

Project Title: International Joint R&D on Data-Driven DSR Control Technology for Energy Sharing (2023—2026)



Entrusted Party: National Institute of Advanced Industrial Science and Technology (AIST)

Outline of the Project

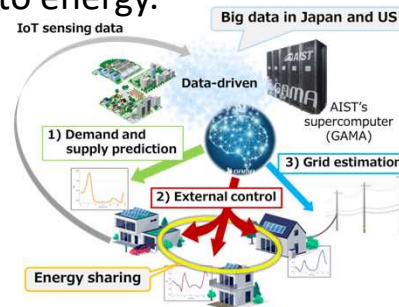
Background

- The Global Warming Countermeasure Plan states that GHG emissions from the residential sector will be reduced by 66% in 2030 relative to 2013 by developing end-use technologies and changing household attitudes.
- **New technologies that treat different households as a system are necessary** in addition to the development and diffusion of underlying technologies (e.g., highly insulated housing and LEDs) and changes in awareness (e.g., “shift to decarbonized lifestyles”).

Purposes, research items, and novelty

- To realize data-driven energy sharing, technologies will be developed for the external control of demand-side resources (DSR) without adversely affecting households by using big data related to energy.

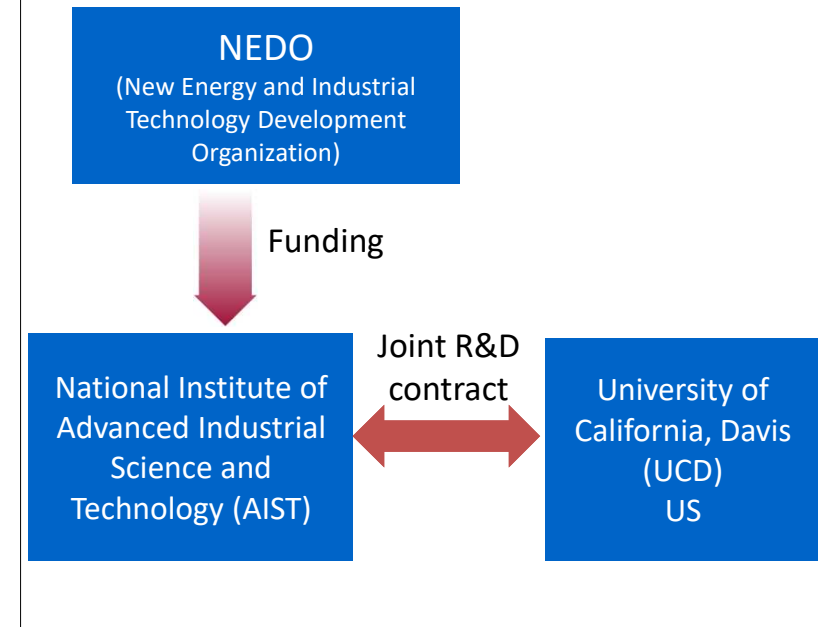
- 1) Energy demand and supply prediction by household types for practical use
- 2) External control schemes without adversely affecting households
- 3) Grid state estimation for grid constraints



Significance of International R&D

- AIST has the world's top technology and infrastructure to collect and analyze big data related to energy.
- UCD has accumulated the latest knowledge on control of energy equipment, but has not developed technologies for DSR control and energy sharing.
- ➡ By combining each party's strengths, the development of data-driven DSR control technology can be dramatically accelerated.

Project Scheme



Expected Outcomes

- Energy sharing will enable households to consume renewable energy efficiently to deliver annual benefits of 153 billion JPY.
- Boosting the diffusion of renewable energy and storage will reduce CO₂ emissions by 27 million tons-CO₂ per year.
- Enhancing energy resilience will reduce the risk of blackouts and save costs of 87 billion JPY per year.