Deriving Key Performance Indicator of a Home Energy Management System project in Siheung smart city, Korea

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Abstract

Recently, many countries carry forward smart city projects for each objective. As with globalization, urbanizaiton and industrialization with rapid technological development have transformed the smart cities of 21st Century. Numerous leading institutions, including the United Nations(UN), are gradually recognizing the importance of smart cities in urban development. There are lots of discussions about architecture and engineering design of smart city. In Siheung, Korea, there is also a smart city project for solving problems of the city. However, performance measurement of smart city are not discussed broadly and deeply. Performance measurement is a significant factor in the process and the achievement of city goals and objectives. A Key Performance Indicator(KPI) is a representative method of performance measurement in various fields. In this project, KPI will be developed for th purpose of performance measurement of each Siheung smart city project. There are many smart city projects in Siheung, but In this paper, deriving KPIs of Home Energy Management System(HEMS) project in Siheung city is discussed. First, it is an introduction to HEMS project in Siheung. Advanced Metering Infrastrucure(AMI) is constructed on residences in Siheung. Smart meters in home collect informations about electrical energy usages of each appliance. HEMS is connected to each smart meter and HEMS provides customized electricity energy service by analyzing informations. For instance, power consumption schedules over time of each appliance to minimize costs and maximize end-user utility are recommended to end-users. In this case, an expectation of power consumptions and an analysis of end-user utility over time are important in HEMS.

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