University of Computer Studies, Yangon

IoT based Home Energy Management system for Rural Area in Myanmar

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Background of Project

The total population of the country mostly in rural areas have no access to electricity. Most of them has no grid connection and people depends on wood, gas and kerosene oil for their cooking and lighting purposes
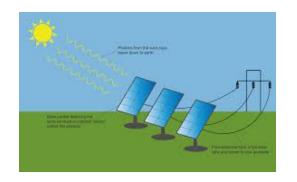
A design of home energy management system using renewable energy source is associated with user interface, home server, microcontroller interface providing solar lantern, solar cooker, solar home lighting system and other appliances of their daily life.

What are the benefits of a Home Energy Management System ?

•Home Energy Management System save your time.
• Real-time monitoring of the household's consumption by the Utility.
•To reduce the peak demand, the maximum demand of the household's peak load is limited within the given threshold .

System Requirements

Solar Panel

Digital Meter
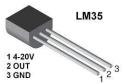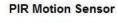
outlet

Breaker

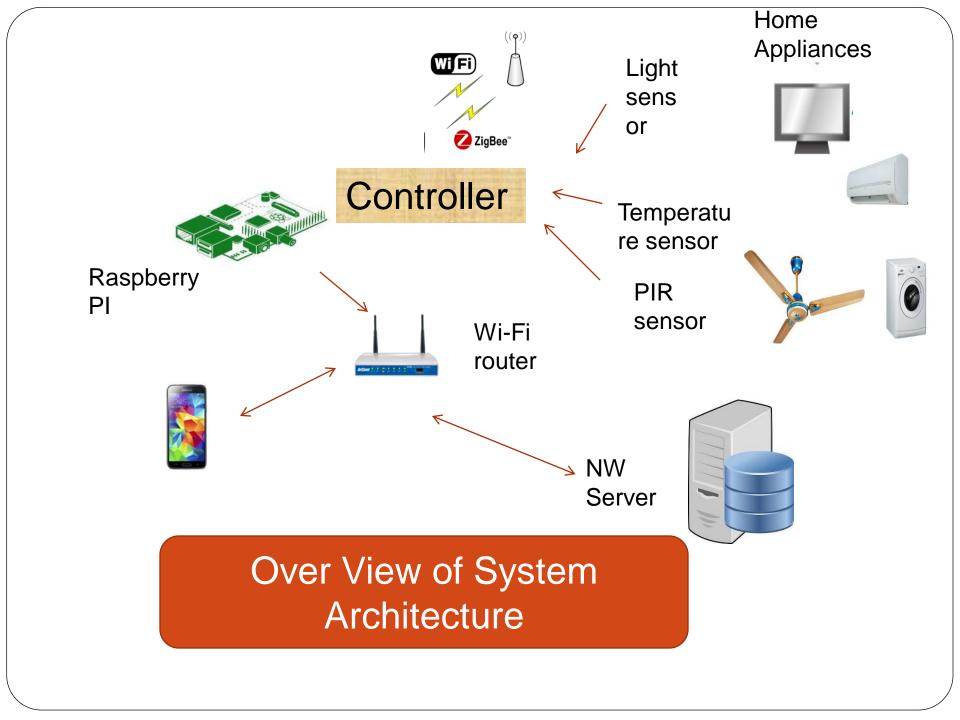*gateway*

Relay

Raspberry PI

Current sensor

Temperature sensor *Zigbee*

PIR Motion Sensor

Home Appliances

Light sensor

Controller

Raspberry PI

Temperature sensor

PIR sensor

Wi-Fi router

NW Server

Over View of System Architecture

IoT Layers

Application Layer	Home Energy Management System	Using Network server HTTP protocol
Management Layer	Data Storage / User Management	
Network Layer	Wi-Fi / GSM	
Device Layer	Things Layer(include: sensors/breaker) / Gate way Layer (microcontroller/communication module)	Using Zigbee

Output Result

- Automatic turn off the lights when not in use

- Do not switch on the power when TV and Audio Systems are not in use.

- Air conditioners having automatic temperature cut off today's home require sophistication control .