

Context Awareness of Social Internet of Things

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ABSTRACT

While previous Intranet of Things, which is a local network of wireless sensor networks, machine-to-machine can only extract regional information containing specific content from the things, The IoT works on two paradigms: 1) interaction between humans and 2) interaction between things. But mostly humans don't use much data from things like client-server model.

Social networks are the topic for discussion as the demand for social networking is growing and IoT now can be referred as Social IoT.

General Terms

Internet of Things, Social Internet of Things.

Keywords

Context Awareness, Social Internet of Things, Internet of Things.

1. INTRODUCTION

It looks like that there is extensive use of the World Wide Web and now the things have been already started to use Net in the year 2008, and the use of the white space spectrum started legally.. White spaces are nothing but the frequencies allocated to a broadcasting service but not used locally. So white spaces devices are strongly used in the community. Different frequencies are assigned for specific uses, and each specific body have the license rights to broadcast over these frequencies.

According to Cisco Internet Business Solutions Group (IBSG), the Internet of Things was started to use in between 2008 and 2009, the number of connections between objects were much more than the humans connected to the internet.

In 2010, the world's human population increased to 6.8 billion but the use of electronics devices like smart phones, tablet PCs, etc was increased to 12.5 billion, and the No. of connected devices per person more than 1 for the first time in history.

Because of its industrial liking nature, the IoT solutions in are not published from academic background. Therefore,

information is collected about the solutions from their technical specifications, respective websites, demo videos, and consumer reply. IoT is depend on the context which is used in the industry. By understanding the necessity for industrialists, academics, researchers, the general trends, industry requirements, demands, and research opportunities are increased.

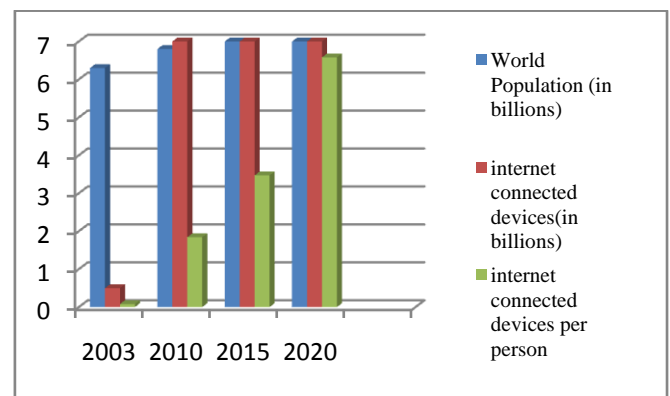


Fig 1: Use of internet devices against human population.

2. CONTEXT AWARE COMPUTING

The concept of Smart city [1] is introduced to provide the various things and infrastructural information and communication to new generation. Smart cities are nothing but the different smart services. Smart public transport, smart energy management, security are the most important factors for building smart cities [1]. However, if the market place is consider, smart homes [13], smart healthcare services, and smart transportation facilities are consider to be the major part of sales.

The interconnection between everyday activities, in the IoT paradigm, it facilitate the applications like : smart cities, smart home, smart offices, smart security [9] and emergencies, smart purchase, smart farming, domestic and home automation, and Health. After popularizing in the industry, IoT solutions can be classified into different types, as: smart wearable, home, city, environment and enterprise.

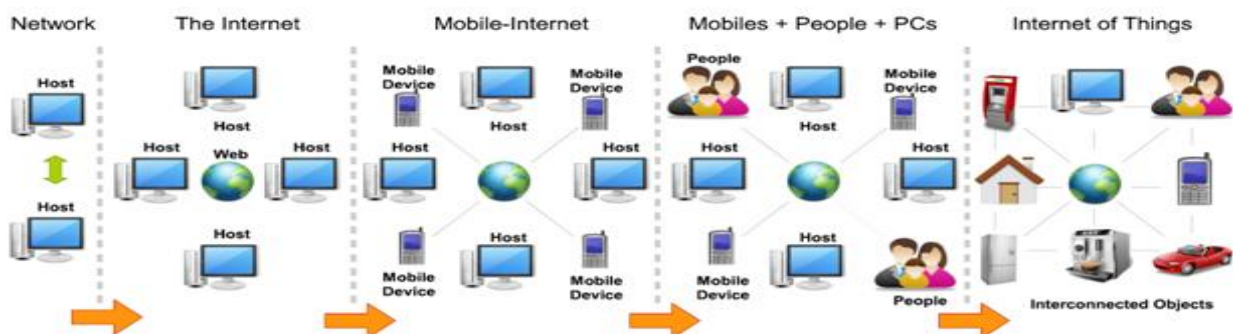


Fig. 2: Evolution of IoT.

The features of the context-aware applications are: presentation, execution, and tagging.

Presentation: Contexts is used to provide what information and services need to be delivered to the user. Consider the example [3]. Mobile need to connect to kitchen devices like refrigerators [4] for retrieving the lists of things to buy and pass them to the users. When a customer go to supermarket and takes their smart phones, what they want to see are their good lists. This example gives the idea of giving information based on contexts [10],

[11] such as time and location. Therefore context-aware computing provides any kind of service, at any place, at anytime with anything and anyone, ideally using anynetwork.

Execution: Example of atomic execution is that ,when the user get into the house, coffee machine should be ready to use . Here communication between machine to machine plays important role in IoT.

Tagging: In the IoT network, large number of sensors are attached to the everyday use devices [7].These objects will produce large volumes of sensory data. The data have to be collected, analyzed, combined and interpreted [5]. If a single sensor will not provide the sufficient information to understand the situation [5], multiple sensors data need to be combined together [5]. To complete the task of fusion, contexts need to be collected. Contexts and sensory data need to be tagged together.

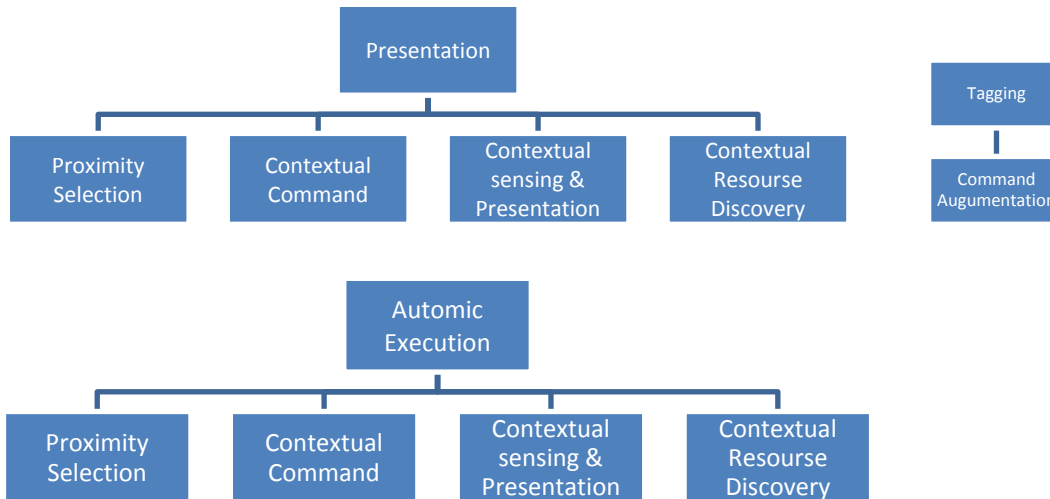


Fig 3: Contextual matrix.

3. CURRENT TRENDS: SOCIAL INTERNET OF THINGS

While early Intranet of Things, which is a local network of a set of things such as machine-to-machine, wireless sensor networks , and smart devices, can only extract general information containing specific content from the things, IoT

can provide large scale between different devices by communicating between various heterogeneous things. Creation of new services are enabled by IoT [8], No.of different intranet of things can collaborate by offering new service to the individuals [9].

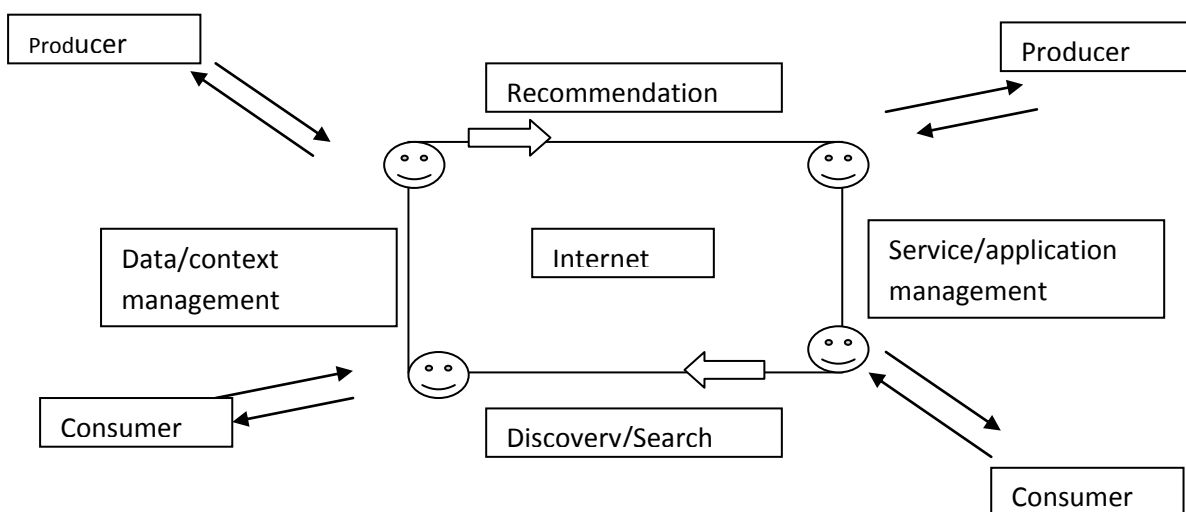


Fig.4.Architecture of SIoT

As mentioned, in IoT, user connects to the other user through networks; on the other hand, while using the services and applications, No. of things communicate with each other through the Internet for sharing information to smart services and applications. Thus, the IoT follows two interaction paradigms: 1) thing-to-thing 2) human-to-human and, and then humans used data from things same as client-server model.

Therefore, relationships between the humans and things should be established. So social networks [12] are played important role. It does not only mean physical connections between humans and things, but also logical configurations of social communities between humans and things. The logical configuration is established through the people and things. Thus, this new vision with improved social activities is denoted by Social Internet of Things (SIoT).

1. Actors— Here actors means both humans and things, as SIoT has a public environment, where actors equally published data and receiving control for management of data. This produced data can be processed to give responses to queries sent by users or devices or by profiling the information. Queries are sent to get the closest node, the most trustworthy node or service, or to receive updates about device or whether status. In response to it, humans and objects in the network can receive services and fulfill current situations and future objectives, i.e. power efficiency plan in a smart home.

2. Intelligent system—Intelligent system is responsible for management and performing the whole interactions done by the actors, The main sub systems can be divided into the intelligent system such as service discovery and applications management, recommendation, and search data and context management.

3. Interface— Interface means communications, interaction with the system. Queries are provided as input to the system and system gives control commands and services as output..

4. At the end, through the Internet, communication takes place and services are provided to the user through the devices

4. ARCHITECTURE OF SIoT

The main aspects that constitute the basis of SIoT: here everything such that social devices, intelligence act as a service.

1. Social Role:

The smart objects which can be shared under social structure rely on the trust provided to the social community, e.g. User can use its own Social Network accounts to use geo-location.

2. Intelligence: In [7], intelligence is the backbone of the architecture for deletion of service, updation of service and maintaining relationships in objects of SIoT.

3. Socialized Devices: The socialized devices has important contributions in SIoT because these devices implies the mechanism of communication with people and various smart objects and embedded devices through the Internet.

5. CONCLUSION

As the Internet use on mobiles is growing day by day use of Social Internet of Things is also increasing day by day.

The use of SIoT is totally based on the context used for the application.

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