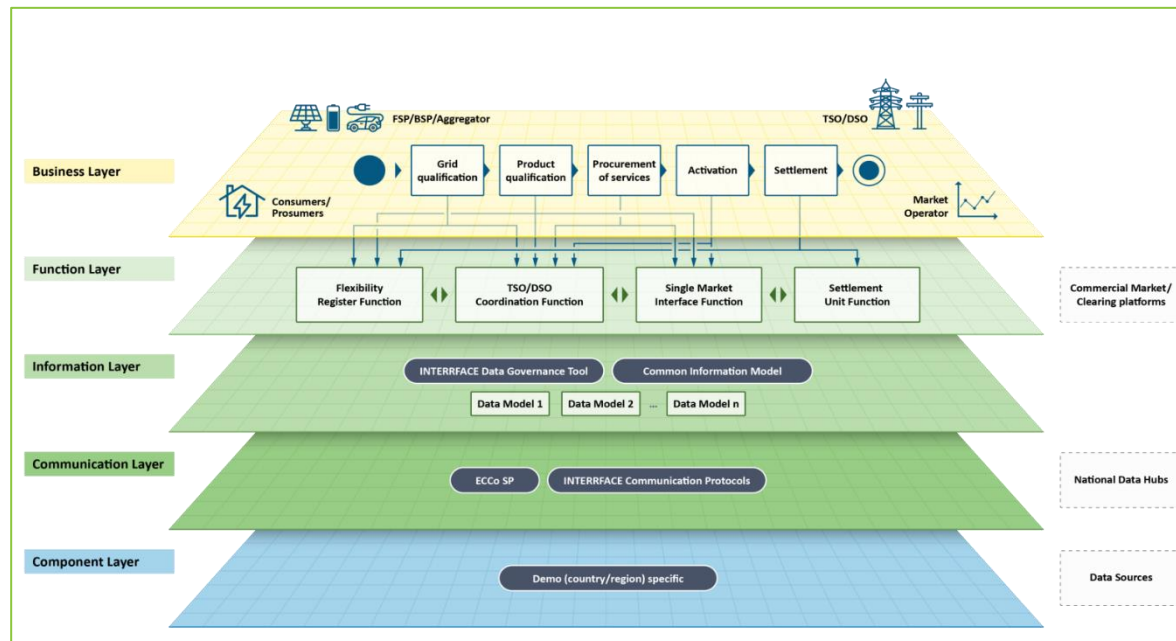
To design a Common Architecture that will connect actors and markets in a transparent, non-discriminatory manner

To drive collaboration in the procurement of grid services by TSOs and DSOs, and to create strong incentives to connected customers

To adopt and promote state-of-the-art digital technologies in order to engage end-users into the next generation electricity market transactions

A common architecture enabling the connection, data and information exchange:

- Enabling the seamless and efficient coordination between SOs
- Optimizing operations and introducing standardized services and market designs
- Incorporating all energy value chain stakeholders
- Offering novel functionalities promoting digitalization





This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824330



/ InterfaceH



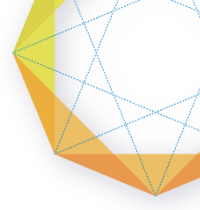
/ interface-h2020



/ www.interrface.eu

Thank you!

Nikos Bilidis – nikolaos.bilidis@eurodyn.com
European Dynamics SA



COORDINET PROJECT

**José Pablo Chaves Ávila –
Comillas**

Introduction



Large-scale TSO-DSO-Consumer demonstrations of innovative system services through DR, storage and small-scale DG

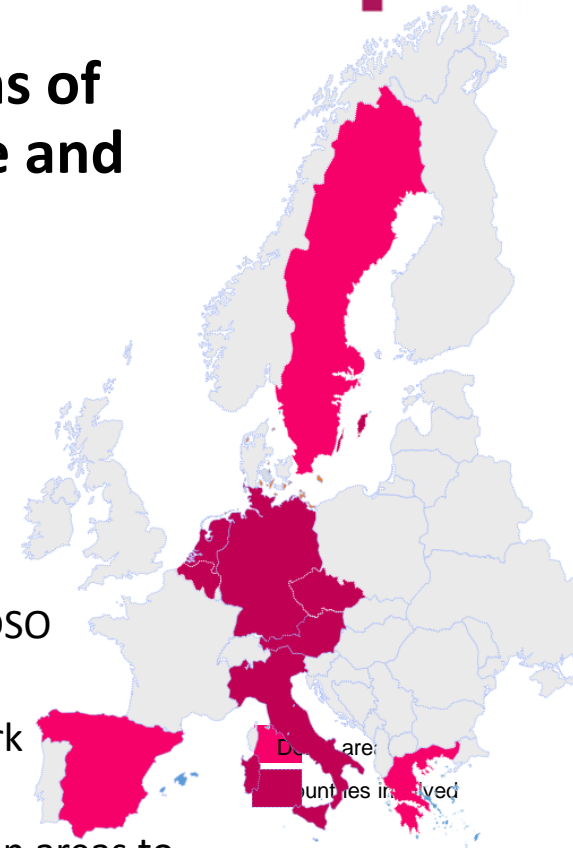
Project Timeline: 01/01/2019 – 30/06/2022

Project Budget and funding : 19.2M€ - 15.1M€

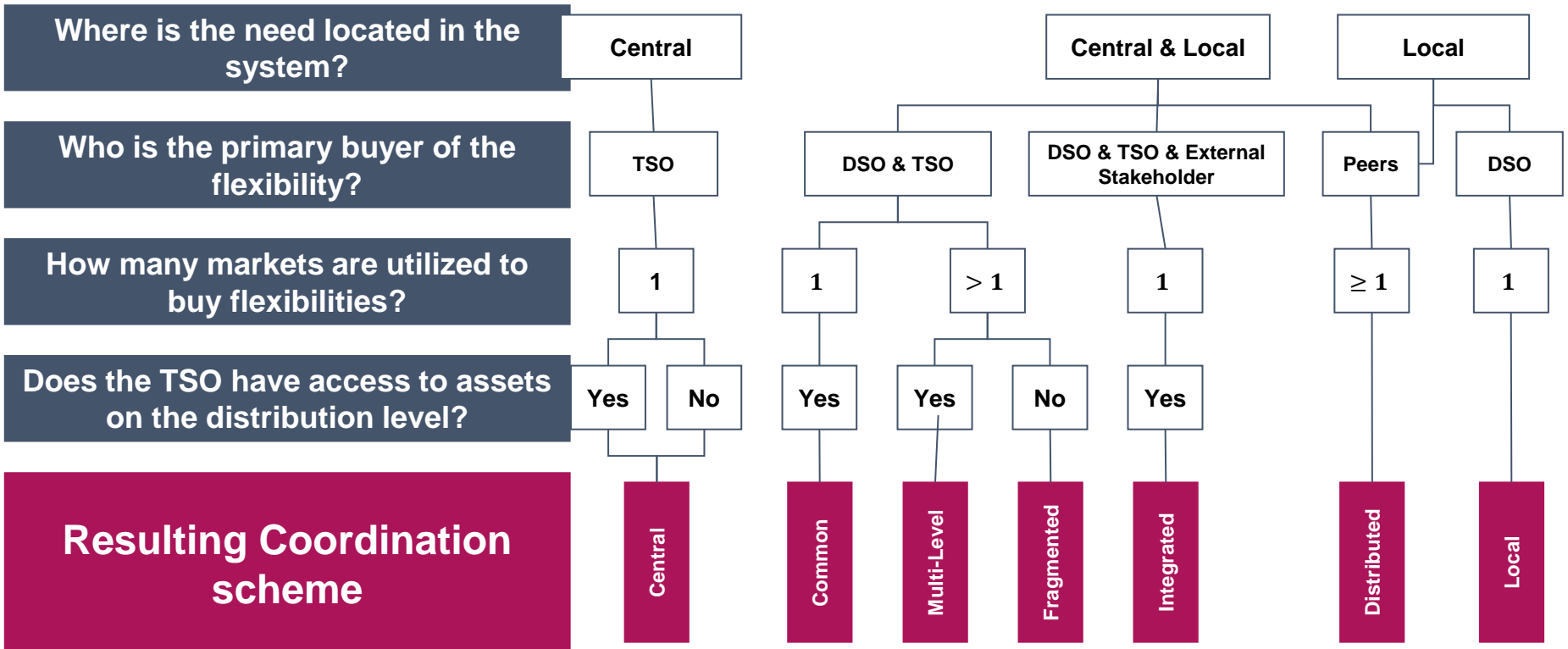
Total number of partners: 23 + 10 Linked Third Parties

Objectives:

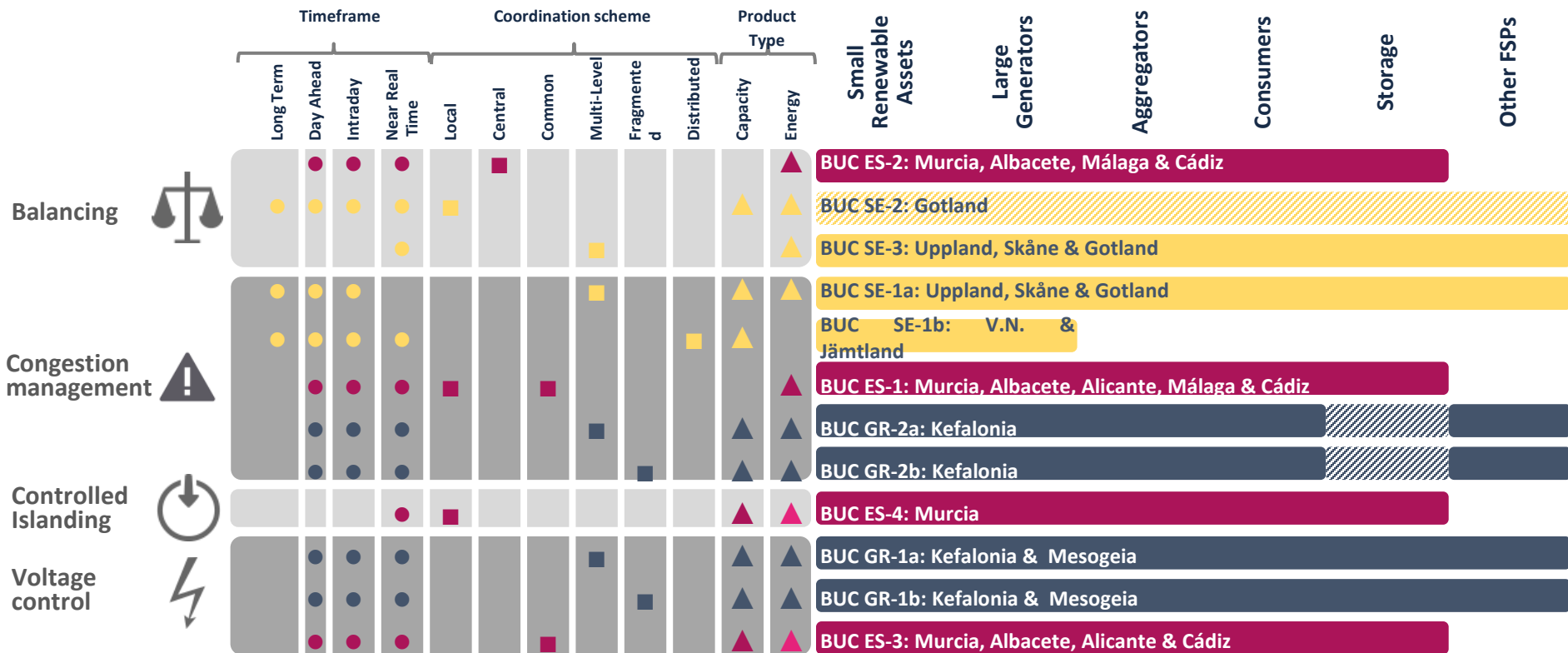
- Demonstrate the activation and provision of services through a TSO-DSO coordination
- Define and test standard products that provide services to the network operators
- Develop a TSO-DSO-consumer collaboration platform in demonstration areas to pave the way for the interoperable development of a pan-European market.

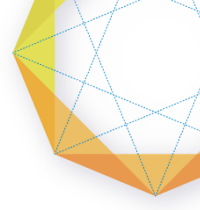


Coordination schemes



Project ambition





POWER POTENTIAL PROJECT

**Biljana Stojkovska –
National Grid ESO**



Power Potential

Dr. Biljana Stojkovska

ETIP SNET Regional Workshop

21 April 2021

Session: Cooperation between energy system operators

Power Potential

- Power Potential is trial project that demonstrated a world-first regional reactive power market using DERMS system which enabled day-ahead procurement of reactive power services from DER.
- The project has demonstrated the concept of end to end dynamic voltage control from DER with a Virtual Power Plant (VPP)
- This is a new means of NG ESO procuring reactive power services using DER capability within a competitive market environment
- By introducing additional Mvar capability onto the system DER could be used to displace or delay the network reinforcement for the provision of reactive power services.
- The key learnings identified from Power Potential trials are valuable input information to support the development of future reactive power markets



SCCER FURIES REeL Demo PROJECT

**Lorenzo Zanni –
Zaphiro Technologies SA**



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Innosuisse – Swiss Innovation Agency

SCCER FURIES - REeL Demo

ETIP SNET Regional Workshop,
parallel session 2

Dr. Lorenzo Zanni
CPO Zaphiro Technologies SA

Project architecture

PMU-based grid monitoring infrastructure



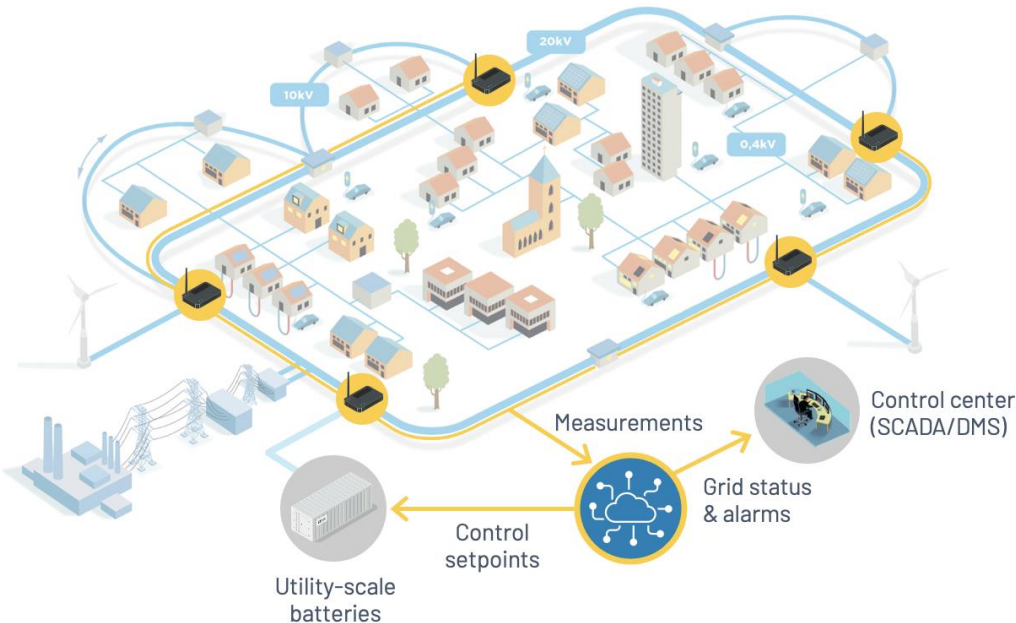
Phasor Measurement Unit (PMU)

- Time-synchronized & high-speed (50 meas/sec) measurements of voltages/currents



SynchroGuard software platform

- PMU-based State Estimation
- Grid-aware battery (BESS) control



Grid-aware battery (BESS) control

Battery control setpoints are generated based on the real-time knowledge of the grid state provided by Distribution System State Estimation (DSSE).

Provision of multiple services:

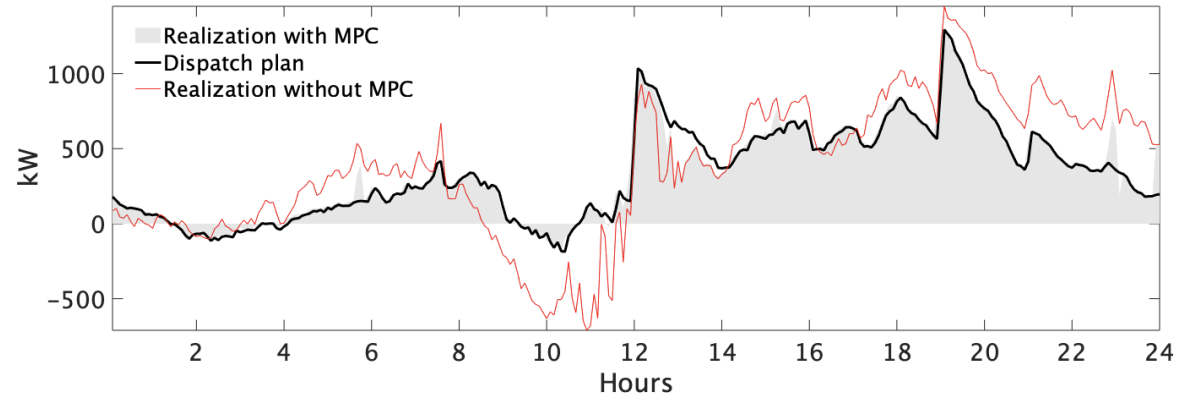
- Feeder dispatching
- Voltage control & line congestion management
- Primary frequency control



Battery 1.5 MVA/2.5 MWh

Project results

Dispatch tracking: realized power at the GCP with and without MPC of the battery.



OPF model vs PMU measurements

Plots

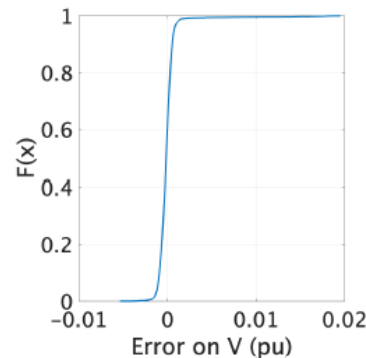
CDFs of the modelling error.

Results

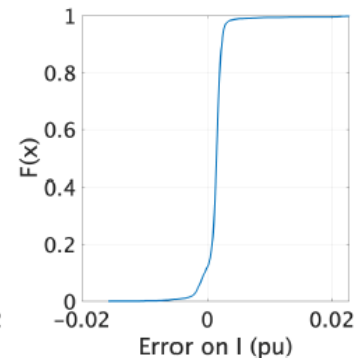
99% of the times, OPF modeling error is:

(a) < 0.01 pu for voltage and current

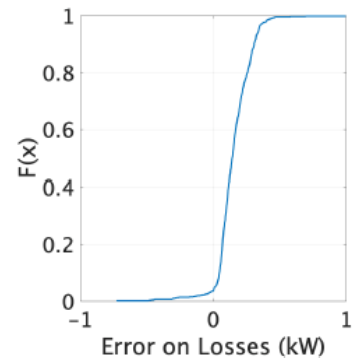
(b) < 0.2 kW for the total grid losses



(a)



(b)

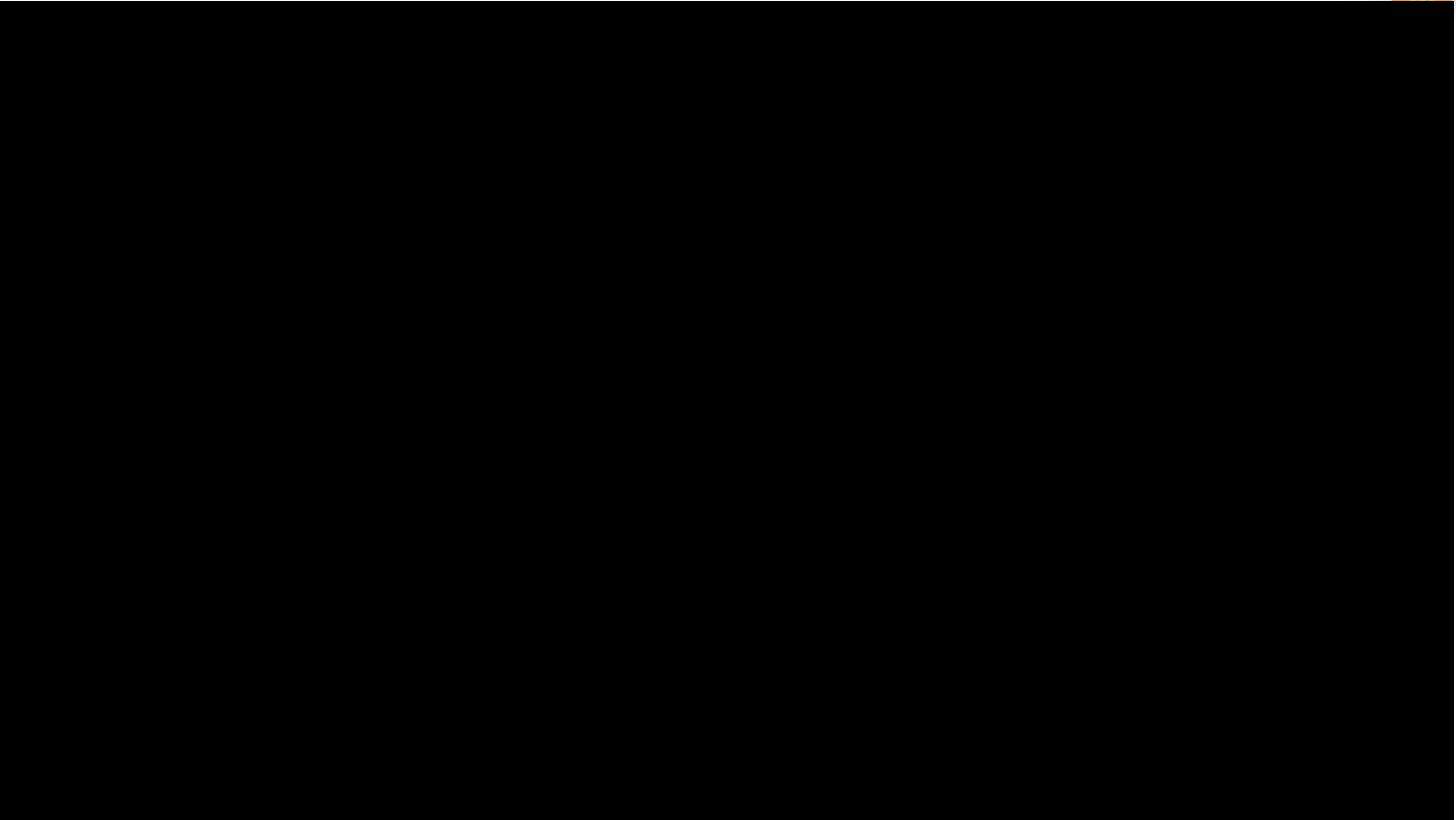


(c)



TDX-ASSIST PROJECT

**Eric Lambert –
EDF R&D**



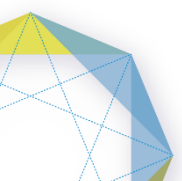
Panel discussion

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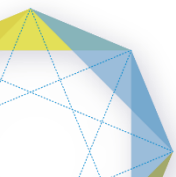
Questions for discussion

1. What are the grid services provided by each operator (DSO and TSO)?
2. What are the market models (the theoretical and implemented in different countries)?
3. What data and how is it exchanged between operators?
4. How are planning tasks coordinated?
5. What is the level of cooperation between different operators of multiple energy carriers (e.g., electricity and gas, electricity and heating/cooling, etc.)?



Questions for discussion

1. What is the measurement infrastructure needed?
2. What are the real-time control strategies involved?
3. What are the innovative and unique features of the project?
4. Which are the future functionalities that can be integrated in this project?



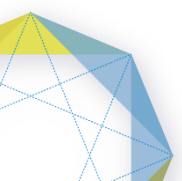
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→ Parallel session 2





Thank you

