Data Spaces Symposium

13:30

Accelerating energy transition and realizing green deal – with data spaces as accelerators

Domain session [energy & green deal]

Data Spaces Symposium

Green Deal & Energy Data Spaces

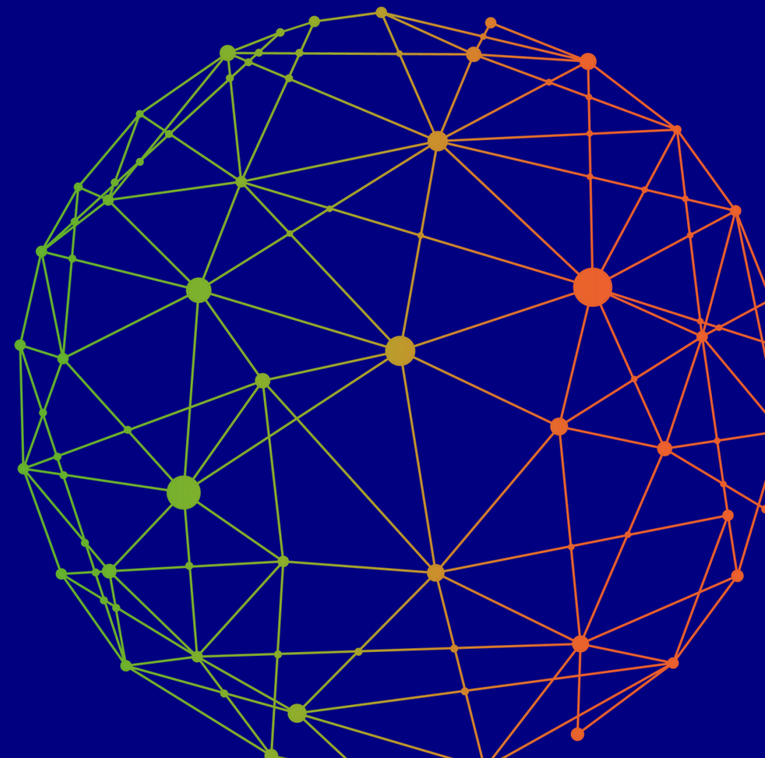
Cristina Maier
Programme Officer- Data Policy and Innovation - DG CONNECT

Towards a common European energy data space

Accelerating energy transition and realizing green deal - with data spaces as accelerators

Data Spaces Symposium 2025

Kristof Almasy, Policy Officer
European Commission, DG CNECT E4 IoT, energy, mobility, agriculture



DSBA ■ BDV BIG DATA VALUE ASSOCIATION FIWARE FOUNDATION gaia-x INTERNATIONAL DATA SPACES ASSOCIATION

DATA SPACES SUPPORT CENTRE

Funded by the European Union

The Data Spaces Support Centre receives funding from the European Union Digital Europe Programme under grant agreement n° 101083412

Unlocking the potential of energy data: a political priority

Data Strategy

Establish a single market for data. Enable data sharing and establish fair and clear rules on data use and access.

Digitalisation of Energy Action Plan

Support the deployment of digital energy services and investment in digital energy infrastructure

AI Continent Action Plan

Apply AI Strategy to boost AI integration in strategic sectors
Address needs in computing, cloud and data infrastructures

Common European Energy Data Space (CEEDS)

Objectives

Establish a **trusted, interoperable EU energy data space.**

Enable **data sharing within and across sectors** to drive innovation and clean-energy transitions.

Empower stakeholders with secure, **standardized data access across borders**.

Key elements

Federated architecture, **open standards**, and robust **governance**.

Seamless **integration of AI-driven insights**, existing clusters, and **sector coupling**.

Secure, **privacy-preserving protocols** that boost consumer and market trust.

Main actions

Deploy **pilots** for real-world validation.

Implement **standard data formats**, **business models**, and **interoperability frameworks**.

Facilitate **stakeholder collaboration**, field tests, and continuous improvement.

Use cases and added value of the CEEDS

Collective self-consumption & optimised sharing for energy communities.	Lower energy costs, foster local resilience, encourage collaboration among communities.
Home energy management integrating distributed energy resources flexibility aggregation.	Minimize peak loads, reduce bills for prosumers, and promote smarter integration of distributed resources.
TSO–DSO coordination: Share real-time data to balance network loads.	Ensure grid reliability, streamline real-time coordination, and unlock advanced flexibility market services.
Electromobility: Services roaming, load forecasting, and schedule planning	Enable cross-border EV usage, improve charging efficiency, and support new business models.
Renewables operations and management optimization and **grid integration**	Boost forecasting accuracy, lower operational costs, and accelerate high-penetration renewable deployment.

Towards a common European energy data space

Preparatory actions
(Horizon Europe, €45M EU funding)

IntNET – coordination and support action

Omega-X, Enershare, Data Cellar, EDDIE, Synergies - Innovation actions

→ Prepare the **blueprint** for the CEEDS

- **Reference architecture** and technical specifications
- **Technical**, **semantic** and **governance** aspects of **interoperability,** tailored for energy data spaces
- Definition of key **use cases**

→ **Piloting** use cases

Deployment action
(Digital Europe, €8M EU co-funding)

INSIEME, Start **1 April 2025**, 3 years

Coordinator: FH OÖ (AT), 54 partners

→ establish a **federated architecture** to connect existing data exchange platforms across Europe

→ develop standardised data formats, security protocols, governance frameworks and business models for **secure and trusted data exchange**

→ **Deploy use cases** in 15 EU countries (e.g. energy efficiency, flexibility management, renewable integration, electromobility)

NEW!

Related actions

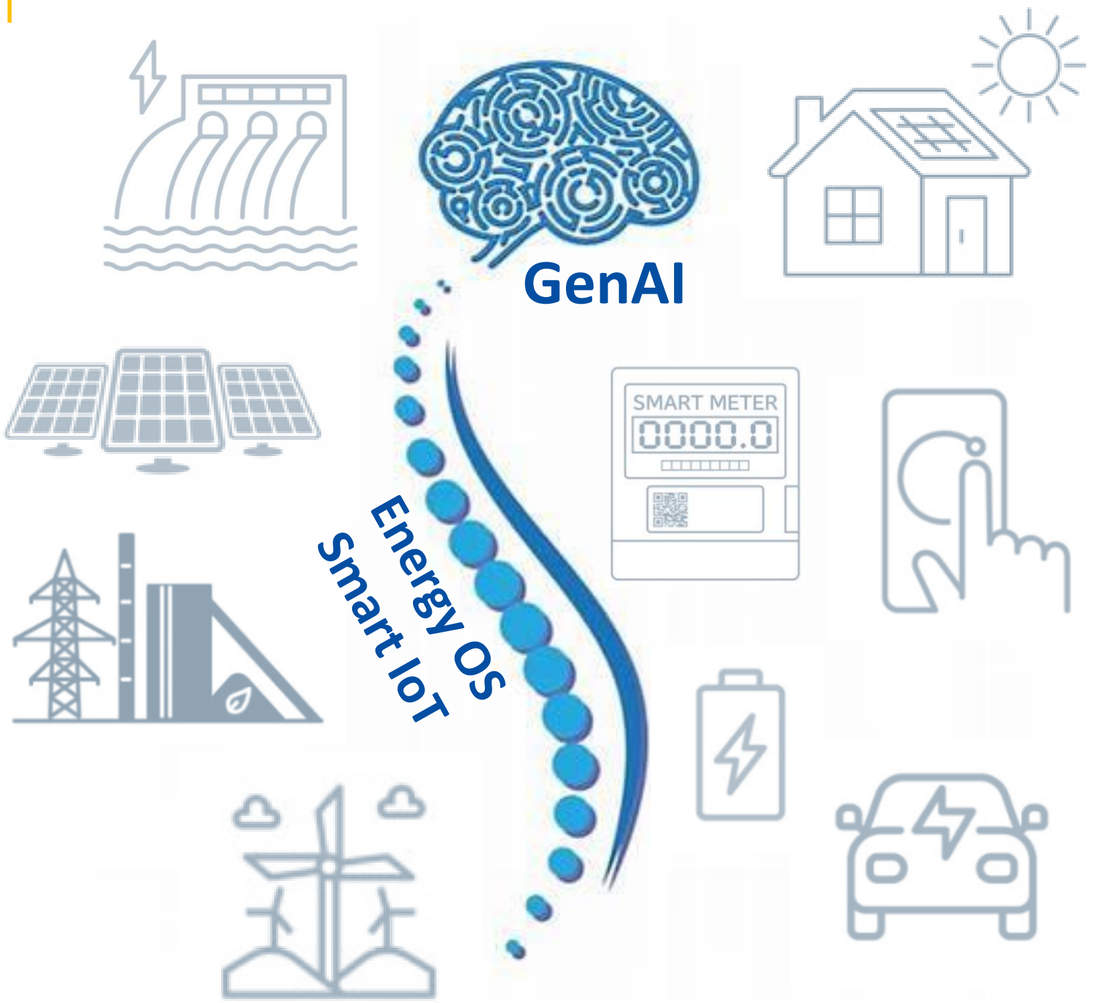
Operational Digital Platforms
(CEF Digital)
→ Retrofit existing energy and transport infrastructures with a cross-border digital infrastructure – Begonia

Common European Reference Framework (CERF) for energy consumer applications across the EU. – Eclipse.

Governance

Smart Energy Expert Group, assisting the EC on the development and deployment of smart energy solutions, cybersecurity, consumers and energy data management, including the **governance of the common European energy data space**

Towards a digital spine of the EU's energy system powered by GenAI



The power of Generative AI
(and foundational models):

- Scenario generation & simulation
- Time series forecasting
- GenAI Decision-making models

Digital Twin ↓ Energy Data Space

Supply – demand side optimisation:

- Harness flexibility - shave peaks
- Reduce carbon footprint
- Empower industry & consumers
- Increase security of energy supply
- Reduce energy prices
- Support EU supply industry

Open platforms:
ecosystem – marketplace – standards – piloting

European Commission

Cross-data space interoperability in the energy sector

Accelerating energy transition and realizing green deal – with data spaces as accelerators

Data Spaces Symposium 2025

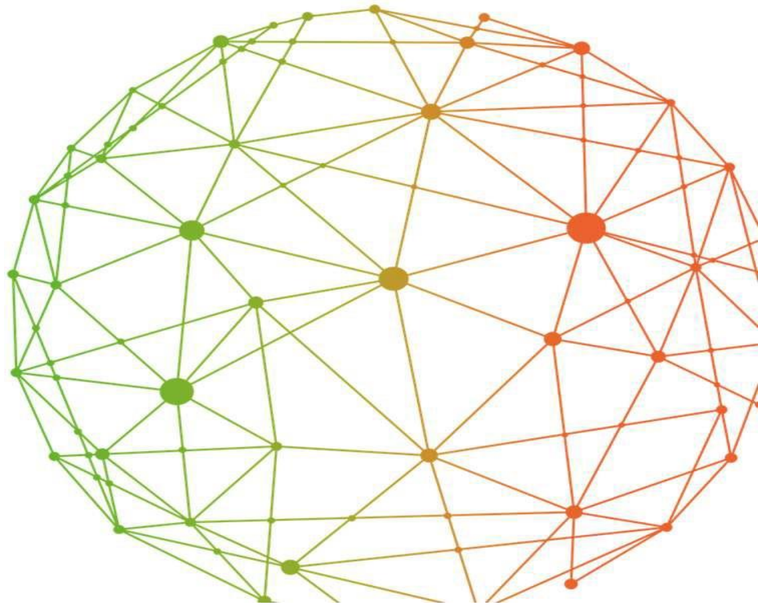
int:net

DSBA ■ BDV BIG DATA VALUE ASSOCIATION FIWARE FOUNDATION gaia-x INTERNATIONAL DATA SPACES ASSOCIATION

DATA SPACES SUPPORT CENTRE

Funded by the European Union

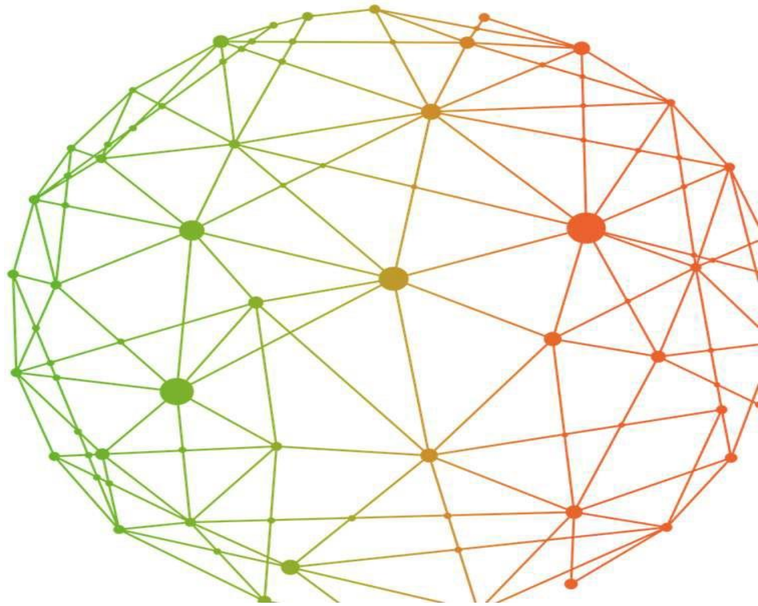
The Data Spaces Support Centre receives funding from the European Union Digital Europe Programme under grant agreement n° 101083412



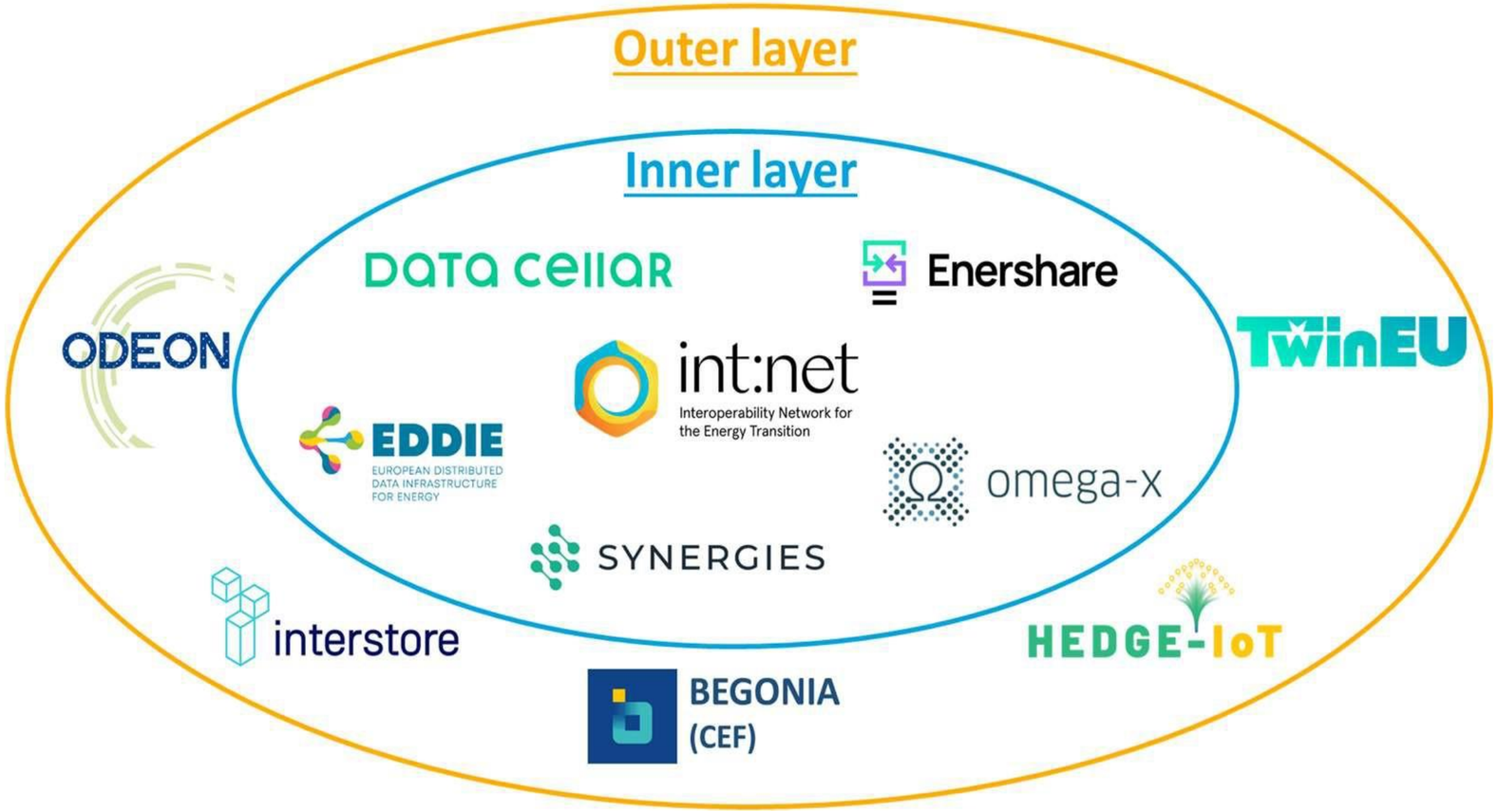
Energy domain overview

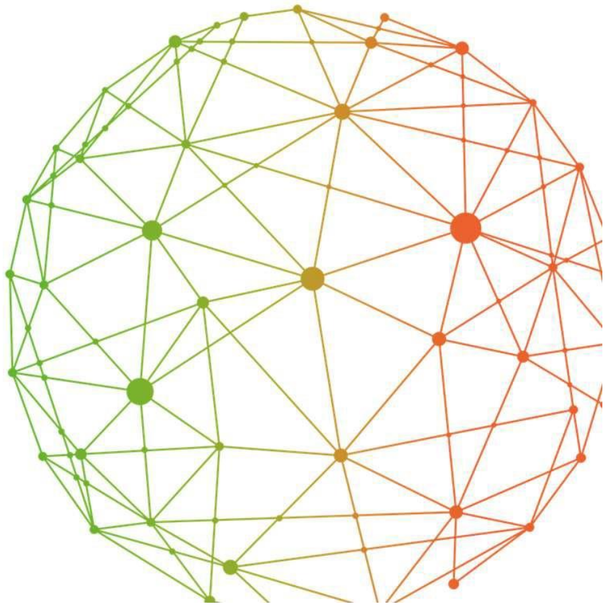
Requirements and challenges

- The energy sector is at the core of the twin **transition towards digitalization and renewable energies**
- **Fossil fuels** are increasingly being **replaced by electrification** in major sectors such as mobility, heat, and industrial processes.
- Energy is to a large extent a **regulated sector.** Non-discriminatory access to the grid and to markets is a key principle that needs to be maintained in a data space setting
- European and national regulatory bodies are imposing **rules and guidelines** that affect interactions and communications in the market. These will feed into the design and the **governance of energy data spaces.**
- Energy data spaces need to comply with a larger set of **domain- specific regulations**

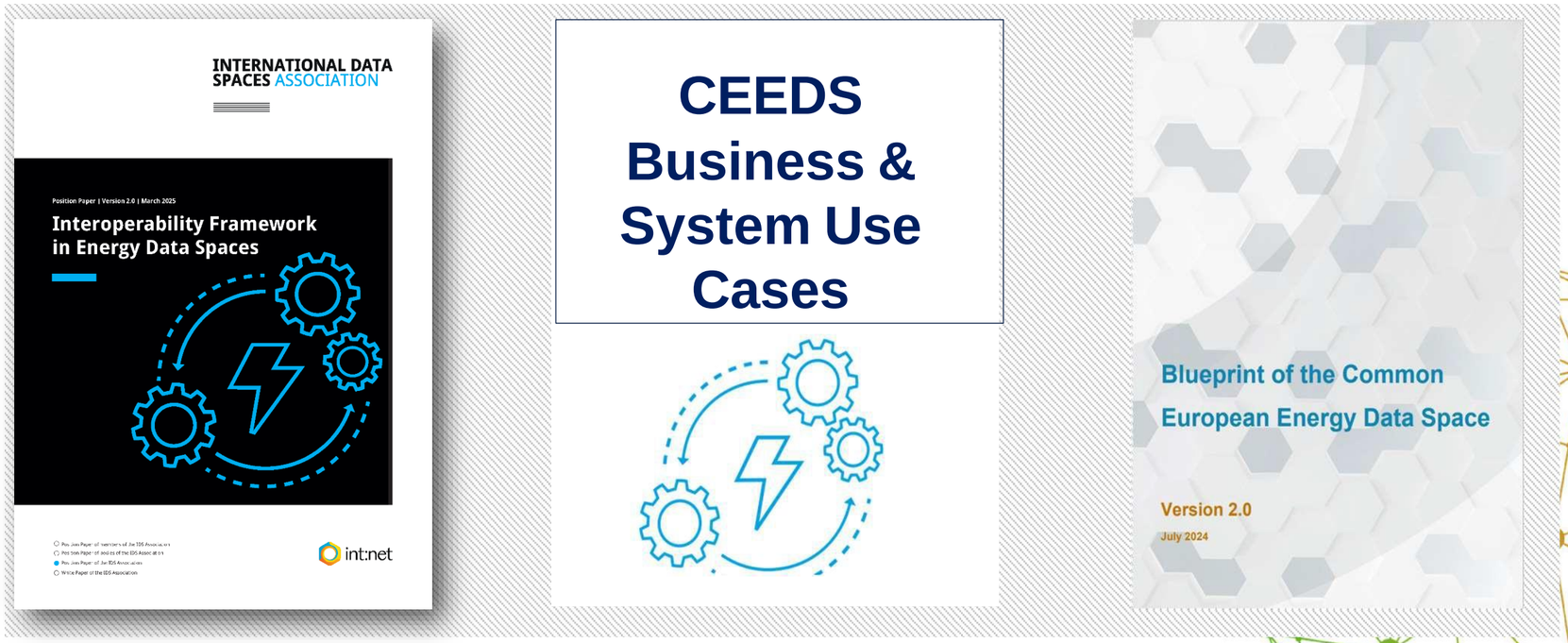


Prepare the ground for the Common European Energy Data Space (CEEDS)

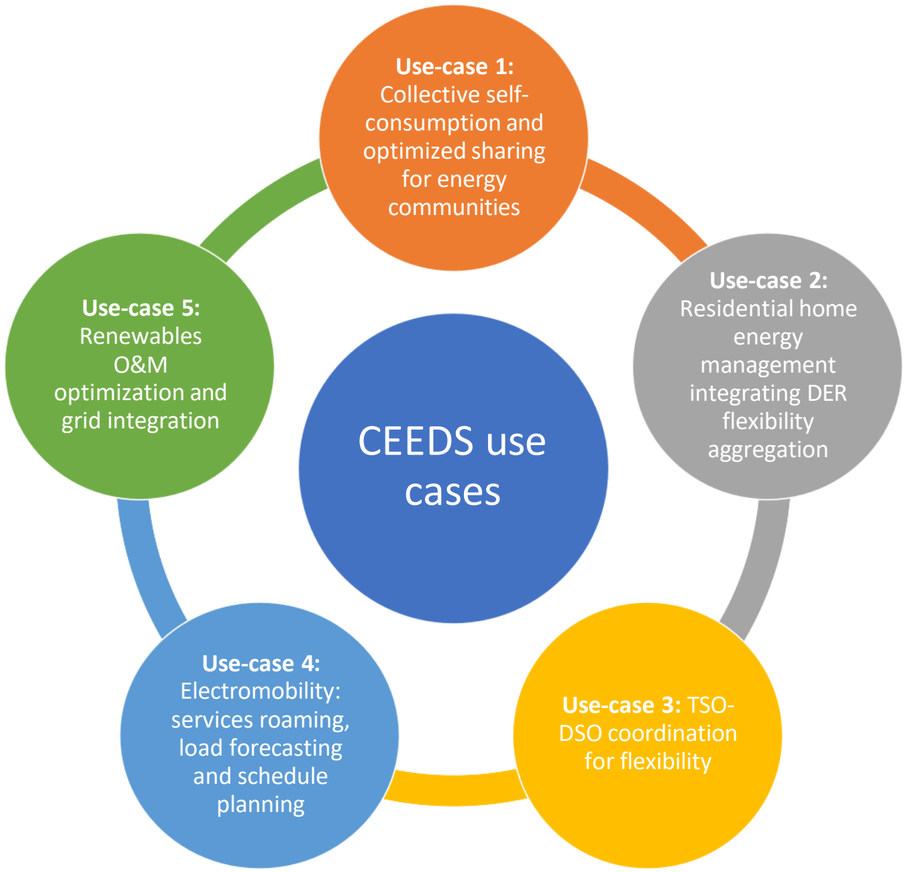




Energy Cluster Activities

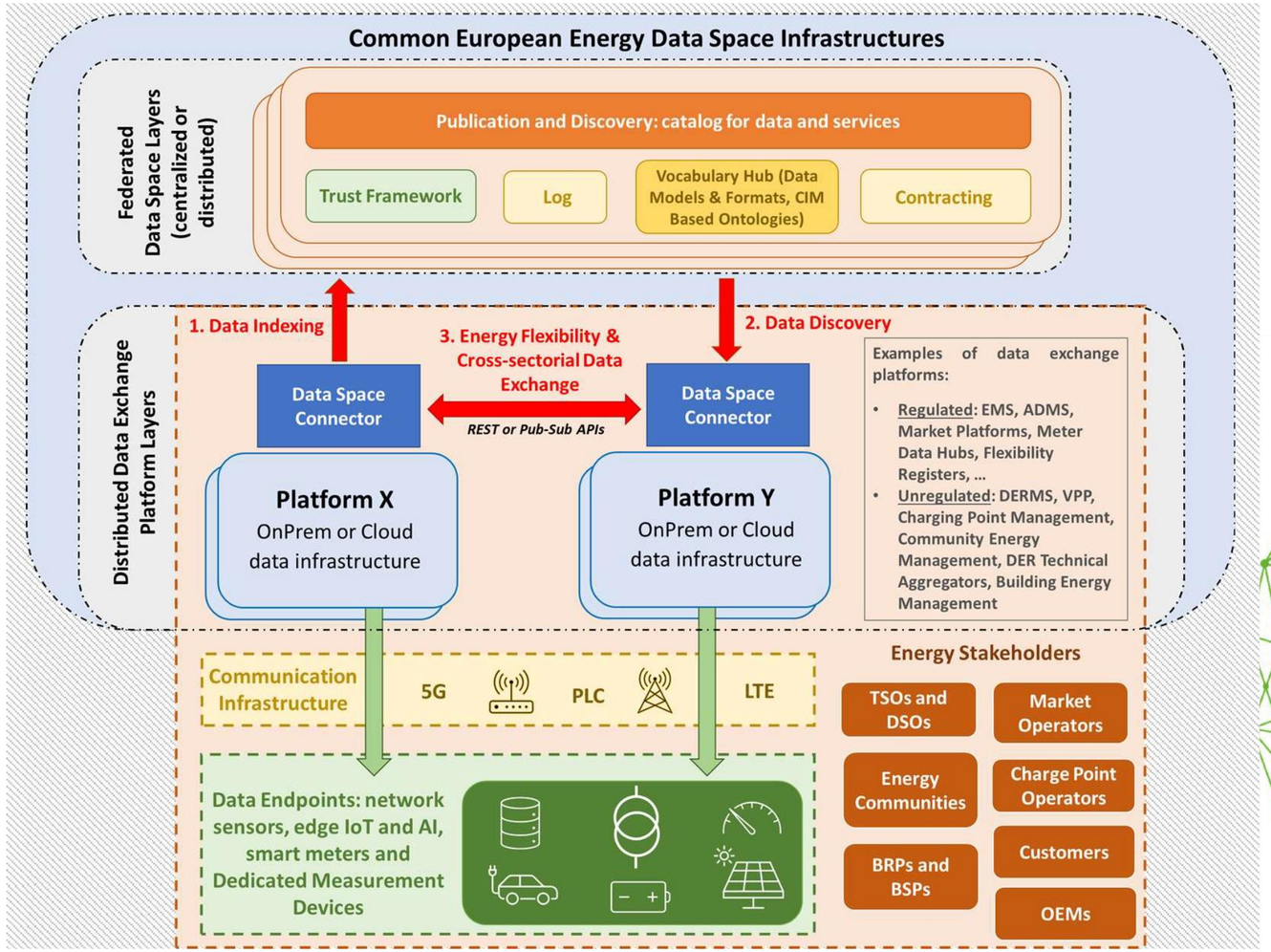


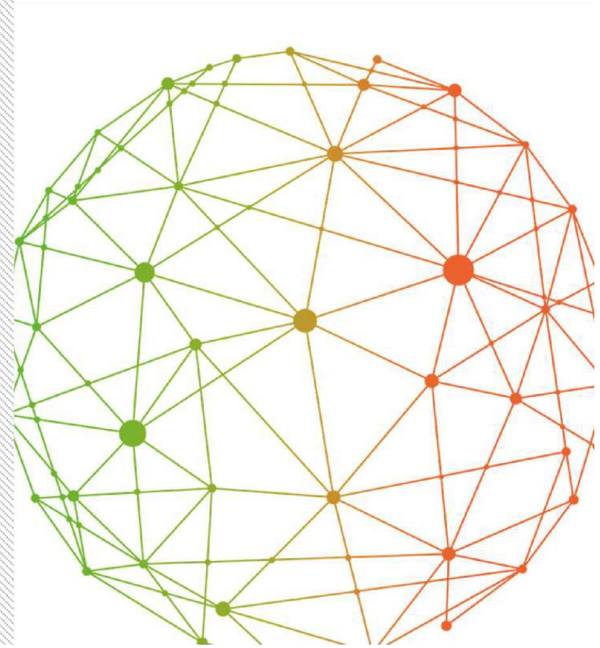
Use cases for Common European Energy Data Space (CEEDS)



int:net

CEEDS Architecture





Interoperability Framework in Energy Data Spaces

INTERNATIONAL DATA SPACES ASSOCIATION

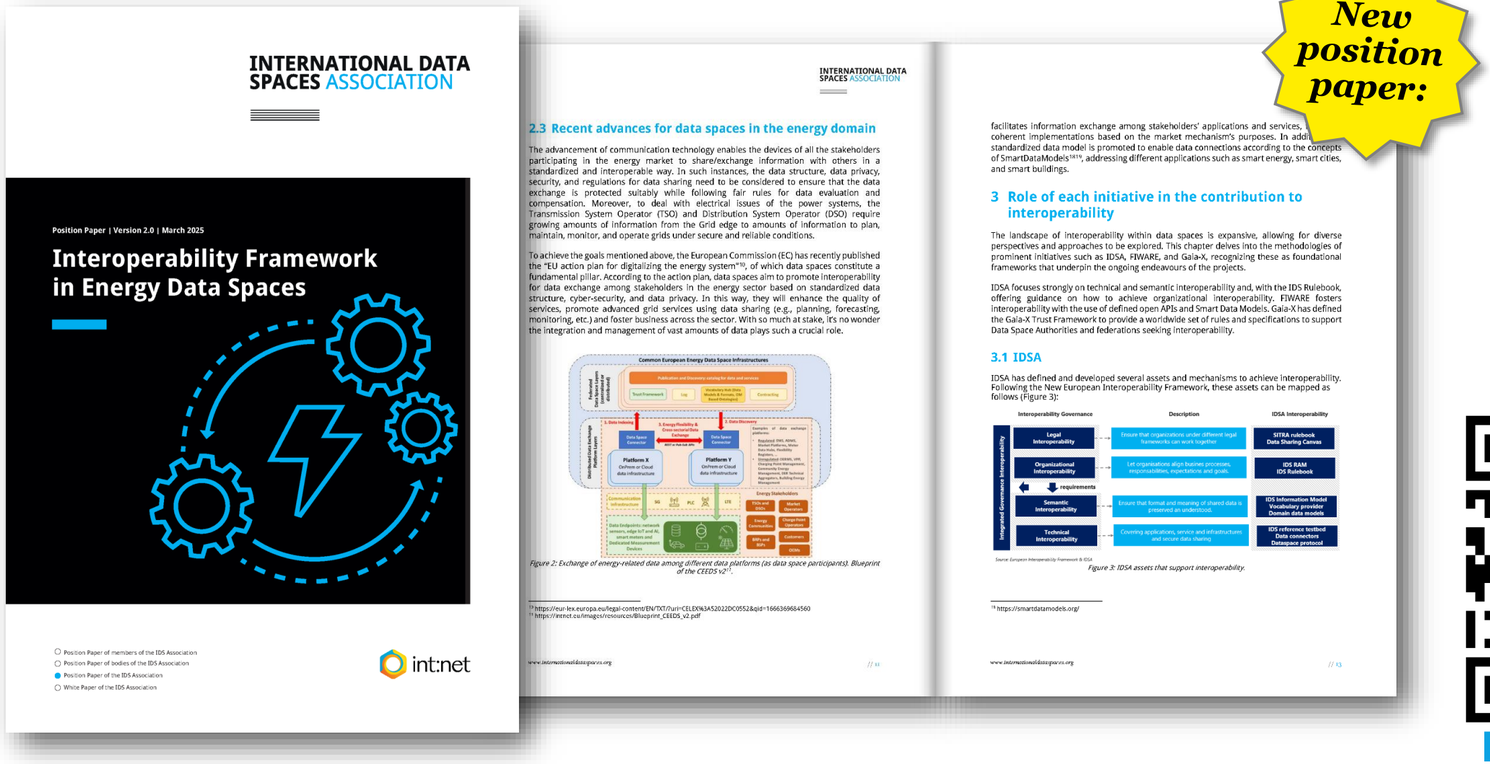


Figure 2: Exchange of energy-related data among different data platforms (as data space participants). Blueprint of the CEEDS v2[17].

Figure 3: IDSA assets that support interoperability.

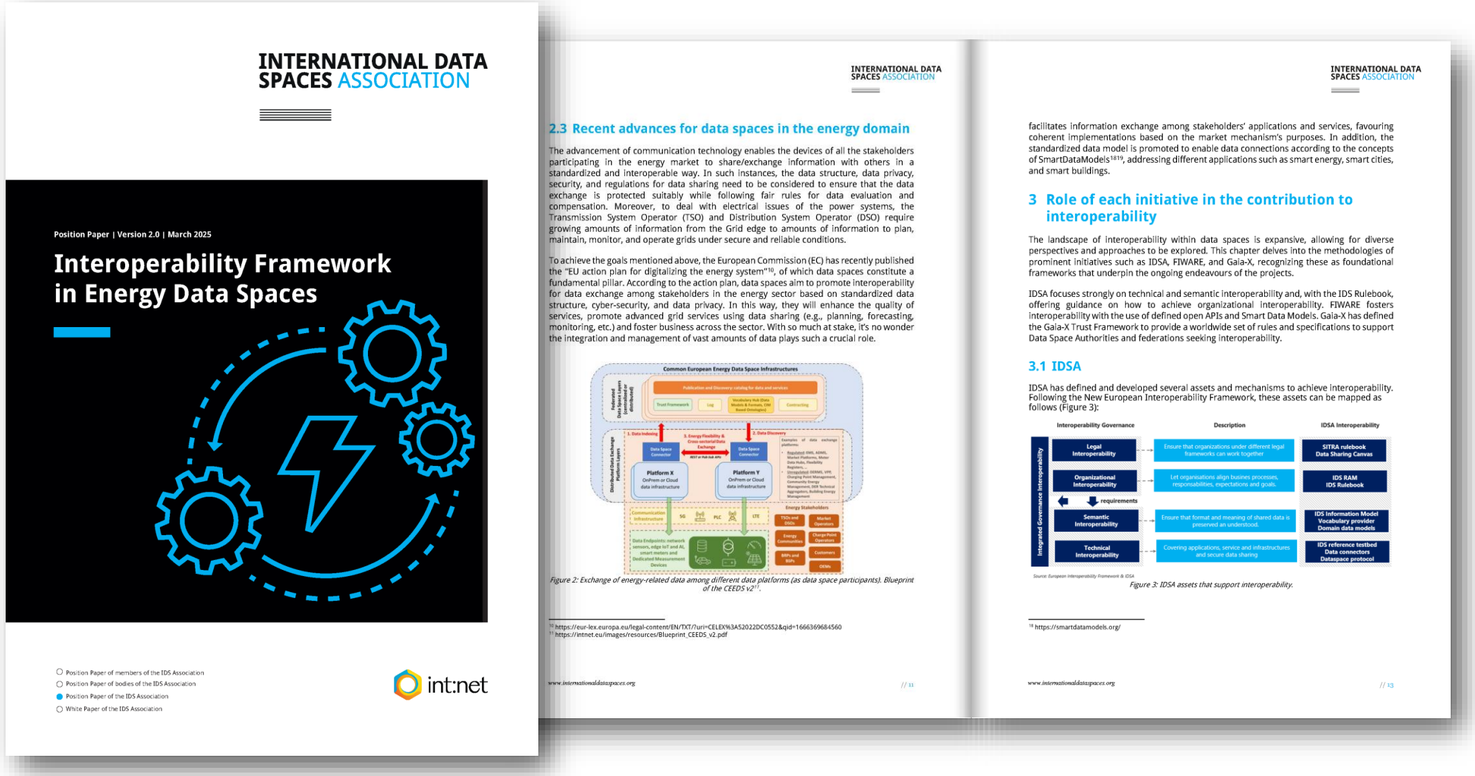
[17] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022DC0552&qid=1666369684560
[17] https://rexnet.cu/fmages/resources/Blueprint_CEEDS_v2.pdf
[18] https://smartdatamodels.org/

www.internationaldataspaces.org // 41
www.internationaldataspaces.org // 43

New position paper:

Interoperability Framework in Energy Data Spaces

INTERNATIONAL DATA SPACES ASSOCIATION

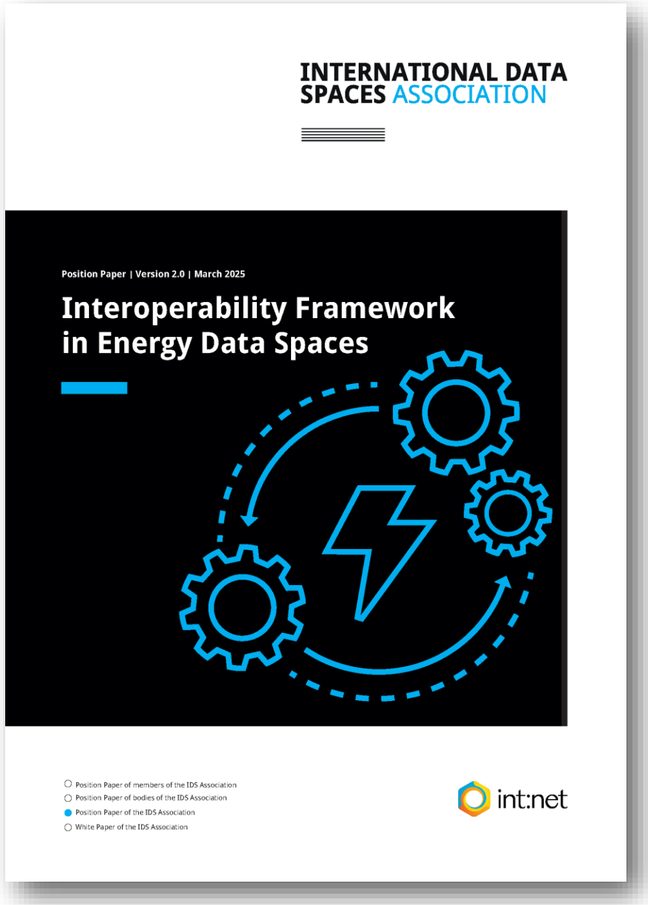


- This paper defines a framework for achieving interoperability in energy data spaces, addressing technical, semantic, organizational, and legal challenges.
- Version 2.0 expands on Version 0.9, adding system use cases, organizational and legal interoperability, and benefits for energy stakeholders.
- The framework is structured using the European Interoperability Framework, emphasizing technical and semantic layers

Interoperability Framework in Energy Data Spaces

Position Paper

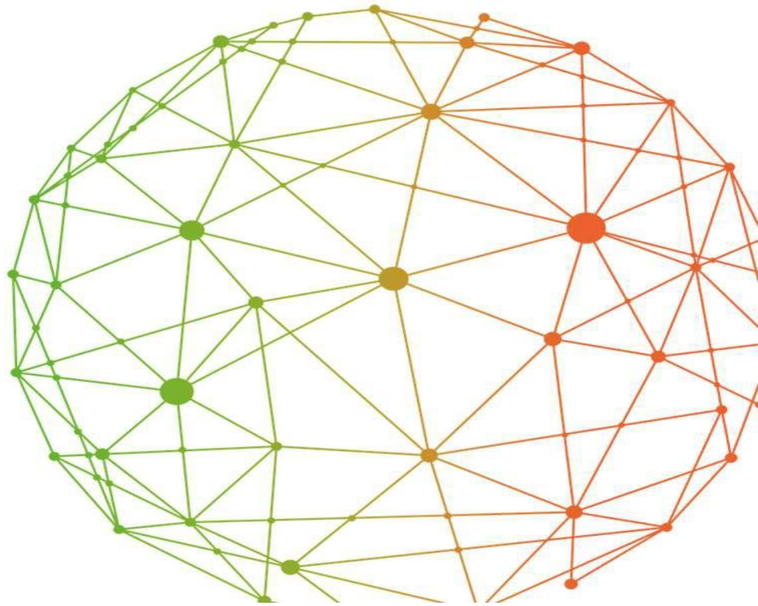
- **Standards** are fundamental to interoperate devices from different manufacturers while avoiding vendor lock-in, enhancing scalability, and ensuring data protection and cybersecurity.
- **Technical interoperability =>** for a successful federation of different data spaces, compatibility among different data connectors, services, and trust frameworks must have the highest priority.
- **Semantic interoperability =>**enormous variety of devices, assets, and applications require:
  - **Harmonization of ontologies and data models** (starting from well-established solutions as CIM).
  - **Common vocabularies and data models** can foster the benefits of federation services for cross-domain solutions



Interoperability Framework in Energy Data Spaces

Position Paper

- State of the Art and Standards
- Data space governance and interoperability
- Definition of energy interoperability framework:
  - Technical interoperability
  - Semantic interoperability
  - Existing interoperability tools and platforms
  - How to achieve cross-domain interoperability
  - Benefits of achieving interoperability for Energy actors
  - Organizational interoperability
  - Legal interoperability
- Energy cluster system use cases
- Cross-domain interoperability – Mobility use case

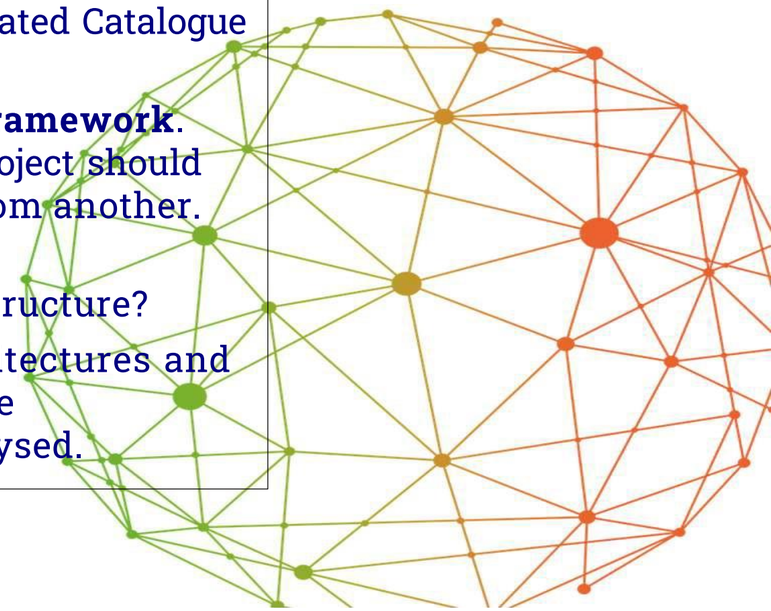


Technical Interoperability

- **Building blocks**
  - Data Interoperability (Data Exchange APIs)
  - Data Sovereignty and Trust (Access & Usage Policies Control and Identity Management)
- **Actors**
  - Data Space Governance Authority
  - Data Space
  - Participant
  - Participant Agent
- **Data formats**
  - JSON-LD
- **Data transmission protocols**
  - Dataspace protocol

Challenges

- Interoperability among **connectors** used by projects
- Interoperability among different implementations of **Federation Services** (e.g., for the Catalogue there is the Metadata Broker from IDS and the Federated Catalogue from Gaia-X)
- Interoperability of the **Trust Framework**. Trust certificates from one project should be interoperable with those from another.
- Are data connectors ready to accommodate existing infrastructure?
- Sister projects' reference architectures and identification of gaps to enable interoperability should be analysed.



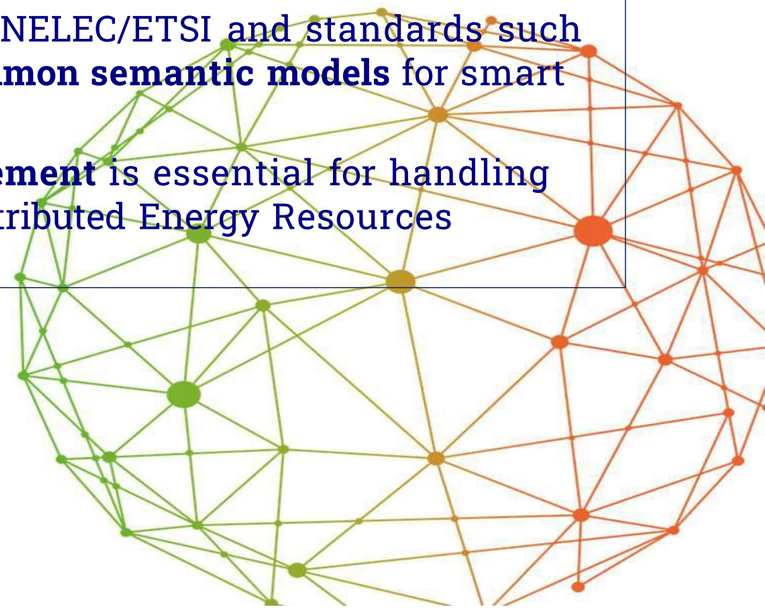
Semantic Interoperability

▪ Key findings

- **Harmonization frameworks** simplify data exchange and interpretation in the smart grid ecosystem by creating common vocabularies, data models, and ontologies.
- **System Adaptation** is essential for aligning data formats with established models.
- **Well-known standards** like IEC CIM ensure consistent interpretation, adapting to changing relationships.
- **Automated data model consultation** streamlines data access and reduces errors.
- **Linked data**, such as RDF, eliminates silos and enhances interoperability.
- **Common ontologies** foster shared understanding, integration, and innovation among stakeholders.
- **Vocabulary Hubs** link semantics to data/service marketplaces, promoting data discovery and exchange in the smart grid ecosystem.

▪ Challenges

- Energy systems involve **heterogeneous components and devices.**
- **Sector-specific Common Information Models**, like in H2020-SYNERGY, are necessary for the decentralized and distributed energy system.
- Organizations like CEN-CENELEC/ETSI and standards such as IEC 62325 work on **common semantic models** for smart energy systems
- **Effective lifecycle management** is essential for handling new components like Distributed Energy Resources (DERs).

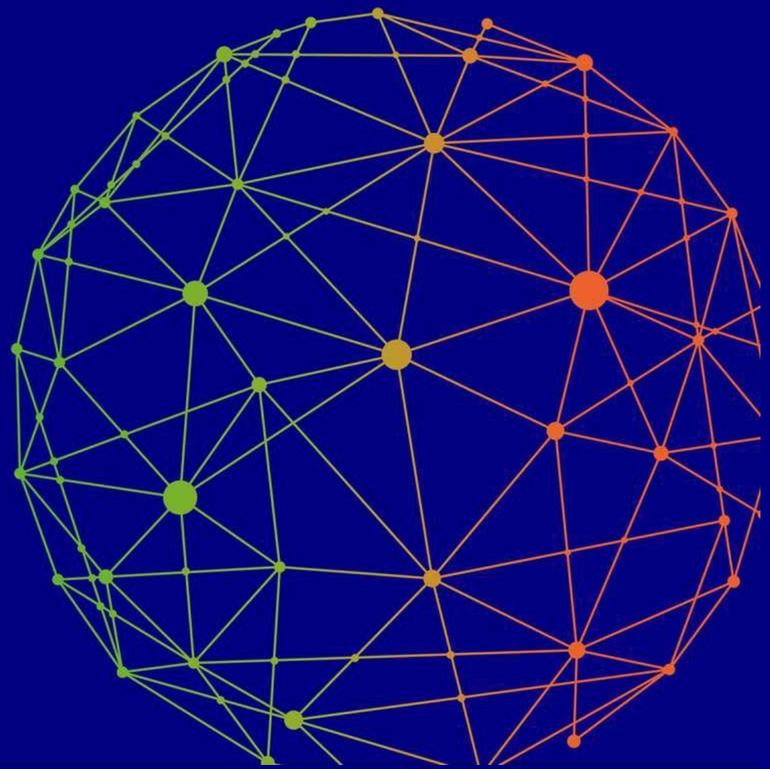


Contact

Charukeshi Joglekar, Fraunhofer FIT
Sonia Jimenez, IDSA

int:net

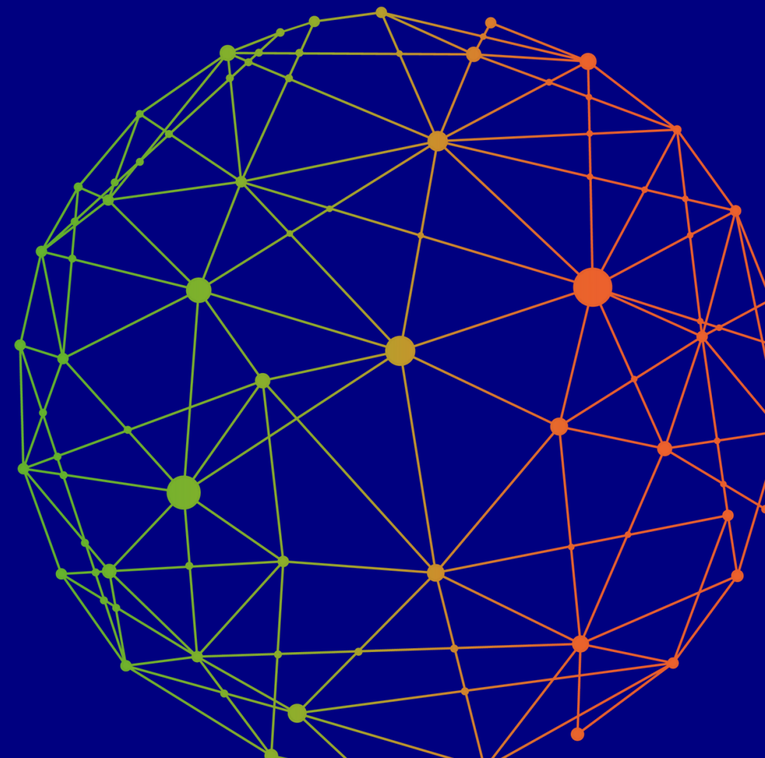
https://intnet.eu/



Project INSIEME

Deploying the Common European Energy Data Space

Data Spaces Symposium 2025



DSBA ■ BDV BIG DATA VALUE ASSOCIATION FIWARE FOUNDATION gaia-x INTERNATIONAL DATA SPACES ASSOCIATION

DATA SPACES SUPPORT CENTRE

Funded by the European Union

The Data Spaces Support Centre receives funding from the European Union Digital Europe Programme under grant agreement n° 101083412

About myself

- Georg Hartner

- Contributor to EU-Level Expert Groups for Austrian Energy Association, GEODE and EU DSO Entity

- For University of Applied Sciences Upper Austria Co-Initiator and Technical Coordinator
  Projects EDDIE and INSIEME

Key Facts

FH OBERÖSTERREICH
UNIVERSITY OF APPLIED SCIENCES UPPER AUSTRIA

INSIEME

Start: April 1st 2025

End: March 2028

Establishing a CEEDS by the sector for the sector

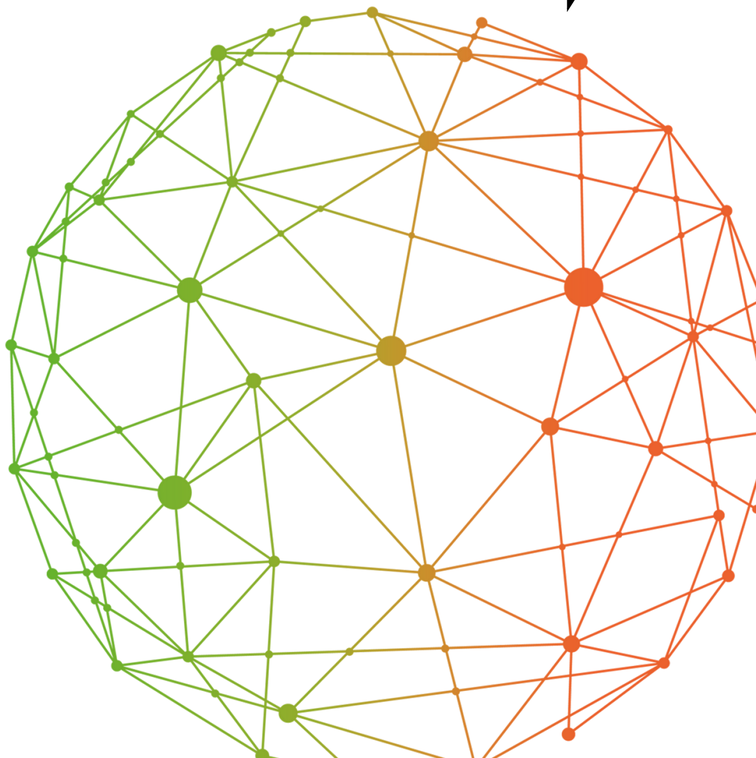
54 European Partners co-operating closely with European workstreams

16 Mio. EUR Budget

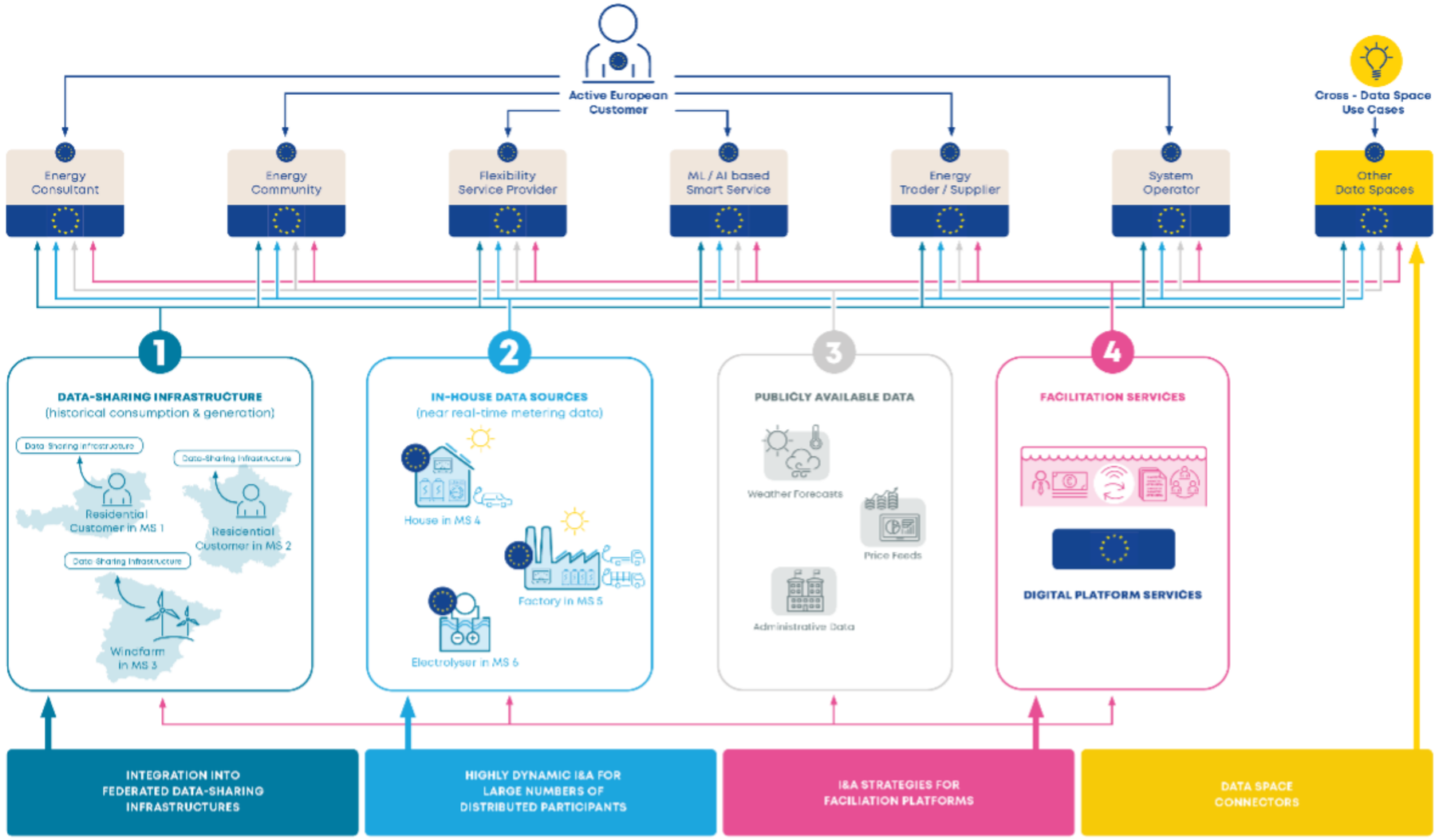
(8 Mio. EUR European co-funding out of Digital Europe Programme)

Tackling highest-priority twin transition challenges directly using the CEEDS

Deploy use cases in 15 EU countries

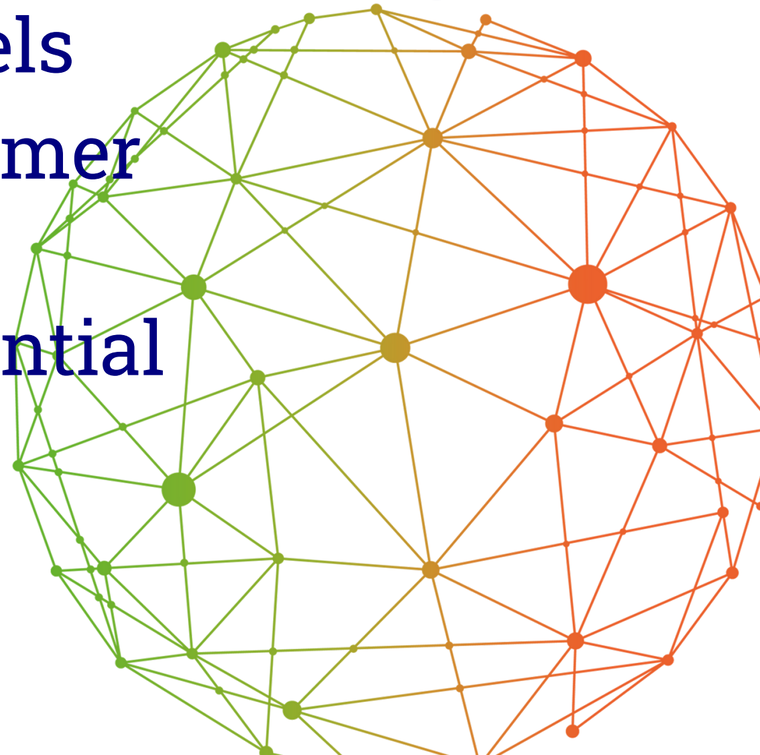


A CEEDS for a flexible, digital and participative energy system



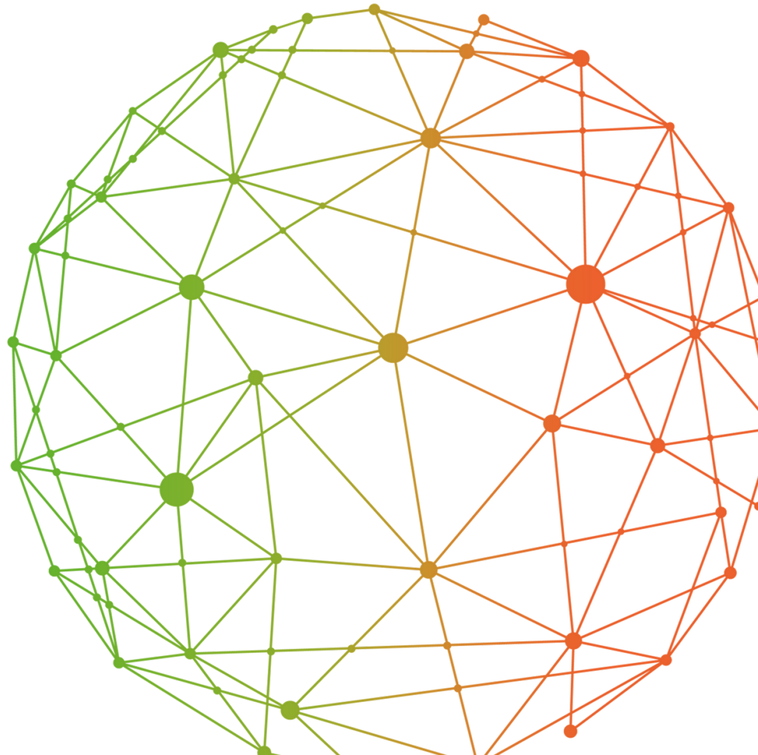
Covering high-priority instruments

- Energy efficiency applications
- Energy community and energy sharing platforms
- Flexible connection agreements
- Flexibility information systems
- Flexibility markets
- EV charging infrastructure solutions for heavy E-trucks
- Carbon and ESG accounting
- Network planning and operation
- AI-/ML-based forecasting on multiple levels
- Digital Customer interfaces
- Smart residential EV charging

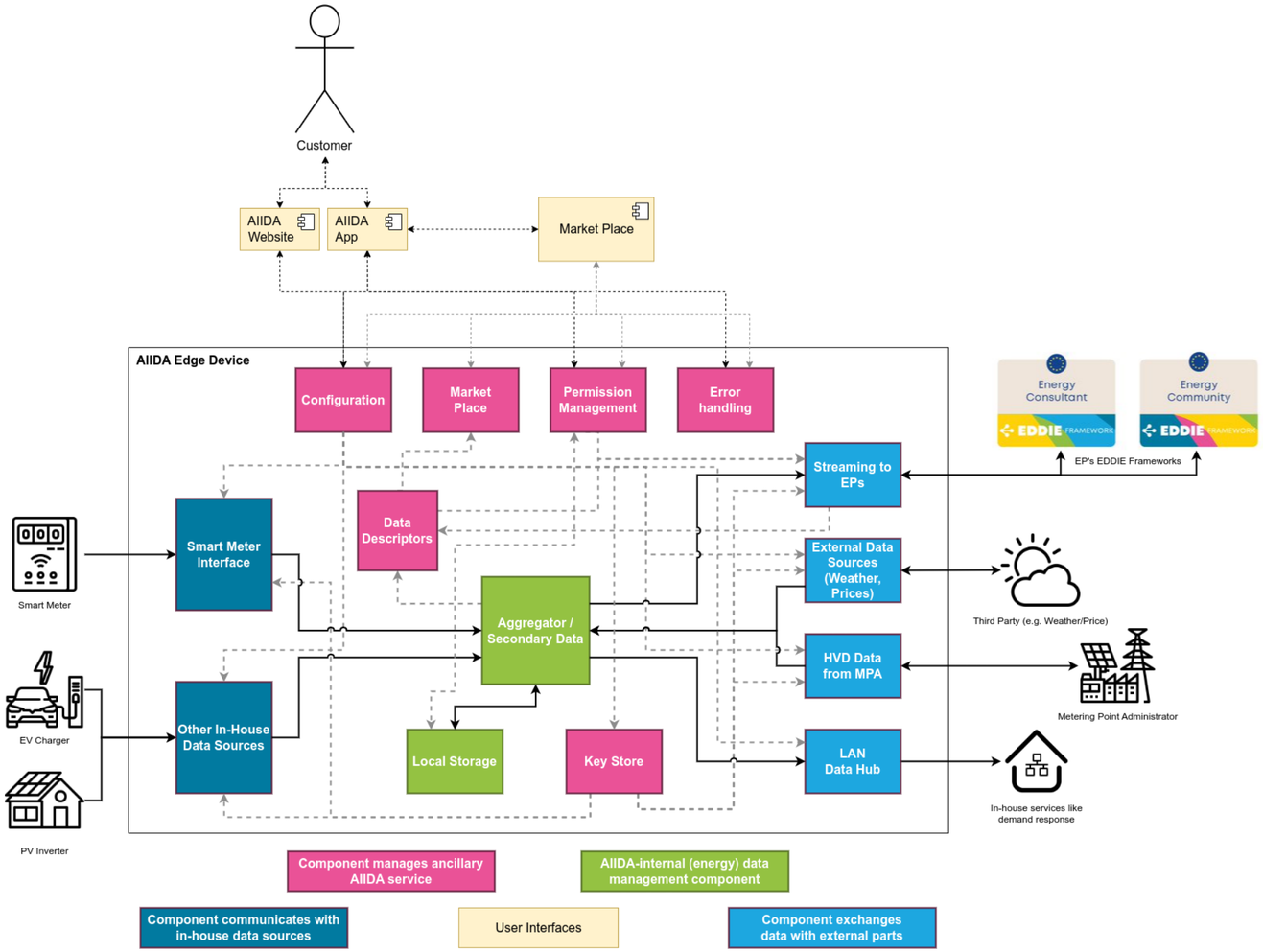


With 54 Key European Players

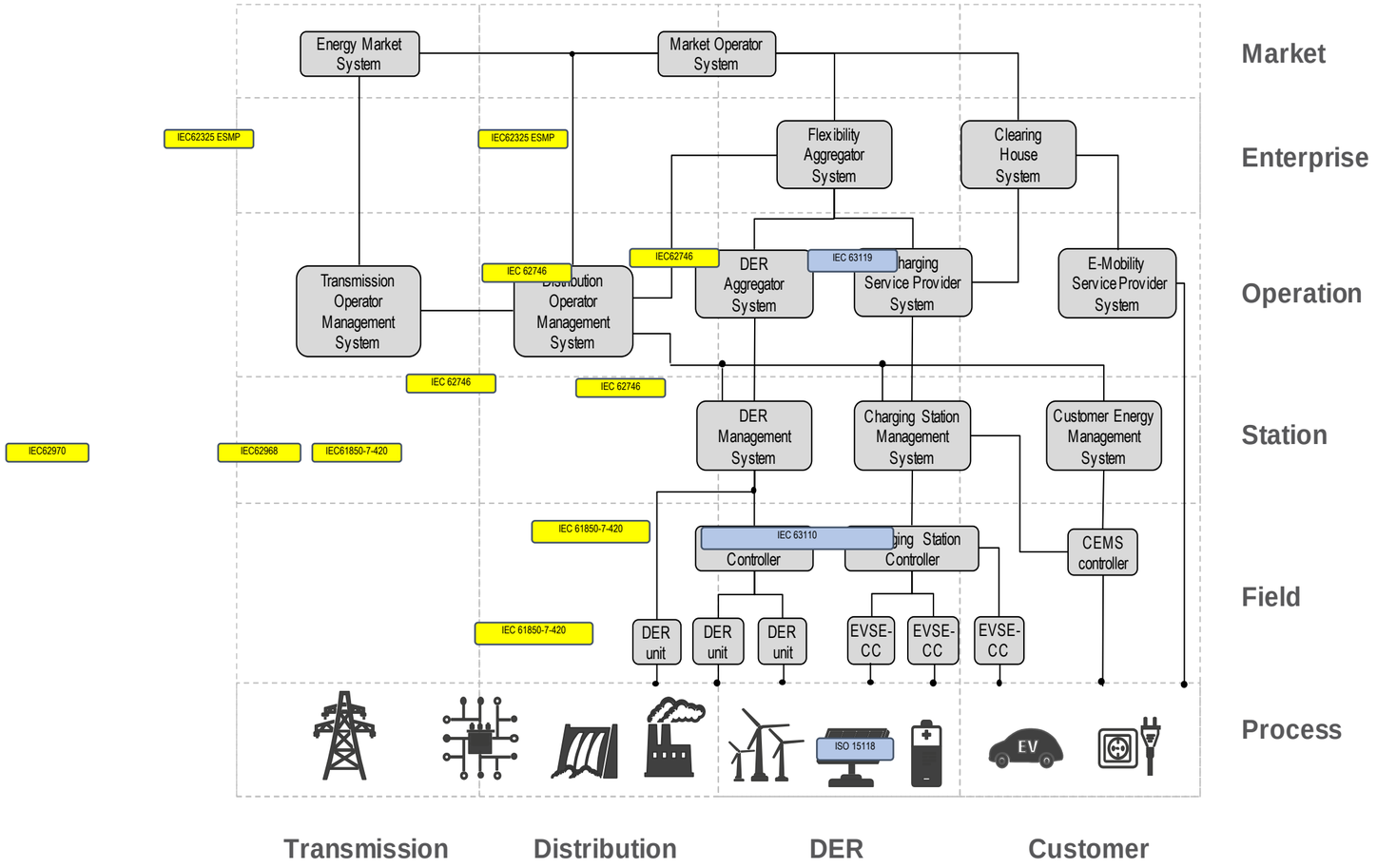
- Key European Distribution System Operators
- Front-running European Transmission System Operators
- Austrian, Italian and Spanish energy market communication responsibles
- Top-notch European Industry Associations and Academic partners
- Strong participation of residential and heavy E-mobility partners
- European new energy and AI start-ups

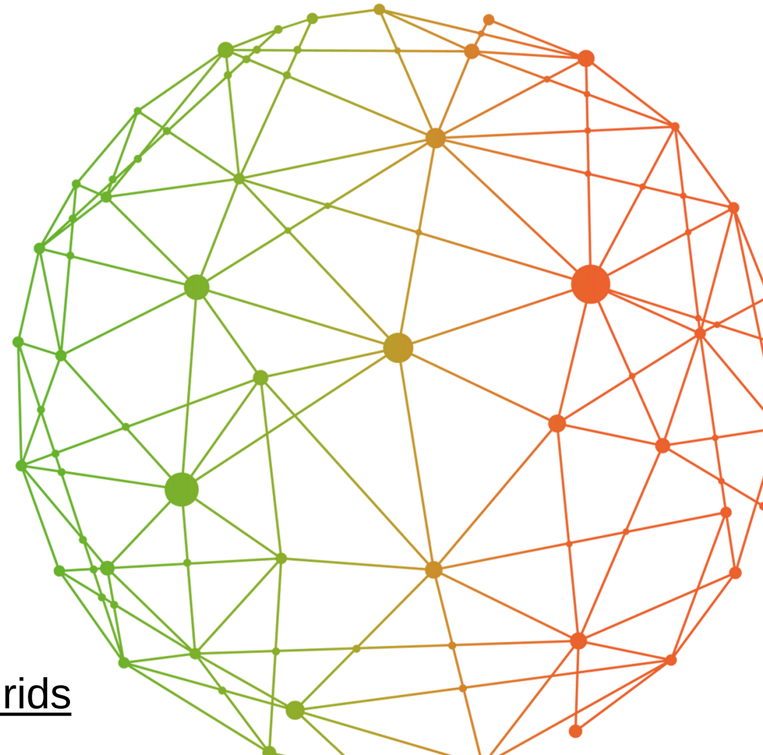


Utilising both cloud and edge…



Standardisation of data exchange interfaces





Source: SmartEn & Digital4Grids

In sync with European workstreams

Network Code on Demand Response (defines the WHAT)

Data Interoperability Implementing Acts following Article 24 of Directive (EU) 2019/944 (streamlines the HOW and the way towards a single, digital and participative market)

Data4Energy Expert Group

- tackles innovation and accompanies legislation to fill important gaps left by SOs and ACER
- Paves the way for the actual implementation of the CEEDS

INSIEME Project (as a reality-check and to prove-in-use regulation under development)

- extend, leverage and combine a federation of INT:NET data spaces
- deploy key twin transition digital instruments in a steamlined way across the Union
- pave the way for the final operationalisation of the Common European Energy Data Space

Building on key European Data Spaces

EDDIE
EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

mffbas

Enershare

eclipse

ENEDIS

datadis

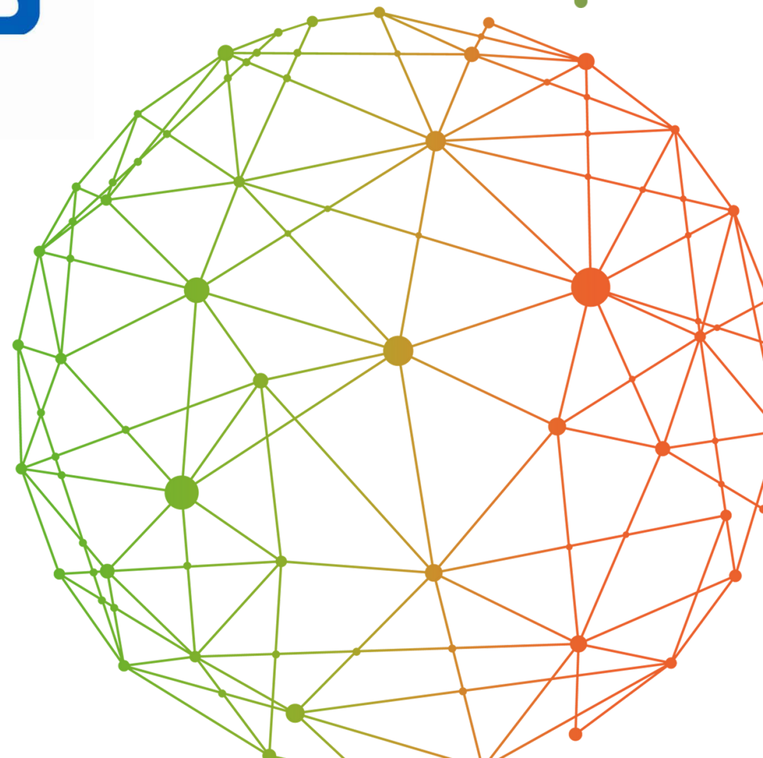
ENERGINET

SYNERGIES

ONENET
one network for Europe

DATA CELLAR

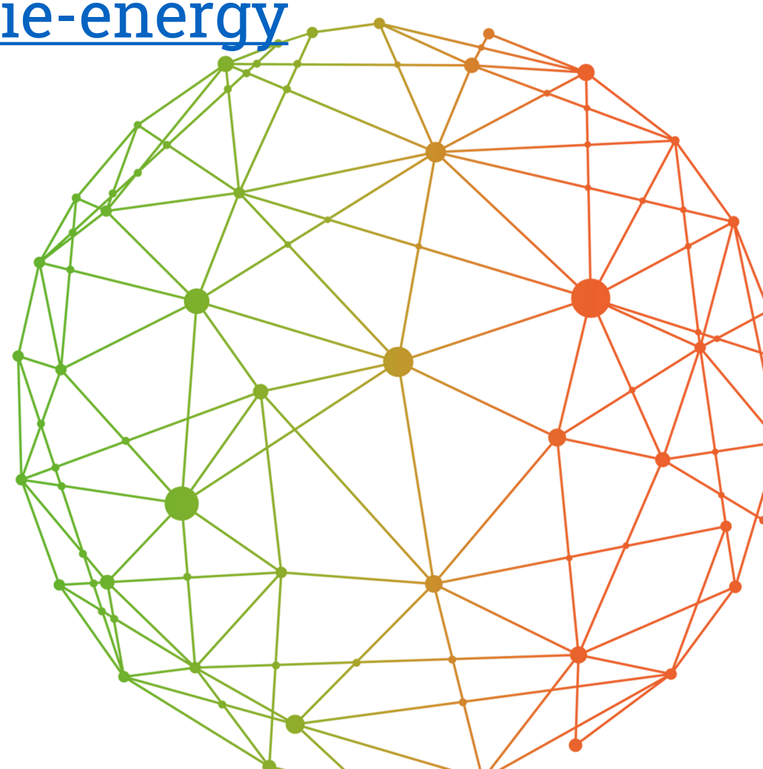
EDA energie wirtschaftlicher datenaustausch



INSIEME is an open initiative

- Visit our website(s):
  - https://insieme.energy
  - https://eddie.energy
  - https://enershare.eu
  - https://synergies-project.eu
- Like our LinkedIn pages
  - https://www.linkedin.com/company/project-insieme
  - https://www.linkedin.com/company/eddie-energy

Georg Hartner
georg.hartner@eddie.energy



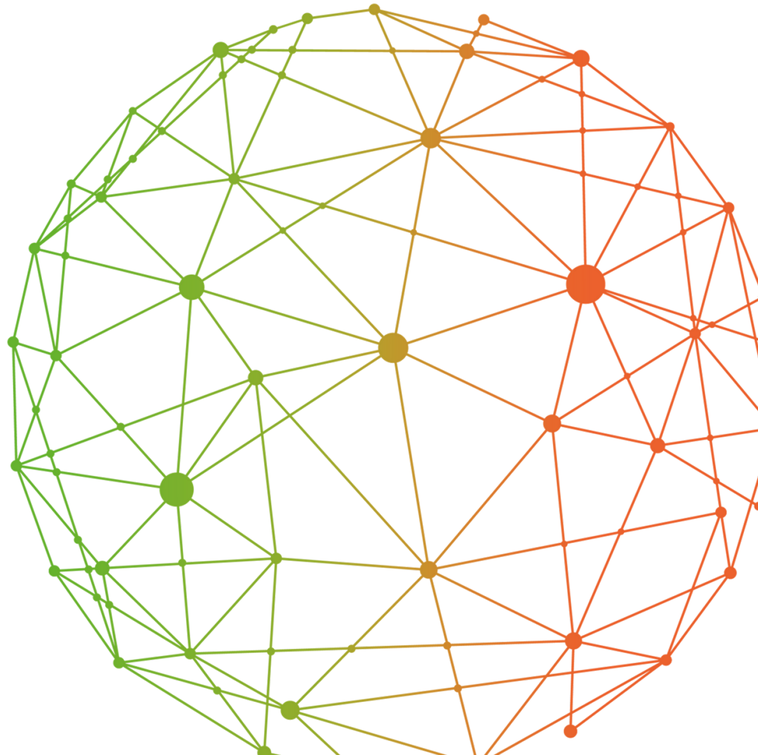
Data Space for Renewable Energy Sources
Domain session [energy & green deal]

Data Spaces Symposium 2025

Krzysztof J. Heller, Ph. D.

DSBA ■ BDV BIG DATA VALUE ASSOCIATION FIWARE FOUNDATION gaia-x INTERNATIONAL DATA SPACES ASSOCIATION

DATA SPACES SUPPORT CENTRE



Funded by the European Union

The Data Spaces Support Centre receives funding from the European Union Digital Europe Programme under grant agreement n° 101083412

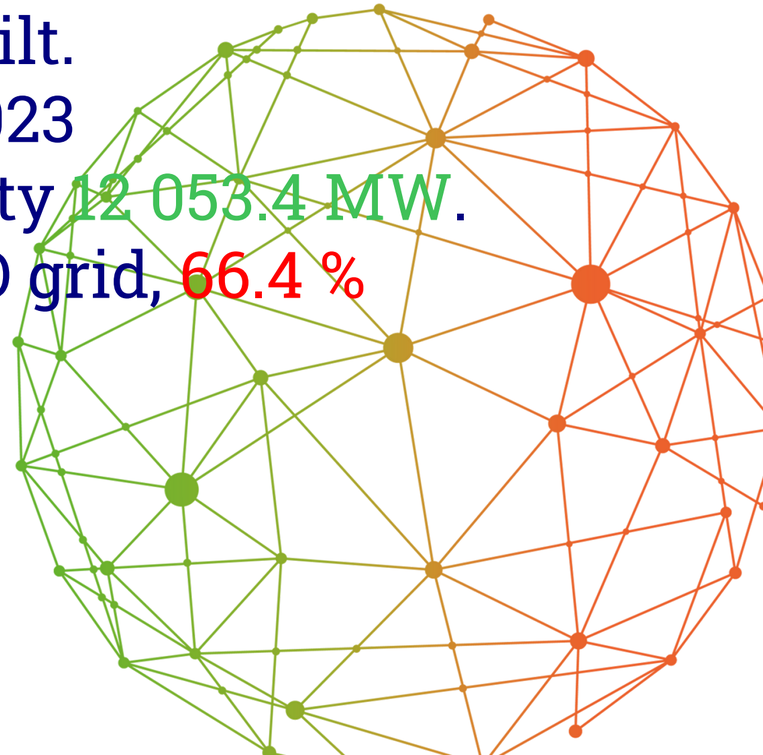
Project OTE - monitoring energy transition in Poland

- OTE – The Energy Transformation Observatory as an instrument to support the socio-economic development of Poland
- Scope:
  - To provide a sophisticated and precise analytical apparatus and a repository of reliable data, which will enable cost-benefit assessments of energy technology deployment.
  - To create tools to enable development policy actors to plan activities and programmes based on objective and impartial criteria.

- Project duration: 2023 – 2025
- expert teams from the Ministry of Climate and Environment, AGH University of Krakow and National Centre for Nuclear Research.
- co-funded by the Polish National Centre for Research and Development within the GOSPOSTRATEG strategic programme

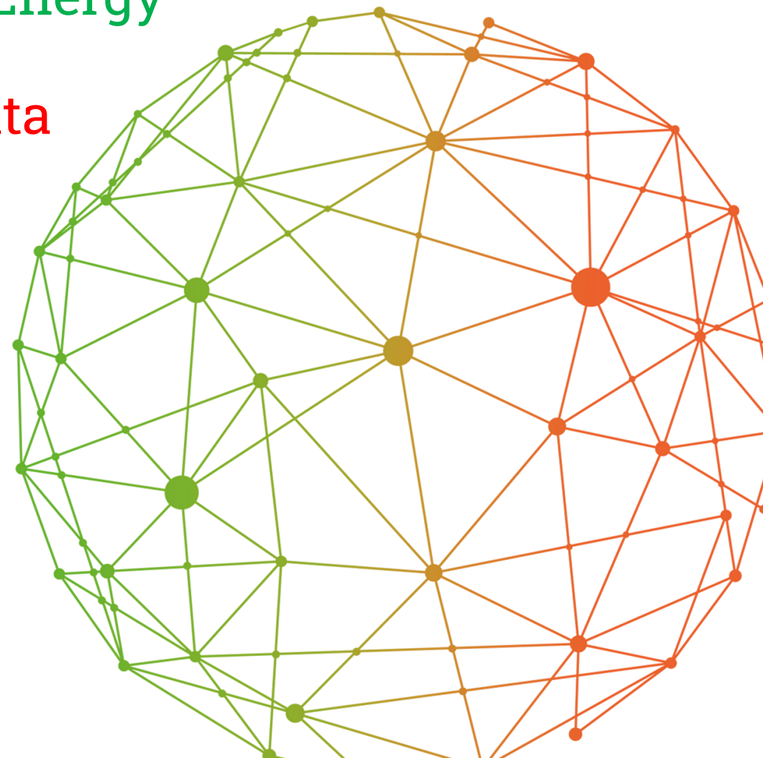
PV installations in Poland

- In Dec 2024, the installed capacity of PV in Poland was 21 157.0 MW, including:
  - National grid PV power plants – 2 467.1 MW
  - Independent PV power plants – 18 689.9 MW
- PV account for 62.9 % of installed RES capacity.
- Average new PV installation ~ 55 kW.
- Some large PV farms (50 – 200 MW) have been also built.
- PV increased by 26.3 % in Dec 2024 compared to Dec 2023
- PV prosumers have 1 520 015 installations, total capacity 12 053.4 MW.
- They injected 104 187.6 MWh of electricity into the DSO grid, 66.4 % more than a year earlier.



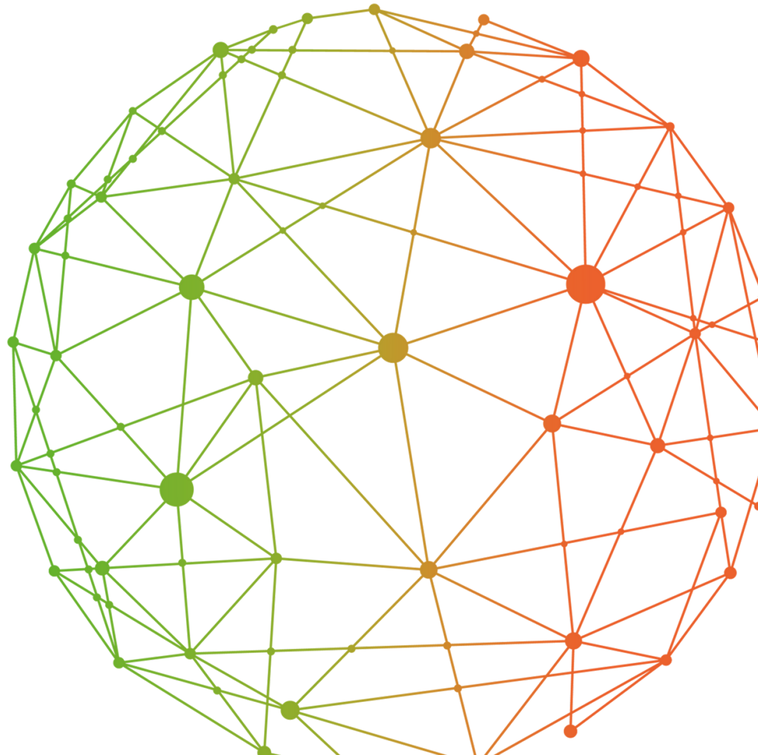
Polish energy market

- European and Polish energy market is undergoing revolutionary transformation
- systematical growth of Renewable Energy Sources (RES)
- RES Power production in Poland reached 27,1% in 2023 and 29,6% in 2024
- most of RES are weather-dependent => challenge when integrating them into the grid
- serious and acute problem – growing curtailing (RES energy loss)
- another important trend - evolution from individual RES to local Energy communities, involving citizens and local administration
- Introduction of AMI and digitisation of grid – large amounts of data
- significant installed district heating base:
  - Approx. 400 entities
  - heat production 285 PJ/year
  - 22 837.8 km of lines
  - 64% of generated heat is CHP



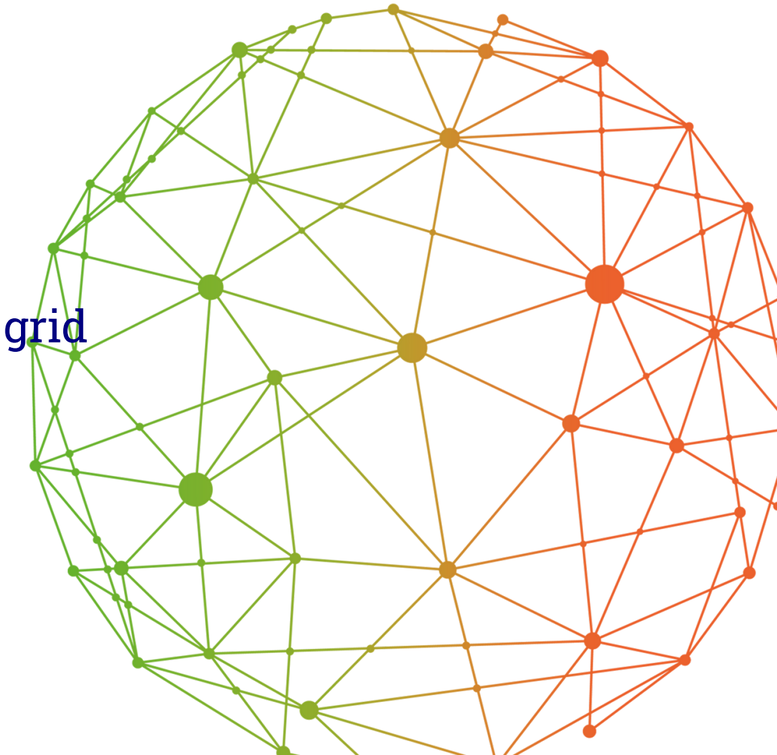
Proving ground - Local Energy Cluster

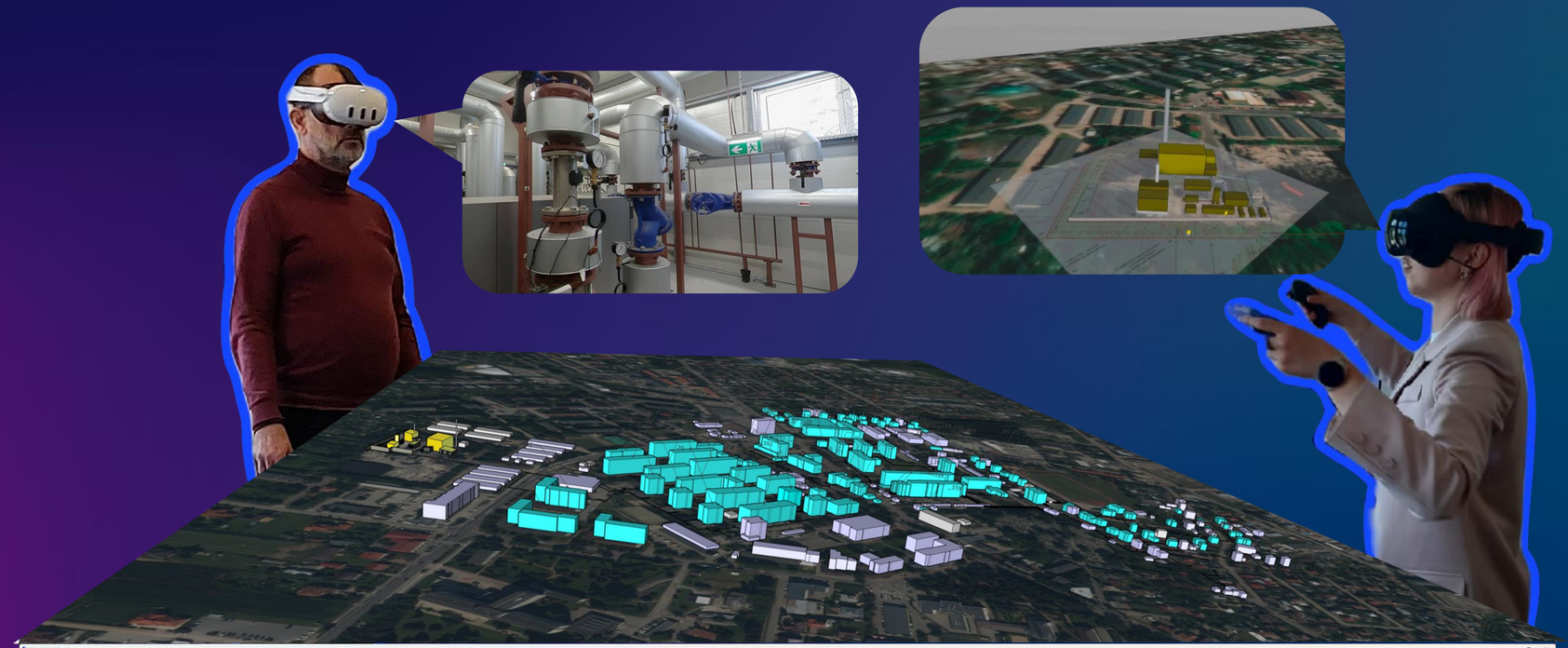
- CHP in the Local Energy System
- the community forms the supply chain of a multi-energy system (biogas->biomethane->en.el.->heat)
- has the development potential to expand the chain to include integration of:
  - local RES sources (wind, PV, biogas),
  - production of natural fertilizers,
  - green CO2,
  - LBM (liquid biomethane),
  - hydrogen,
  - storage of heat and electricity,
  - self-balancing and provision of system services for DSO.

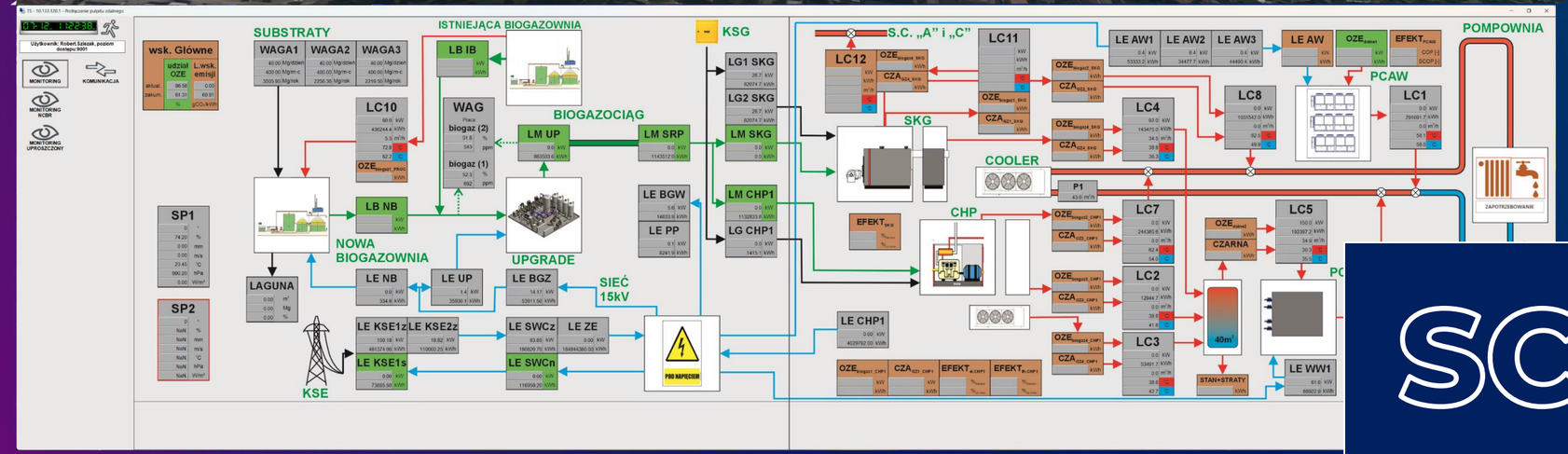


Proving ground - Local Energy Cluster

- about 30 data collection points in the energy production chain
- about 300 data collection points on the receiving side (with the potential to expand to several thousand)
- Examples of data:
  - biogas parameters,
  - filling level of gas tanks,
  - dynamic schedule of biogas plant production for the next 40 days,
  - historical energy balances,
  - weather forecasts,
  - TGE quotations,
  - dynamic tariff quotations,
  - forecasts of system operation modes,
  - current status and forecasts of energy intake/output capacity from/to the grid
  - quotations of the internal energy market



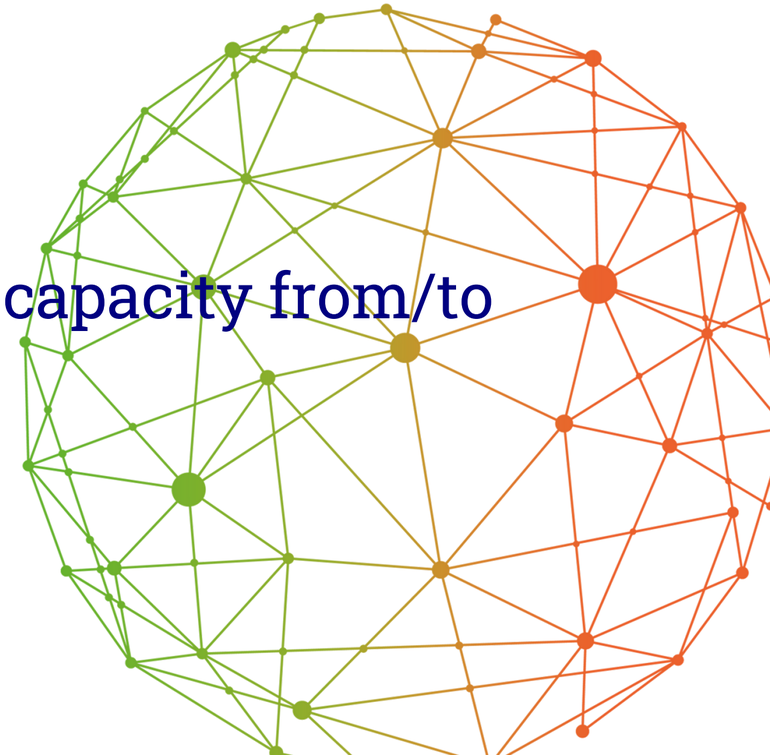


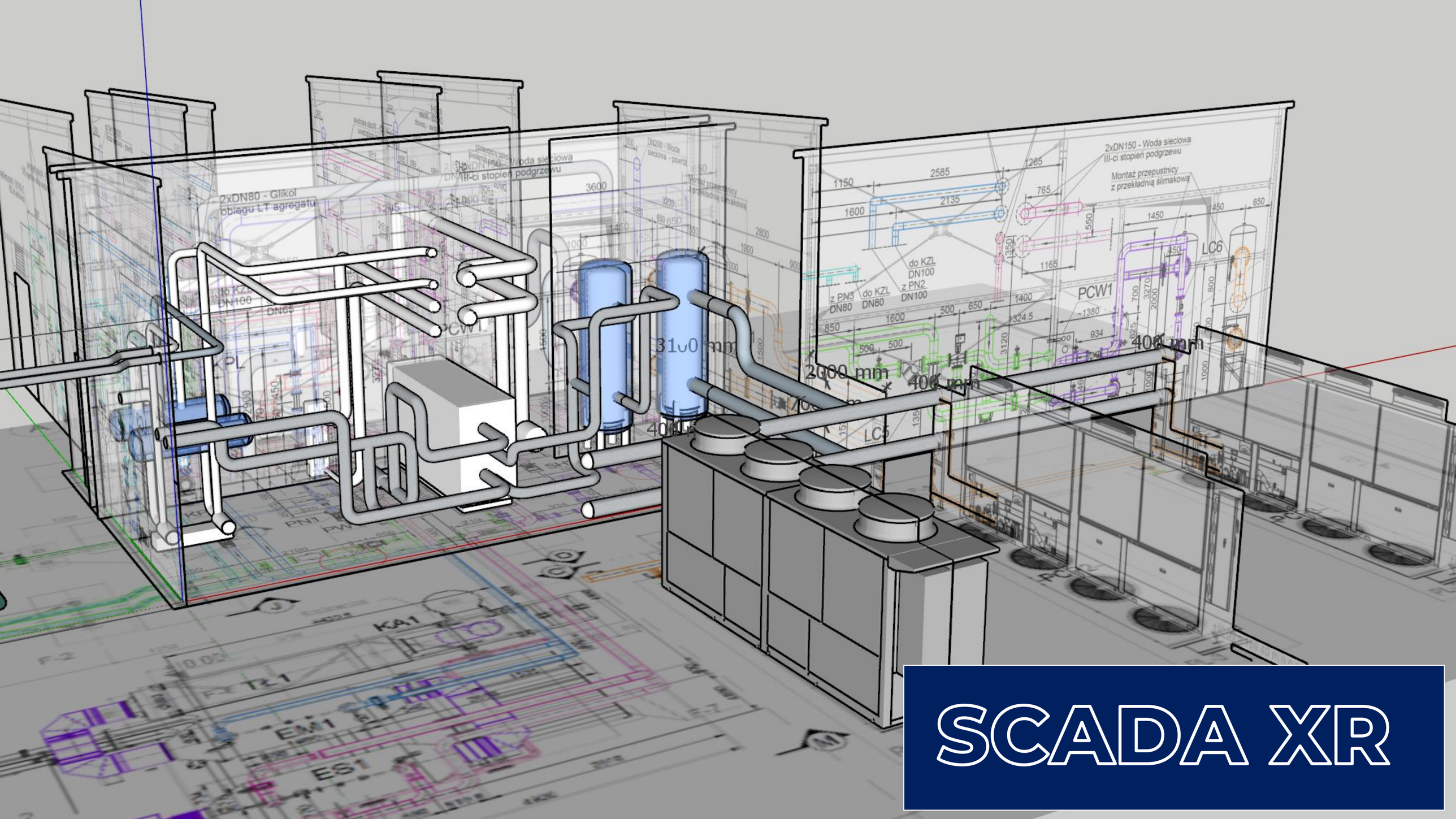

SUBSTRATY
ISTNIEJĄCA BIOGAZOWNIA
KSG
S.C. „A" i „C"
POMPOWNIA
PCAW
BIOGAZOCIĄG
SKG
COOLER
CHP
NOWA BIOGAZOWNIA
UPGRADE
SIEĆ 15kV
KSE
WAGA1
WAGA2
WAGA3
LB IB
LB NB
LC10
WAG
LM UP
LM SRP
LG1 SKG
LG2 SKG
LM SKG
LM CHP1
LG CHP1
LE BGW
LE PP
LE NB
LE UP
LE BGZ
LAGUNA
LE KSE1z
LE KSE2z
LE KSE1s
LE SWCz
LE ZE
LE SWCn
LC12
LC11
LE AW1
LE AW2
LE AW3
LE AW
LC4
LC8
LC1
LC7
LC5
LC2
LC3
LE CHP1
LE WW1
40m³
ZAPOTRZEBOWANIE
SP1
SP2

SCADA XR

Proving ground - Industrial Park

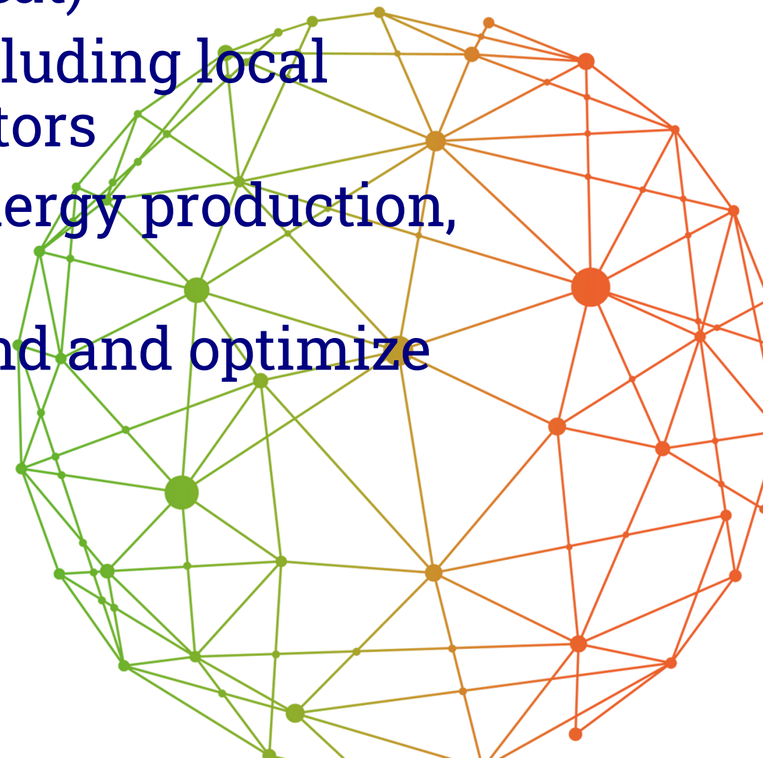
- community of industrial producers and prosumers of heat and electricity
- examples of data:
  - data from outside PPE (SCADA/MES systems)
  - historical energy balances, forecasts and declarations of production and consumption,
  - weather forecasts,
  - POLPX quotations,
  - dynamic tariff quotations,
  - current status and forecasts of energy intake/output capacity from/to the grid,
  - quotations of the internal energy market.




2xDN80 - Glikol
obiegu LT agregatu
2xDN150 - Woda sieciowa
III-ci stopień podgrzewu
Montaż przepustnicy
z przekładnią ślimakową
PCW1
LC6
LC5
2000 mm
406 mm
SCADA XR

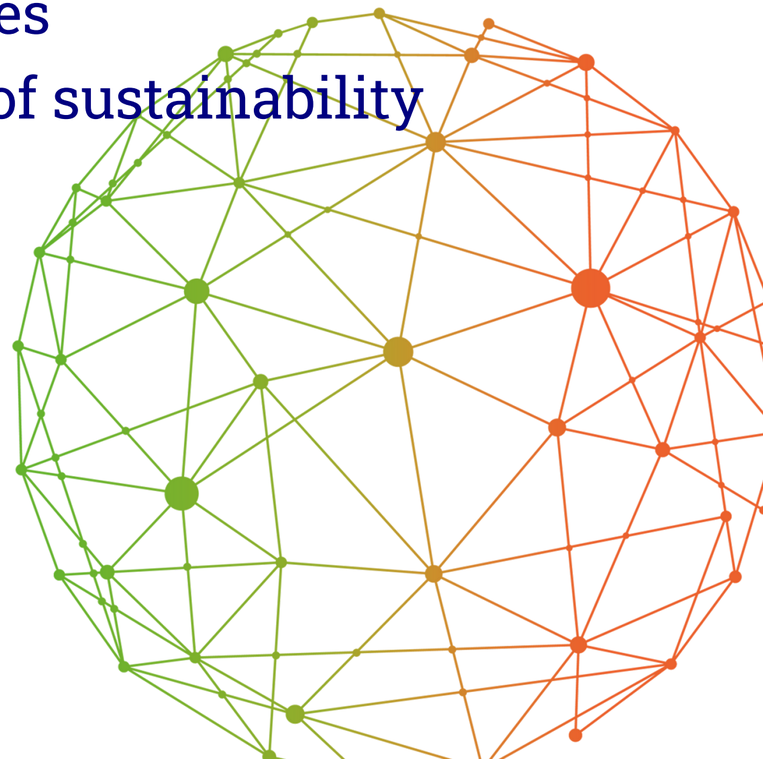
Data Space - Benefits for LECs

- need for reliable, standardised and complete data, including historical data
- LECs in addition to own data need also access to external data from DSO, energy markets, transmission grid
- interface to external systems, such as DSO’s; and smart grid components (vendor-dependent subsystems)
- need to analyse multienergy data (especially electricity + heat)
- seamless sharing of data between various stakeholders, including local governments, energy producers, consumers, and grid operators
- access to real-time data => informed decisions regarding energy production, consumption patterns, and investment
- historical and real-time data can help predict energy demand and optimize supply



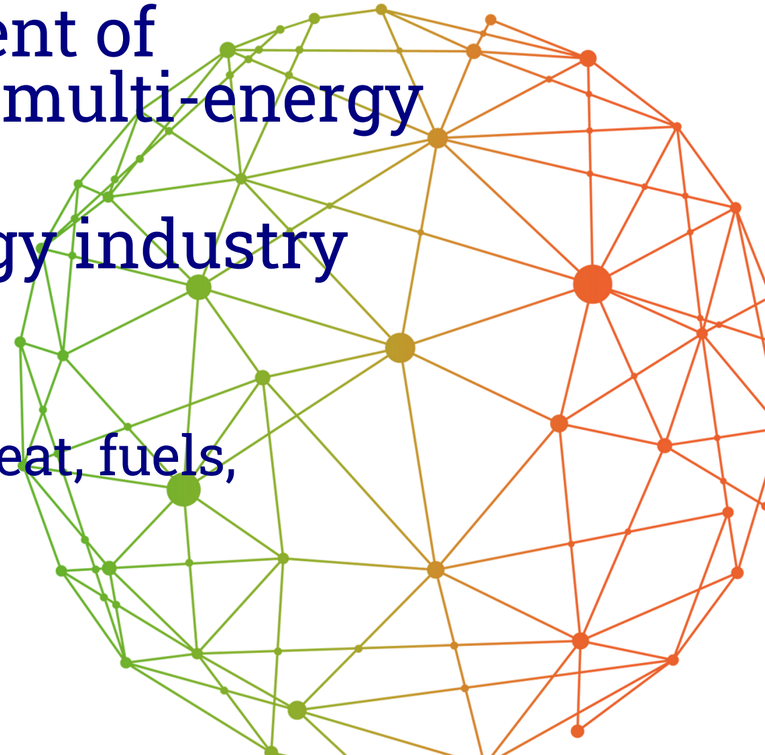
Data Space - Benefits for LECs

- facilitate programs that adjust energy consumption based on supply availability
- data-driven insights enable authorities to better design incentives, programs, and initiatives that promote energy efficiency and sustainability
- Optimized Energy Management - Demand Response Programs
- tools to monitor and evaluate local renewable energy resources
- educate residents about their energy use and foster a culture of sustainability and energy efficiency practices
- enhanced cybersecurity



Energy Poland - X

- support for system actors of the energy transition:
  - data on planned and current operation of CHP plants
  - data on energy communities
- support for energy communities
  - a platform for storing data needed for economically and energy-efficient community operations
- creation of a federated data space for the development of initiatives and specialized services for actors of the multi-energy system
- breaking down interoperability barriers in the energy industry both in relationships:
  - vertical (e.g., local energy communities - DSOs - TSOs)
  - horizontal (e.g., between different energy silos: electricity, heat, fuels, transportation)



Five federated services

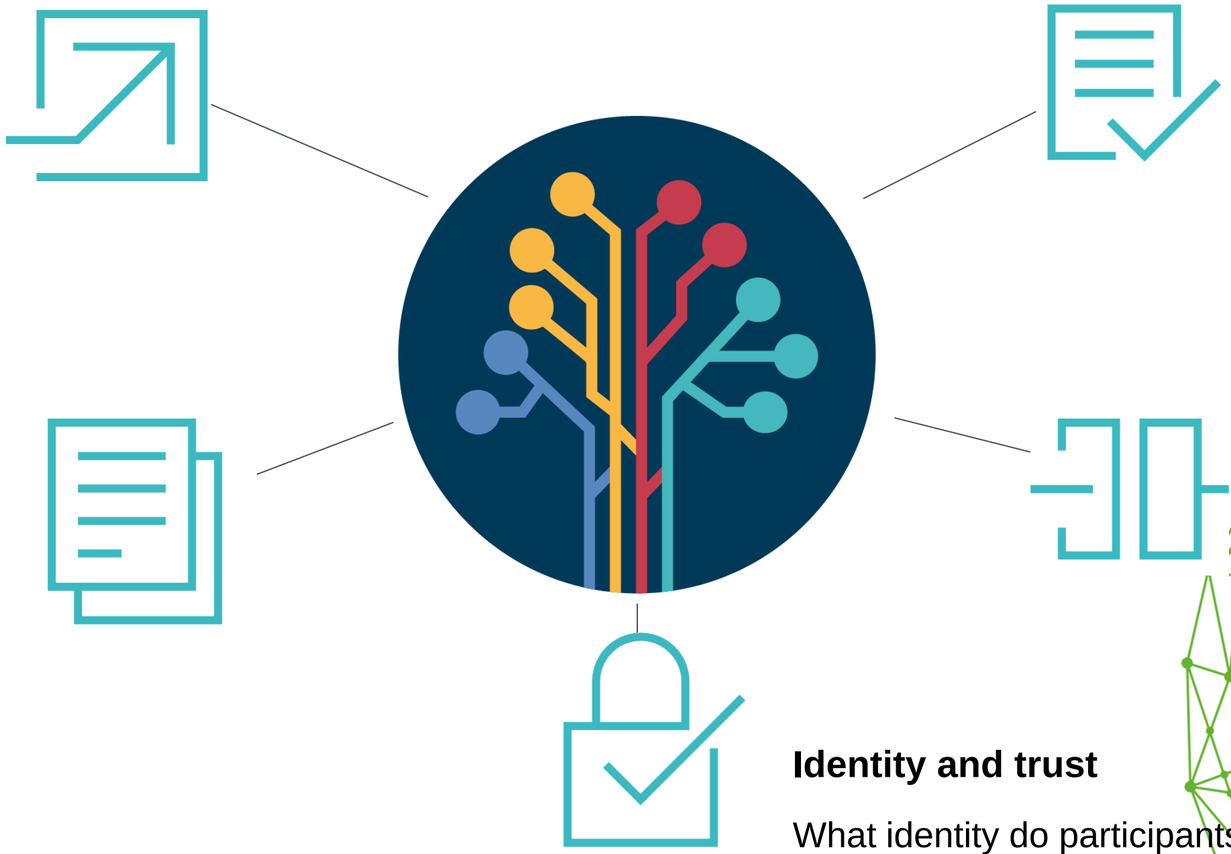
Energy data space

Data sovereignty service

Access to the data space that also implements rules about who can use what data and with what level of security, such as regulated network operators with different rights than a competitive energy service provider/distributor.

Compliance

What rules apply to data sharing, such as which data/services can be used by which participant, for what purpose, and for how long?



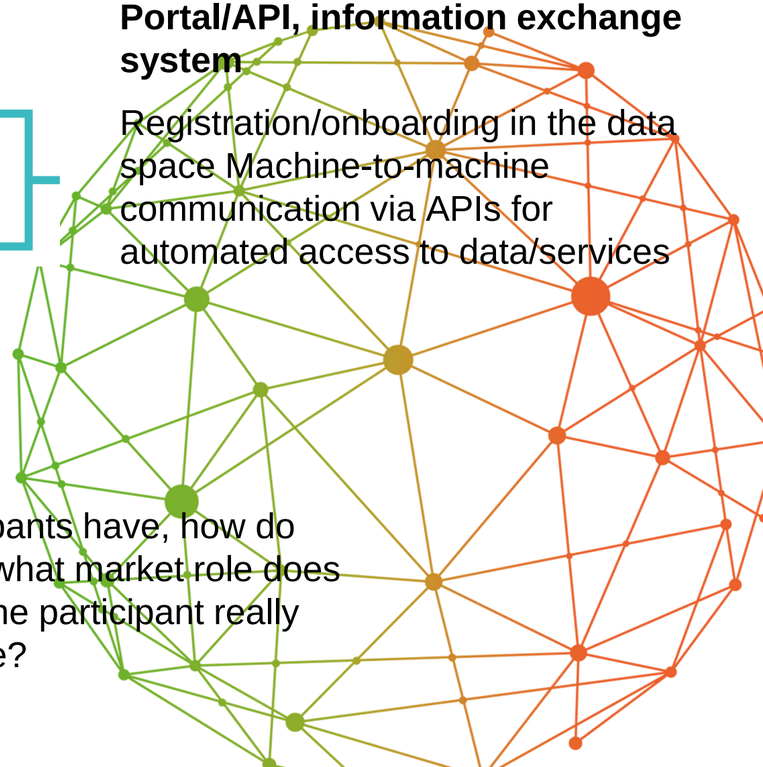
Service offering / federated directory

Description of the offered data/services according to the agreed data model.

Finding the data/services you are looking for using a catalog that describes the data and the level of detail.

Portal/API, information exchange system

Registration/onboarding in the data space Machine-to-machine communication via APIs for automated access to data/services

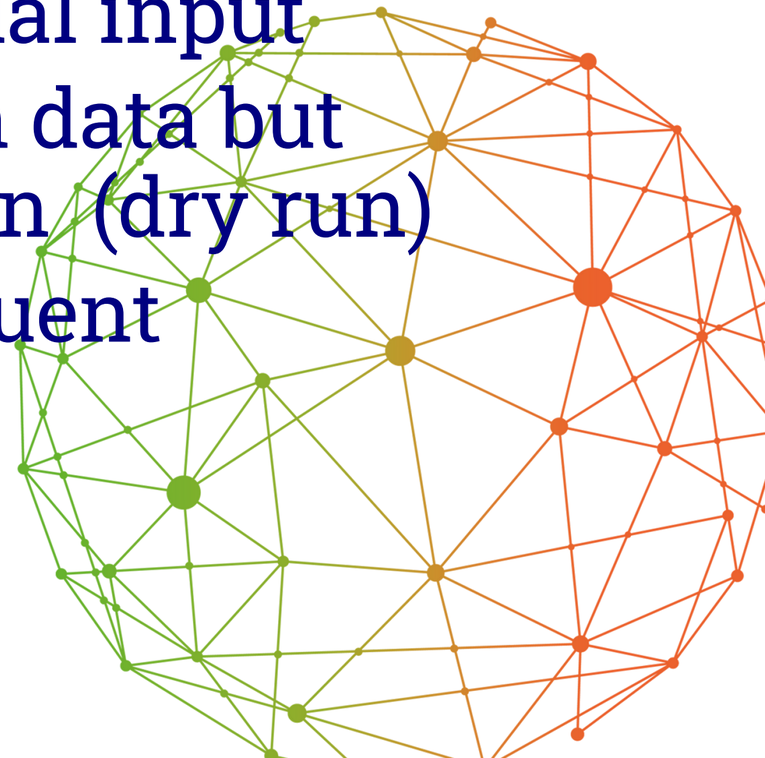


Identity and trust

What identity do participants have, how do they gain access, e.g., what market role does the participant play, is the participant really who he/she claims to be?

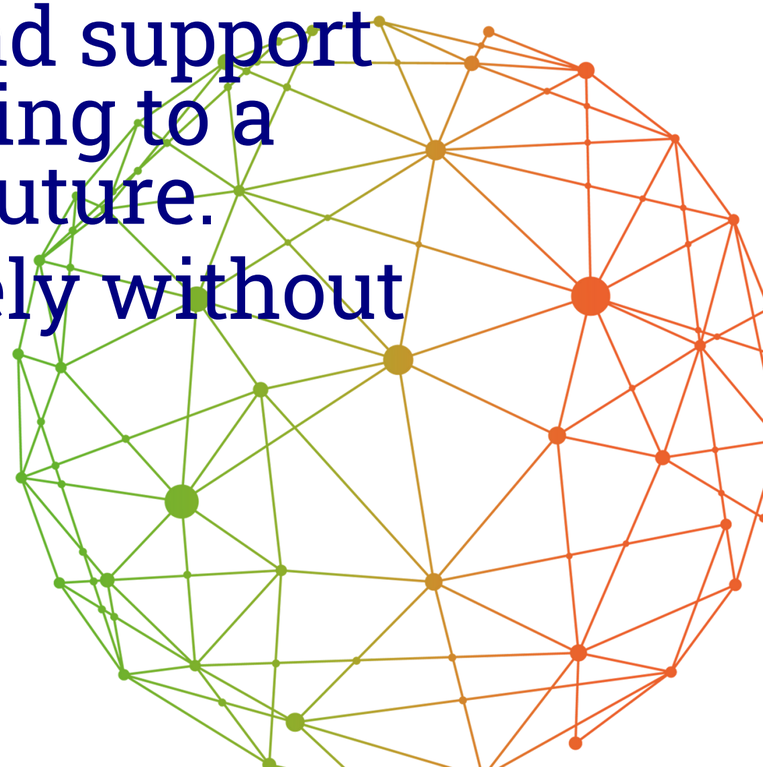
Next Steps

- preparation of optimal data model for local Energy communities needs
- building pilot data space in cooperation with a few selected local communities and DSO/TSO
- utilising existing accumulated data as initial input
- testing Data Space operation on production data but without interference with actual production (dry run)
- verification of data acquisition and subsequent utilisation practices

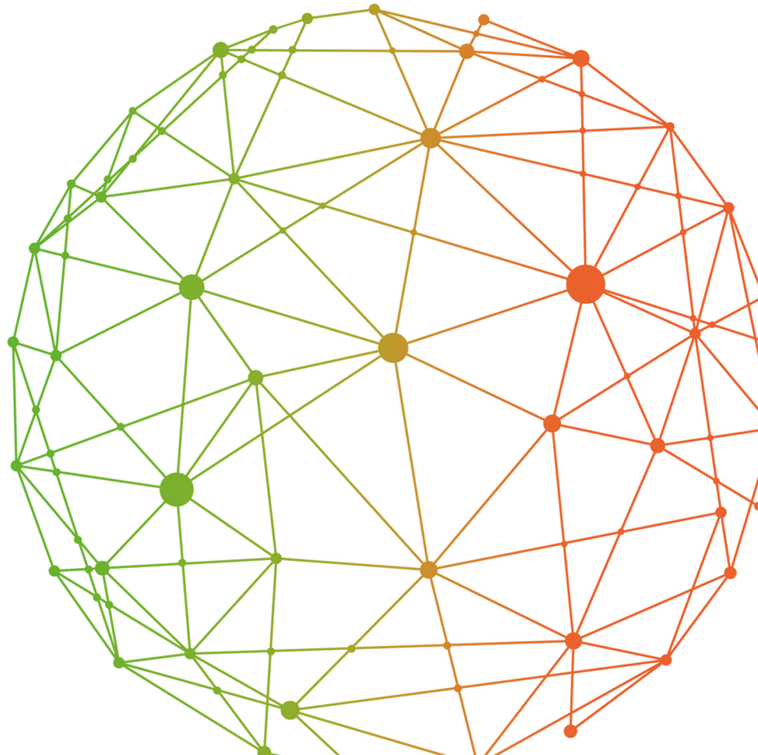


Conclusions

- Energy data spaces provide an invaluable framework for local energy communities, enabling collaboration, optimizing resources, and fostering sustainable practices.
- By leveraging data effectively, LECs can enhance their resilience, reduce their carbon footprint, and support their local economies, ultimately contributing to a decentralizing and democratizing energy future.
- LECs on their own cannot operate effectively without relevant data spaces.



Thank you!



Data Spaces Symposium

Keynote | Environmental / Green Deal Data Space - EC perspective

Sotirios Kanellopoulus – DG ENVI

Data Spaces Symposium

Keynote | Making the Green Deal a reality in Europe with data spaces

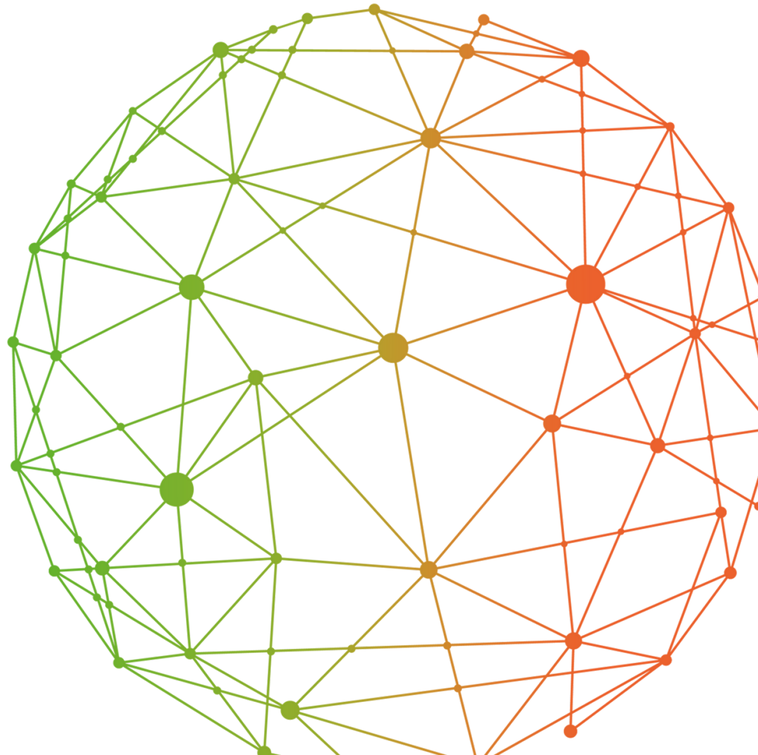
Richard Stevens

SAGE - The Green Deal Data Space

Making the Green Deal a reality in Europe with data spaces

Data Spaces Symposium 2025

Richard Stevens - IDC



DSBA ■ BDV BIG DATA VALUE ASSOCIATION FIWARE FOUNDATION gaia-x INTERNATIONAL DATA SPACES ASSOCIATION

DATA SPACES SUPPORT CENTRE

Funded by the European Union

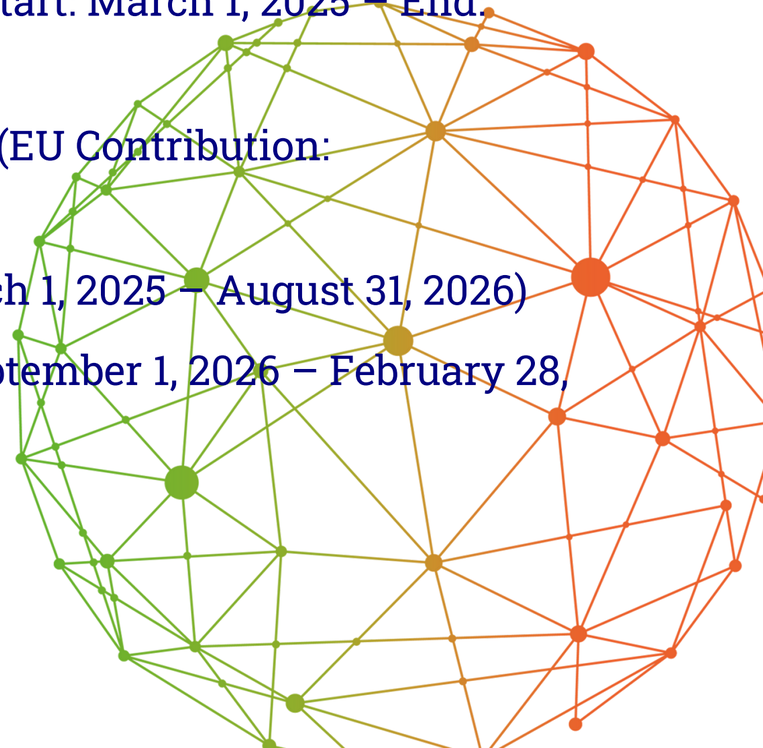
The Data Spaces Support Centre receives funding from the European Union Digital Europe Programme under grant agreement n° 101083412

Welcome to the SAGE era

The **SAGE** (Sustainable Green Europe Data Space) project is developing a **federated**, **secure**, and **interoperable data space** for the **Environment** to support the European **Green Deal**, building directly upon the GDDS **GREAT** project community and results. It integrates **high-value datasets**, establishes **governance** and **trust** frameworks, and demonstrates **10 pilot use cases** to foster data-driven sustainability solutions across **biodiversity**, **climate**, **circular economy**, and **pollution** monitoring.

Key Project Information

- **Call Number**: DIGITAL-2024-CLOUD-AI-06-GREENDEAL
- **Coordinator**: IDC Italy **Number of Partners**: 43 Beneficiaries
- **Duration**: 36 months (Start: March 1, 2025 – End: February 28, 2028)
- **Budget**: €29,746,326.36 (EU Contribution: €14,873,163.18)
- **Period 1**: M1-M18 (March 1, 2025 – August 31, 2026)
- **Period 2**: M19-M36 (September 1, 2026 – February 28, 2028)



Data enabling the European Green Deal

SAGE is building a trusted data-sharing framework to help EU policymakers, researchers, and industries use environmental data more effectively.

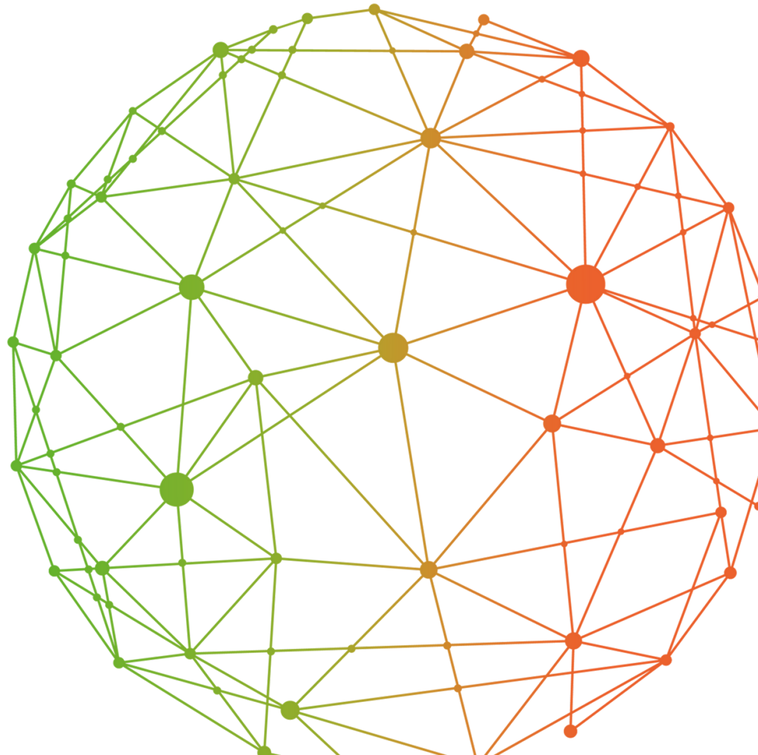
SAGE ensures **data-driven decision-making** for environmental policies, supporting **biodiversity conservation, pollution reduction, and the circular economy**.

Regulatory alignment: SAGE complies with key EU data regulations, including:

- **The Data Governance Act (DGA)** – Ensuring fair and transparent data sharing.
- **The Open Data Directive** – Promoting high-value datasets for public and private use.
- **INSPIRE and Copernicus programs** – Enhancing geospatial and environmental data accessibility.

Focus on Interoperability : SAGE is aligned with **Gaia-X, IDS,** European Open Science Cloud (**EOSC**) to ensure seamless cross-sector data exchange. We are collaborating and working with the **DSSC**

SAGE



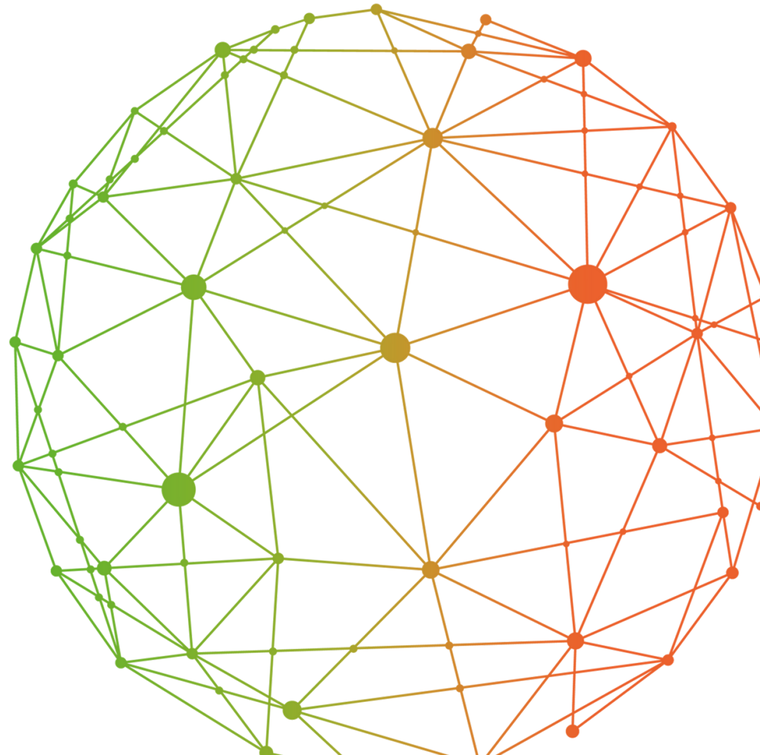
Concrete Objectives

Objective 1: Develop the Green Deal Data Space (GDDS) -create **a unified, secure, and scalable data infrastructure** to **connect stakeholders and facilitate data exchange** across sectors.

Objective 2: Implement 10 Pilot Use Cases to demonstrate **how interoperable data can drive sustainable solutions** in biodiversity, pollution monitoring, climate risk assessment, and circular economy.

Objective 3: Governance, Compliance, and Security A **legal and ethical framework** will be established to **ensure data privacy, sovereignty, and compliance with EU regulations** (e.g., GDPR, Data Act).

Objective 4: Long-Term Sustainability - Beyond technical development, SAGE will develop **economic models** to ensure the GDDS **remains financially viable beyond the funding period**.



SAGE - Showing it Work

Federated Data Discovery

- The technical approach involves federated data discovery, allowing access to data from multiple sources and platforms

GDPR-Compliant Identity and Access Management

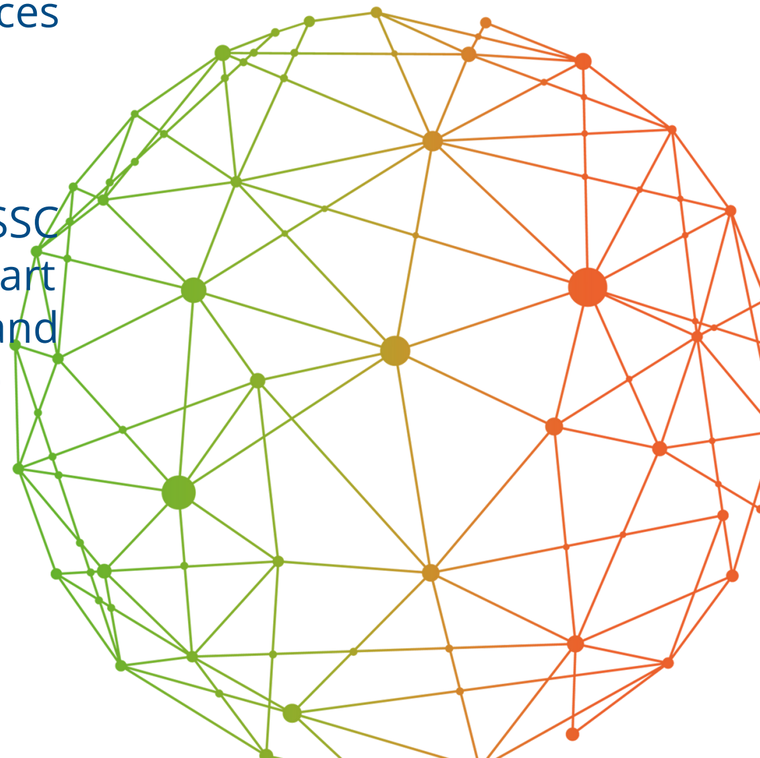
SAGE will implement GDPR-compliant identity and access management to ensure the secure and ethical handling of data.

Integration with European Data Spaces

SAGE will integrate with European data spaces such as EOSC (European Open Science Cloud), Copernicus, and DSSC (Data Space for Smart Cities) to leverage and contribute to these collaborative data ecosystems.

Pilot Use Cases

SAGE will pilot 10 use cases across key Green Deal priorities



Data Spaces Symposium

Panel discussion | Making the Green Deal a reality in Europe with data spaces

Thorsten Reitz, Carlos Mazo & Oscar Lazaro

FUTURE FOREST

FutureForest – KI für den Wald

Entstehungsgeschichte und Ergebnisse eines KI-Leuchtturmprojektes

SmartForest 2025, Freising

Thorsten Reitz, Founder/CEO wetransform GmbH

13.03.2025

Gefördert durch:

Bundesministerium
für Umwelt, Naturschutz, nukleare Sicherheit
und Verbraucherschutz

aufgrund eines Beschlusses
des Deutschen Bundestages

NTT DATA - UC9 Nature and ecosystem services trade-offs (NECST) assessment tool

The tool will digitize the analytical process of natural data and nature risks through AI, while integrating geospatial data into land planning models to address regulatory demands and strategic risks.

INNOVATION

STAKEHOLDERS

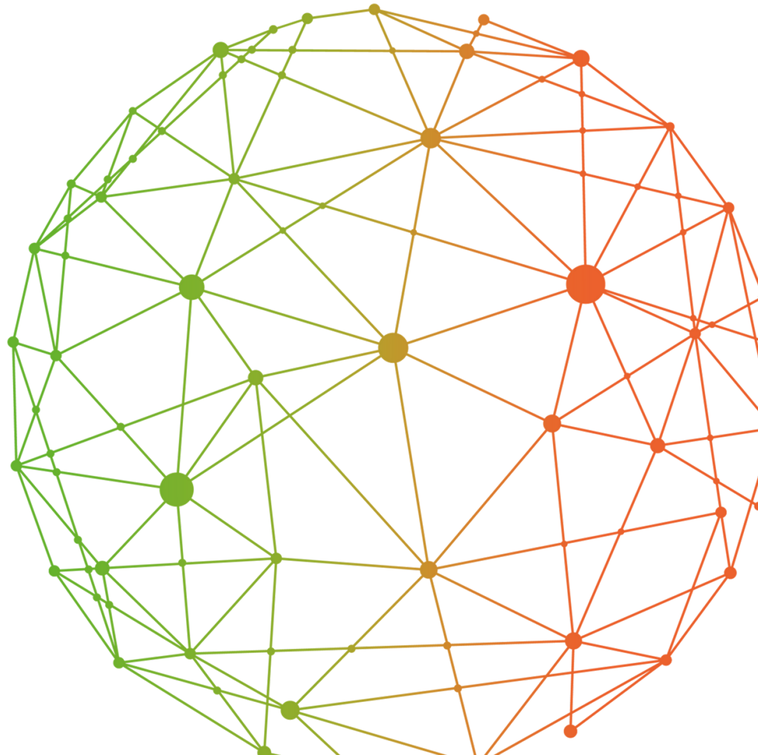
- Public agencies
- Private/Public organizations
- Citizens
- Policy makers
- Research institutions
- Tech providers

IMPACT

- **Impact 1**: Enhance space observation with new algorithms and data fusion to integrate emerging technologies.
- **Impact 2**: AI-based geoprocessing models detect and analyze changes in natural resources due to human pressures, to assess impacts on ecosystem services and socioeconomic development

ADAPTATION

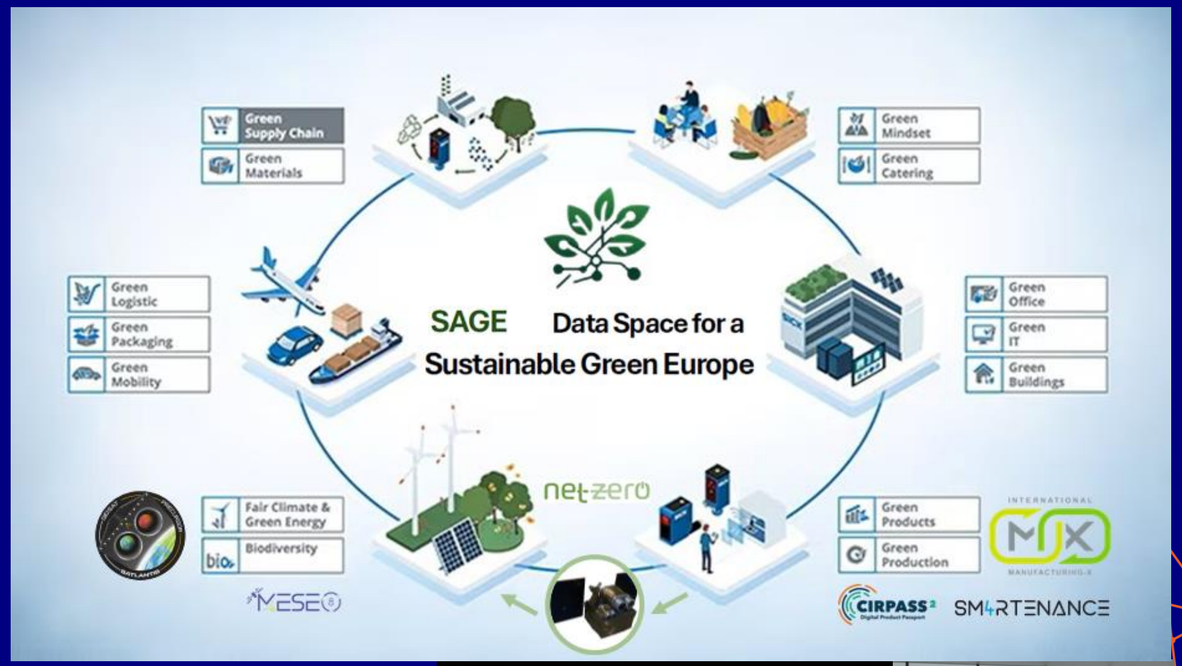
Allows a profitable and adaptive management of nature, ensuring the conservation of its value for society, the environment and the company or public administration



Net-Zero Zero Defect Manufacturing (ZDM)

Industrial Data Transparency

- ~10% of CO2 emissions from industry generated by own factories, ~90% by upstream/downstream supply chain
- ~ 96% of the ingredients of a battery are recyclable
- AI and data analytics can increase equipment efficiency by 60% and cut CO2 by 2.2 Tn over 20-25 years.
- Greener logistics can reduce emissions by 20-30%.
- Energy-efficient manufacturing can lower energy consumption by 15-30%.



Green Products & Production – Mfg DS

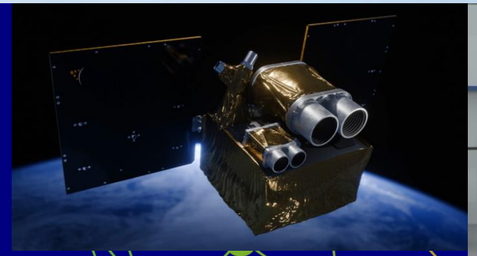
- ESPR/DPP, ESG Reporting.
- Low PCF & energy efficient circular manufacturing equipment

SM4RTENANCE, CIRPASS-2

Green Energy Industry & Climate – (E2E) EO DS

- GEISAT Precursor Copernicus Contribution Mission (CCM) .
- Detection and monitoring of methane emissions from the Oil & Gas industry.

MESEO, GEISA T.



Data Spaces Symposium

Integrating geospatial data standards in data spaces

Joan Maso Pau

Geospatial Standards Role in the Data Spaces

Integrating Geospatial Data Standards in the Data Spaces

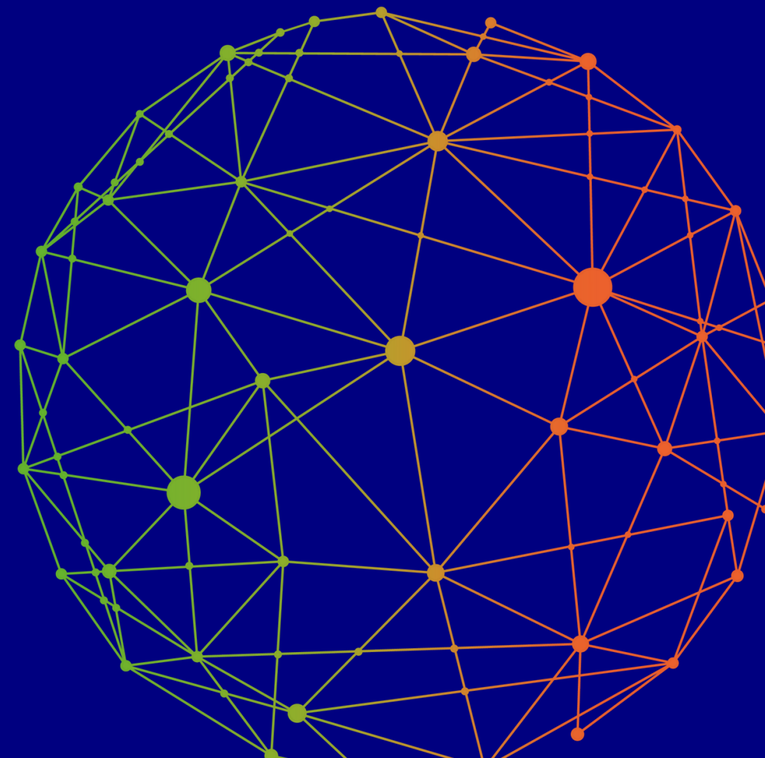
Data Spaces Symposium 2025

Joan Maso (CREAF)

AD4GD

DSBA ■ BDV BIG DATA VALUE ASSOCIATION FIWARE FOUNDATION gaia-x INTERNATIONAL DATA SPACES ASSOCIATION

DATA SPACES SUPPORT CENTRE



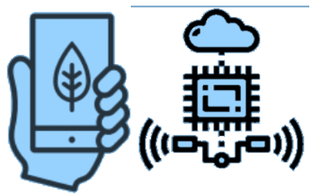
Funded by the European Union

The Data Spaces Support Centre receives funding from the European Union Digital Europe Programme under grant agreement n° 101083412

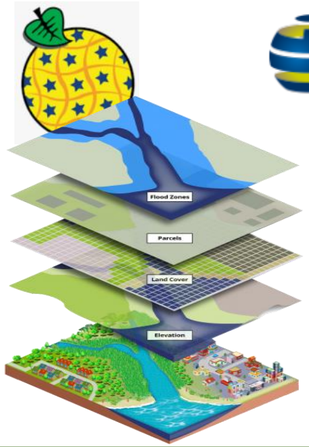
Geospatial data models and semantics

AD4GD

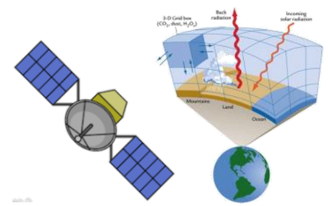
GeoNetwork opensource



Semantic tagging



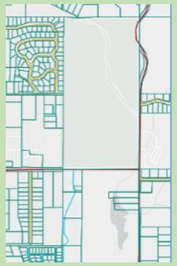
Dimension definition

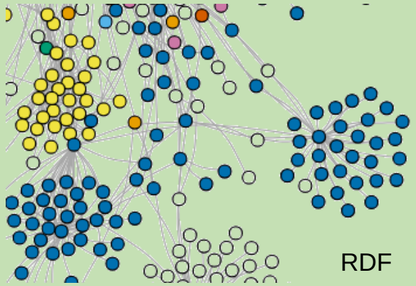


Original layers are no longer "visible"

GDDS

GDIM

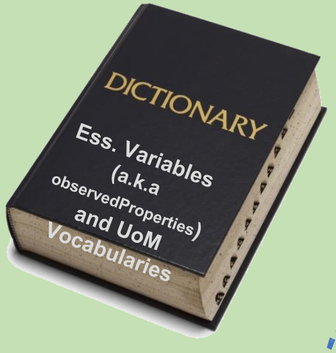




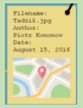
RDF

Representation of mainly object based

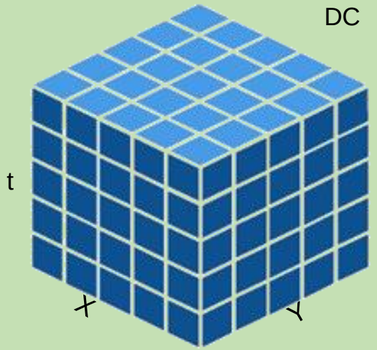
Features / STAplus / GeoSPARQL queries



"subLayer" extraction
(a.k.a collections)



DC



DC representation of mainly gridded based

Coverages, Xarray queries

Open access

OAuth

Contract validation

OGC web APIs

Open Geospatial Consortium

Features

Approved Standard

OGC API - Features - Part 1: Core and Part 2: Coordinate Reference Systems by Reference are both publicly available.

Coverages

OGC API - Coverages allows discovery, visualization and query of complex raster stacks and data cubes.

SensorThings

Approved Standard

The OGC SensorThings API provides an open, geospatial-enabled and unified way to interconnect Internet of Things (IoT) devices, data, and applications over the Web.

Tiles

Approved Standard

OGC API - Tiles provides extended functionality to other OGC API Standards to deliver vector tiles, map tiles, and other tiled data.

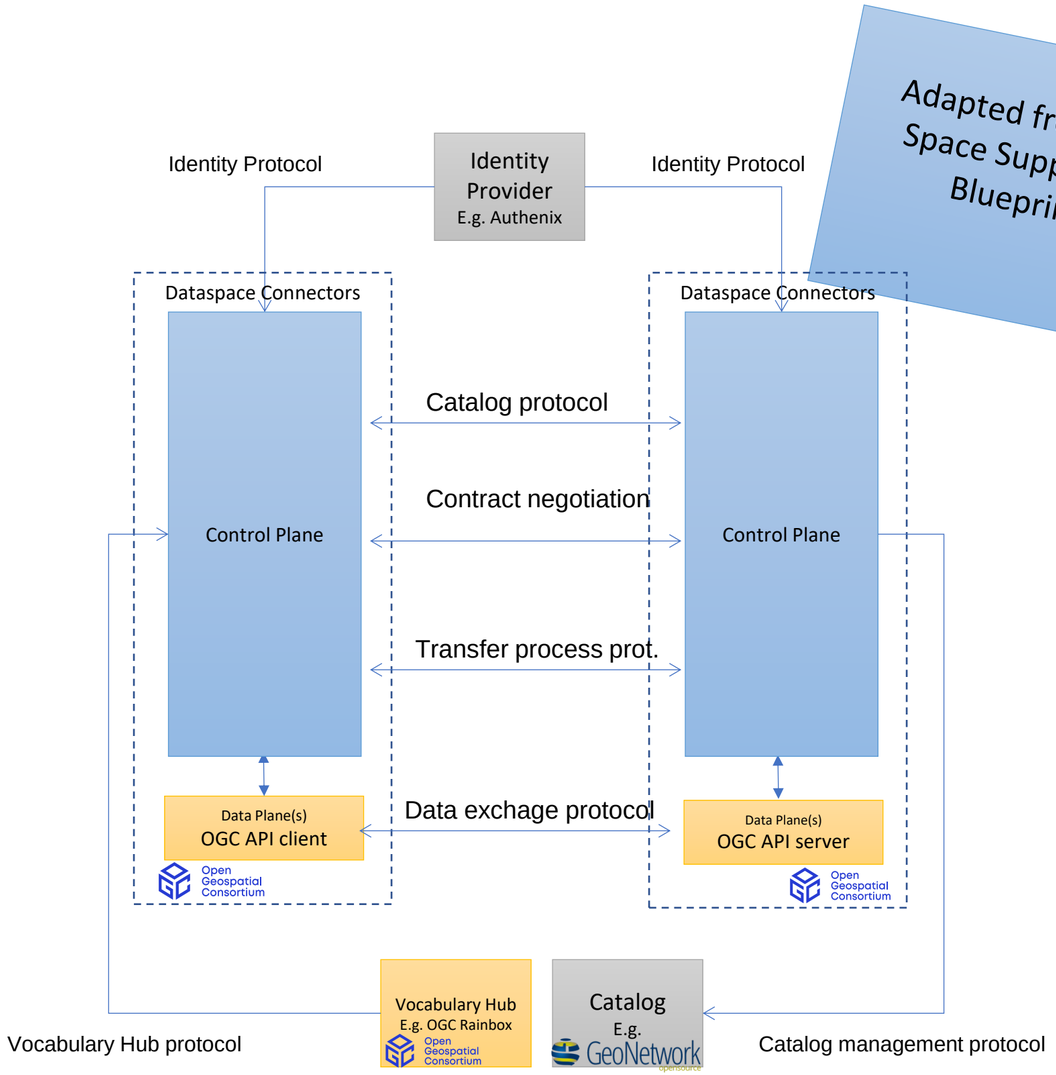
EDR

Approved Standard

Environmental Data Retrieval (EDR) API provides a family of lightweight interfaces to access Environmental Data resources. Each resource addressed by an EDR API maps to a defined query pattern.

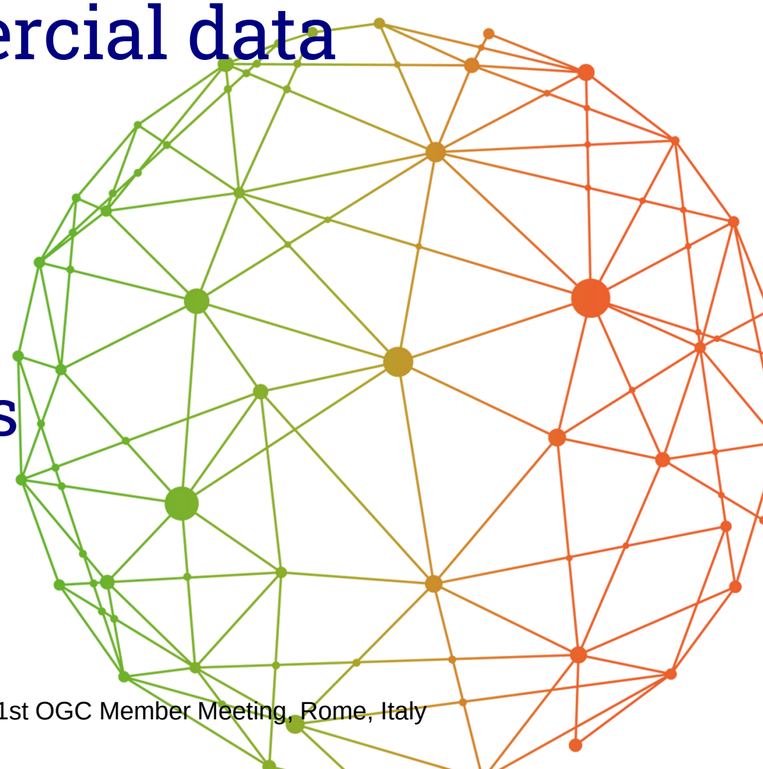
https://ogcapi.ogc.org/

OGC Standards and connectors



AD4GD demands to the Data Space Community

- Please consider the **geospatial** component and the OGC standards
- Please consider **dynamic data** services and **OGC APIs**.
  - In addition to data assets
- Please consider **research data** as well as commercial data
  - Public infrastructure and secure infrastructure
- Please consider **processing in** the data space
  - It is not the case and IMHO is one of the very few ways to ensure data sovereignty for data providers



Data Spaces Symposium

Closing and Q&A

Sonia Jiménez & Richard Stevens

Data Spaces Symposium

15:00

Break

Quick break, grab a coffee & relax.