

Smart IT Convergence Framework in IoT Environment

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Abstract—In this paper, we have presented a framework design method for content production using mobile terminals and sensors based on IoT environment. Also, this paper includes the prototype framework applying the proposed techniques.

Keywords—IoT, framework, convergence, smart IT, prototype

I. Introduction

In order to make a service control platform in IoT environment, there must be a network module that enables connection to environment as well as these devices. And a controller is needed to establish connection between server and devices. However, it could be possible that the controllers may not be required, so they may create connections to server directly. In this paper, we introduce a prototype framework with the function of communication between server, sensor module, and mobile devices in IoT environment. The rest of the paper is organized as follows. In Section 2, we review the basic concept of IoT. Section 3 introduce a prototype implementation results. Section 4 concludes this paper.

II. Background

The term Internet of Things (IOT) was created by Kevin Ashton of MIT Auto-ID Sensor in 1999 [1,5], and presented the vision of connecting objects through RFID technology to the Internet. IoT technology is similar but defined differently depending on the organization dealing with the technology and its purpose. The common point is that all objects have global scale connectivity and provide intelligent services [2]. There are various categories of domestic and foreign IoT industry. However, some are accepted as an extension of ubiquitous or machine-to-machine (M2M). Key domestic industry examples include SKT's smart farm service, KT's smart home service, and LG U +'s IoT @ Home. SKT's smart farm is a service that manages farming through Smartphone by installing various sensor and W-CDMA-based terminals in the vinyl house of the farmhouse [3].

As for the business models of KT and LG U Plus's, they are the services that allow the home terminals with outlet, lamp, gas valve, etc. In a sense those services may be regarded as an extension of the previous USN or M2M not like real IoT for global service [4].

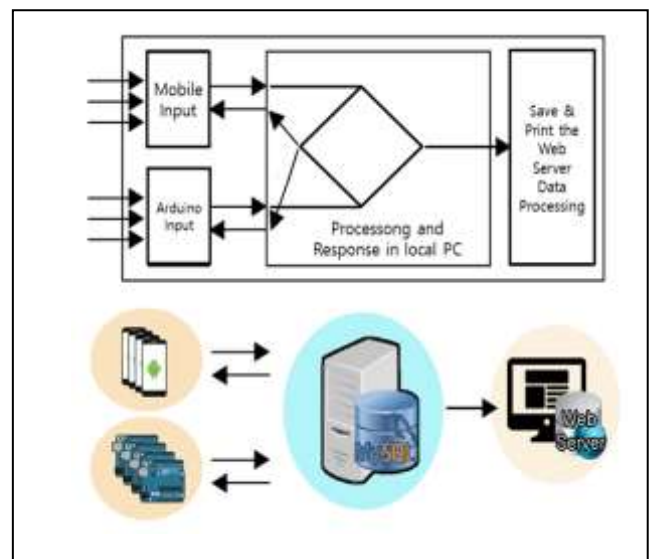


Figure 1. Implementation environment

III. Proposed Method

This paper proposes a IT convergence framework using Lego type sensor module design techniques and Fig. 1 shows the implementation environment. The network environment applied in this work is shown in Fig. 1. For implementation C++ language and MySQL were used. All mobile sensors and Arduino devices communicate through local PCs. The examples of local PCs functions are as follows: confirm setting of completion of the device, data processing, backs up, and so on;

(1) Initialization step: When all sensors are operating normally, the initialization code is transmitted to the server. The server receives the code and sets the state of each sensor to the initialization phase. If it is determined that all the sensors (mobile and Arduino) have been set to the initialization step, the server sends the initialization completion code as a packet to all connected sensors collectively. (2) Data exchange phase: The sensor receiving initialization completion code assumes that the data is ready for exchange, and transmits the input value to the server. This includes various parameter values including on/off values. The server stores the received data in the web server. In addition, it analyzes the received data and can process them appropriately for mobile or Arduino. Through

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