CONNECTED FOR BETTER HEALTHCARE: PHILIPPINES' FIRST IOT-ENABLED PRIMARY LEVEL HOSPITAL

Creating the first ever Smart Primary Level Hospital in the Philippines using the IoT through GoTensei's iBMS and iVMS Programs

CASE STUDY

Story

The RS Hospital is a four-story hospital which is going to be built in the city of Angeles, Pampanga with the beginning of construction in November 2018 and is projected to be completed by April 2019. This hospital will stand in a lot area of 1,000 square meters with a floor area of 4,000 square meters. To adhere to the guidelines of Department of Health (DOH) for new hospitals in the Philippines to be at par with the level of hospital facilities in Singapore, the owner of the RS Hospital sought for the expertise of GoTensei to transform their soon to rise hospital to be the first Internet of Things (IoT)-enabled primary level hospital to stand in the country.

The new RS Hospital will be modern, efficient and flexible enough to adapt to the needs of the patients and to the developments in the healthcare industry; and will provide high quality health care for the patients by providing optimal patient care, greater efficiencies in the workflow, enhanced patient safety and increased flexibility to grow into the future.

The Challenge

• Security monitoring for hospital patients and staffs
• Central management for the facilities of the hospital with a focus on automation, security, efficiency and sustainability

Solutions and Impact

• Security Management through *i*VMS

intelligent Video Management System (iVMS) is the solution we applied for the security implementation in the hospital. This is our software solution in partnership with HikVision, the world's leading manufacturer of CCTV, video surveillance products and solutions. A total number of 68 CCTV cameras will be designated in different areas of the hospital. There will be various types of CCTV cameras that will be used depending on its type and on what part of the hospital it will be deployed.

For an instance, we used a Face Recognition camera to be placed in the Accounting department and Pharmacy room to restrict people to go inside those rooms. The hospital personnel who will be authorized to go inside the accounting and pharmacy room will have their faces whitelisted in the system which means their faces will be saved in the database so that the CCTV will be able to recognize whether the person entering the room is authorized or not. And incase an unauthorized person entered the restricted room, it will send an alarm trigger to the admin. This will prevent any security risk or incident to happen in the hospital. Crimes often happen at night since it is dark – no details and you will not be able to see anything, only black in a normal CCTV camera. That is why, we used a CCTV camera that is designed specifically to

capture images in extreme and low-light conditions and the result is in crystal-clear color images. We used a different type of CCTV camera specialized to count real-time the number of people entering and exiting the hospital. For the outside premises of the hospital, we used another type of CCTV camera that is ideal for outdoor use.

Through the iVMS web app, the admin will be able to monitor all the CCTV cameras inside and outside the hospital; review all the recordings and will be notified immediately for security risks detected by the cameras.

• Energy and Building Management through *i*BMS

One of the biggest monthly expenses of the hospital is the cost of electricity and water. To make the hospital responsive, energy-efficient and have an increased operational efficiency, we applied the intelligent Building Management System (iBMS). A total of 989 sensors and devices has been designed to be deployed in every floors and rooms of the hospital.

We used Motion Sensor to detect if someone is inside the restroom or none. If it detected that there is no one inside the restroom, it will turn off the light and close the faucet automatically in case the patient forgot to turn it off. In this way, the hospital will be able to save for the electricity and water.

In every rooms of the hospital, we've placed smoke and flammable gas detectors to detect the concentration of the smoke in the room or if there is a high concentration of flammable gas in the air which may result for a serious kind of emergency like fire. We've also placed a CO2 sensor to measure the concentration of CO2 gas in the room. Through this, the hospital will be able to discover a fire while it is still in its smoldering or in early flame stage to prevent accident.

To maintain the normal temperature inside the rooms, we've placed a Temperature and Humidity sensor for the goal of human comfort and energy conservation. If incase the room is hot or too cold, the air-conditioner will adjust automatically according to the set normal room temperature. And if there's no one inside the room, the air-conditioner will be turned off automatically.

The admin will be able to control and manage the all IoT sensors and devices inside the hospital through the iBMS portal. Here, the admin can monitor the electric consumption of the hospital. He/she will be able to receive alarm events and notifications in this portal. Also, he/she will be able to control the devices in all the rooms without going there physically like to turn off/on the light or water.