FLEXI

Human-centered AI and Digital Twin powered energy system integration for flexibility markets

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Project scope

• Problems addressed

Key system challenge the project aims to solve (3 main ones).

1. Low Engagement and Limited Insight into Energy Usage Patterns
2. Fragmented Energy Systems
3. Inefficient Flexibility Utilization and Market Barriers

• Solutions

Category of solutions for each problem.

1. KER1: LLM-driven Energy Assistant
2. KER2: Federated Digital Twins for energy system integration
3. KER3: Flexibility-as-a-Service business model – Flexibility bank

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KERs and target need-owners

• Key Exploitable Results (KERs)

Main project outcomes with clear potential for uptake, exploitation and impact (3 main ones).

1. LLM-driven Energy Assistant for resource owners
2. Federated Digital Twins for energy system integration
3. Flexibility-as-a-Service business model

• Need-owners

Key actors and stakeholders whose needs are addressed by the KERs and who enable adoption and impact.

1. *Research, Government, Civil Society*: Scientific community, citizens, policy makers, DSOs, ESCOs (UBI, SIE, OEDAS)
2. *Industry, Research*: Industrial innovators, technology providers, aggregators (SIE, FENR, CW)
3. *Industry, Research*: Aggregators, TSOs, DSOs (CW, OEDAS, MEPSO, MEMO)

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Pathway from readiness to impact

Technological Readiness (TRL): Level of technical maturity and validation of the solution.

Societal Readiness (SRL): Degree of acceptance, stakeholder engagement and fit with societal needs

Market / Commercial Readiness (MCRL: Preparedness for market uptake, business viability and scalability.

Evidence of Validation: Concrete proof (tests, pilots, stakeholder actions, analyses) supporting the claimed readiness level~~s~~.

• RL evolution

	Start	End
Technological (TRL)	3	4
Societal (SRL)	1-2	3-4
Market / Commercial (MCRL)	1-2	3

• Evidence of Validation

- What supports the TRL, SRL and MCRL?

- 2 living labs (FENR and SIEMENS) and 4 UCs
- Surveys/workshops (SRL3) and user acceptance testing (SRL4)
- Detailed market surveys

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