



RADIO SCIENCE FOR HUMANITY

A wireless infrastructure to collect data for energy management in a Smart Home

Infrastructure sans fil pour le recueil de données de gestion d'énergie dans une maison intelligente

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With the advent of the Internet of Things, the scientific community as well as the industry continuously develop smart X applications. Nowadays, around 70% of the electricity produced in France is consumed by the residential sector. In this context, a lot of approaches have been proposed in order to control and reduce energy consumption at home. The aim of a smart home is to help people living independently and comfortably with the help of the wireless sensors technology.

The Smart Home proposed in this paper is equipped with an energy harvesting system Using sensors, different information are collected. Based on these sensory data, different services related to the management of energy are then proposed. A wireless infrastructure, based on the WEMO smart plug from Belkin using a WIFI technology as the communication protocol and able to collect the instantaneous power consumed, has been developed for that purpose. Using this infrastructure, some measurements have been performed on typical house appliances such as a set-top box, a fridge, a PC screen or a microwave. Obtained results highlight the fact that those home appliances can be classified in three different types of load: phantom, intermittent or continuous. A PhD thesis is starting on this subject at the Laboratory of Electronic Antenna and Telecommunications (LEAT) of the University Côte d'Azur (UCA). The aim of this thesis is to model and design connected objects in order to propose services for smart homes. Using the three types of load, the objective is to predict and optimize the use of an energy harvesting system to supply a smart home.