

Vision

A research section at the forefront of **algorithmic electricity markets**, building the science of how *flexibility*, *computation*, and *information* jointly determine market outcomes in a fully renewable system.

Focus: Short-term electricity markets, from market design and bidding to clearing, surveillance, and real-time operation and control.

Three identity sentences:

01 Flexibility is the core commodity.

02 Energy markets are trustworthy algorithmic systems.

03 Information is regulation.

Mission

We build the **mathematical and algorithmic foundations** of energy markets.

Three focus areas:

Design

Flexibility & Market Architecture

Economics of flexibility, market architecture and grid code design

Key question: How should electricity markets and grid codes be designed to integrate flexible resources and enable a fully renewable system?

Operate

Algorithmic Market Operations & Verification

Provably safe algorithms for bidding, clearing, control, and surveillance

Key question: How do we develop algorithms that are scalable, attack-resilient, and provably safe under uncertainty?

Govern

Information Design & Regulation

Information design enabling data-driven market regulation

Key question: What information is revealed, to whom, under what incentives, and how does data become a governed economic asset?

Focus Areas: Activities & Tools

Focus Area 1

Flexibility & Market Architecture

Potential clients

TSOs, RCCs, ENTSO-e

Mathematical tools

Optimization, game theory, mechanism design, probabilistic guarantees

Example activities

- **Nordic-SEC** Multi-TSO cross-border coordination
- **Ind. PhD Energinet** Multi-TSO reserve dimensioning
- **Ind. PhD Ramboll** H2 market design; flexible contracts
- **DTU alliance TU/e** P90 reliability grid codes for ancillary service markets
- **Other potential directions** Capacity market design; redesigning reserve and balancing products; imbalance pricing; DSO-level grid service design; etc

Focus Area 2

Algorithmic Market Operations & Verification

Potential clients

Bidders (physical/financial), market operators, regulator

Mathematical tools

Optimization, learning, formal verification, data-driven safety certification

Example activities

- **ViPES2X** Algorithmic multi-market trading for hybrid power plants
- **LaCour** Algorithmic market clearing for energy communities
- **Ind. PhD — Regulator** Surveillance of intraday market distortions
- **DTU alliance KTH** Cyber-physical resiliency for power system operation
- **Other potential directions** EUPHEMIA 2.0 redesign; REMIT 2.0; formal verification of bidding decisions; etc

Focus Area 3

Information Design & Regulation

Potential clients

ACER, Danish Energy Agency, data market platforms

Mathematical tools

Privacy-preserving algorithms, mechanism design, information design

Example activities

- **Data Unlocked** Privacy-aware data sharing between market participants
- **DTU alliance Cornell** Privacy-aware coordination of flexible loads
- **EDDK 2.0** Data sharing, trading platform and sandbox for data-driven market regulation
- **Other potential directions** Information design as regulatory tool; incentive-compatible disclosure; market surveillance via information asymmetry; etc

Members

18 Members
(21 by end 2026)

9 Nationalities

38% Female
researchers

11 PhD Students

Faculty & Staff

Jalal Kazempour
Professor, Head of Section

Farzaneh Pourahmadi
Researcher

Lesia Mitridati
Associate Professor

Josefine Hansen
Administrative Coordinator

Licio Romao
Tenure-Track Assistant Professor

Postdocs

Lukas Stipple

Ander Martinez Alonso
Visiting Postdoc (VUB)

PhD Students

— Torine Reed Herstad

— Valdemar Søgaard
Industrial PhD, Energinet

— Tomas Lubiana Herscovici

— Gloria Tintoré Vidal

— Yannick Heiser

— Shobhit Singhal

— Alessia Ortile

— Sofie Davidsen

— Marco Saretta
Industrial PhD, Rambøll

— Asmus W. Eriksen

— Rasmus Thorgaard
Industrial PhD, Forsyningstilsynet

+ 3 incoming by end 2026



Grants Secured in 2025

6

Grants secured

16.2

mio DKK for DTU Wind

7

PhDs to hire

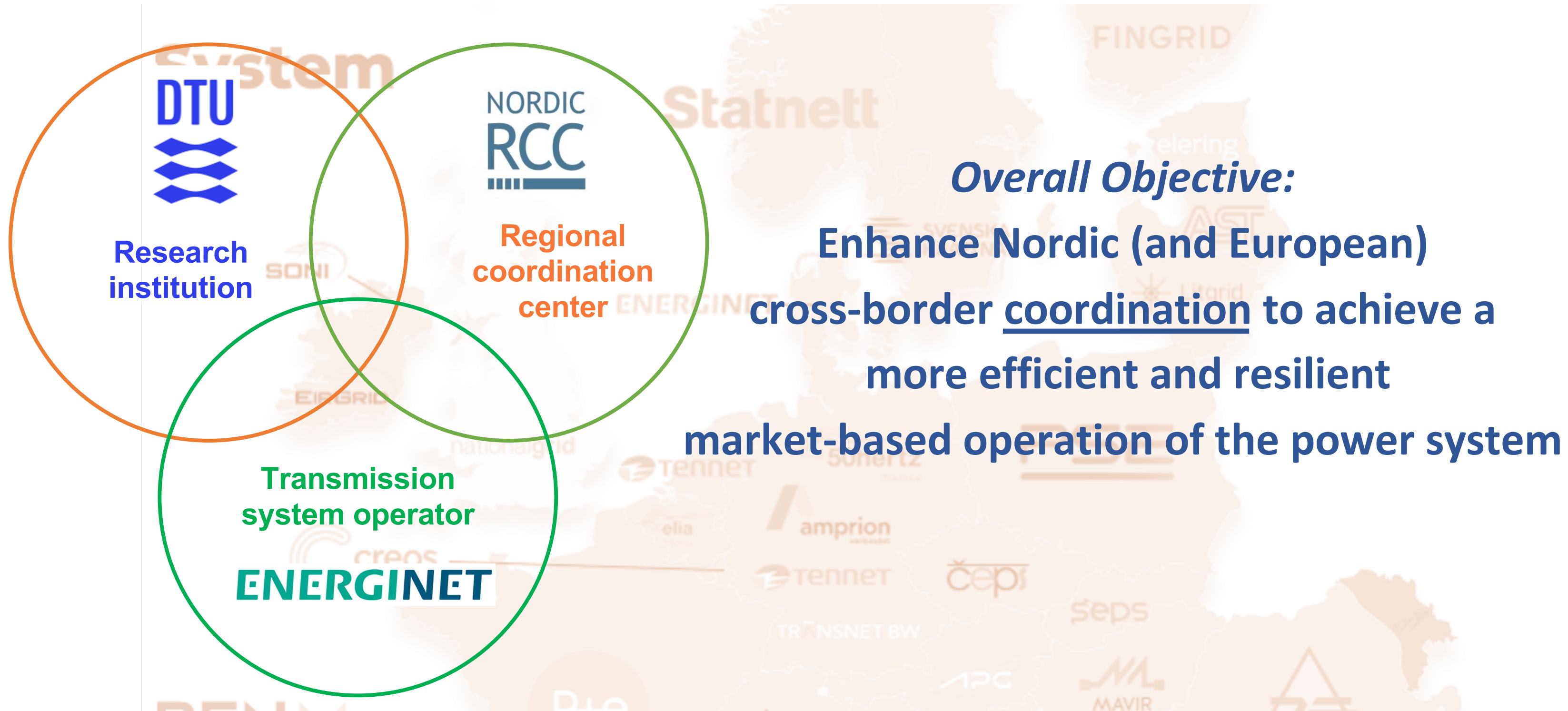
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Postdoc to hire

Project	Source	DTU Wind funded (k DKK)	Hiring for EMA
Data Unlocked	EUDP	6,356	2 PhDs + 1 PD
Nordic-SEC	IFD GS	4,500	2 PhDs
Industrial PhD	IFD	360	1 PhD
HyDetails	EU MSCA DN	2,508	1 PhD
NNLL	Nordforsk	365	—
Avanguard	Horizon Europe	2,160	1 PhD

More proposals are currently under review.

Nordic-SEC



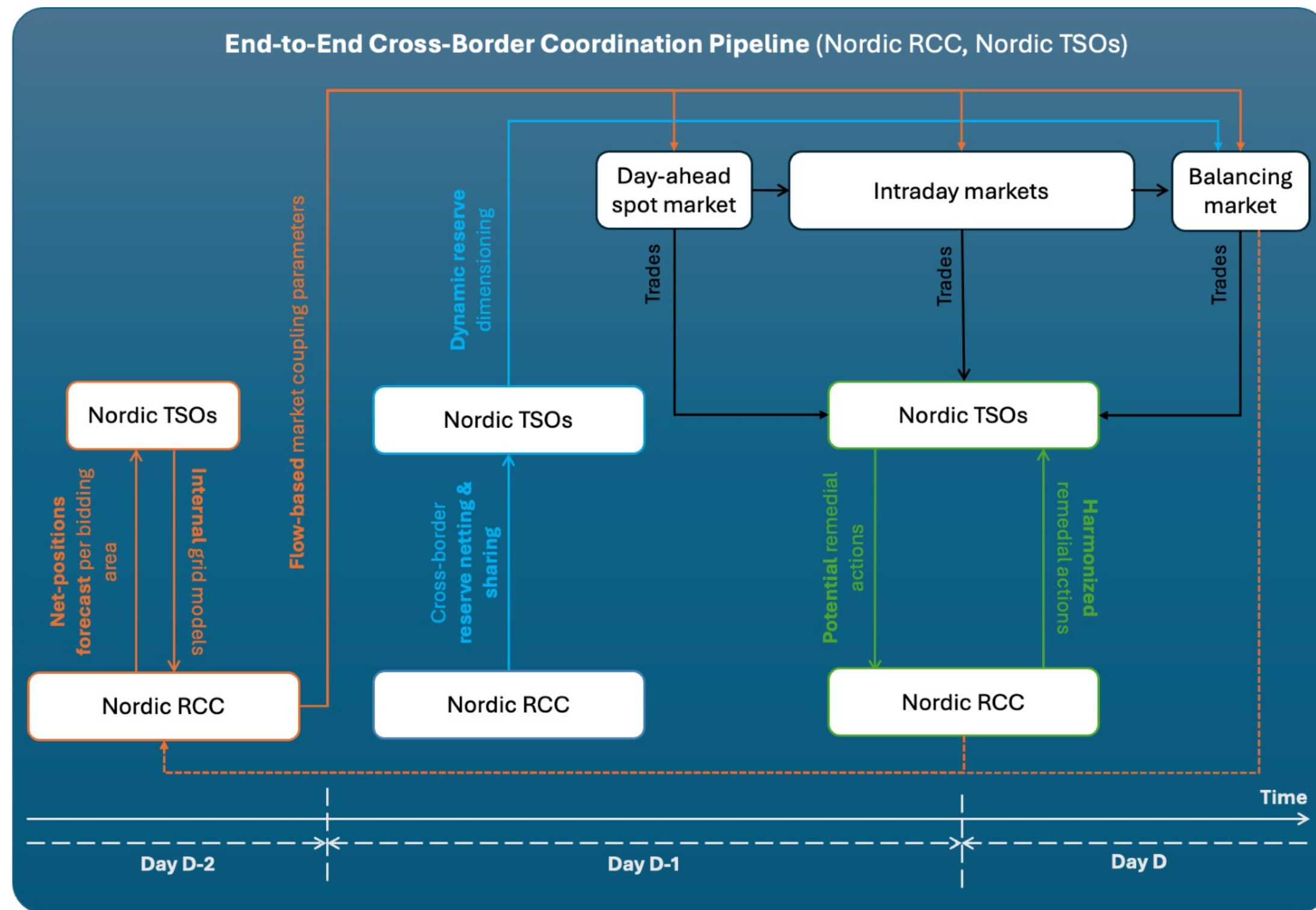
Nordic-SEC

Funded by IFD Grand Solution
DTU Wind as the main PI
Granted 2025 , started 2026

WP1) Future-aware cross-border flow calculations and market coupling

WP2) Dynamic reserve dimensioning and procurement

WP3) Security assessment and remedial actions harmonization



Data Unlocked

Funded by EUDP
DTU Wind as the main PI
Granted 2025 , started 2026

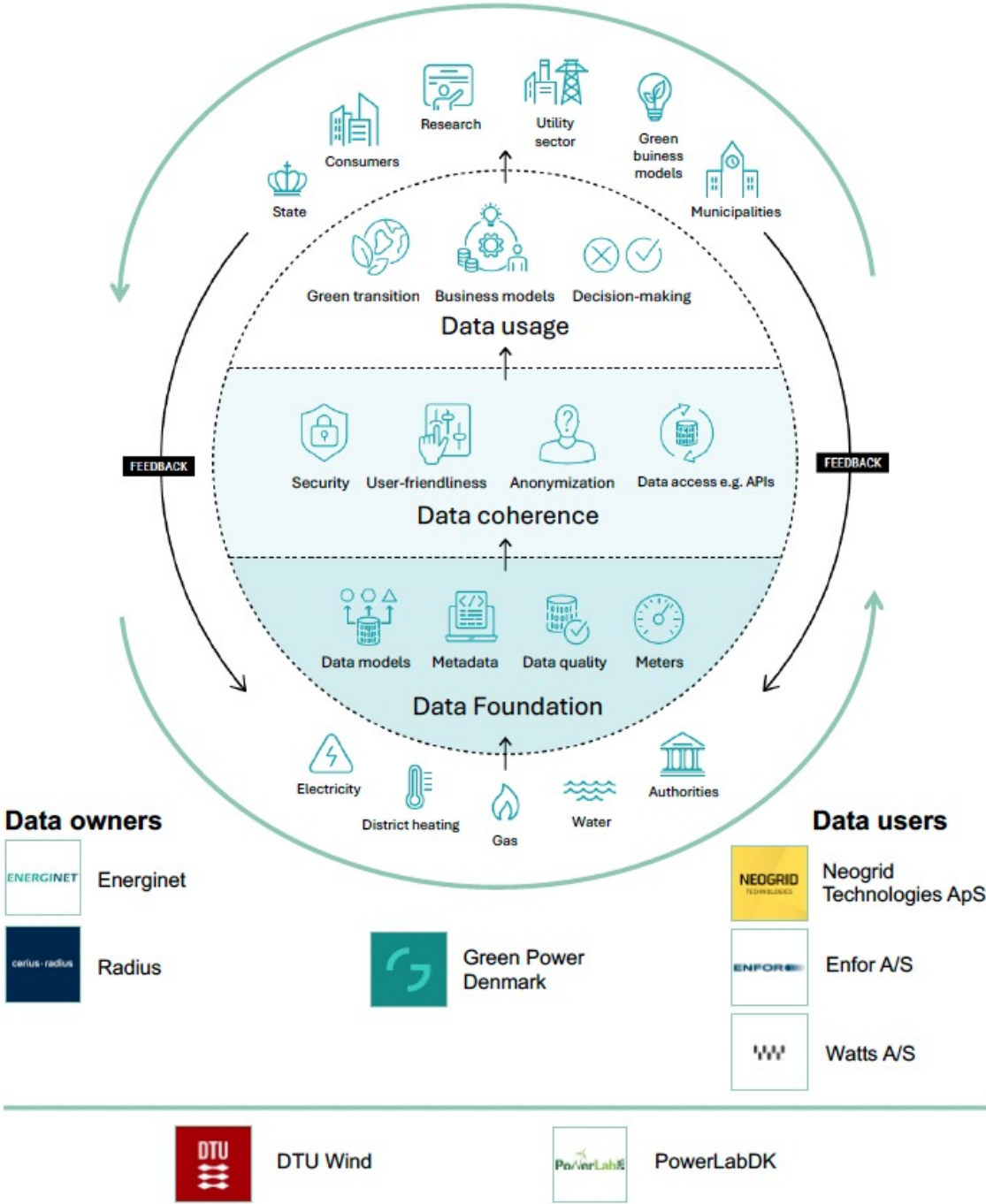
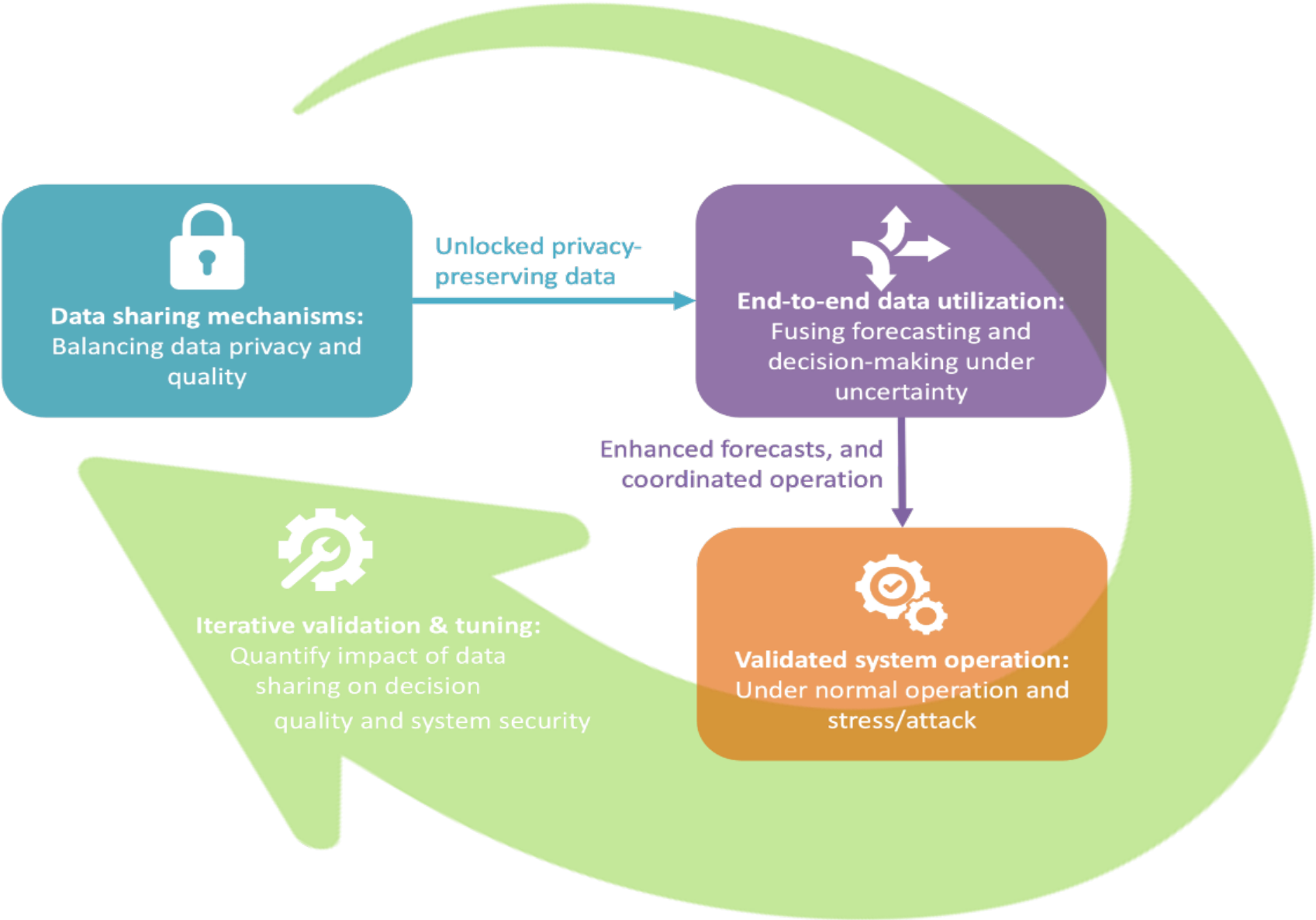


Image translated from <https://www.forsyningdigitaliseringsprogram.dk/om-fdp>

EMA Educational Activities



Get a Master’s degree
in Sustainable Energy
Systems

- Head of Studies for *MSc Sustainable Energy Systems*

Course	Main Teacher	# Students
MSc – <i>Renewable in Electricity Markets</i>	Jalal	150+
MSc – <i>Optimization in Modern Power Systems</i>	Lesia	100+
MSc – <i>Machine Learning for Energy Systems</i>	Farzaneh	100+

DTU PES Summer School

- Known as a flagship summer school in the power system community
- Application success rate: approx. 30% for 60 seats
- 10th edition in May 2027

