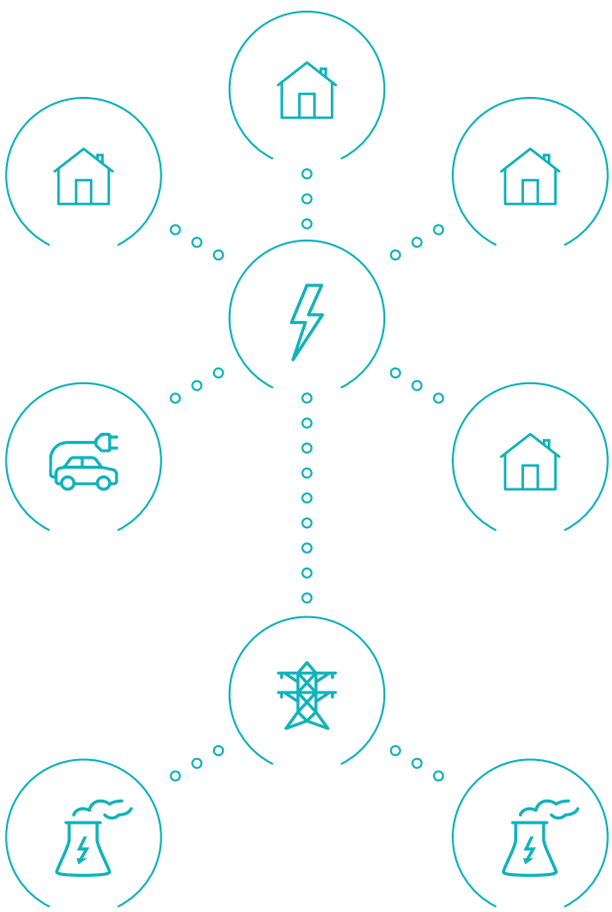
SOFIE'S ENERGY FLEXIBILITY MARKETPLACE PILOT

ENERGY FLEXIBILITY



VISION

Thanks to the network equipped with devices that allow remote monitoring and management in real time, it is possible to collect data useful to generate accurate forecasts and avoid the emerging of reverse power flow.

Thanks to the SOFIE project, blockchain technology and smart contracts are used to enable a secure and transparent mechanism to time—shift and modulate the end users' consumption according to the needs of the network (Demand-Response).

This involves the DSO, EV Fleet Managers, and Energy Retailers in the business platform.

DSO requires energy flexibility to tackle grid issues, EV Fleet Managers provide energy flexibility by planning electric vehicles recharging in specific areas at specific time-slots. Energy Retailers are selected for energy supply according to their offer price.

STORY

Following the advent of distributed generation, the electric grid underwent an impressive change in power flows. The grid was designed considering that energy had a unidirectional power flow, but today we have many renewable generation sources (solar and wind), distributed in the network and, sometimes the energy produced is higher than the energy consumed by the end users present in the same local network.

CHALLENGE

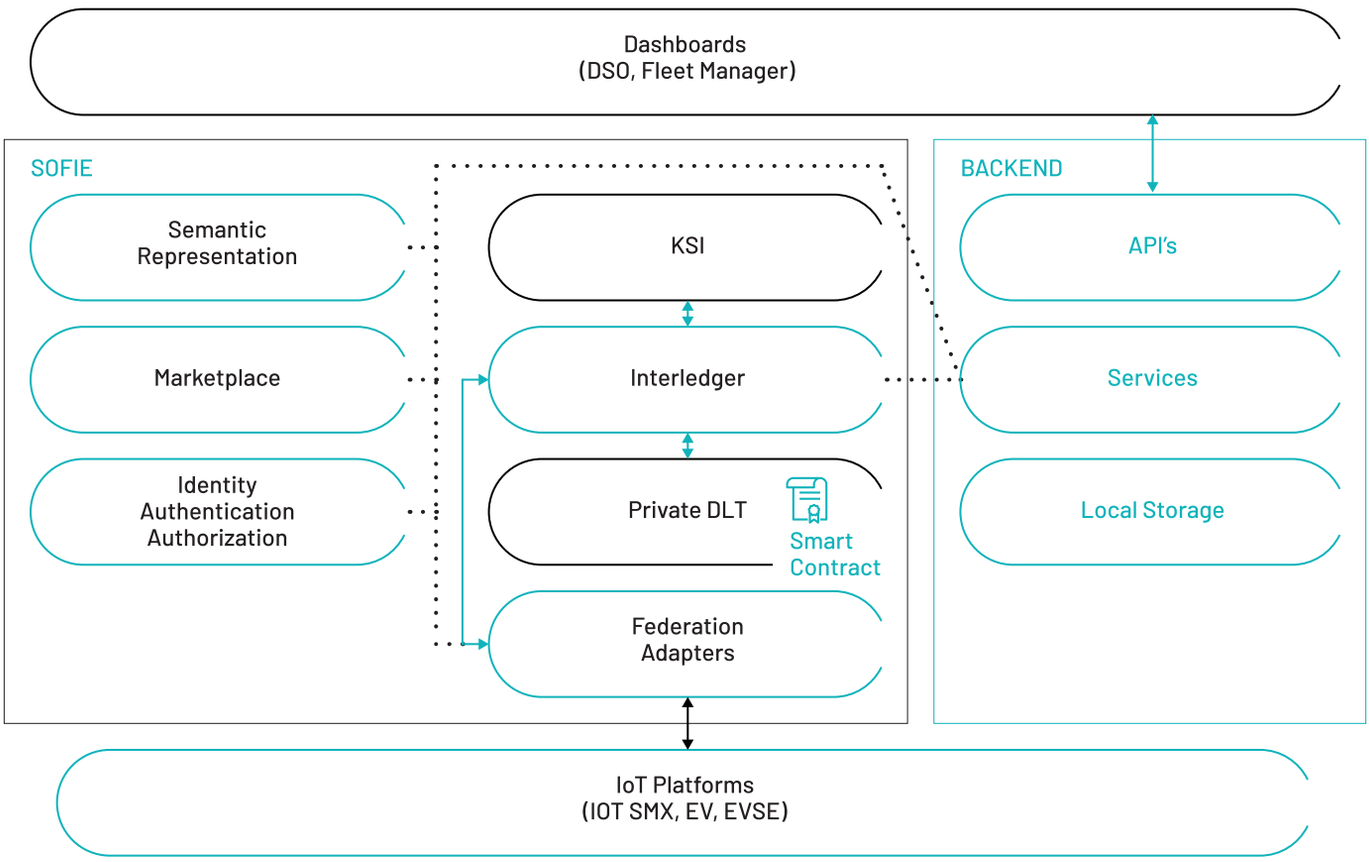
The reversed power flow causes stability and safety problems in the electricity grid, that the DSO have to solve to guarantee the continuity of the energy service. To understand the complexity of this phenomenon, it is essential to consider that it is generated mainly by intermittent and non—programmable renewable sources strongly influenced by atmospheric conditions. This makes it very difficult to predict its progression.

GOAL

The goal is to **build a new decentralized, fair, transparent, and secure marketplace powered by the blockchain.** Operators will be offered with a fair Marketplace avoiding any kind of bias in offer-demand matching. By interfacing directly with the smart meters on the grid the system will assure payments settled in near real-time resulting with an improved market liquidity.

"ENERGY FLEXIBILITY MARKETPLACE" WILL DELIVER:

- SOFIE adapters placement to collect data from DSO's smart meters and fleet managers' EVs and EVSEs.
- SOFIE decentralized blockchain-based marketplace.
- Distributed identity, authentication, and authorization of the involved actors.



FOR DSO

- Use real time and historical data to forecast the occurrence of reverse powerflow.
- Create flexibility requests on the marketplace to balance the local energy supply.

FOR FLEET MANAGERS

- Help to recharge the batteries of its fleet of electric vehicles at advantageous price.
- The incentive provided by the DSO can cover part of the electrical supply.
- Thanks to the marketplace, the most convenient energy retailer can be selected any time a recharge is needed.

FOR ALL THE USERS INVOLVED

- Provides a rapid user-friendly mechanism to negotiate micro-contracts.
- Grants security, transparency and auditability of the operations.
- Enable the interoperability among different siloed IoT systems.

INTERESTED IN SOFIE'S "ENERGY FLEXIBILITY MARKETPLACE" PILOT?

- Energy flexibility marketplace pilot executor: Engineering Ingegneria Informatica and users: ASM Terni SPA, Emotion SRL.
- Your primary "Energy Flexibility Marketplace" contact is **Giuseppe Raveduto** from Engineering, e-mail **giuseppe.raveduto@eng.it**

  Any questions or proposals you might have, he's happy to listen.
- You can also reach us via SOFIE's webpage to announce interest to be a test user in 2020 demonstration.
- You should follow SOFIE's social media channels to be up to date with latest developments.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 779984.

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