



Survey on IOT Based Industry Environment Protection System Using Arduino

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ABSTRACT

Internet of Things (IoT) plays a key role in the new generation of industrial automation systems (IASs). Evolving IoT standards if effectively used may address many challenges in the development of IASs. However, the use of the IoT and the REST architectural paradigm that IoT is based on is not an easy task for the automation engineer. In this paper, a model driven system engineering process is adopted for IASs and it is extended to exploit IoT standardization efforts in IEC 61131 based system. IoT is considered as an enabling technology for the integration of cyber-physical and cyber components of the system and humans, bringing into the industrial automation domain the benefits of this technology. A UML profile for IoT is exploited to automate the generation process of the IoT wrapper, i.e., the software layer that is required on top of the IEC 61131 cyber part of the cyber physical component to expose its functionality to the modern IoT IAS environment. A prototype implementation and performance measurements prove the feasibility of the presented approach.

Keywords: Industrial Automation Thing, Internet of Things (IoT), UML profile for IoT (UML4IoT), IEC 61131

I. INTRODUCTION

As the society is growing with various developments, the outmoded forms of storing various food products in cold store rooms fails to satisfy human need. Through the monitoring of the temperature and humidity inside cold storage rooms, the goodness of the products can be ensured for a longer time. Recent research has revealed that operations of wireless sensor systems are largely affected by their on-board temperature [1]. We can implement sensors in wide area over the machines and instruments and control and monitor the circumstances by using concept of IoT [2]. As we are making use of Internet the system becomes secured and live data monitoring is also possible using IoT system [3]. In this paper we have designed a gateway which will be the central part of this whole system. The function of the gateway is to gather data, process them, upload them and process user control information. If the network connection is not established then the data will be stored and upon reestablishment of the network it will be uploaded. The terms of "things" in the IoT vision is very broad and includes a variety of physical elements. The terms of things include portable personal items such as smart phones, tablets and digital cameras. Furthermore, IoT includes elements of our environments (be it home, car or office), and things equipped with RFID tags connected to a gateway device. From those mentioned so far, a huge number of devices and things will be connected to the Internet, each providing data and information and some even services. With the rapid increase in the number of user of the internet over the pass decades made the internet as the part of the life and IoT is the latest and emerging technology.



II.LITERATURE SURVEY

[1] H.S.Raju, Sanath Shenoy Siemens Technologies and Services Private Limited in “Real-Time remote monitoring and operation of Industrial Devices using IoT and Cloud” 978-1-5090-5256-1/16/\$31.00-2016 IEEE have explained recent times there has been significant advances in managing different types of sensors and industrial devices by IoT (Internet of Things) protocol. Along with the availability of massive amount of processing power provided by the Cloud new opportunities have emerged for complete automation of industrial devices. IoT has a vast application in different sectors and domains which are yet to be explored. In industry domain, industrial automation is need of the hour to increase the time to market with high grade quality and enhanced productivity. In this paper we explain proven ways to utilize the capabilities of Cloud and IoT to control the device and analyse the data generated by them.

[2] “IoT-based Integration of IEC 61131 Industrial Automation Systems: The case of UML4IoT” by Foivos Christoulakis, Kleanthis Thramboulidis- 978-1-5090-0873-5/16/\$31.00 ©2016 IEEE have explained that Internet of Things (IoT) plays a key role in the new generation of industrial automation systems (IASs). Evolving IoT standards if effectively used may address many challenges in the development of IASs. However, the use of the IoT and the REST architectural paradigm that IoT is based on, is not an easy task for the automation engineer. In this paper, a model driven system engineering process is adopted for IASs and it is extended to exploit IoT standardization efforts in IEC 61131 based system. IoT is considered as an enabling technology for the integration of cyber-physical and cyber components of the system and humans, bringing into the industrial automation domain the benefits of this technology. A UML profile for IoT is exploited to automate the generation process of the IoT wrapper, i.e., the software layer that is required on top of the IEC 61131 cyber part of the cyber physical component to expose its functionality to the modern IoT environment. A prototype implementation and performance measurements prove the feasibility of the presented approach.

[3] “An IoT Architecture for Things from Industrial Environment” by Ioan Ungurean^{1,*}, Nicolet-Cristina Gaitan¹ and Vasile Gheorghita Gaitan¹ 978-1-4799-2385-4/14/\$31.00 ©2014 IEEE told that there are significant changes in industrial process control, intelligent building control and automation technologies under pressure to reduce operating costs and to integrate important advances in telecommunications and software. The software has become an essential factor in production and enterprise-wide systems. Internet connection has fundamentally changed the arrangements for monitoring and control, and the use of open/public standards and personal computer systems (PCs, tablets, smart phones) bring significant benefits to their users and producers. This led to the definition of Industry 4.0 that brings the concept of the Internet of Things in the industry.

III.METHODOLOGY

In this proposed system, the main concern is to implement and design a multisensors based IoT platform for air, sound and water quality real-time monitoring. Main focus of this system is high & fast sensitivity, low cost and low power consumption with two way power system .The system always takes its powered from solar panel unit, if the solar panel fails the AC power line enable automatically, thus the automatically switching system is handling by power electronic logic circuit. After sensing data send to the cloud, data storage operation and Alarming before will pollution become occurs. Air temperature and relative humidity CO₂, CO, LPG, Smoke, alcohol, benzene, NH₃ Temperature, similarly to pH level, water temperature for water quality and also detect environment sound Dimension are united this system for real-time monitoring . Another consideration in this research based on cost effective sensors for relative humidity , temperature and VOC measuring , pH measuring with MOIST thick sensor was developed [1].This proposed system provides a special advantage where every one sensor connected with a input pin within a central unit based microcontroller for sensing quality parameters value .The proposed central unit based microcontroller system ensures that it can be easily expanded, customization and allows customization options as user requirements, simple, accurate result, easily maintenance and cost-effective, E-mail alert and SMS alert before the pollution occurs, If the device are



disconnected with cloud, user get a Email alert within 5 minutes . The proposed system is a platform which allows multi-parameters analysis of air, gas, sound and temperature .So the proposed system offers better efficient and differentiate with existing system .The pollutants when released from industries or when fire is detected the system gets activated. When carbon di oxide goes above the defined level or threshold value the system gives an alarm to the authority. If the authority does not take any actions system automatically stops the motors. Similarly when _re is detected an alarm is given and if no actions are taken by the authority automatically exhaust fans will get on.TheLeaked is detected and after the alarm if no actions are taken the boilers are switched off. This system is also monitored using IOT the internet of things.

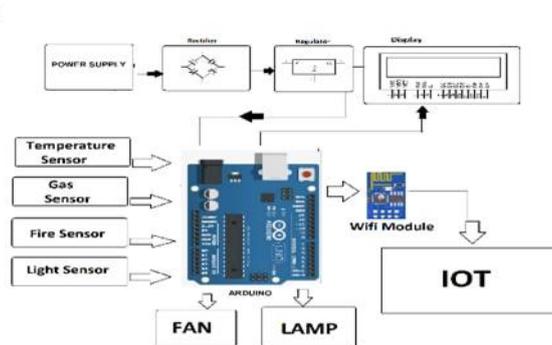


Figure 1: Methodology Description

Whenever the parameters cross the limits the values are updated. These updated values can be viewed anywhere and anytime by opening the link given through internet. The inputs from sensors given are interfaced with IOT and made available online all the time so anyone who has the link can view the condition of the parameter. Methodology Description is shown in Figure 1

IV.CONCLUSION

The wireless sensor networks are connected with the internet with the help of the IoT gateway and also ensure the monitoring of the products inside cold store rooms. Also this type of application helps in checking the temperature and humidity on a continuous basis and then resulting instructions are sent to the server. Based on which the environment inside the store rooms can be monitored. This type of system can help in Industrial Automation using IoT, with the help of which we can take intelligent decisions.

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