

Identifying key enabling technologies for the development of an integrated energy management system for vertically integrated utilities



Challenge

The client, a multinational utility with operations in generation, transmission, and retail, wished to deepen its understanding of key enabling technologies that would allow it to manage electricity and heat assets in commercial and industrial parks.



Solution

Lux built a taxonomy of enabling technologies capable of orchestrating multiple management systems for different energy streams and objectives. The analysis demonstrated that a full-fledged integrated energy management system is lacking in the market today, but the client has an opportunity to build a unique solution to start providing value to its customers today.



Value

The client is using Lux's analysis to identify potential partners for the development of an integrated energy management solution offering for its customers.

Integrated energy management systems are still in their infancy, but DERMS can serve as stepping stone

IEMS functions	Ability to fulfill function today
A truly integrated energy management system orchestrates multi-energy flows – electricity and heat – between a variety of generation sources and loads.	DERMS manage power flows, owing to the penetration of distributed assets that put stress on the grid; use cases beyond demand response need to increase. Heat management remains in early stage.
Automatically balances supply and demand. An IEMS should target the optimal use of generation and storage assets to achieve energy savings.	Balancing of supply and demand, when distributed assets are present, is already done by DERMS. Solutions targeting management of micro-grids are emerging and could already optimize power flows today.
Plans and manages maintenance operations and outage events are other key functions of such a system.	OMS systems already form part of DERMS; in combination with ADMS, this function is already mature.
Provides visualizations of the different assets – either in the form of dashboards or 3D simulations – prioritizing alerts for grid and park operators.	DERMS and ADMS already provide visualization of network assets. Detailed views of complex assets is under the purview of digital twins, which still need to mature. Data analytics can help improve reliability.
Manages the flexibility of buildings based on external factors such as market signals and weather conditions, optimizing energy flows in the park.	A few DERMS developers such as AutoGrid or Enbala already interface with BEMS.



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