



TECHNOLOGY AND INFORMATION SYSTEM (SECP1513)

LOW FIDELITY PROTOTYPE PROJECT (PART 1)

**INTERNET OF THINGS (IoT)**  
**SMART HOME**

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**SECTION** : 10  
**GROUP** : 6

**LECTURER'S NAME** : DR NAGHMEH NIKNEJAD

## **Introduction**

In the present time , 4.0 industry or 4IR has been the bridge to interconnectivity and smart automation. Therefore, 4IR envisions the fast change to technology , industries and societal patterns and processes .As part of this report we choose The Internet of Things (IoT). IoT refers to physical objects (or groups of such objects) that are equipped with sensors, computing power, software, and other technologies to connect and exchange data with different devices and systems over the Internet or other network infrastructure. In short , IoT makes our lives simpler and more organized as everyday items are equipped with integrated computing systems that use sensors to collect data and respond intelligently . Application on IoT includes consumer applications such as smart home automation which is our main focus in this report .

## **Content of report**

Client : En. Mohd Thamrin bin Superman

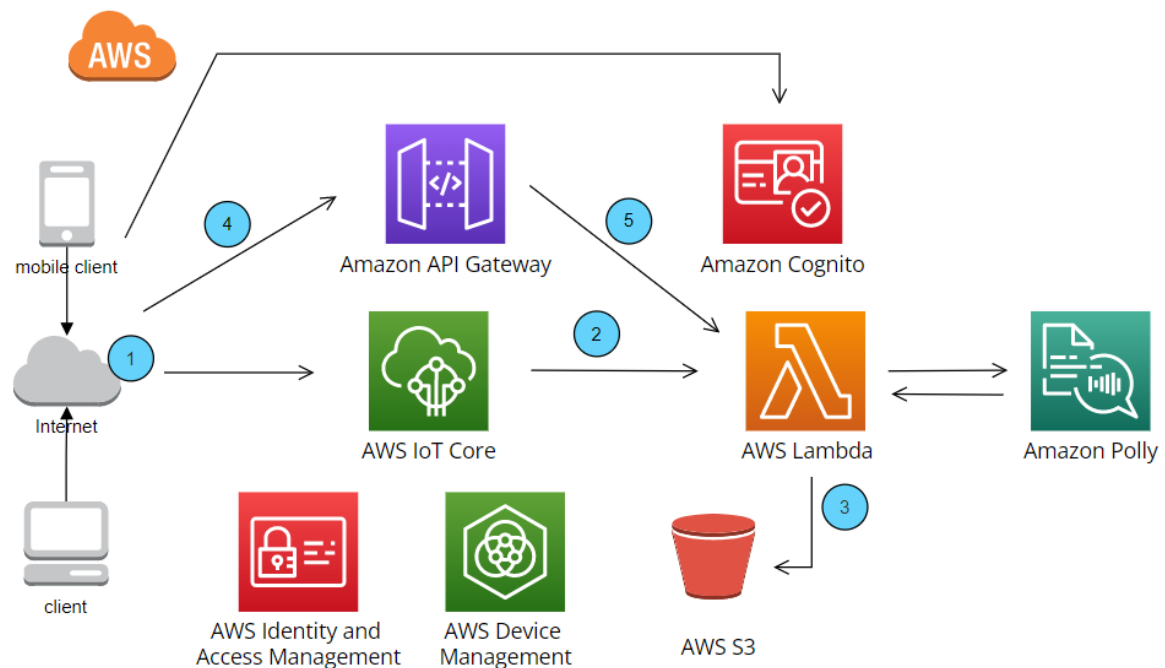
Position: Chief executive

Company: Tip Top Construction Sdn.Bhd

The client, Mr Mohd Thamrin, has requested us to help him develop a smart house system for his company that specializes in home construction. The problem is, their company has received multiple requests from their client to develop a system that is convenient and hassle free which doesn't require human energy. Before this, his company never had experience with the Internet of Things (IoT) in their project.

In order to do that, we have decided to help our client by inventing a system that can centralize the house that controls their home with these technologies through an application on a smartphone or tablet . We are planning to develop a smart home app that allows users to control their home appliances such as light, alarms, television and security . Self-learning capabilities are built into these home appliances, allowing them to learn the schedules of their owners and make modifications as needed. These smart devices (appliances) will come with computational processing power that is connected through a wireless network and will be accessible from the internet. A smart home includes equipment that give residents a variety of benefits, including comfort, controllability, and energy economy.

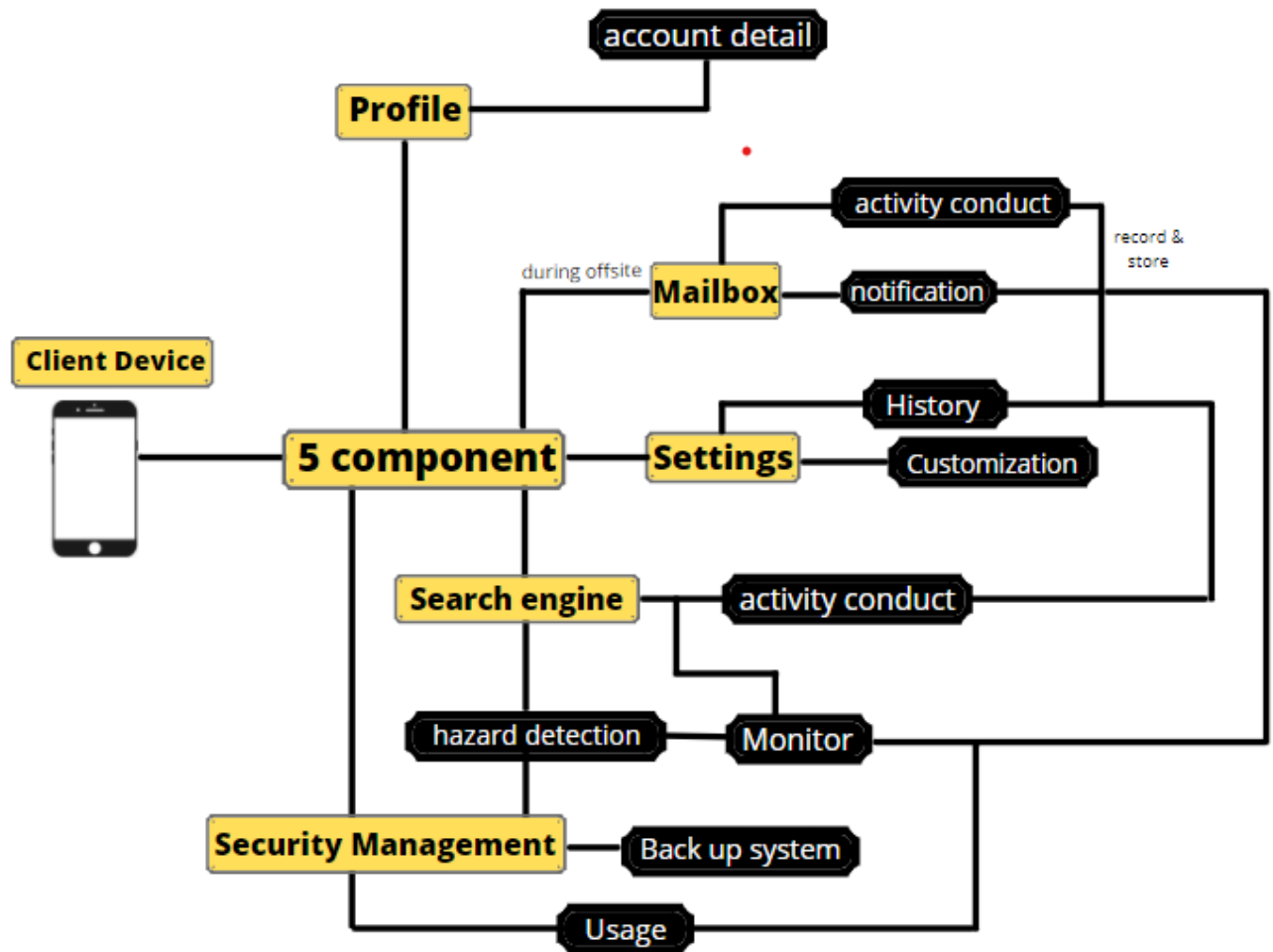
## Architecture and Planning Design



Authentication of users in the mobile app is handled through an integration of the customer's existing SSO solution with an Amazon Cognito Identify Pool. The smart home IoT platform is built with AWS IoT Core and AWS Lambda to provide customer device registration, easy device fleet management at scale, and the interconnection of end users and the home appliances connected to this platform.

Users authenticate from their devices through mobile apps connected to the internet . The information will pass through the AWS IoT Core. AWS IoT Core uses a rule engine to extract necessary data from the messages and pass the data to AWS Lambda function. AWS Lambda functions generate and then return an Amazon S3 presigned URL to store multimedia such as images, audio files, and videos especially for the security cameras of smart home . AWS Lambda function sends requests to Amazon polly, the data goes through Amazon Prolly which converts text into spoken audio that can be generated into dozens of languages, making it easy to add making it easy to add speech to applications . Next, Amazon Cognito will deal with login information such as authentication, authorization and user management for our app. AWS identity and access management can specify who can access which services and resources, and under which conditions by using single sign-in identity .AWS Device Management will register, organize, monitor, and remotely manage connected devices at scale .This service is secure and easy to use. Amazon API Gateway receives requests from Mobile apps and triggers AWS Lambda function to fulfill the requests.

## Smart home Security



Through devices, the client can access 5 components in the apps

### **1. Profile**

Clients can use the profile by creating a personal account. In the profile, there will be personal information and the ownership of the app since the app is synchronize with the system that has been built in through the client's house. Hence, the system will only recognize the owner of the app and the member or authorized guest that has been permitted by the owner. This mean that the house will be more secured since only certain people that have been permitted by the owner only able to access the app

### **2. Mailbox**

Client able to check their activities in their house even though they are outside of the house. The system will check, record and store any activities that have been done in the house and will notify or alert the client if there are any abnormal activities occurring in the house.

### **3. Settings**

Any recorded activities will be stored and the client should be able to access the history to check the recorded activities. Besides, clients are also able to customize the app through settings. For example, adjusting the font size or background color according to the client's preferences.

### **4. Search Engine**

As mentioned before, the client should be able to perform any activities or action even though outside of the house. For example, the client instructs the system to turn up the heat in the water bath so that the client doesn't have to wait for the water to heat up. Besides, clients are also able to monitor their house in order to ensure their security of the house.

## **CONCLUSION**

### **1. ACHIEVEMENT**

In this project, we aim to help our client by providing the best solution by inventing a smart home application based on the Internet of Things (IoT).

Individual citizens are the primary target group that we are aiming for. It is evident from this group what kind of change we want to see, such as new ways of life with major improvements. We are determined to improve the quality of living along with improving access to economic development.

We, the team members, gain from this initiative as well. We build trust, confidence, and respect for each other's viewpoints among team members, allowing us to develop new projects with ease and without stress.

### **2. LIMITATION**

- Adapting to something new takes time, especially to adapt smart tech into our daily routine and of course there may be some stumbling blocks. This is very normal and to be expected. Although ease of use are mentioned earlier, there is definitely a learning curve with smart home technologies. If people are more tech aware, they will be able to pick it up quickly. Even if you aren't too technical, you should be able to figure it out rather quickly. The majority of gadgets come with very simple installation instructions and excellent tutorials.
- The internet is the most basic necessity for a smart home system. You will not be able to control this without a good and stable internet connection. There is no other way to access and control your system if you don't have access to the internet for some reason.

### **3. CONTRIBUTION**

A smart home IoT solution based on AWS IoT may give consumers real-time status of home equipment and services, as well as the ability to control them from anywhere. Users will be able to safely share their device's status with other users, as well as communicate with one another utilizing multimedia material such as photographs and videos.