Title: Distributed Optimization in the Operation of the Future Electric Power System

Duration: 2013-2015

Sponsor: ABB, Scott Institute

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Contributing Students: Junyao Guo

Description: This project supports the development of methods enabling a distributed operation of the electric power system with an enhanced communication infrastructure. Specifically, the project has two major objectives: 1) to develop methods for enabling localized but coordinated optimization by the means of agents; 2) to derive an integrated model of communication system and power system and study the inherent vulnerabilities introduced into system operation when relying on increased communication. A distributed optimization framework was formulated and decomposition methods were applied to solve Optimal Power Flow problem. On-going work includes developing a task allocation method in the implementation of distributed optimization to enhance the performance of distributed methods such as reducing convergence time.