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A Study- Impact of Internet of Things (IOT) For Providing Services for Smart City Development

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***Abstract:** Smart city is a very hot topic now days for the development and for the sake of developing the cities. it is important to get all the different services and provide those services for regular user on their demand and for that Internet of the things (IoT) plays very important role in that rather than saying IoT role we can say Internet of Everything(IoE).it plays major role in this paper we are focusing on identifying the services and its impact on development of the smart city .*

***Keywords:** Smart city, IOT, IOE, Digital India, Services, Domain provider*

I. Introduction

Smart city is very hot topic now days. Citizens of India are very excited about it. Government is taking so much initiative for the purpose of providing opportunities to other countries for contributing for the development of the digital India and in this mission internet of things (IOT) will play very important role like back bone for the smart city.

II. Internet of Things

Internet of the things is the back bone of the smart city development In the historical speech of the 15th aug 2014 our prime minister said that

» ***I stand before you not as Prime Minister but Prime servant"***

» ***I tell the world - Come, Manufacture in India. We have the skill and talent"***

» **Digital India** ***"e-governance is easy governance, efficient governance, and that is important"***

And not only decided but also taking so many steps for the development of the india and also developed some policy to be implemented

Fig. 1. Government policy

The Internet of Things (IoT) is a scenario in which objects, animals or people are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. IoT has evolved from the convergence of wireless technologies, micro-electromechanical systems (MEMS) and the Internet.

III. Structure of Smart City

Smart city Development different types of organization provided different types of structure and from all structure one common thing is that without IOT smart city doesn't exists .sample structure are as follows

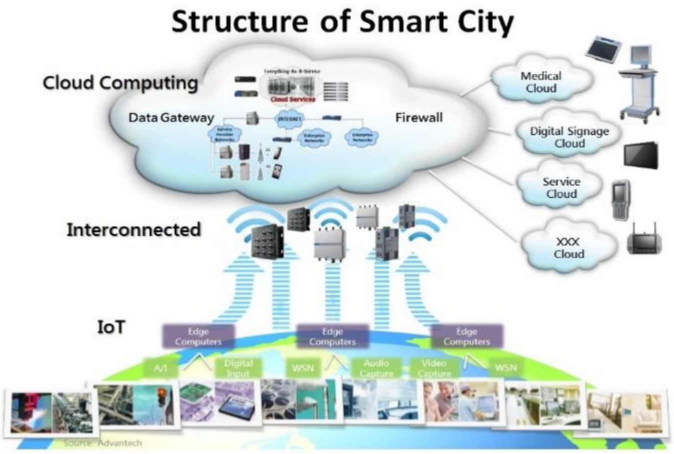

Fig. 2. Structure of Smart City

- Interconnects people, machines, and sensors throughout the city (indoor and outdoor)
- Securely collects real-time and context-aware data from multiple sources
- Stores data from devices, people, and applications so that it can scale to accommodate growing volume
- Organizes data by using semantic links to identify and send it to relevant users according to individual access rights
- Analyzes data by interpreting and correlating patterns of use, such as sales trends, that may allow for monetization opportunities in the future. More important, the technical architecture should improve predictive modeling by allowing the city to analyze historical data.
- Shares information with end users and publishes linked data based on semantics. End users include both city agents who will use specific monitoring applications, and city residents who will receive access to the information either on their smartphones or on multimedia kiosks.
- Enables an open ecosystem for innovation to develop new services that appeal to both citizens and city leaders. Platforms need to be open to local start-ups and businesses (either for free or for a fee), and local businesses can develop their own offer in agreement with the city charter of good behavior

IV. Key Features of A Smart City

Intersect between competitiveness, Capital and Sustainability. The smart cities should be able to provide good infrastructure such as water, sanitation, reliable utility services, health care; attract investments; transparent processes that make it easy to run a commercial activities; simple and on line processes for obtaining approvals, and various citizen centric services to make citizens feel safe and happy.

Smart-City Services – Two examples

First we will analyze two representative smart-city services and examine the limitations of the closed service-delivery model.

Building Energy Management Systems

Energy management for localities is one of the most daunting tasks for providing services in smart cities. A building energy management systems (BEMS) typically starts when a service provider carries out research in the area, locality or building , which is already constructed or in process of construction. A project's scale can start from a small building to a dense colony comprising numerous houses and apartments. Due to which technical infrastructure like packets of data, data processing devices and software's will change and there capacity and usage is to be understood. After researching and designing for the single apartment, the service provider will collect corresponding technical devices from manufacturers, integrate them into an technical infrastructure solution, and develop analytical and control applications.

This process produces many vertically isolated BEMS (often referred to as "silos"), which leads to two problems. The first is maintenance: The more silos that are provisioned, the more system instances the solution provider must maintain. System maintenance becomes a particularly painful process – hardware devices are monitored in separate systems, and software instances must be updated separately and tested on site with specific hardware configurations. The second issue is extensibility: Many campuses and building compounds expand continuously to accommodate new users; deployed BEMS might need to manage more buildings and facilities. In any case, BEMS ought to scale up accordingly.

In the current silo-based service-delivery model, such expansion could require the solution provider to reconfigure the whole system from the bottom up or to add new isolated BEMS because of tight coupling among devices, middleware, and applications. Furthermore, the energy consumption data that individual BEMS collect are largely underutilized because data storage and processing modules are isolated. Today, a painstaking data cleaning and integration process is a prerequisite for conducting fine-grained energy consumption analysis on a large scale.

In brief, the BEMS exemplifies a *vertical service-delivery* model, by which a single solution provider is generally responsible for provisioning and maintaining the entire solution throughout its lifetime. This is the dominant model by which most current smart-city services are delivered. Scalability and extensibility in this model are inherently limited.

Public-Event Organization

Public events constitute an essential part of urban life. Some events reoccur regularly, such as yearly city marathons or national day parades; some might be *ad hoc*, such as demonstrations. An event at any scale has effects on city dwellers. Participants or visitors want to know how to reach and leave the location. Those who aren't interested want to know how to avoid the event. Public services should be ready for expected or unexpected situations. Event organizers must address all these concerns.

A typical event-organization service is composed of data collections, organization plans, notification channels, and contingency plans. It runs through four phases in normal situations – planning, preparation, operation, and finishing. In addition, contingency operations might be carried out if unexpected situations arise. The information required for an efficient organization application is diverse; it can include relatively stable information such as maps, public transportation routes, communication channel capacity, and facility accessibility, as well as real-time data such as traffic, weather, public transportation status, and parking lot occupation. Although most information of this type is available through existing public services, these services are isolated and domain-specific. They operate their own information infrastructures, process the data in house, and publish them via various public channels.

The key challenge to developing event-organization services is accommodating the event specifics (scale, local resources, processes, safety concerns, and so on) by properly collecting domain-specific services and information sources. Developing an event-organization service requires significant effort, given that it might be used only once or may need to be updated periodically for regular events. Furthermore, the computing resources required to provide such services are needed only during the events. Thus, the effort required to deliver such a service is justified only if the development and provisioning are efficient and cost-effective.

Public-event organization is a case of *third-party service* delivery: An application provider acquires access to existing IoT services and other information sources to develop applications for specific purposes. These information sources are highly diverse, ranging from public services such as public transportation status to commercial services such as mobile networks. The provider's focus is on developing the application logic because it doesn't own the information sources or, in most cases, doesn't have direct control of them. However, the provider must provision computing resources to ensure quality of service (QoS). Third-party smart-city applications, particularly those needing to incorporate multiple IoT and Web services, are still uncommon due to the challenges exemplified by this case.

Stakeholders in Smart-City Service Delivery

At the center of Internet-scale smart-city service delivery are domain-independent **service-delivery platform providers**, who present a new type of Platform as a Service (PaaS) offering that integrates IoT devices and infrastructures, processes data from a large amount of distributed data sources in real time, and lets applications employ both IoT and cloud resources on demand. The management of both IoT infrastructure and cloud resources is hidden from application providers. Platform providers must ensure the required provisioning of computing resources involved in service delivery. The platform also provides cloud services, including service metering, billing, and tenant management that will let stakeholders share resources and establish flexible business relationships.

Such a platform's emergence will directly influence traditional **domain-specific solution providers**. With a cloud-based platform, solution providers can leverage cloud resources to integrate IoT infrastructure and develop domain-specific applications, thus enabling virtualized vertical solutions, or *virtual verticals*. In virtual verticals, solution providers can reuse software services on the cloud and scale up services without investing in the computing infrastructure. In addition, other than the traditional role of providing vertically integrated IoT solutions, solution providers can also provide IoT Infrastructure as a Service (IaaS) on the cloud to open IoT **device capabilities** to third-party application developers.

The platform will also benefit cloud **application providers** who specialize mainly in Web and cloud application development. The service-delivery platform lets these providers access IoT services to create novel applications for users. Application providers won't need domain-specific knowledge for managing IoT infrastructures because such infrastructures' capabilities are provided as services on the cloud, and the platform facilitates the important components for service delivery. Thus application providers can focus on application logics and enjoy on-demand use of both cloud and IoT resources.

V. CONCLUSION

In the conclusion we can able to say that smart city is the think which get pop up with time but it will not be complete without number of services and those services are provided by IOT.

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