

PRESS RELEASE N°3: SMART IT PLATFORM UP AND RUNNING

ISLANDER project launches test phase of innovative smart IT platform to transform Borkum's grid management

The ISLANDER project, an EU-funded initiative to decarbonise the energy systems of EU islands, has started the testing phase of its Smart IT Platform (SITP). Designed by project coordinator [AYESA](#) to optimise and digitise energy networks, the platform is a key step in transforming energy management on the German island of Borkum, the project's pilot site. By remotely controlling renewable energy and storage solutions and loads installed on the islands, the SITP aims to improve energy efficiency and grid stability and is a key asset in Borkum's transition to a net-zero island.

Optimising Grid Management of island energy systems

The SITP is a key development of the ISLANDER project and acts as an aggregator and distributed energy resource management system (DERMS). It controls renewable energy generation, storage and demand response technologies, enabling dynamic, data-driven decisions and optimal grid control. The platform determines the optimal use of the generated renewable energy, deciding whether it should be stored, consumed or sold to the energy market.

It is specifically designed for electricity grids with high levels of renewable energy sources such as solar and wind. It contributes to voltage and frequency stability providing ancillary services while maximising the local use of the renewable energy produced on the island.

The SITP oversees various energy assets deployed on Borkum, including photovoltaic systems, hydrogen storage, batteries, ultracapacitor systems, seawater district heating, bi-directional electric vehicle charging stations and street lighting system. These energy installations are monitored and managed in real-time, ensuring optimal operation within defined parameters.

Core components of the SITP

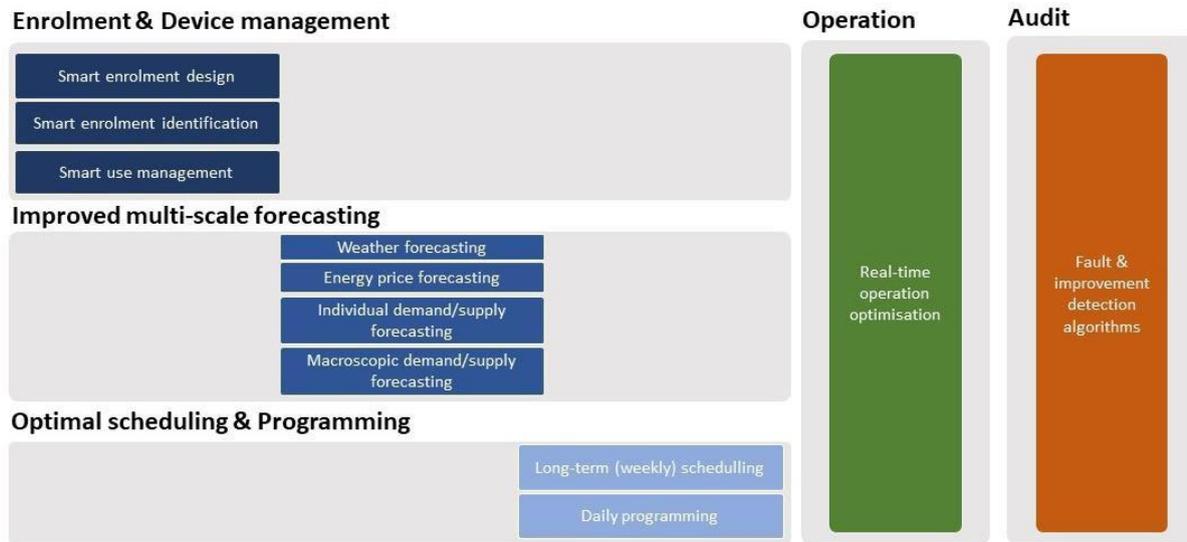
The SITP is built on a cloud-agnostic, microservices architecture, making it highly adaptable to different IT environments. Whether deployed in the cloud or on-premises, the platform is designed for scalability and flexibility. For initial deployment, the platform uses Amazon Web Services (AWS), chosen for its cost-effectiveness, agility and robust features. This architectural approach ensures that the SITP can adapt to future energy needs, providing a sustainable solution for renewable energy integration.

The platform's predictive algorithms offer key features such as:

- Weather, energy price, and consumption forecasting.
- Real-time decision-making to balance energy storage and market participation.
- Demand-side management to improve grid reliability and efficiency.

The platform consists of four integrated layers: The **Communication Layer** ensures secure data transmission via VPN and facilitates offline uploads and mobile notifications. The **Business Layer**, based on a microservices architecture, manages algorithms, scheduling, and energy

service optimisation. The **Database Layer** uses PostgreSQL, MongoDB, and Redis for efficient, purpose-specific data storage. Finally, the **Presentation Layer** provides a user-friendly interface for monitoring and optimising energy assets.



Future steps and Impact

In line with the ISLANDER project's vision of a carbon-neutral Borkum, the SITP enables smarter, greener energy management. It supports interoperability by integrating devices and software using open communication standards, ensuring a cohesive energy system. The test phase will validate the SITP's capabilities and gather valuable data to refine its performance. Once fully operational, the platform will set a benchmark for renewable energy management on isolated and remote islands across Europe. The testing phase will run throughout 2025, using a phased approach. First, the platform will monitor all households acting as prosumers. Then, three buildings will be integrated and tested in the Smart IT platform as new DER (Distributed Energy Systems) and the rest of the system will be integrated and tested in the first quarter of 2025. The heterogeneous characteristics of the different systems will allow the SITP to demonstrate how, by using an SW platform as an orchestrator of heterogeneous energy systems, islands and isolated areas can take rapid steps towards decarbonisation.

By advancing digital energy solutions, the ISLANDER project not only contributes to the decarbonisation of Borkum, but also provides a scalable model for other regions aiming for zero emissions. The SITP demonstrates the potential of technology-driven energy transformation, paving the way for a more sustainable future.