FlexCHESS

Speaking the same language: why interoperability unlocks flexibility

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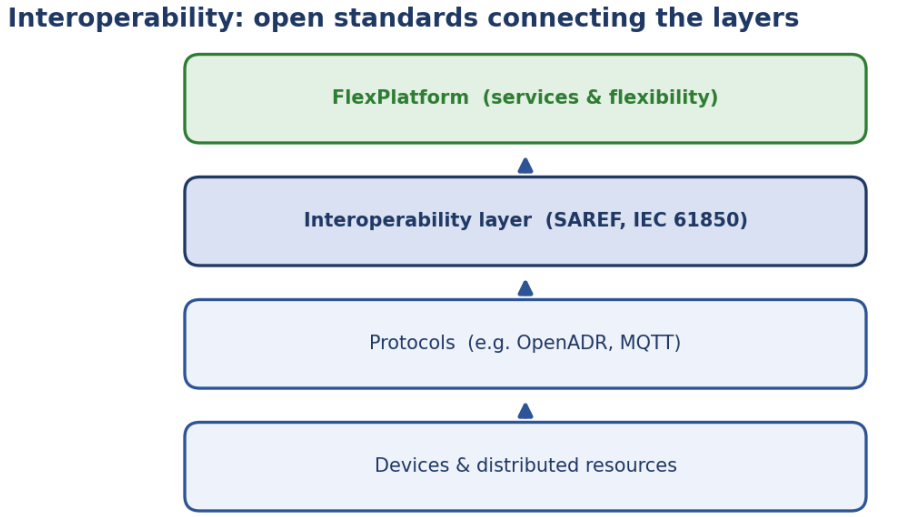

Open interfaces enable data exchange across systems — with data protection by design

In a flexible energy system, success depends on a great many devices, platforms and organisations working together: batteries and heat pumps from different manufacturers, software from different providers, and operators with different systems. If they cannot communicate, the whole idea falls apart. This is why interoperability — the ability of different systems to work together seamlessly — is so important to FlexCHESS.

The challenge is real. Energy devices and smart appliances often use different, sometimes proprietary, technologies and communication standards. Bringing them into a single, coordinated system means overcoming these differences. FlexCHESS does so by developing an interoperability layer that connects the various components through open interfaces, allowing data to be collected from many sources and exchanged smoothly across the energy value chain.

To achieve this, the project draws on established and emerging open standards. It works with common communication protocols, supports widely used data formats, and aligns with reference frameworks and ontologies designed for the energy and smart-appliance domains. The aim is to ensure that products used in the home can integrate easily with systems developed by others, and that distributed assets can be connected through a variety of communication options. Open programming interfaces allow two-way communication between service providers and customers, so that flexibility can be managed effectively.

Standards are the quiet backbone of this work. FlexCHESS builds on widely used reference frameworks — including ETSI's SAREF ontology for smart appliances, the Smart Grid Architecture Model, common protocols such as OpenADR, and established communication standards for power systems — so that its tools can connect to existing infrastructure rather

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than replace it. Open interfaces and careful data protection ensure that openness never comes at the cost of security.

Interoperability is not only a technical matter — it is also a market enabler. When systems can exchange data freely and securely, new services become possible, and smaller players can take part more easily. FlexCHESS contributes to a more open digital single market for energy, in which stakeholders can share data, build new products and unlock flexibility that would otherwise remain locked away behind incompatible technologies. Throughout, the project pays careful attention to protecting data where necessary and to giving access only where appropriate.

By helping diverse systems speak the same language, FlexCHESS lowers the barriers to participation and helps the flexibility market grow. It is a reminder that, in the energy transition, the connections between technologies can matter just as much as the technologies themselves.

References and further reading

- SAREF — Smart Applications REFerence ontology (ETSI)
- OpenADR Alliance
- EU initiatives for smart energy systems — European Commission
- FlexCHESS project — CORDIS, European Commission

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