

Automatic Control System of Intelligent Building Based On Web Service

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ABSTRACT— The Upcoming Big Possibility and Challenges for the Internet is Internet Of Things. Expansion of Web Architecture to this new domain of constrained Wireless Network and devices will be helpful in achieving Flexibility and Scalability. This paper presents Introduction of automatic control system based on web service. It also introduces the renewable of energy, solar energy for improving the working efficiency and distributed control and centralized management system of buildings. This System intent to provide water Solar energy, Air Conditioning system.

KEYWORDS— Building Automation, Web Service, Solar Energy, Air Conditioning.

I. INTRODUCTION

In the field of automation technology intelligent building is becoming a new focus. This concept helps to understand the use of technology in improving the energy performance in buildings. Real Time System includes Monitoring Software, Data Acquisition Hardware. Communication System used to Stored, analyse and display buildings real time data. Real Time system provide hourly whole building electric data which is web accessible with analytical and graphical capabilities. Through, real time system technology we can reduce energy use in building for number of reasons-Energy Saving, Reduce Maintenance Cost, Reduce Costly Visits, Improve Security [1].

II. WEB SERVICES

To grasp how to expand the web to suppressed networks and device, also important to understand the core architecture of web. A new application transfer protocol designed for realizing embedded web services was developed by RESTful environment group. Due to the Internet Of Things there will be plenty of challenges in the front of the internet and communication engineers because scale of internet increase from billion to millions. Figure 1.Shows ring model of Internet of Things. The Third ring of internet which is Internet of Things consists of new embedded application such as routers, servers and quickly growing fringe internet consists of personal computers, smart phones. All these above applications add totally possibility and challenges [3].

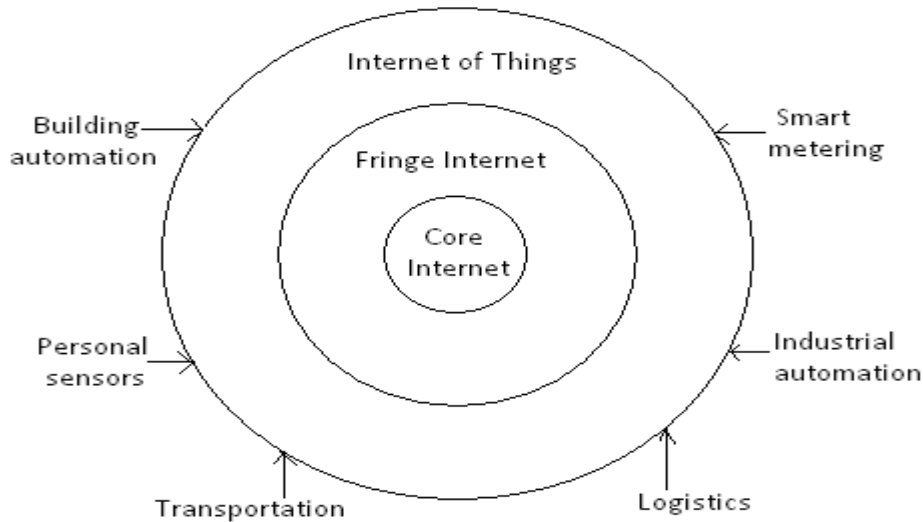


Fig 1. Internet of Things

III. WEB ARCHITECTURE

Web Services is a program running on remote machine also known as web server which using a transport and vendor neutral protocol exposes it to the web. It consists of two communicating entities Producer and Consumer i.e. Web server and Client. A more sophisticated form also involves registry acting as a third party reference as to which web service provides which service at what address.

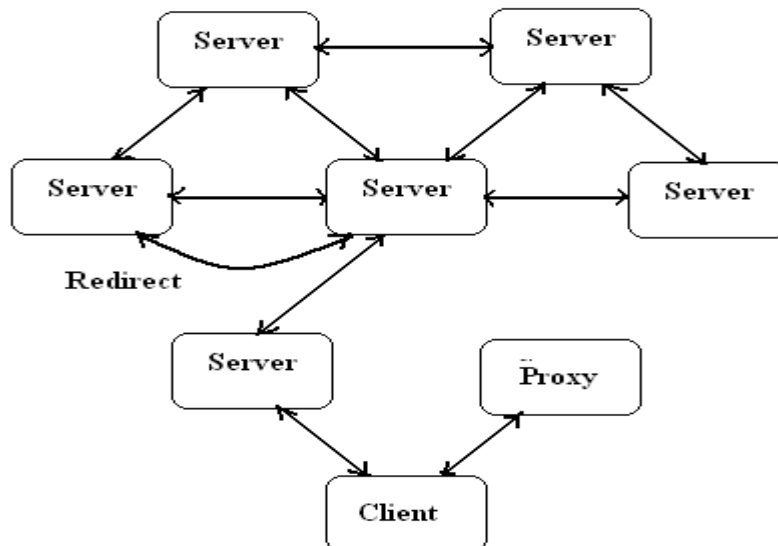


Fig 2. Web Architecture.

Figure 2. is the Server controlled Resources they are accessed by clients in a synchronous request/response mode using methods such as GET,PUT,POST and DELETE of HTTP. Resource state allows for the Catching,

Proxy and Redirection of Requests and Response. Web Resources may contain links to other resources and to create a distributed web between Internet end points, resulting in highly scalable and flexible architecture. This web architecture are commonly known as Representational State Transfer (REST). Though today HTTP is merely being used for manipulation web Resources, REST can also be used with other application protocol [3].

IV. VARIOUS SYSTEMS FOR BUILDING AUTOMATION TECHNOLOGY

Energy Information Systems is rare compared to other aspects of building control and diagnostics. Yet there are various studies which draws our attention. A recent study determined the state of the technology and updates data [11].

A. Air Conditioning System Based On Intelligent Building Automation

The central Air Conditioning Systems as an essential part of buildings. It is enterprise by its high energy consumption and it is possible for energy saving with the technology of Direct Digital Control. Direct Digital Control is mainly used in pumps, fans and frequency conversion control of Refrigerator, Compressors that can achieve multi parameters coordination control. MATLAB usually is used to research the purpose of affecting factors such as environment temperature, Compressor working frequency, condensing temperature and humidity etc. The maximum control model of Air Conditioning Systems belongs to multivariable non-linear problem, in the basis of forecasting Air Conditioning System load using fuzzy control technology to improve quality of control can achieve Air Conditioning System energy saving operation and fault-tolerant ability in a certain extent [9].

B. Solar Water Heating System

Solar water heating system executes centralizing renewable energy source to produce heat source and adopts electricity like gratuitous heat source. This is made up of electricity heating, back water pump, circulation pump, water supply pump, feeding pump. The loop contains pump and valves which can be controlled by feeding pump. It can accomplish in various types of functions such as water circulation, water supplement and water send-off. In this system there are two modes:

1. Automatic Mode: START/STOP button is used in automatic mode and the system can control automatically.
2. Manual Mode: In manual mode system can control through user [1].

V. CONCLUSION

This Review Paper introduced recent activities in the expansion of the web architecture into suppressed environment using embedded web services by using fundamental REST architecture in this domain. Routing, Scalability, Naming, Identification, Security and Privacy are most important challenges for such as type of network. The Central Air Conditioning System optimization Control management system which is based on the research of air Conditioning System optimization operation strategy had been successfully applied in energy

saving renovation project. It achieve a excellent energy saving effect, and Benefits of this building Automation technology useful for energy saving scalability, security and improve efficiency [9].

REFERENCES

- [1] Jian Liu, Xiaoqin Lian, Xiaoli Zhang, Chongchong Yu, "Automatic Control System of Intelligent Building Based on Web access", Proceeding of the 7th World Congress on intelligent Control and Automation June 25-27,2008,Chongqing,China.
- [2] Minghao LU, "The Application of Building Automation System in Construction Energy Conservation," Building Electricity, no.7, pp.13-17,2007.
- [3] Zach Shelby,Sensinode Ltd,"Embedded Web Services",IEEE Wireless Communication, Dec 2010.
- [4] Zheng Lia, Shiming Deng, A DDC-based capacity controller of a direct expansion (DX) air conditioning (A/C) unit for simultaneous indoor air temperature and humidity control e Part I: Control algorithms and preliminary controllability tests. International Journal of Refrigeration, Vol. 30, pp. 113-123, January 2007.
- [5] L. Goel, Qiuwei Wu, Peng Wang, Fuzzy logic-based direct load control of air conditioning loads considering nodal reliability characteristics in restructured power systems. Electric Power Systems Research, Vol. 80, pp. 98-107, January 2010.
- [6] R. T. Fielding, "Architectural Styles and the Design of Network-Based Software Architectures," Ph.D. Thesis, University of California, Irvine, 2000.
- [7] M. Nottingham, "Web Linking," IETF RFC 5988, Aug. 2010.
- [8] T-J. Yeh, Yen-Hung Chen, Jin-Long Lin, Control of air-conditioning systems in heating mode to enhance transient performance and steady-state efficiency. Energy and Buildings, Vol. 41 pp. 1391-1400, December 2009.
- [9] Liu Xue-feng, Liu Jin-ping, Liu Lei, Zou Wei,"The Design and Application of the Optimize Control Management System to the Central Air-Conditioning Based On Intelligent Building Technology",2011 IEEE.
- [10] S.A.Vaghefi, M.A.Jafari, Member, IEEE, J.Zhu, J.Brouwer, and Y.Lu,"A Hybrid Physics-Based and Data Driven Approach to Optimal Control of Building Cooling/Heating Systems",1545-5955,2014 IEEE.
- [11] Jessica Granderson and Mary Ann Piette and Girish Ghatikar,"Building Energy Information Systems",16 June 2010.