

## Intelligent Lighting Management Application

### The Client

The client is one of the leading manufacturers and suppliers of outdoor lighting management products to the emerging smart energy management market.

### The Challenge

For better management of outdoor lighting, a system capable of remote monitoring and control is required. To improve efficiency, the system should provide unmatched energy savings, flexibility, measuring and monitoring capabilities, and improved performance from lighting systems. A measurement system for energy consumption and control will also help in reducing the operational cost.

### The Solution

The solution provides a lighting management system which consists of Intelligent Lighting lamps connected to a central server via a gateway for remote control and monitoring. Each lamp can be communicated with, so that its condition can be assessed remotely and its intensity controlled accordingly. The facility of dimming lights depending on the location and usage requirements is provided. The adaptive lighting optimizes the performance of outdoor lighting system. The system supports both DALI compatible and normal lamps and results in Energy Savings up to 40%.

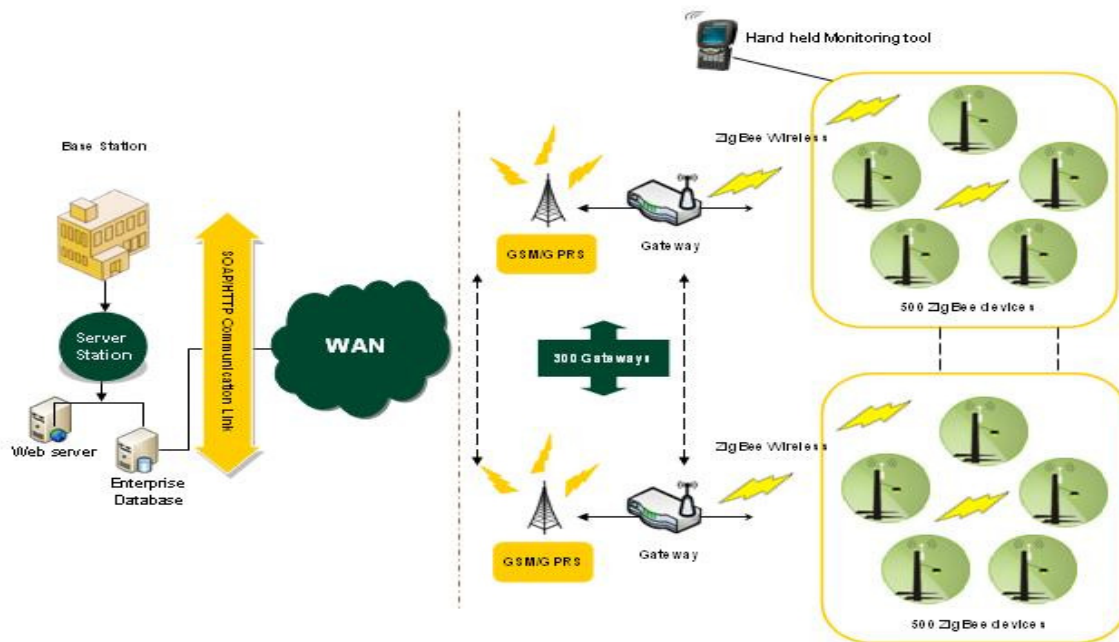


Fig: Intelligent Lighting Management Application

Each lamp controller communicates with the central server via a gateway. One network consists of up to 500 nodes controlled by a single gateway, and 300 similar gateways for other networks report to a central server station. The gateway has attached photo sensors for adaptive lighting.

The gateway has a ZigBee node and it communicates to the individual lighting networks via ZigBee wireless network. These technologies form the standard approach to monitor, gather and control the remote data. Debugging and field diagnosis of the outdoor lighting network is done via a hand held tool hosted on Smart Phone, from any location. The central sever is designed to host both enterprise lighting management application and network management system.

Hardware, firmware and software design and development is done for the entire system. The Hardware for Lighting node and gateway would match CE and EMC certification requirements. Over-the-air configuration and upgrade of gateway firmware and lighting node application firmware is provided from central server.

### The Benefits

- Autonomous adaptive lighting at the gateway level is provided for nodes
- Network knowledge and control is possible through a hand held tool remotely
- Better efficiency is achieved by adaptive control thorough knowledge of energy consumption data

### The Technology

- ASP.Net, C#, Microsoft Web server, Microsoft SQL server, SOAP/XML
- C, Python
- ZigBee PRO, ZigBee GSM/GPRS cellular