IoT :LOCKING OBJECTS BY UNLOCKING INTERNET

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ABSTRACT

One of the buzzwords in the Information Technology is Internet of Things (IoT). The future is Internet of Things, which will transform the real world objects into intelligent virtual objects. The IoT aims to unify everything in our world under a common infrastructure, giving us not only control of things around us, but also keeping us informed of the state of the things. The Internet is a global system of interconnected computer networks that use the standard Internet protocol suite (TCP/IP) to serve billions of users worldwide. It is a network of networks that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless and optical networking technologies [1]. Today more than 100 countries are linked into exchanges of data, news and opinions through Internet.

I. INTRODUCTION

The next wave in the era of computing will be outside the realm of the traditional desktop. In the Internet of Things (IoT) paradigm, many of the objects that surround us will be on the network in one form or another. Radio Frequency IDentification (RFID) and sensor network technologies will rise to meet this new challenge, in which information and communication systems are invisibly embedded in the environment around us. This results in the generation of enormous amounts of data which have to be stored, processed and presented in a seamless, efficient and easily interpretable form. to date the mobile operators have identified the services as :

- The Internet of Things can enable the next wave of life-enhancing services across several fundamental sectors of the economy.
- Meeting the needs of customers may require global distribution models and consistent global services.
- The Internet of Things presents an opportunity for new commercial models to support mass global deployments.
- The majority of revenue will arise from the provision of value-added services and mobile operators are building new capabilities to enable these new service areas.
- Device and application behaviour will place new and varying demands on mobile networks.
- Various definition for IoT are defined as : Semantically, the IoT means "A world-wide network of interconnected objects,

uniquely addressable, based on standard communication protocols" (Internet of Things in 2020, 2008).

CASAGRAS defines the IoT as (Casagras, 2011): "A global network infrastructure, linking physical and virtual objects through the exploitation of data capture and communication capabilities. This infrastructure includes existing and evolving Internet and network developments. It will offer specific object-identification, sensor and connection capability as the basis for development of independent federated services and applications. These will be characterised by a high degree of autonomous data capture, event transfer, network connectivity and interoperability".

In section 2 we give an overview of related work which identifies all the major research work being done in this area. Section 3 highlights about the applications and services of IoT. Components for designing small applications is included in Section 4 followed by Implementation modules in Section 5. Section 6 discusses about some concluding remarks.

II. RELATED WORK

. In US in 2009, IBM's CEO S. Palmisano proposed the concept of "Smart Planet" by embedding and equipping sensors into everyday items (power grid, railways, etc.) and other applications, and through intelligent processing, Smart State should be achieved [3]. In Europe the European Commission (EC) had made efforts to tackle regulatory issues of IoT since 2006. In 2008, EC published a Staff Working Document to discuss policy issues in governance of IoT, on which several concerned stakeholders have commented [4]. In 2009, EC expressed that the governance of the IoT should be carried out in a coherent manner with all public policy activities related to Internet governance [5].In China in 2009, the concept of "Sensing China" is proposed and the sensor net-works center is built in Wuxi, Jiangsuprovince, as one of the major science andtechnology projects in the country.

III. APPLICATIONS AND SERVICES OF IoT

The applications of IoT technologies, which are either directly applicable or closer to our current living habitudes, might be grouped into the following 4 domains:

- • Supply chain management :With lower cost and lower power requirement, real-time information process-ing technology based on RFID and NFC in IoT will be widely used in supply chain. Accordingly, accurate and real-time information relating to inventory of finished goods, work-in-progress, and in-transitstages with reliable due dates would be obtained.

- Healthcare : The IoT technologies such as RFID, WSN,etc., could provide many benefits in thehealthcare domain. For example, a per-son's health status could be inferred from the RFID tags on clothes or from discovering a wearable medical device.

- Disaster alerting & recovery: Recently, natural disasters (flood, land-slide, forest fire, etc.) and accidental disasters (coal mine accident, etc.) are taking place more and more frequently. Technologies in IoT, such like RFID and WSN could play a crucial role in disaster alerting before it happens, and disaster recovery after it ends.

- Transportation: Cars, buses and taxis as well as roads intersections are becoming more instrumented with sensors, actuators, and processing power [5]. Important information could be collected to realize traffic control and guidance, help in the management of the depots, and provide tourists with appropriate transportation information.

IV BUILDING BLOCKS AND COMPONENTS OF IoT:

Some of the building blocks and components that form IoT needed for small applications are:

Table 1Building Blocks of IoT

BUILDING BLOCKS AND TECHNOLOGIES OF THE IoT

IoT Elements		Samples
Identification	Naming	EPC, uCode
	Addressing	IPv4, IPv6
Sensing		Smart Sensors, Wearable sensing devices, Embedded sensors, Actuators, RFID tag
Communication		RFID, NFC, UWB, Bluetooth, BLE, IEEE 802.15.4, Z-Wave, WiFi, WiFiDirect, , LTE-A
Computation	Hardware	SmartThings, Arduino, Phidgets, Intel Galileo, Raspberry Pi, Gadgeteer, BeagleBone, Cubieboard, Smart Phones
	Software	OS (Contiki, TinyOS, LiteOS, Riot OS, Android); Cloud (Nimbits, Hadoop, etc.)
Service		Identity-related (shipping), Information Aggregation (smart grid), Collaborative-Aware (smart home), Ubiquitous (smart city)
Semantic		RDF, OWL, EXI

V. CHALLENGES IN IoT

Some of the challenges noticed after a brief survey and the protocols in the design are listed in the table.

TABLE 2: LIST OF IoT CHALLENGES

Sl. No	IoT Challenge	
	Issue	Protocol
1	Architecture	IoT-A,EBBITS ,BETaaS,CALIPSO,VITAL
2	Availiability	
3	Reliability	RERUM,RE LYonIT
4	Mobility	IoT6,OpenIoT,APECLoV
5	Performance	Smart Santander, RE LYonIT
6	Interoperability	IoT-icore, PROBE-IT,OpenIoT.
7	Management	OMA device manager(OMA-DM),LWM2M,NETCONFlight,Kura.

VI. BASIC COMPONENTS OF IoT

Components of IoT under study

Sl. No	Components	Types	Description
1	Sensors	Temperature	The LM35 series are integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius temperature. The LM35 thus has an advantage over linear temperature sensors calibrated in ˚ Kelvin
		Humidity	A humidity sensor senses, measures and reports the relative humidity in the air. It measures both moisture and air temperature.
		Moisture	**Humidity Sensor HR201** is highly advanced technology of Humidity Sensors is presented by us with the efficient functionality and less maintenance features. These sensors are useful for determining the humidity content or relative humidity of air
2	Electronic devices	capacitor	It can be used to store the energy.
		register	It is also used for storing the energy.
		diodes	It can be used to conduct the electric current in the sensors
		Relays	Relays are simple switches which are operated both electrically and mechanically

Sl. No	Components	Types	Description
3	Microcontrollers	ATmel	The **Atmel AT89 series** is an Intel 8051 compatible family of 8 bit microcontroller (μCs) manufactured by the Atmel Corporation . This allows a great amount of legacy code to be reused without modification in new applications.
		ATmega	The ATMega Controller is based on the new ATMega128 microcontroller from Atmel. microcontroller is a massive 128k of Flash Program Memory, enabling easy rewriting and a huge storage space for large programs
4	Boards	arduino	Arduino is an open-source platform used for constructing and programing of electronics. it uses a hardware called **arduino uno** circuit board and software programme to programme the board.

VI. CONCLUSIONS

In this paper, we survey the state-of-art on the IoT, including the manifold definitions, enabling technologies, already or soon available applications and open re-search issues with efforts been. However, it is not this paper's main purpose to pro-vide a comprehensive review of the details of the relevant technologies. It is believed that in the near future the achievement of the vision of "from anytime, anyplace connectivity for anyone, we will now have connectivity for anything" should depend on cross-discipline and cooperative efforts in related fields.

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