My profiles

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Business   : System Integration and Automation

Number of rooms installed   : About 350

Years in business   : 20 years (1 April 1995)

Number of staffs   : 4

Current development   : Design of an embedded system (microcontroller based) for
                                                         custom automation solutions

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Private and Confidential

Possible category: Building's interaction with occupants

Towards green building in Malaysia – Typical problems in many existing buildings and the possible solution

Greeting the audiences

The contents:

Typical scenario of multi tenant building
The major problems
Possible solutions to the problems
Q&As

The multi tenant building – typical scenario that I was called to offer my solution

Back in Mac 2014, I went to visit an organization up north of the country to discuss on how to solve the mentioned issues

The organization showed me six blocks of building, each building having about 8 floors, and each floor has 64 bedrooms, 16 bathrooms, common area, etc.

The minimum numbers of bedrooms available are about 64 X 8 x 6 = 3,072 units. The walls and ceiling are made of concrete … hardly to add any new wiring to it

Each bedroom consists of two tenants, hence the minimum number of tenants for the six blocks building comes to about 6,144 people.

The problems

The management team of the organization told me several issues that they are facing, and they are:

Increase amount in monthly electricity bill, due to tariff increment and human negligence

Rental (and service) fees cannot be increased accordingly by the building management

Human misused – the tenants took high voltage appliances into the bedrooms. This caused the electricity main distribution tripped off due to over current

Human negligence – tenants did not turn off unused appliances (ceiling light and fan, etc) when they are out of the room/building/area

Human refusal – there is a regulation for all tenants to turn off ceiling light in every rooms after 10 pm at night, the rule was ignored

The possible solutions

I have extracted some of the must consider parameters in order to offer one of the possible solutions. They are:
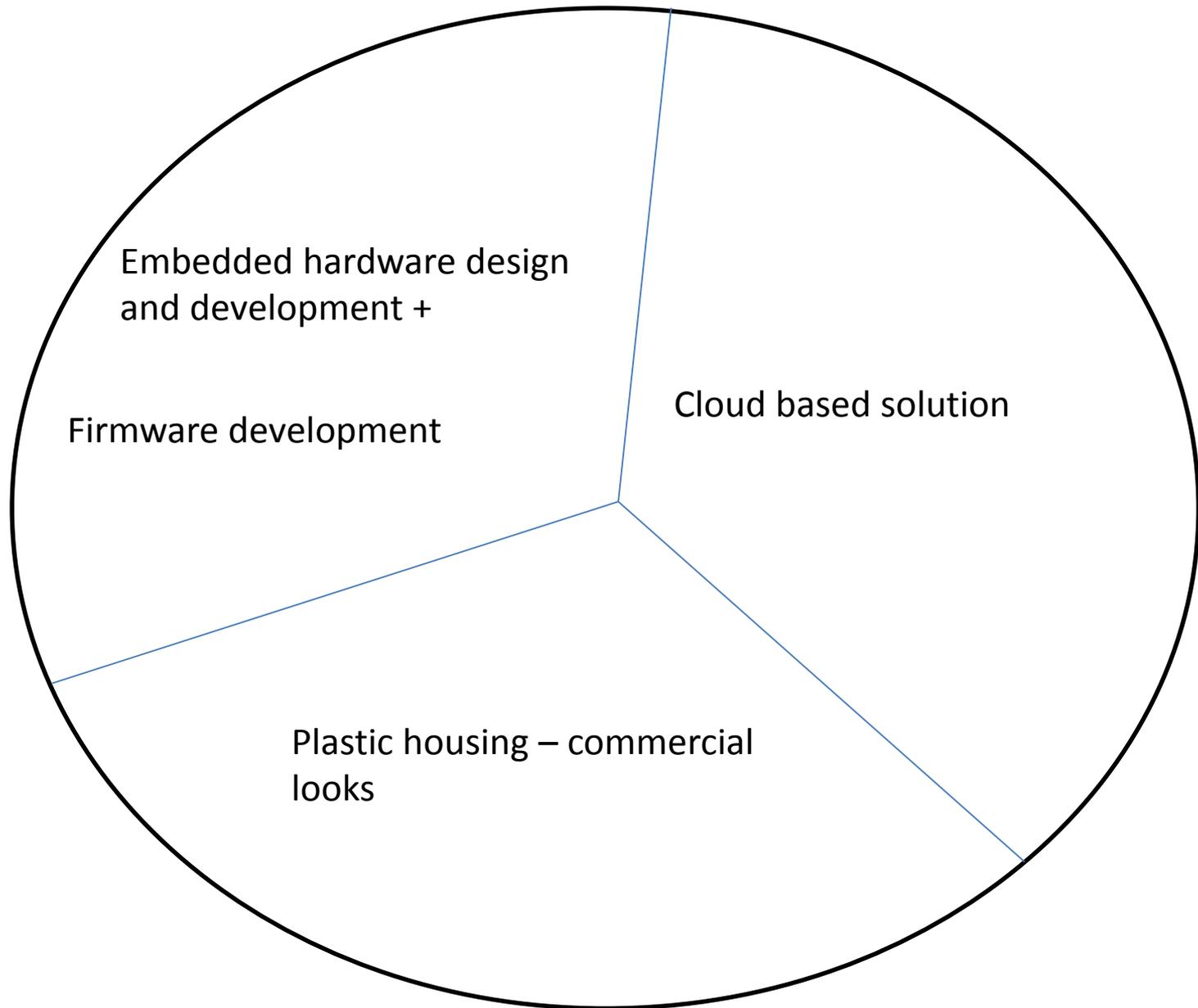
Human factors – consideration on the human presence (or not), misuse (of facilities), negligence, refusal to change and worst among all is the vandalism

Time and date – based on these parameters, system development can be made custom to the yearly operation of an organization. Rules can be set in a system as well

Mix of wireless and wired system – modules made of wireless and wired is a must have factor to give the ease of installation (with reasonable installation cost and time saving), ease of maintenance and flexibility

Therefore, the solution map may looks like below:

The Solution Map – Components For Development

Embedded hardware design and development +

Firmware development

Cloud based solution

Plastic housing – commercial looks

The embedded hardware design specifications

Price target: affordable – facilitate easy replacement of modules in the event of system maintenance

Availability: online order/web

Power consumption: low power devices

Installation difficulty: low and can easily be done by average technicians

Device functionalities: multi (with built in few sensors on board)

Module type: modular, expandable with needs

Inter modules communication: based on the common tcp/ip with built in encryption engine

User programmable modules: yes, with simple training

The software and web development specifications

Interfaces – provide easy interfaces for ease of operations by the users/customers

Authentication – multi level depending on the post assigned to each individuals

Hosting: cloud enabled (paid/free – if any)

Development software – use development tools that can be ported to various platform of Oses

Functionalities – to provide user controls, remote monitoring and system settings (dynamically)

The prerequisites infra structures

Electrical power (or solar) – to power up the entire system/solution

Wifi/internet facilities

Overall performance

Modules are publicly available, affordable and reliable

This is the beginning of building our Malaysian technology, and from here we will move on step by step

Thank you!

http://en.wikipedia.org/wiki/Green_building

The definitions:

Green building (also known as **green construction** or **sustainable building**) refers to a structure and using process that is environmentally responsible and resource-efficient throughout a building's life-cycle: from siting to design, construction, operation, maintenance, renovation, and demolition. In other words, green building design involves finding the balance between homebuilding and the sustainable environment. This requires close cooperation of the design team, the architects, the engineers, and the client at all project stages.[1] The Green Building practice expands and complements the classical building design concerns of economy, utility, durability, and comfort.[2]

Although new technologies are constantly being developed to complement current practices in creating greener structures, the common objective is that green buildings are designed to reduce the overall impact of the built environment on human health and the natural environment by:

Efficiently using energy, water, and other resources
Protecting occupant health and improving employee productivity
Reducing waste, pollution and environmental degradationHYPERLINK "\l "[2]
A similar concept is natural building, which is usually on a smaller scale and tends to focus on the use of natural materials that are available locally.[3] Other related topics include sustainable design and green architecture. Sustainability may be defined as meeting the needs of present generations without compromising the ability of future generations to meet their needs.[4] Although some green building programs don't address the issue of the retrofitting existing homes, others do, especially through public schemes for energy efficient refurbishment. Green construction principles can easily be applied to retrofit work as well as new construction.
A 2009 report by the U.S. General Services Administration found 12 sustainably designed buildings cost less to operate and have excellent energy performance. In addition, occupants were more satisfied with the overall building than those in typical commercial buildings.[5]

Custom Embedded Hardware for Automation