Abstract: A transactive energy approach for energy management in smart buildings

The transactive energy concept is relevant for building energy management. The GridWise Architecture Council defines TE as “A system of economic and control mechanisms that allows the dynamic balance of supply and demand across the entire electrical infrastructure using value as a key operational parameter”.
An architecture is described to manage several prosumers, and each one with various electrical appliances. An open IoT architecture is employed, where a centralized database records the energy data of all electrical appliances, photovoltaic and storage systems, and environmental parameters from all prosumers. Thus, each prosumer is connected to a home gateway, connected by means of the cloud paradigm to a gateway manager. The architecture may enable commercial aggregators to provide services by connecting to the gateway manager and centralized database.
Each prosumer is managed by an Energy Management System (EMS) enabling energy and cost saving while maintaining the serving of the load of the user.