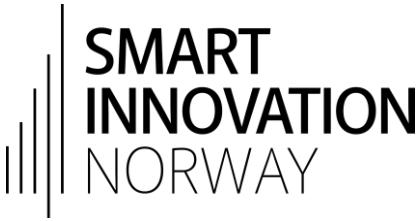
SYNERGY

Big Energy Data Value Creation within SYNergetic enERGY-as-a-service Applications through trusted multi-party data sharing over an AI big data analytics marketplace

HSBooster Webinar on AI Standardisation: Challenges & Opportunities AI Use Cases in Key Sectors
June 27th, 2024

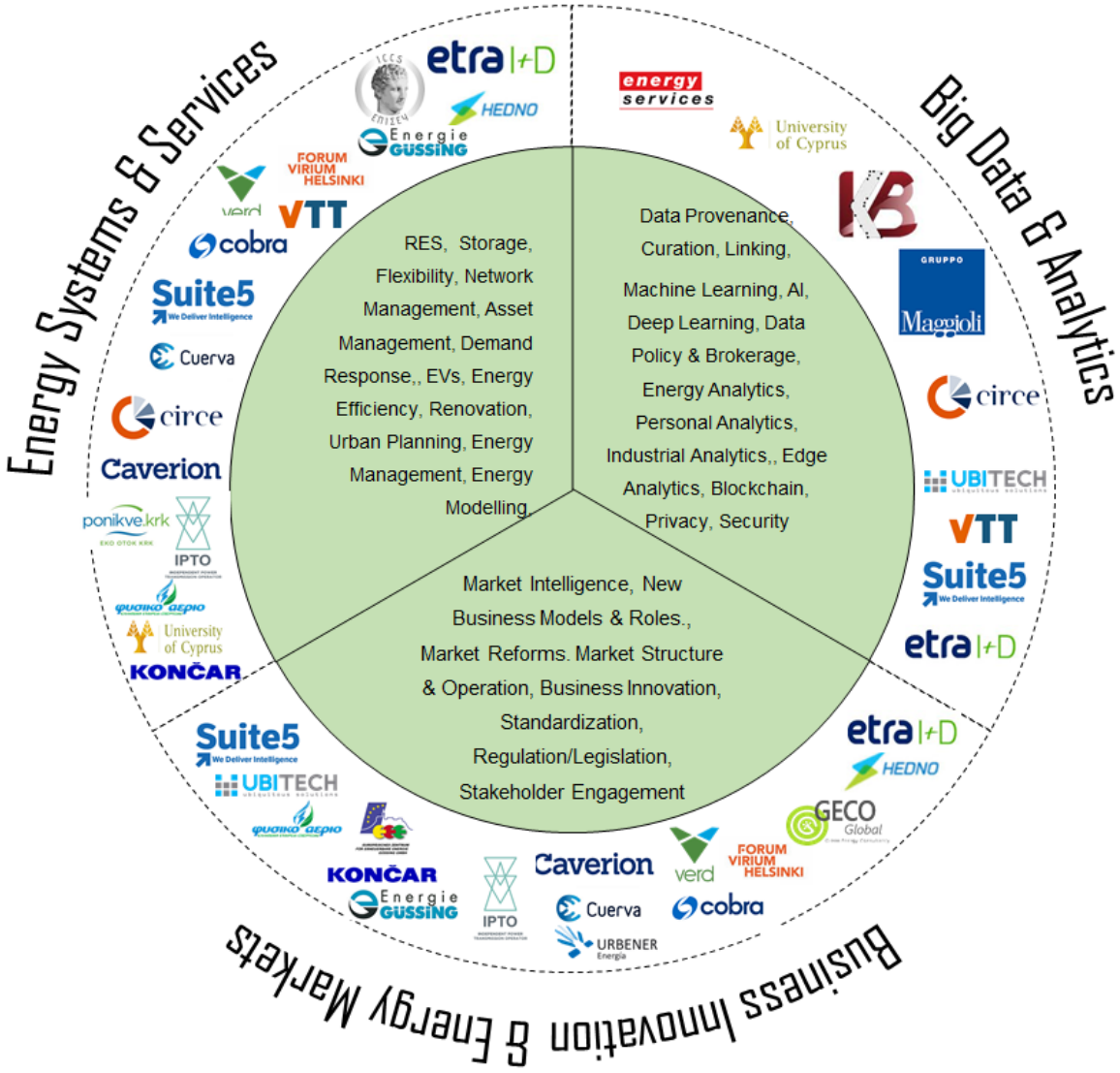
This project has received funding from the **European Union's Horizon 2020 Research** and **Innovation programme** under Grant Agreement No **872734**

THE SYNERGY PROJECT CONSORTIUM



PROJECT FACTS AND FIGURES

- Call: **DT-ICT-11-2019**
  - Big Data Solutions for Energy
- Coordinator: ETRA I+D (Spain)
- **24** partners, **9** EU countries
- Demonstration: **5** demos, **5** countries
- Total budget: **12,7** M€
- Total funding: **9,9** M€
- Start date: **01/01/2020**
- End date: **31/12/2023**
  - 48 months, **project completed**



CHALLENGES RECAP

1. To facilitate the **"end-to-end" coordination** between the electricity stakeholders, in data exchange and business terms.

2. To enable the **enhancement of electricity networks' stability and resilience**, while satisfying individual business process for in the value all stakeholders chain.

3. To help electricity stakeholders to simultaneously **enhance their data reach, while getting involved in novel data sharing/trading models**, in order to shift individual decision-making at a collective intelligence level.

4. To develop a highly effective **Big Energy Data Platform and AI Analytics Marketplace**, accompanied applications for the totality of electricity value chain stakeholders

A BIRD-EYE VIEW TO THE SYNERGY APPROACH

- ❑ Increase own data quality
- ❑ Control access over own data
- ❑ Acquire access to other data "assets" through smart contracts
- ❑ Run analytics pipelines over own and acquired data

SYNERGY Energy Apps

- Create smart contracts for data "assets" owned by different stakeholders
- Retrieve data via customizable APIs

Upload app data

- Run analytics pipelines on demand / according to schedule / event-based
- Retrieve results via customizable APIs

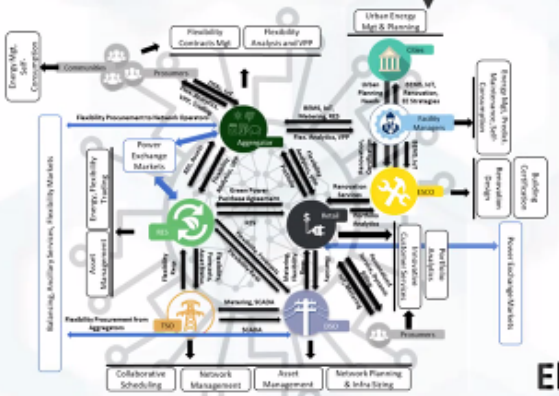
SYNERGY Big Data Platform & AI Marketplace

❑ Data Check-in Pipelines (executed once / according to schedule / at real-time)

Data Gathering

Data Generation / Discovery

Business-Generated Data *Human-Generated Data* *Machine-Generated Data*



Electricity Data Value Chain Stakeholders

KEY INNOVATIONS AND VALUE PROPOSITION

A **holistic data platform:** secure data management ensuring data ingestion, harmonization, quality, interoperability, exploration, analytics and sharing.

A **unique one-stop-shop** for the discovery and acquisition of data (and models!) in and for the electricity data value chain

An **ecosystem building environment** enabling the development of new services and innovative applications (beyond the duration of the project!)

SYNERGY

INTERNATIONAL PRESENCE AND LIAISONS

bridge HORIZON 2020

ETIP SNET
EUROPEAN TECHNOLOGY AND INNOVATION PLATFORM
SMART NETWORKS FOR ENERGY TRANSITION

PLATOON

BDV BIG DATA VALUE ASSOCIATION

BD4OPEM

EUROPEAN BIG DATA VALUE FORUM
25-27 OCTOBER | VALENCIA - SPAIN

Enlit Europe

BD4NRG
Big Data for Next Generation Energy

OPENDEI

SUSTAINABLE PLACES 2023

BEYOND THE CONSORTIUM:
SYNERGY OPEN CALL

1. SYNERGY Open call prepared and launched

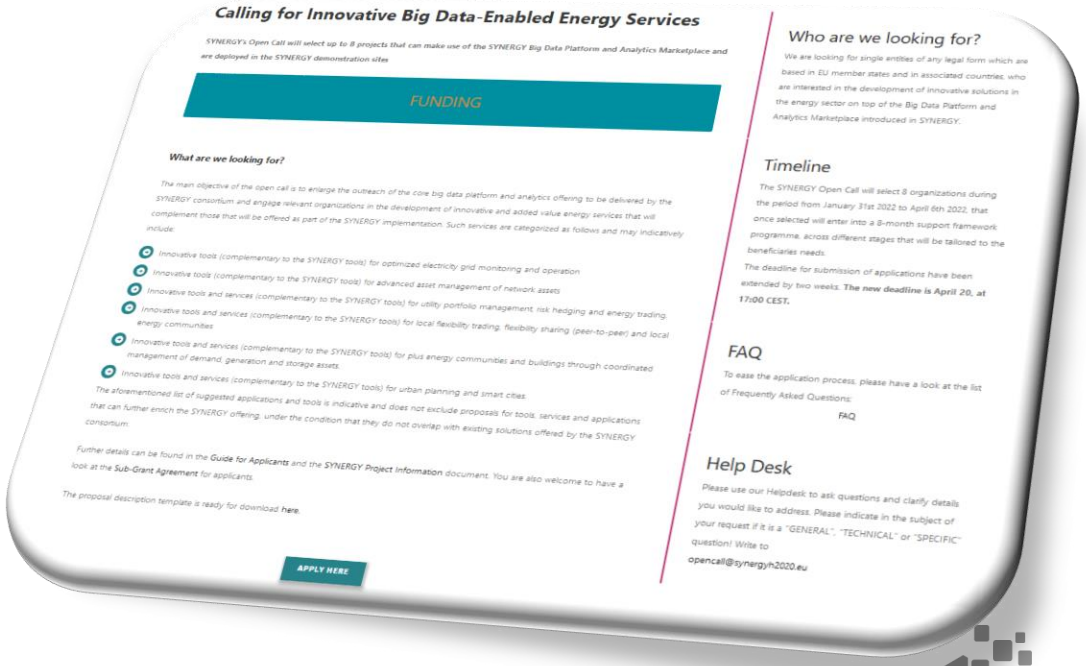
2. **5** Applicants awarded

3. **3 Sprints** to complete activities

4. Constant **technical** and **administrative** support to applicants

5. **Internal** and **external** dissemination

6. Open call Payment and Completion

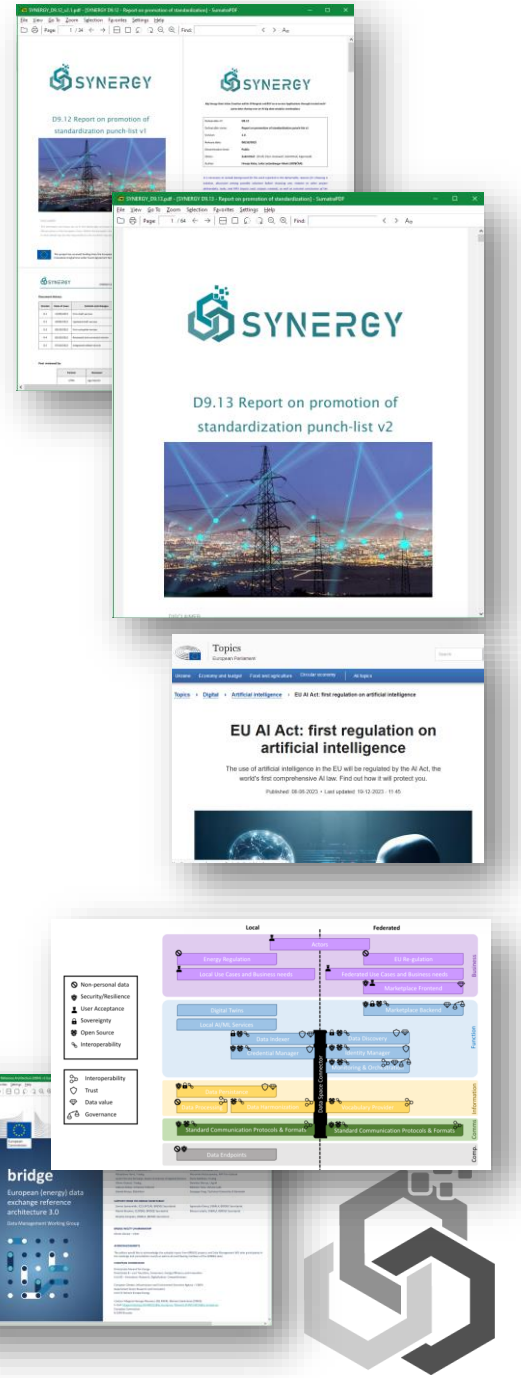


STANDARDIZATION DELIVERIES

- Publicly available **D9.12** and **D9.13 reports** (M33 and M48)
  - **First version** and **updated version** of the standardization reports
    - Standardization landscape and corresponding contributions

- The updated deliverable paid specific attention to **2023 EU-level acts and developments**
    - **The development of these coincided with the project completion**
    - Compared to 2019, the situation is **homogenizing…**
    - … but we still clearly need standardization and regulatory push!

    - Plan on Digitalising the Energy System
    - The **EU Data Act** and the **EU AI Act**
    - The BRIDGE **DERA v3.0** (European Energy Data Exchange Reference Architecture)
    - The **Implementation Regulation 2023/1162** on **Interoperability Requirements**
      - Particularly relevant: unlocks near real time measurement data from metering service operators
      - Once implemented, reduces many of the pain points felt during the SYNERGY execution!



STANDARDIZATION TAKEAWAYS

- **Two main axes of project standardization contribution:**
  - The SYNERGY **reference architecture**
    - and within it, primarily from the SYNERGY CIM
  - The SYNERGY **practical implementation**
    - The **five pilots,** the **21 demo cases,** and the experiences gathered through their execution

- The SYNERGY **reference architecture** underpins the platform and all the apps
  - **SYNERGY Common Information Model**:
    - Beyond just the static **model:** it includes the model **maintenance** and **perpetuation** procedures!
    - Maintaining the data model responsible for big-data scale is non-trivial, and it must be able to evolve over time
    - The model permits the SYNERGY solutions to interact with multifaceted, multi-layered and interspersed established standards
    - This model (*and* its diligent application in the platform) is what ties the world of big data with the world of electricity!
      - Respects **established** electricity data **standards**
      - Handles **big data scale** well
      - Includes **lifecycle management** procedures!

- Proper **semantic interoperability** is *crucial*
  - Contributions provided back to IEC CIM via the Users group to modernize the IEC CIM (IEC 61968/61970)
    - New developments related to **model governance**, **modeling lifecycle procedures**, big data handling capabilities, serialization updates…
  - Beyond just **data** exchange: (pre)trained AI **models** are considered assets too
    - This allows reusing the pretrained models - widens the scope of impact of the models
    - Ensure the data usage restrictions imposed by the owner are respected properly
    - All requirements of the data **interoperability** and **sovereignty** are **applicable to the models as well**!

STANDARDIZATION TAKEAWAYS (2/2)

- Standardization also driven by the **project implementation** experiences
  - The **situation** across the five pilot countries is very **uneven**
    - Diverse landscapes and environments across the five pilots raised diverse sets of challenges
  - A takeaway common to **all** pilots, *regardless* of the maturity:
    We must ensure (full) **interoperability** and maintain **sovereignty**
    - Collaborative approach towards existing systems means respecting established standards
    - Somewhat underestimated challenge is getting the data out of data-captive opaque solutions
      - So-called walled data gardens are a challenge common to all pilots
      - In many cases, existing proprietary solutions had to be amended or even replaced (!)
        - You have the data, but are unable to access and take advantage of it…
        - There are technical and legal (!) dark patterns that make open access challenging
      - Essentially: we should **not** widen the divide between „haves" and „have nots" **and this needs further push from the relevant bodies!**
    - **Openness, traceability, security, sovereignty**: these become ***more*** significant when we go beyond the data and consider the AI models as well
  - A moving target: the landscape **changes** very **significantly** and very **dynamically!**
    - The project efforts are already embedded in different documents, acts and proposals…
    - … these **efforts live on**, through several Horizon Europe proposals and ongoing projects that have stemmed from this project

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