CASE STUDY

SMART HOTEL WITH TINKERTOUCH S 10.1"

In this article, we are going to talk about a way to use Tinkertouch S 10.1. This PC panel is one of Industrial Shields' newest and most versatile devices. It is Raspberry based and runs with Linux.

After reading this essay, you will know more about what a smart hotel actually is, why the technology is becoming so important and which are its main advantages.

SUMMARY

Meaning of the concept "smart hotel"

The main idea is that a smart hotel is a hotel using devices interconnected all together and to the cloud. In this way, they are able to interactuate and give us valuable information.

The functionality of this concept allows guests to manage multiples devices from a single point of control and also gives an intelligent answer to the necessities of costumers based on their preferences.

A lot of important hotel chains like Hilton or Mariott have already installed the most advanced technology, This fact improves significantly the costumer experience, facilitates hotel workers' life and saves owner's money.

Using smart rooms, guests are able to control multiple components and have their rooms just the way they like it. They also find it both faster and easier to get important information. Moreover, creating a smart hotel can also reduce the number of operational costs.
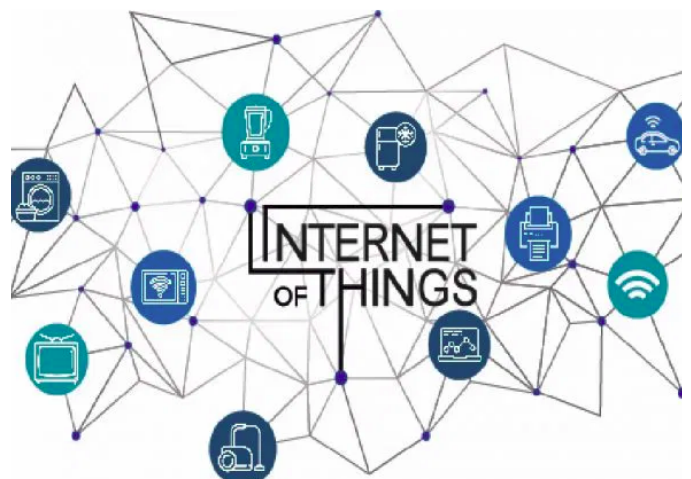
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GOAL

The main objective is to make a model which can help to transform a hotel into a smart accomodation. To reach this goal, we need to think about an appropriate and viable way to implement it. We will install several Raspberry based PLCs and Tinkertouch S 10.1", several sensors, scanners and a server to upload all the information.

CONCLUSION (HARDWARE)

The IoT system that we want to implement consists of creating a network between the main PC Panel and the slaves located in every room. The master is situated at the entrance of the hotel and will be the one welcoming us, scanning IDs, filling out all the forms, asking for signature and sending it by email to the costumer. All this information will be scanned from the ID card and will be previously sent along with the number of the room assigned, to the PC Panel. In the PC Panel, we will show a menu where our guests will be able to choose their preferences; the room will be assigned based on the customer's preferences. The main PLC is connected to the cloud via GPRS to transfer all the customers' data; we will also connect the PC Panel by Ethernet and the scanner using RS-485.

To be able to communicate with the others PLCs from the rooms, we need to create a WiFi network where the main PLC of the entrance will be the master.

Now let's go to the rooms. There we will also find a PLC in association with a PC Panel. For this application, the most appropriate PLC is one with Relay Outputs to control 220V devices.

- Climatic Sytem. Using a temperature sensor as Digital Input to the PLC, and the Air Conditionating as Relay Output.
- Lights of the room. Using leds as PWM Output we can change the intensity.
- The fridge. Relay output; when the room is assigned, the fridge will be ON so we do not waste energy.
- Bath water. By installing two solenoid valves (cold/hot water) in digital outputs of your PLC, we can begin to fill the bath using the PC panel to have it ready to use.

In the PC Panel, there will be the menu to control all these variables and also the following information:

- Digital Clock
- Hours remaining until the Checkout time and the next alarm.
- Spa, sauna, gym and swimming pool. The costumer can select when he/she wishes to use those services and the PC panel, based on the information from other users, can tell us which is the best time to visit the facilities so we can enjoy the sauna without too many people inside.
- City Maps and suggestions about restaurants, markets, pharmacies and places to visit based on age, nationality and more parameters of the costumer.
- Restaurant times and menus also adapted on every guest.
- All the contacts of the hotel, police etc.

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ADVANTAGES

- **More sustainable hotel rooms**: From the owner's perspective, one of the most important benefits is the improved sustainability available. This is primary linked to energy saving possibilities in the rooms, which can be aided by the automation that IoT offers. Leds can be set up to automatically increase or decrease in power, based on the levels of light in the room at any given time. In the same way, heating can be configured to automatically maintain a certain temperature, with air stopping once that temperature is achieved. All these facts then lead to lower energy bills.
- **Improved levels of personalization**: A smart hotel offers excellent opportunities to deliver personalization, The PC Panel can be remotely set up to address guests by their own name, it is also used as a central control point by the guests to set the conditions of the room. Also as an extra, through IoT technology, smart TVs and smart speakers can provide guests with the ability to access their own accounts on services like Netflix and Youtube.
- **Easier access to information for costumers**: Another important advantage of smart hotel technology is the ability to gain access to information. With the Tinkertouch S 10", costumers can get all the essential information to have a wonderful stay.
- **Data-driven decision making**: Workers from hotel industry should be careful with smart hotel systems, specially in terms of protecting costumer privacy. As long as hotels are transparent and comply with the data protection legislation, some costumer information from smart hotels can be useful. This can allow hotels to find out the most popular TV channels, restaurants or places to visit, times of using hotel services, etc., allowing for data-driven decisions on what to set as default options.
- **Pre-emptive maintenance and repairs**: Costumers and hotel owners can benefit from the ability that a smart hotel provides for pre-emptive maintenance and repairs. Basically this can be achieved because the IoT allows hotel staff to see performances information and operational data for specific devices in real-time. Using this technique, hotel staff can solve problems quickly, or even before they happen, allowing repairs to be made earlier. This can save a lot of money to the hotel owner. On this model, we have not implemented this function but it would be possible installing sensors on the different devices (e. g. pressure, temperature, humidity or air quality sensors) and sending the data to the server to analyze it later.