



InEEExS – Innovative Energy (Efficiency) Service Models for Sector Integration via Blockchain

EU Projects Clustering event: Smart Energy Services

Filippos Anagnostopoulos, IEECP
Project Coordinator

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InEExS

Project name	Innovative Energy (Efficiency) Service Models for Sector Integration via Blockchain	<ul style="list-style-type: none">IEECP (COO) - The Institute for European Energy and Climate PolicyNTUA - National Technical University of Athens, HERON, DOMXBeA - Berlin Energy Agency, OFFISESCAN, ENERCOOP, GEA, Verdia LegalINLECOMEnergy WebHIVEN
Topic	LIFE-2021-CET-SMARTSERV	
Duration	November 2022 – October 2025	
Partners	12 Organizations: a utilities, an energy agencies, an energy cooperatives, technology providers, university labs and research institutes	
Grant	1.94M EUR	

⚡ InEExS – in summary

The core concept of InEExS is the deployment of integrated energy services across sectors and carriers, and the tokenisation of energy saving data in a public blockchain to facilitate cooperation among market segments and actors.

InEExS improves the implementation of Energy Efficiency Directive (EED) Article 7 /Article 8 by supporting Obligated Parties to provide integrated service offers that enable energy savings, system efficiency and include non-energy benefits.



Objectives



conceptualise and develop business models and contractual schemes for integrated and sustainable energy service offers

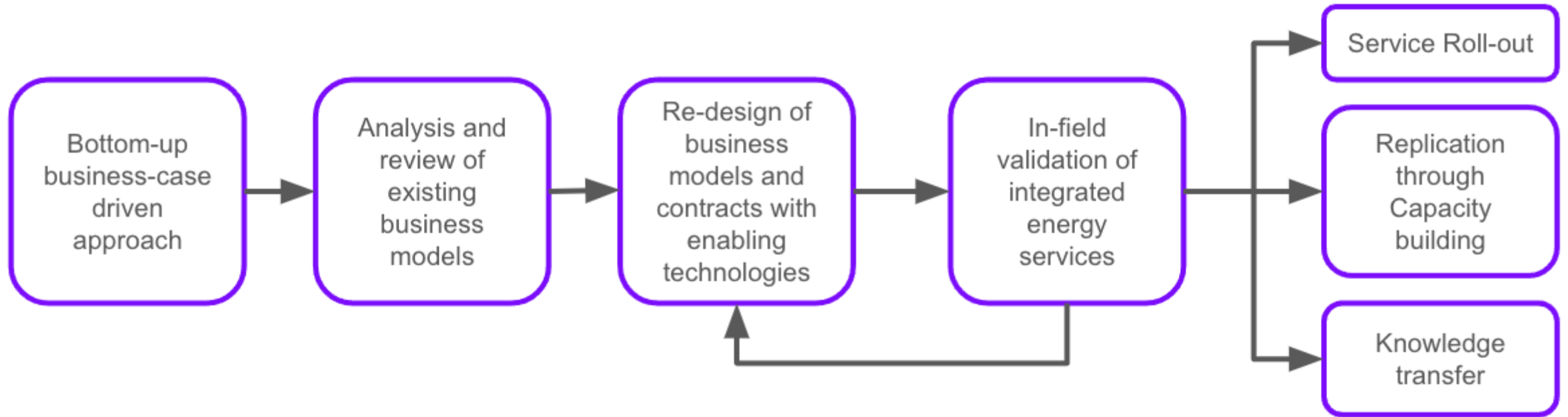


deploy, assess and validate the use of innovative technologies as enablers of integrated services across sectors.



roll out and replicate smart energy services

⚡ Intervention logic





5 Business cases

InEExS is testing five innovative services, their business models and contracts, and linking them through metered energy savings and a blockchain platform

Energy Performance Contracting with Pay4Performance guarantees (Berlin, Germany)

Improved self-consumption of distributed energy resources in Energy Cooperatives (Crevillent, Spain)

Energy efficiency and flexibility services for legacy natural gas boilers (5 Greek cities: Athens, Thessaloniki, Larisa, Trikala, Volos)

Smart energy management for EV chargers and electricity-based HVAC appliances (location to be confirmed)

Decentralized Energy Efficiency Power Plant (DEEPP) (conceptual)



Energy Performance Contracting with Pay4Performance guarantees

Area: <ul style="list-style-type: none">Berlin, Germany	Stakeholders: <ul style="list-style-type: none">Berlin Energy agencyReal estate company (berlinovo)ESCO (TBD through public tender)
Participants: <ul style="list-style-type: none">2 publicly owned big blocks of residential apartments	Customer portfolio: <ul style="list-style-type: none">berlinovo manages the portfolio of 22 real estate funds with 246 properties (99.5% state owned)
Smart services: <ul style="list-style-type: none">EPC contracts with Pay4Performance guarantees based on metered savingsEnergy efficiency upgrade of electricity-based HVAC systems	Infrastructure: <ul style="list-style-type: none">Smart metersDistributed PVs and batteriesHeat-pumpsEV chargers
Potential DLT platform usage: <ul style="list-style-type: none">EED EEOs: Automated quantification and verification of energy savings for alternative measuresSmart EPC contracts with Pay4Performance guarantees, where all payments among engaged parties (ESCO, Owner, etc.) are linked to metered savings	



Improved self-consumption of distributed energy resources in Energy Cooperatives

Area: <ul style="list-style-type: none">• Crevillent, Spain	Stakeholders: <ul style="list-style-type: none">• ENERCOOP: Energy Cooperative, Supplier, DSO and consumers
Participants: <ul style="list-style-type: none">• 65 households of ENERCOOP members	Customer portfolio: <ul style="list-style-type: none">• >15.000 consumption points of ENERCOOP
Smart services: <ul style="list-style-type: none">• Shared PV without upfront investment for members of the cooperative• ToU tariffs to encourage consumers to increase self-consumption• Energy advisory program with behavioural interventions through the smartphone application to encourage consumers to use electricity when it is cheap	Infrastructure: <ul style="list-style-type: none">• Smart meters and smartphone application for all community members• Existing Collective PV of 100 kW and expansion of additional 100 kW under development• 4 EV chargers and small battery storage (242 kWh)
Potential DLT platform usage: <ul style="list-style-type: none">• Smart contracts to increase transparency of energy bills and to self-consumption• Smart Pay4Performance contracts for end consumers based on achieved energy efficiency• Energy tokens to incentivize community members to increase self-consumption,• Article 7: Automated quantification and verification of energy savings for the contribution of RECs in both EEOS and alternative measures	



Energy efficiency and flexibility services for legacy natural gas boilers

Area: <ul style="list-style-type: none">• 5 main Greek cities (Athens, Thessaloniki, Larisa, Trikala, Volos)	Stakeholders: <ul style="list-style-type: none">• Energy supplier (HERON)• Technology developer (domX)
Participants: <ul style="list-style-type: none">• 20 retail HERON consumers with legacy natural gas boilers and electrical white goods	Customer portfolio: <ul style="list-style-type: none">• >20.000 retail natural gas consumers of HERON
Smart services: <ul style="list-style-type: none">• Energy efficiency improvement (up to 35%) for space heating scenarios based on real-time weather data and forecasts• Real-time flexibility offered to the supplier by respecting user comfort limits• Remote boiler fault detection, maintenance and technical support	Infrastructure: <ul style="list-style-type: none">• Smart IoT controller for monitoring and control of space heating• Smart electricity meters• Smartphone application with built-in nudging features• Cross vector energy management platform (electricity-gas)
Potential DLT platform usage: <ul style="list-style-type: none">• Article 7: Automated quantification and verification of energy savings for the supplier's EEOS• Smart Pay4Performance contracts for end consumers based on achieved energy savings• Energy tokens to incentivize participation in natural gas flexibility services, which can be redeemed to cover costs across energy vectors, carriers and services	



Smart energy management for EV chargers and electricity-based HVAC appliances

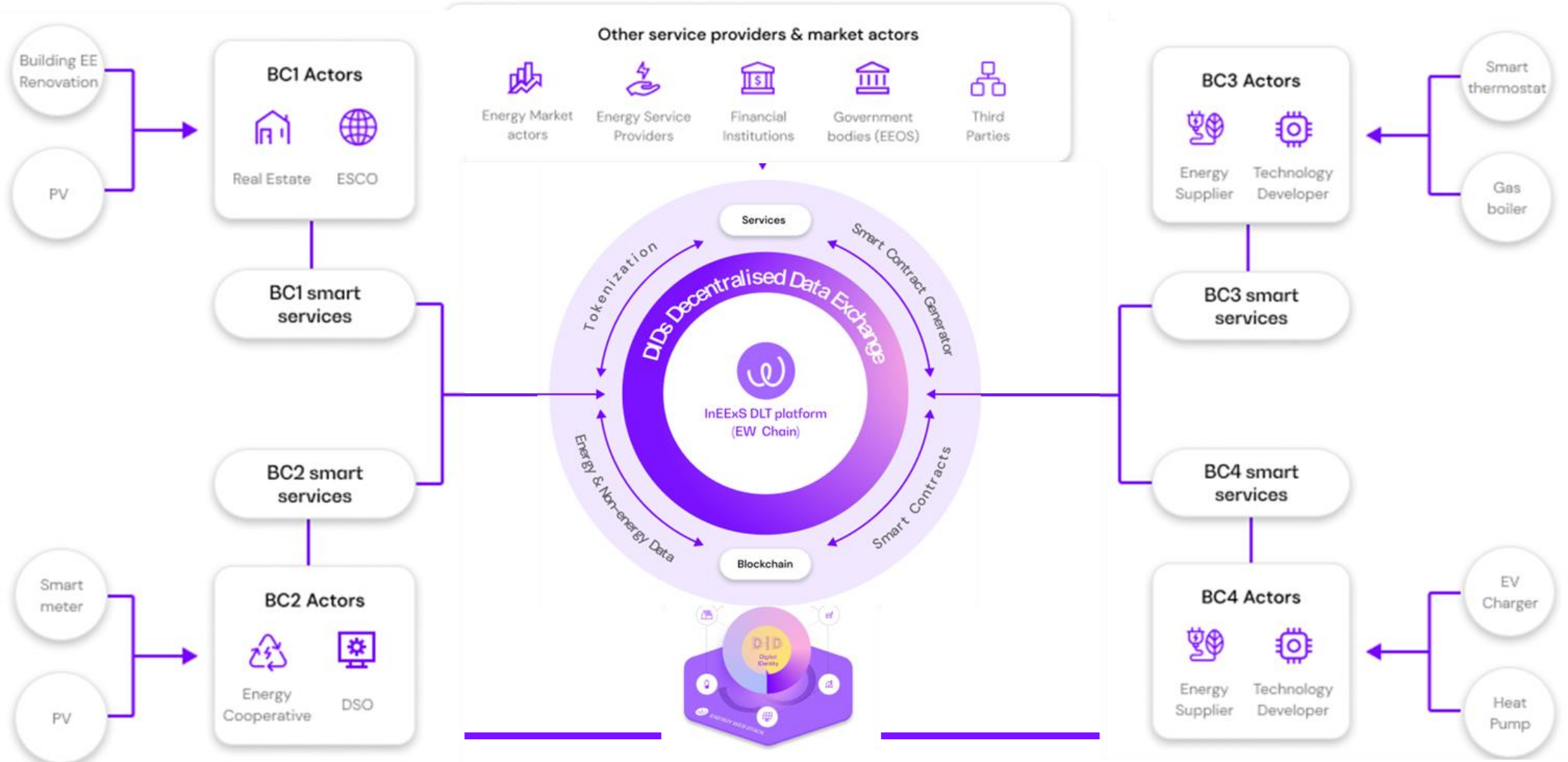
Area: <ul style="list-style-type: none">• EU MS TBD based on the analysis of the service rollout	Stakeholders: <ul style="list-style-type: none">• Energy management company (HIVEN)• Energy supplier (TBD)
Participants: <ul style="list-style-type: none">• 400 households spread in two locations	Customer portfolio: <ul style="list-style-type: none">• 20-30K households across HIVEN partnerships
Smart services: <p>1.Demand shaping based on:</p> <ul style="list-style-type: none">• variable pricing (20-30% cost reduction)• CO2-levels (reduction of 20-40%) <p>2.Demand flexibility offered to the DSO and TSO, with possible participation in the balancing market</p>	Infrastructure: <ul style="list-style-type: none">• Cloud connectivity to smart appliances such as EVs, EV chargers, heat pumps, panel heaters and hot water heaters.• Automatic smart energy management algorithms• Smartphone app for EV charging and space heating management
Potential DLT platform usage: <ul style="list-style-type: none">• Energy tokens to incentivize and reward consumers to offer flexibility• Smart contracts between the Energy supplier and management company to guarantee the rules of the signed SLAs and increase trust in the offered services• Article 7: Automated quantification and verification of energy savings for the supplier's EEOS	



Decentralized Energy Efficiency Power Plant (DEEPP)

Status: <ul style="list-style-type: none">• Proof of concept	Stakeholders: <ul style="list-style-type: none">• Business model developer (IEECP);• Technology enablers (EW, INLE, DOMX);
Participants: <ul style="list-style-type: none">• consortium and selected stakeholders	Potential replicants: <ul style="list-style-type: none">• Technology enablers and stakeholders
Smart services: <ul style="list-style-type: none">• Rewards for decentralized energy savings• Rewards for flexibility services to DSOs• Facilitation of Energy Efficiency as a Service with ESCO marketplace	Infrastructure: <ul style="list-style-type: none">• Pay-for-Performance MRV algorithms• Decentralized app connectivity to smart meters and smart appliances
Potential DLT platform usage: <ul style="list-style-type: none">• DEEPP interfaces with the blockchain platform• DEEPP Utility based on DAO structure (Decentralised Autonomous Organisation)• Energy tokens to reward energy efficiency measures and flexibility participation• Smart contracts between consumers and DSOs, Energy Utilities and ESCOs• EED Article 7: Automated quantification and verification of energy savings for EEOs	

⚡ The InEExS Blockchain platform and services

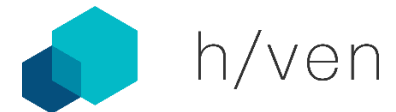


Benefits for market actors

- **Practical transfer of experience** in the design and implementation of business cases
- **Mentoring** of stakeholders interested in replication of business models and digitalisation solutions
- Limited space for 2-3 **replicants** for each business model. Organizations will be selected based on their needs to overcome market barriers.
- Large scale **capacity building** activities: Knowledge transfer through training courses, webinars, replication workshops, national workshops, association-specific events, etc
- Public **reports** on smart services integration, business roadmaps, and recommendations for aspects of regulation, finance and market design



PARTNERS



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