International Journal of Technical Research and Applications e-ISSN: 2320-8163,
www.ijtra.com Special Issue 39 (KCCEMSR) (March 2016), PP. 72-74

AUTOMATION SYSTEM USING INTERNET

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***Abstract*— A smart city is the one that has digital technology embedded across all city functions. Using sensor-actuator networks and cloud technologies we can enhance the quality and performance of urban services, reduce cost and resource consumption, and engage more effectively and actively with its citizens. This paper focuses on the economic impact of IOT in the development of a city and we stand by the view of "Connecting People, Process, Data, and Things to improve the 'Livability' of Cities and Communities".**

Index terms- **embedded; sensor-actuator; cloud; technologies; Process; IOT; Livability,**

I. INTRODUCTION

A smart city is the one that has digital technology embedded across all city functions. A smart city (also smarter city) uses digital technologies or information and communication technologies (ICT) to enhance quality and performance of urban services, to reduce cost and resource consumption, and to engage more effectively and actively with its citizens. Sectors that have been developing smart city technology include government services, transport and traffic management, energy, healthcare, water and waste. Smart city applications are developed with the goal of improving the management of urban flows and allowing for real time responses to challenges. A smart city may therefore be more prepared to respond to challenges than one with a simple 'transactional' relationship with its citizens. Other terms that have been used for similar concepts include 'digital city", 'electronic communities', 'information city', 'intelligent city', 'knowledge based city, 'wired city', etc.

Smart cities are the future reality of all municipalities around the world. By 2050, an estimated five billion people will inhabit earth and seven in ten people will live in the cities. To manage this large-scale urbanization,

cities are turning to digital technologies to integrate information and communication systems into various technical systems and infrastructure, thereby setting the stage for smart cities.

Our project 'Automation using Internet' or 'Internet of Things (IOT)' gives an insight about the various services and essential functions, which will be used to connect all objects through the internet for remote sensing and control. Cities stand to benefit the most from connecting people, process, data, and things. Our main focus is to explain the economic impact of IOT in the development of a city and we stand by the view of "Connecting People, Process, Data, and Things to improve the 'Livability' of Cities and Communities". We are trying to develop a model on Smart City using IOT. And the same is explained further in our entire Project Report.

II. LITERATURE SURVEY

As more people and new types of information are connected, IOT becomes an Internet of Everything.

"Digital urbanism" is rapidly becoming a central pillar for urban planners, architects, developers, and transportation providers, as well as in public service provisions. Since the past decade, scientists and organizations have been working on developing and improving the already existing technology, which is automation using internet.

In the city of Amsterdam, Netherlands, Cisco is engaged in developing smarter and greener environment. Here, the company in collaboration with another industrial giant PHILIPS, developed network-enabled LED Street lighting system. Instead of traditional fluorescent street lights which had to be controlled manually, they used LEDs in place of fluorescent light bulbs, which consumed less power, and which where

lighter and more reliable. And all the street lights across the system where connected to a central controlling unit, which controlled the Street lighting system, switching it on/off whenever required and thereby saving a large amount of energy. Area wise control of the system was acquired and in turn wastage of electricity was reduced on a large scale. On the brighter side, maintenance of the system became easier as the controlling unit would carry out intelligent lighting operations such as

Remote Monitoring: The lighting failures are automatically reported by the system, saving time and costs.

Smart asset management: The digital system smartly plans and routes the maintenance works to minimize street blockages.

Smart dimming & scene setting: Lights are dimmed during low traffic hours to save energy or enhanced in problematic neighborhoods to improve safety.

Intelligent energy metering & billing: A smart meter accurately calculates the energy consumption taking into account the varying rates and automatically bills all entities.

Up to 30% of congestion is caused by drivers cruising the streets in search of a place to park. In Barcelona's Born Market, sensors embedded into parking spaces relay real-time information on empty spots to an app for would-be parkers. Siemens recently gave a grant to a start-up devoted to building parking drones that could guide cars to available spots. Tel Aviv, a city in Israel, is tackling traffic on busier roadways by reserving one lane for buses, shuttles, taxis and car poolers—and allowing impatient and deep-pocketed commuters to use the designated lane, as well. Sensors in the asphalt pick up the car's license plate number and automatically charge the owner's credit card at a rate that varies depending on how busy the road is.

III. PROPOSED SYSEM

From the literature survey of the existing technology and the current architecture of the various sub systems or basic building blocks of a city, we have identified certain problems, and proposed a solution to solve them. We are trying to gather data and monitor it from the following entities:

1. Street Lighting systems
2. Parking systems
3. Pollution Controlling Systems
4. Garbage Management
5. Water Management
6. Flood Control
7. Traffic Control System

These sub-blocks define the area of working of the automation model. In other words, various sensors and electronic equipment is fitted in the necessary areas and data is collected. The technology and data gathering used in Smart Cities should be able:

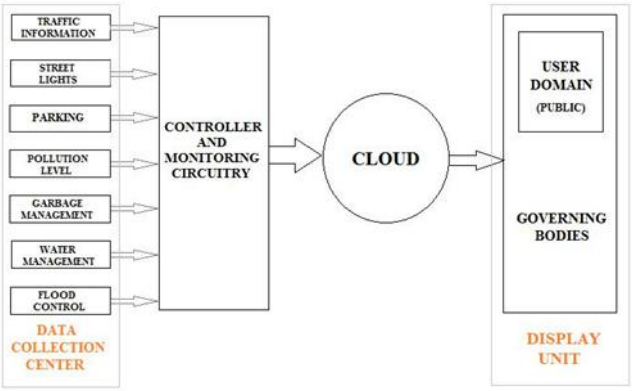
To constantly gather, analyze and distribute data about the city to optimize efficiency and effectiveness in the pursuit of competitiveness and sustainability

To communicate and share such data and information around the city using common definitions and standards so it can be easily re-used

To act multi-functionally, providing solutions to multiple problems from a holistic city perspective.

Developing a platform: The main aim of our entire system is to develop a common platform for the authorities as well as the masses; where they can access the information. This ensures transparency in a system. All the systems that are mentioned above can be linked to each other using the Internet. The information connected by the various nodes and sensors is sent to a cloud; which is visible to everyone. Thus, we have focused on modern day technologies like Cloud Computing.

Based on the above work, we have essentially developed a generalized block diagram of our system.



These sub-blocks define the area of working of the automation model. In other words, various sensors

and electronic equipment is fitted in the necessary areas and data is collected. Through the internet this data is stored at the data collection center. This collected data or information is then passed to the next block which is the

'Controller and Monitoring Circuitry'. Here the information is processed and it is stored. Now, to make this information available to the common masses and the governing bodies, there must be a common platform which is accessible to all. Here comes in picture, the concept of 'Cloud Computing'. The practice of using a network of remote servers hosted on the Internet to store, manage, and process data, rather than a local server or a personal computer is Cloud Computing. In simple words, the collected and processed information must be made available, and here it is done on the cloud. A Cloud is a virtual concept, accessible through the internet. Here the concept of 'Internet of Things' comes into picture. All the information is made available on the cloud and anyone can access this information. And thus cloud is the next block. The final block as seen from the block diagram above is the 'Display Unit'. This block consists of the User Domain which is for the public and the governing bodies.

IV. IMPLEMENTED SYSTEM

In the implementation stage we have actually designed each block separately and finally integrated them into the complete working system. And to make everything available on the cloud, we have developed a software. To get the logical flow of the software, the development of algorithm has a prominent role. So, we have analyzed the complete system and organized the algorithm in such a manner that one can understand the complete working of the software. After the development of the algorithm and flowchart we have actually translated them in C language for Atmel 89C51 Microcontroller so that it can understand the instructions and run as per our requirement. The

instructions are in ANSII C Language. The code is implemented on the computer for which we have used Keil pre-installed on PC. The Keil is a Computer Aided Program to simulate the working of Microcontroller in real time without burning the software into actual IC. We simulated and compiled our program for error checking. After removing of several compiling errors the program was converted into machine language i.e. Intel hex format. After this stage the compiled hex format file was downloaded or burned into Atmel AT89C51 flash Microcontroller. This was done with the help of FP-8903 Programmer for Atmel microcontrollers designed by Oriole Electronics Pvt. Ltd. This time we tested our project for actual working, after loading the software into the microcontroller. Any errors found were removed successfully. This is the last and final stage of development of our project.

V. CONCLUSION

To fully understand the complex interaction between the city and its energy management systems with all components at different urban scales (grids, buildings, supply technologies, and consumers), it is crucial to be able to unlock the full potential of smart grids. Therefore, a more holistic approach with a special focus on the interaction of all incorporated system elements is needed. The successful combination of smart processes (e.g., demand side/response management and real time consumption management) and smart technologies (e.g., smart meters and intelligent home energy management devices) will enable energy efficiency and savings to be achieved in the residential and business market.

REFERENCES

1. Internet of Things for Smart Cities: Andrea Zanella, Senior Member, IEEE, Nicola Bui, Angelo Castellani, Lorenzo Vangelista, Senior Member, IEEE, and Michele Zorzi, Fellow, IEEE
2. WSN- and IOT-Based Smart Homes and Their Extension to Smart Buildings: Hemant Ghayvat, Subhas Mukhopadhyay *, Xiang GUI and Nagendra Suryadevara
3. Internet of Things: Ubiquitous Home Control and Monitoring System using Android based Smart Phone Rajeev Piyare
4. https://groups.csail.mit.edu/drl/wiki/images/e/e0/BashaI CTD07SAT.pdf- Design of Early Warning Flood Detection Systems for Developing Countries Elizabeth Basha, Member, IEEE, and Daniela Rus, Member, IEEE
5. http://www.cisco.com/web/strategy/docs/gov/everything -for-cities.pdf
6. http://www.theglobeandmail.com/report-on-business/rob-magazine/the-future-is-smart/article24586994/
7. http://www.ijesi.org/papers/Vol(2)3%20(Version-3)/J236069.pdf