Artificial Intelligence for Next Generation Energy

**I-NERGY**

- Started: 01/01/2021
- Duration: 36 Months

Coordinator: Institute of Communication and Computer Systems (ICCS)

European Union’s **Horizon 2020** Research and Innovation Programme

- Budget: 4,999,844.50 €
- Grant Agreement Number: 101016508

**ICT-49-2020** Artificial Intelligence on demand platform
17 partners from 9 Countries

7 Leading Research & Academy Institutions, SMEs and Large ICT companies - With leading expertise on AI, ICT and Data in the energy sector

Funding box - cascade funding to start-ups and SMEs

9 EPES stakeholders covering the full energy value chain:
- Power network operators, including TSO and DSO
- Energy suppliers
- Aggregator/Energy Cooperative
- Power market actors
- ESCOs
- Financing institutions, energy agency and policy makers
Motivation (1/2)

Artificial Intelligence is bound to revolutionise the Energy Sector

- Fast and accurate forecasts
- Demand / Supply predictions
- Grid flexibility
- Optimised maintenance
- Optimal operation
AI proliferation in the energy sector holds the premise for a larger environmental and social impact

- Decentralisation, Democratisation Digitalisation of energy
- Environmental sustainability
- Alleviating energy poverty
- Fighting climate change and environmental degradation
Challenges to be addressed

● EPES Community
  o Lack of appropriate tools for capturing the real time dynamics
  o Scarcity of and competition for AI experts
  o Need for knowledge transfer to and for training AI in new contexts

● @ Application Level
  o Lack of holistic view of how AI techniques can be integrated from the energy system perspective
  o Lack of a cross-stakeholder coordination perspective
  o Fear of AI and potential misuse

● @ ML Models Level
  o Lack of system-level data models (going well beyond the asset-level models)

● @ Data Services Level
  o Existence of consolidated functional / organisational silos combined with lack of semantic and business interoperability across data stream providers
Deliver an energy-specific open modular framework for supporting AI-on-Demand in the energy sector (AI4 Energy)

Based on state-of-the-art AI and Data technologies

**Energy Commodities Networks:** AI for energy networks optimised operation

**Distributed Energy Resources:** AI for RES generation, buildings, districts, communities

**Energy Efficiency and Non-energy related Services:** AI enabling synergies / implications on other energy and non-energy domains
... and Objectives

01. Reinforce the service layer of the AI-on-demand-platform:

01.1 **Strengthen European-wise Research and Innovation on AI** through synchronising, liaising, contributing and extending the AI4EU Platform service and research across a variety of cross-fertilisation activities, which bring AI4 Energy vertical center stage.

01.2 **Deliver** a TRL 7 DLT/blockchain/smart contract-based implementation of an energy data decentralised governance technological enabler.

01.3 Adapt, evolve, upscale and deploy a TRL 7 technology enabler for advanced AI-based data management, learning and analytics, and **deploy the I-NERGY Energy Analytics Applications** along different deployment modes, ranging from experimental on-premise sandboxes to AI-as-a-Service (AlaaS) Energy Analytics operation.

02. Reach out to new user domains and boosting the use of the platform through use cases and small-scale experiments:

02.1 **Validate** the I-NERGY analytics by developing a variety of near real time edge-level AI-based descriptive, predictive and prescriptive analytics, along a number of cross-function, cross-stakeholders, cross-domain piloted applications.

02.2 Lay the foundation for pan European AI for energy ecosystem, boosting EU-scale data economy and use cases experiments by leveraging on systematic community-building and financing support to innovative technology/solution provider from EPES community.
AI4EU is a one-stop-shop for anyone looking for AI knowledge, technology, tools, services and experts.

**AI4EU Energy**
Proliferate AI4EU platform with AI and resources for the Energy Sector

**Assets**
- Open Calls
- Project assets tested on real pilot cases

- **AI Catalogue**
  - I-NERGY section

- **AI4EU Experiments**

- **AI as a Service (AIaaS) APIs**

- **I-NERGY Applications / Dashboards**

- **Code / Library / Notebook / Docker**

- **Documentation**

- **Datasets**

- **ML Models**
The overall I-NERGY service analytics framework is applied, implemented, demonstrated and validated in real life pilots in:

- 9 pilot hubs (15 use cases)
- across 8 countries
Open Calls

- **2 M€** Financial Support to Third Parties (FSTP)
- Technical Mentoring

<table>
<thead>
<tr>
<th></th>
<th>TECHNOLOGY TRANSFER PROGRAMME I</th>
<th>TECHNOLOGY TRANSFER PROGRAMME II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CALL LAUNCH</strong></td>
<td>NOV 2021 - JAN 2022</td>
<td>OCT - NOV 2022</td>
</tr>
<tr>
<td><strong>WHO CAN APPLY</strong></td>
<td>SMEs Including Startups</td>
<td>SMEs, Startups, EPES beneficiaries, research institutions, other relevant stakeholders (At least 2 organizations per bottom-up project are required)</td>
</tr>
<tr>
<td><strong>SCOPE</strong></td>
<td>Building blocks for new AI algorithms / services and small-scale experiments (prototypes)</td>
<td>Developing new services on top of existing technologies (MVPs)</td>
</tr>
<tr>
<td><strong>DURATION OF SUPPORT PROGRAM</strong></td>
<td>6 months</td>
<td>9 months</td>
</tr>
<tr>
<td><strong>BOTTOM-UP PROJECTS</strong></td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>
I-NERGY will run along an overall duration of 36 months, encompassing 7 Work Packages (WP)
Thank you!

The I-ENERGY project has received funding from the European Union’s Horizon 2020 Research and Innovation programme under grant agreement No 101016508

@inergy_h2020  I-NERGY Project  contact@i-nergy.eu  www.i-nergy.eu