

# TOWARDS A DEMAND-SIDE SMART DOMESTIC ELECTRICAL ENERGY MANAGEMENT SYSTEM

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## **Abstract**

Energy conservation concerns call for end-users to regulate their electrical consumption and help achieve a balance between the available energy supply and demand. Therefore there is a need for rigorous research into smart home energy management systems that could assist the end-user in achieving this goal. This paper addresses the issue of electrical energy conservation in the home through the adoption of smart technologies (one instantiation of smart technologies). Smart objects are everyday artefacts augmented with sensing, processing and networking capabilities that enable them not only to communicate with people and other smart objects, but also discover where they are and what objects are in the vicinity. The smart home, on the other hand, is an automated home equipped with smart objects and a home network that is able to transport information between the objects and the Internet. This research focusses on the design and implementation of a smart home energy management system that integrates smart technologies such as the smart phone, cloud, wireless, web server and motes. The research analyses literature on existing smart home energy systems and technologies and draws lessons from the analysis on how the proposed architecture should be structured. When completed this system will allow the end-user to switch single or group of appliances by means of an Android-based smart phone, be they within their home or at a remote location. In emergencies, an authorised authority such as the municipality could potentially control electrical appliances in a whole neighbourhood.