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IOT Perspective and Future Impact Framework

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***Abstract*— The Internet of Things (IoT) is an background in which objects, animals or people are provided with unique identifiers and the capability to transmit data over a network without requiring human-to-human or human-to-computer interaction. Things can replace information by themselves and the quantity of "things" connected to the internet will be much larger than the number of "people" communication on internet .In this case the number of devices connects to internet will be in billion. IOT will become ubiquitous in the coming decade, which will generate massive amount of data that must be manage by big data analytics and to be analyzed in order to generate value for individuals, organizations, entire industries and ultimately society. This paper aim to address the better understanding of usage, future impact of IOT at different levels of individuals, organizations, industries and society, and essential issues of IOT.**

***Index Terms*— Internet of Things, ubiquitous computing, broadband connectivity, Standardization.**

I. INTRODUCTION

As the Internet of Things (IoT) technical popularization and a large number of research and development of embedded device deployment, the amount and type of smart objects are in constant growth, the IOT devices and systems used in people's daily life is also more and more popular. But because of the IOT devices, high coupling and poor scalability issues, resulted in the fragmentation of the Internet of things application present situation of the development, the threshold is high, long development cycle [1].

Big data analytics is currently generating tremendous fascination worldwide. In 2012, Gartner defined big data as “high volume, high velocity, and/or high variety information assets that require new forms of processing to enable enhanced decision making, insight discovery and process optimization” [2]. To those three Vs, Sharda, et al. [3] add veracity, variability, and value proposition. The complex combination of the first five Vs makes achieving the last – a legitimate value proposition – particularly challenging yet potentially exciting for many organizations.

II. RELATED WORK

Today, a large number of different means are used to enable communication between heterogeneous devices. We see these as "Intranet of Things", representing vertical silos that do not support interoperability. However, as region or group of efforts will lead to a predictable slowdown in planning a viable global solution. Furthermore, existing solutions do not address the scalability requirements for a future Internet of Things, they provide inappropriate models of governance and fundamentally neglect privacy and security in their design. To deliver an end-to-end IoT solution, architectures will potentially require seamless interoperability across the six following technology domains. These domains are illustrated in Figure 1:

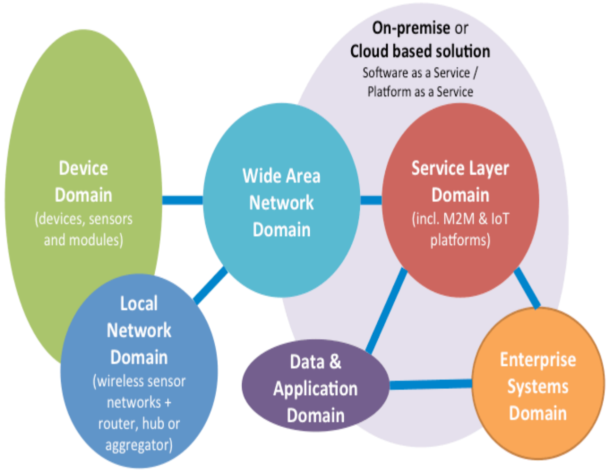

Figure 1: High-level domain design for an IoT architecture [Source: Machina Research, 2015]

Device domain connected assets including sensors, devices, and module Local Network domain – connectivity technologies enabling internal transfer of data from sensors and devices to other devices or a local network gateway Wide Area Network domain – connectivity technologies enabling the transfer of data directly from devices or local network gateways to external Service Enablement domain Service Enablement domain – platforms and middleware Applications and Data domain – provisioning, development, storage, and management of applications and data Enterprise Systems domain – back-end enterprise / corporate systems Each domain is comprised of a specific set of products, services and skills. Within IoT, the configuration of these domains may change from use case to use case. Given this characteristic, one of the crucial considerations for enterprises is to identify the tools and enablers which make implementing IoT solutions across these domains as easy and simple as possible.

Another approach which reflects the early stages of M2M and IoT is that of enablement platforms such as ThingWorx designed as being device and connectivity agnostic. In this approach, platforms are designed with a wide range of interoperability tools and approaches to allow for the smooth interoperability between devices, connectivity technologies and platforms[4]. This approach is fundamentally based on pre-configured technical integrations between assets. As the

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diversity of assets remains fairly ‘manageable’ and ‘predictable,’ assisted by being implemented within defined sectors or segments, platforms that are device and connectivity agnostic deliver significant shorter to medium benefits. In the longer term however, standardization has to be the way forward for massive heterogeneous asset implementations.

III. THE FUTURE IMPACT OF THE IOT

The application of the IoT to different sectors also gives rise to specific terms. Smart homes or smart buildings refer to IoT concepts applied to the management and control of buildings including heating, cooling, lighting, entertainment devices, security systems and household appliances. Smart cities typically use networks of sensors and computers to maximize the efficiency of traffic, public transport, street lighting or other city infrastructure. IoT networking in an industrial setting (including service industries like the hospital sector) may be referred to as the Industrial Internet of Things (IIoT) or described as the architecture underlying Industry 4.0, the imminent (fourth) industrial revolution.

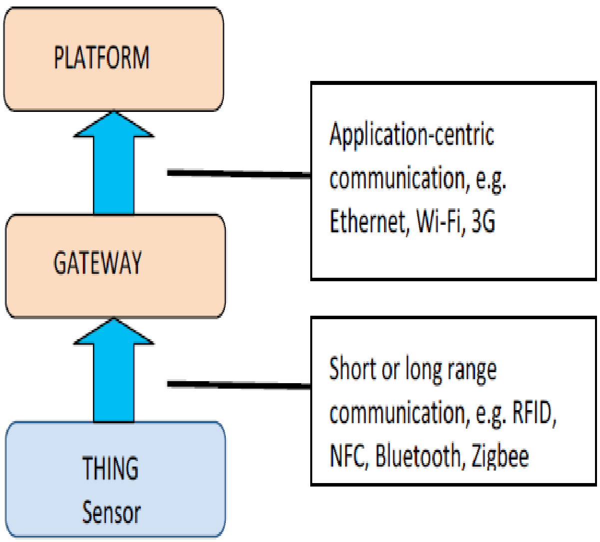

Figure 2: IOT Landscape [5]

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Health, home care and the IoT	With an ageing population and rising health and long-term care costs, the IoT can help to improve care and reduce costs through eHealth services. Sensors placed in the home or in clothing can monitor vital signs and activity levels of older people. Families or caregivers can be alerted if problems arise. Recovering patients can be discharged earlier from hospital, or people with chronic disease can avoid hospital stays, if they can be monitored remotely in their homes. Wearable devices can also play a part in preventing health problems, by tracking heart rate or blood pressure or encouraging healthy activity. Pilot studies have shown that bracelets or watches that measure activity can increase the participation rate and improve the effectiveness of fitness programmes for overweight people.
Smart parking	Smart parking platforms use low-power wireless sensors to detect the presence of cars in individual parking spaces. Drivers looking for a place can use a free smartphone app to see real-time availability of spots, as well as information on pricing, time limits and payment methods. Studies suggest that as much as 30% of driving time in large city centres is used in looking for a parking place, so not only do consumers benefit in terms of time and petrol used, cities suffer less pollution and traffic congestion, and can adjust parking prices in response to patterns of demand. American company Streetline has partnered with European organisations to bring this technology to cities like Braunschweig (Germany) and Manchester (UK)
Smart elevators	ThyssenKrup is using an Internet of Things approach to increase the safety and reliability of their elevators while reducing maintenance costs. Each elevator has thousands of sensors that capture operational data including lift speed, distance travelled, motor temperature and alignment. These data are transmitted to the Cloud, where 'intelligent' software sorts, analyses and visualises the vast amount of data collected for the use of personnel in remote service centres. Signs of problems

	before a lift fails will trigger remote diagnostic testing or a site visit by a technician who can visualise data on a laptop to determine the exact cause and perform preventive maintenance.
Agriculture and the IoT	The IoT can help farmers to reduce waste and improve productivity. For example, studies show as much as 60% of irrigation water is wasted. A smart irrigation system can collect data on soil conditions and plant needs, so as to selectively water different plots of land. 14 European pilot sites for the Water bee system demonstrated a 40% reduction in water use. Data can also be combined with weather forecasts to hold off irrigation if rain is imminent. Smart farms can also benefit from other kinds of intelligent objects. 'Smart' bins and silos can report on the levels of grain and other feedstuffs they contain to simplify management and avoid risky physical checks. These devices can also send alerts when temperatures in the containers rise to levels that might damage or degrade their contents.

IV. CONCLUSION

The IoT current profuse benefits to consumers, and has the possible to change the ways that consumers interact with technology in basic ways. In the outlook, the Internet of Things is likely to link the virtual and physical worlds together in ways that are currently hard to understand. From a security and privacy perception, the predicted pervasive introduction of sensors and strategy into presently intimate spaces – such as the home, the car, and with wearable and ingestible, even the organization – poses particular challenges. The potential of the IoT appears to be great, regardless of the range of issues that need to be addressed. Industry participants in particular emphasize that improper action in the early hours in the growth of the IoT could smother investment and improvement. As a result, new problems and challenges begin spanning different areas: design, communication, addressing, finding, data and network management, power and energy storage, security and privacy, to cite a few. Classic Internet approaches are not sufficient to solve these unique issues, and need to be revised to address the complex requirements imposed by IoT. This paves the way for the development of intelligent algorithms, novel network models and new services.

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