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A Novel Design of IoT Cloud Delegate Framework to Harmonize Cloud-Scale IoT Services

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Abstract: Nowadays, IoT is related with technologies. It is also with WoT. The combination of many network protocols is to allow interactions considering as the client to manage the linked services. This is done by IoT technologies. Still, to sponsor IoT technology is higher interesting usage master plan dislike remote control. This is functionally required. This paper presents a new architecture to collaborate with the cloud level IoT service on a smart service by using the theory of Intention. The presented architecture states the intention of client or service to set up the interaction among all linked services in cloud-dimension IoT devices. After combine all the things, a development tools are described and HTML application is implemented.

Keywords: IoT, XML, Smart Things, OAuth protocol, Intension Manager, Withings, Data Channel.

I. INTRODUCTION

A technology associated to IoT (Internet of things) is acquiring attention from many areas in recent days. Products are being provided to market by some IoT technology companies and standard documents are also being made by many standard bodies. The main focus of IoT technology is to remotely control client's device at any time. In order to achieve this, various network protocols and definitions are utilized by IoT – related standards and technologies to control and identify devices. XMPP, MQTT are protocols to be considered as fundamental protocols to IoT device, and HTTP based REST framework [1]-[3]. Data formats like JSON, XML can be used for IoT technology. In addition, companies like Smart Things are making integrated development kit that are web-based and can be used by developers to make applications to control devices that are intercommunicated to its link service.

Also various researches related to IoT are being done. PatRICIA, mainly a concept of intent and intent scope is used to manage a customized cloud dimension IoT service. In 3 and 1, proposal of RESTful framework for IoT is made. In spite all these, technologies such as these do not get enough exposure, concentration from general client. Devices can be controlled remotely by most of the current IoT applications, but for general client, installation and usage is too complex due to its range of capabilities as a remote controller. For example, there's somebody who is an owner of a device from Smart Things, Hue and Withings. From client's perspective, it is same as having an IR based remote controller lying on the table with plenty of steps to follow. Smart devices which are not only remote controllers are needed in order to make IoT services more successful. Hence, we present intention based IoT Service Representative Architecture to supply more attractive use cases for IoT technology [4]. The aforementioned method provides framework that can be used for highest application among IoT services. The proposed framework will enable communication between IoT devices. Let us take an example – when CO2 level reading from private wind sensors is more enough, air conditioner is turned on in air cleaning mode and that too without any client interaction. Intention in this context can be defined as this relation between client and devices. Intention can be built either certainly based on clients incorporate or essentially from client nature and is described in XML [5]-[6].

II. IOT DELEGATE ARCHITECTURE BASED ON INTENSION

The major objective of this presented research work is explanation of the how the client's Intension connects with each other. Here the clients mean the users such as IoT client and IoT service. To reach a target, the device's data information is required for the cloud scale. The application of maximum IoT cloud supplies the procedure to fetch the devices of users and controlling by protocols [7]. The arrangement of the planned scheme is in figure 1.

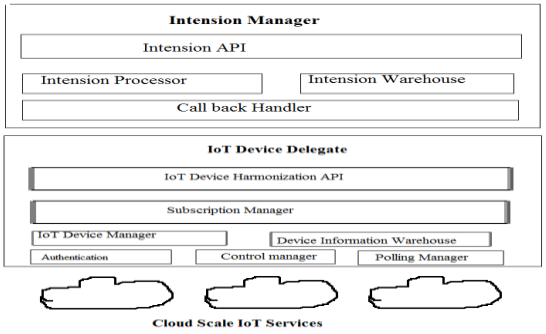

Fig 1: Arrangement of planned scheme

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A. IoT Service Representative

IoT Service Representative analyses the various authentication systems implemented for enhanced security and private re-position of an individual's log-in credentials. It describes the multi-factor authentication (MFA) systems, which, though not applicable to the field of Internet of Things, provides great security to a user's credentials. MFA is followed by a brief description of the working mechanism of interaction of third party clients with private resources over the OAuth protocol framework and a study of the delegation based authentication system in IP-based IoT.

In the IoT Service Representative, it has a warehouse to store the data about IoT device from the cloud IoT device. Now, maximum IoT services are to exist their devices by the supplying of the APIs. The IoT Service Representative Manager manages the protocol which is about the cloud service. It should be done very securely. The such protocols are like OAuth.

In the Data Channel, today most connected devices operate in siloes, preventing us from unleashing the IoT's full potential. Data Channel technology uses a peer-to-peer architecture that provides privacy measures, which in combination with Identity Relationship Management assure that confidential information can be accessed only by authorized parties. Data Channel is a real-time peer-to-peer data transfer technology that can run not only between browsers as stated in the specification, but also on servers or other applications [8].

B. Intension Manager

The word Intension means “what to do” for a “particular reason”. This is described as “Trigger”. Trigger means the situation for starting the particular Actions in the form of Data Channel. Action is the formerly known. Target service and Target Actions are described by Action.

For the set up installation of the Intension manager, the client makes Intension by XML. It receives by the Intension Manager when he receives the Intension. At that time, it fetches the data parameter from the Data Channel and it follows the particular data where it exists. It is the explanation of Intension Manager with the following smaple code.

```
// Set Data Channel
DataChannel dc = new DataChannel();
dc.setOwner(uuid );
dc.setSource( “iot:temp” );
dc.setCondition( “iot:gt”, “26”);

// Set Action
Action ac = new Action ();
ac.setTargetService( airconditioner.uuid );
ac.setAction( “airCon:SetColdMode”);
dc.subscribe(hotCallback, ac );
…
voidhotCallback( Action[] acList )
{
// process actions described in acList
}
```

III. IMPLEMENTATION

IoT Service Representative and Intension manager is the basic thing of presented architecture. And very recently, we are going to work on the implementation of IoT Service Representative. The functions for IoT Service Representative can be recap as 1) collecting the service data from the cloud dimension IoT devices separately 2) Supplying IDH APIs to match services. These functions are as stated.

On the basis of ai7 PC, the researchers have to install HTTP server with Apache, Tomcat. It is executable IoT Service Representative for 6 devices from three cloud dimension IoT service: Smart Things, Weather Stations, and Withings. The services are related to different sensor. Those are: door sensor, proximity sensor, weather sensor. It can be supplying each other devices data; facts, news and show from those three clouds level IoT devices and organize the information pathway by the use of HTTP. Sometimes, some cloud level does not supply the service state change. For this case, we need Asynchronous JavaScript and XMLto accept that information. All information pathways were too brought up to date from service sector successfully and proposed them in web browser on computer and Smart Phone and Smart TV.

Also, the improvement apparatus for IoT Service Representative (WDT-ISR) is based on web. It is implemented. Through the WDT-ISR’s API experiment and recognition in real, it can be easily accessible by organizer and form an application for cloud-dimension IoT devices [9].

IV. CONCLUSION

Through this paper, we present a new, original methodology to match devices from dimension of the cloud IoT devices. The presented architecture uses IoT Service Representative to manage the services from different clouds and the work for Intension Manager is to conduct the communications between all the devices. The IoT Device Manager is implemented. It presented the device state by the using of data channel successfully. The implementation is the based on the show with the WDT-ISR, what is based on the internet and IoT service development tool and it connected with the API which supplied in the apparatus.

Now the researcher assumes about the presented framework and improvement apparatus which supplies a useful and efficient path to build it more appealing and interesting IoT service. This all are done in this paper. It has future work. In the expected work, we are going to work on this architecture in more details. We can implement Smart Home Life Service where it connects the home with IoT services. It is connected by internet.

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BIOGRAPHY

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