

# Cooperative Optimization for Energy Systems

Nguyen Dinh Hoa, PhD

Assistant Professor

Applied Math for Energy Systems, Energy Analysis Division

In complex energy systems nowadays, lots of variables need to be measured, processed, and controlled, hence traditional centralized approaches using a central unit to do all above tasks are cost-ineffective, non-resilient, and slow, and in many cases impossible. Therefore, recent researches and applications aim at developing distributed approaches in which the tasks of measurement, optimization, and control are locally performed, while some relatively small information is exchanged between system parts to achieve the desired global system targets. One of such approaches is based on the multi-agent system theory, where different parts of an energy system are considered as agents which might have physical interactions while being able to communicate with other agents. As such, a global optimization problem for an energy system can be locally and cooperatively solved by agents representing parts of the system using inter-agent information exchange. This talk then presents recent results developed by the speaker and collaborators for several optimization problems in energy systems and discussions on the future directions for this research area.

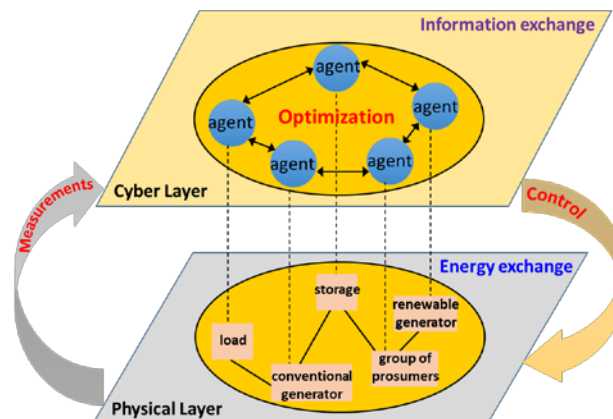


Fig. 1. Illustration of cooperative optimization for smart grids

## References

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