COMP1715 Scholarly and Academic Practice

Academic Paper

The Internet of Things in a Wider Urban Context

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**Abstract**

Technology has changed the world drastically. Hence, why Internet of Things is the future of technology. In this report, it explores how Internet of Things is going to run as expected in the near future. This discusses the legal, ethical, logical, social,

**Introduction**

**Is it going to all change?**

Internet of Things (IoT) is a physical object that contains an internet-based system that can be controlled remotely. International Data Corporation is a telecommunication organisation that does an analysis on technology globally. They help make decisions to enhance technology. According to the Senior Vice-President of Research of IDC Vernon Turner, he feels, “The Internet of Things will give IT managers a lot to think about. Enterprises will have to address every IT discipline to effectively balance the deluge of data from devices that are connected to the corporate network.” IDC predicts that Internet of Things can be introduced by 2020 and they feel that it could be a huge asset towards any organisation (Hudges, 2014).

It seems ridiculous, but one example could be by reducing your heating temperature when you need before you enter your own home. However, having physical objects that are controlled remotely in a place of residence can have security issues. On the other hand, Internet of Things can revolutionise the perspective of the healthcare system, home facilities, transportation and retail stores (Abigail, 2015). Many different features can come into play in the next five years. Technology is rapidly increasing much of its developing innovation would enhance everything by making daily routines easier for consumers.

By 2020, it is estimated that 50 billion objects connected to the internet (Strickland, 2015). The daily lifestyle routine will improve drastically.

**How it will work?**

Each category of the IoT will run differently. For example, sensors will be different depending on what is needed. For example, once the temperature sensor is activated, this could be the presence of the person; it connects to the internet wirelessly and automatically predicts what the user requires. Imagine you walk into your own room, with your latest mobile phone; a sensor will detect the current date through your phone. Once this is complete, it will check the current weather allowing the temperature of the room to be warmer, or cooler. This will be all linked to any other devices to execute the temperature being cooler, or warmer. It predicts by using specific algorithms that will be made so precise that it predicts what any person needs. Having different types of sensors would enable different products, or services, to work differently.

Cloud computing is in, which large groups of servers are grouped together to allow others for a use of service. Clouds can be classified as public, private or hybrid. Internet of Things will be looking to use Cloud storage to store data. An example of cloud storage can be Microsoft SkyDrive – data can be stored privately on this application.

(100 words on each)

1. **Home**
2. **Healthcare**
3. **Transportation**
4. **Cities**

**Timeline**

4G is the current generation of telecommunication. As we all know, lots of data is expected to be transferred and the data to be handled. As expected, 5G is the next major generation to improve the current one. This runs at a rate of 1TB per second.

Internet Protocol is a unique numbers to identify each computer. As the population and technology keeps on growing, it enables more computers to be released and run. The current internet protocol version is IPv4. IPv4 is the current version of the internet Protocol. IPv4 is a 32-bit and they are running out of IPs. IPv4 is worth 232 = 4,294,967,296 addresses. An example of IPv4 is 156.15.259.3. As we, all want Internet to be fast, the population keeps growing; therefore, more IPs are needed.

Therefore, IPv6 is going to be released in 2020 and this is going to be 128 bits.

Referring to Figure 1, it demonstrates the timeline of what to expect from the technology to come. This picture was released from 2014, therefore it predicts what to expect from then. However, you can see that Internet of Things is highlighted to be reached within 5 to 10 years. Many more advanced technologies is shown below on the timeline too.

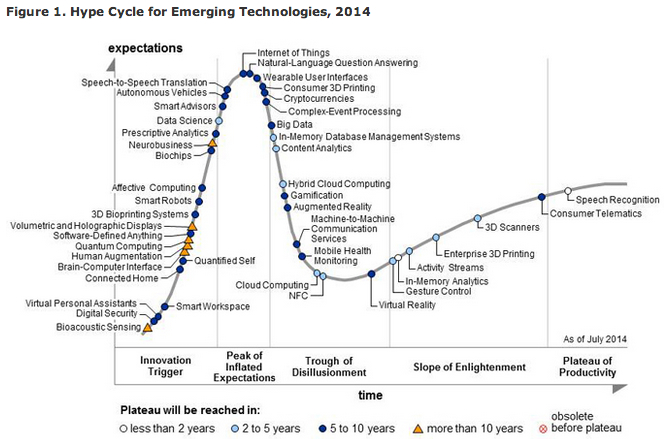
[](https://www.google.co.uk/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0CAcQjRxqFQoTCLid9YKehMkCFcQvDwodYU8LDQ&url=http%3A%2F%2Fwww.geekwire.com%2F2014%2Finternet-things-wearables-3d-printing-chart-shows-hyped-technologies-2014%2F&bvm=bv.106923889,d.ZWU&psig=AFQjCNGRNUHP61O9Wwwvejx2ql0z6DM_YA&ust=1447189194759021)

Figure 1 shows what technology to expect.

This may sound exciting; however, we all need to think about how much it is going to cost ourselves. For example,

**Advantages**

**Problems**

**Social issues**

Culture and Language

The language barrier can affect millions of users around the world. It would make life easier for those who use the current technology. If the elderly prefer the traditional lifestyle, it would not be any use to them.

<http://bolender.com/Dr.%20Ron/SOC1023G%20Social%20Problems/New%20Social%20Problems%20Course%20Folder/The%20Internet%20and%20Social%20Life.pdf>

**Logical issues**

**Legal Issues**

Cyber Security

Data Protection Act

<http://www.computerweekly.com/opinion/The-legal-considerations-of-the-internet-of-things>

***Data Protection Act 1998***

*Vast amounts of data is processed as millions, or even trillions, of data being transferred. Top priorities should be held with security and privacy. This act was introduced in the 1998s for any organisation that deals with information that transfers data which needs to be lawfully processed. This law was set as this is vital information was to prevent any data being exposed. As*

*Only certain information is taken, to ensure the safety of the employee is harmless. It is supposed to be secure so nobody can get hold of the information. Data has to be confirmed that the data is accurate. For example, if a businesses’ human resources department have all the data for the employees and the finance department asks information about details about the employee. They will give the basics; name, how much they get. They cannot expose anything else as this would breach this act. If the data protection act is misused, they will either be fined or prosecuted. Others can get hold of this vital information and can do anything with it. As*

**Professional issues**

**Ethical issues**

**Economical issues**

*Codes of practice- Many organisations have policies and restrictions for them not to be used on the building premises. This is important for any organisation as employees would be focused and not distracted whilst completing their work. They need to follow the code of practice for the organisation to be successful and run quickly.*

*Use of Internet- Some could have work on the internet, but they could permanently restrict the sites so the employees cannot access them. Some organisations can limit the amount of hours they would work on the internet. For example, people could get distracted by spending vast amount of time on Facebook or Twitter. This is not permitted with some organisation as they could be losing time and not working for the company.*

*This could cause potential problems if an employee spends 1 or 2 on a social networking site, and they have a restricted deadline on the same day, but they haven’t completed it. They would lose time and potential sales. For example, if a person is wasting their time on the internet whilst waiting at a cashier, a person comes to purchase something, but he is too distracted. The potential customer would be frustrated. They could lose potential customer loyalty customers as they are regular customers who attend and if they get frustrated, then it would be a big lose.*

*Organisational policies- Firstly, policies are guidelines which should be followed step by step. They can outline steps which should be followed. For example, opening and closing the shop. The last employee leaving should ensure that everything is closed and secured. This organisational policies links to our business, because these important guidelines needs to be set. It doesn’t necessary have to be security reasons, it could be whenever you have finished your work, saving the information after they have finished is necessary. Potential problems could be that if these policies are set out in a business, they could limit the restrictions of where it’s accessible and where it’s unavailable.*

**Economic issues**

Expenditure

**Political issues**

**Physiological issues**

<http://www.gsma.com/newsroom/wp-content/uploads/15625-Connected-Living-Report.pdf>

**Conclusion**

**References**

Abigail, Tracy, Inc.com, (2015*). How the Internet of Things Actually Works* [Infographic]. [Online] Available at: <http://www.inc.com/abigail-tracy/inforgraphic-understand-the-internet-of-things.html> [Accessed 23 Oct. 2015].

Ally Hudges and Sarah Murray, (2014). *IDC Reveals Worldwide Internet of Things Predictions for 2015*. [Online] Available at: <http://www.idc.com/getdoc.jsp?containerId=prUS25291514> [Accessed 16 Oct. 2015].

Ashton, Kevin. (2009): "That ‘internet of things’ thing." *RFiD Journal* 22.7 97-114. [Accessed 28 Oct. 2015]

Greenwich, University of, (2015). *Being a Computer Science Student*. [Online]. Available at: <https://cms1.gre.ac.uk/teachmat1516/COMP1715/course/schedule.html> . [Accessed 28 Oct. 2015]

Jayavardhana Gubbia, Rajkumar Buyyab, ∗, Slaven Marusic a, Marimuthu Palaniswami, (2015). *Future Generation Computer Systems.*1st ed. [eBook] a, pp.1-10. Available at: <http://www.elsevier.com/locate/fgcs> [Accessed 29 Oct. 2015].

Jonathan Strickland, HowStuffWorks, (2015*). Forward: Thinking: The Internet of Things: HowStuffWorks.* [Online] Available at: <http://shows.howstuffworks.com/fwthinking-show/fwthinking-ep1-internet-of-things-video.htm> [Accessed 23 Oct. 2015].

Abigail, Tracy, Inc.com, (2015*). How the Internet of Things Actually Works* [Infographic]. [Online] Available at: <http://www.inc.com/abigail-tracy/inforgraphic-understand-the-internet-of-things.html> [Accessed 23 Oct. 2015].

Atzori, L., Ierab, A. and Morabito, G. (2015). *The Internet of Things: A survey*. [Online] Sciencedirect.com. Available at: <http://www.sciencedirect.com/science/article/pii/S1389128610001568> [Accessed 29 Oct. 2015].

Gubbi, Jayavardhana, (2013). "Internet of Things (IoT): A vision, architectural elements, and future directions." *Future Generation Computer Systems* 29.7

Jayavardhana Gubbia, Rajkumar Buyyab, ∗, Slaven Marusic a, Marimuthu Palaniswami, (2015). *Future Generation Computer Systems.*1st ed. [eBook] [Accessed 29 Oct. 2015].

Zanella, Andrea (2014). Internet of things for smart cities. *Internet of Things Journal, IEEE* 1.1

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Marks are awarded in approximately equal measure for the following criteria.

The quality of the language used in the article. Is the language clear and unambiguous or is it difficult to follow, with poor sentence structure and grammatical errors? Is the language at an appropriate level using a technical vocabulary or is it too simplistic or overly familiar?

The structure of the article. Is the text in a single paragraph or is it sensibly organised into sections and paragraphs? Is the text overly compartmentalised? Is there a logical flow to the text to build a narrative or argument or is it merely a collection of facts and assertions?

The quality of the content. Is the discussion superficial or does it have depth and demonstrate insight? Is there evidence of critical evaluation with weight being given to the more significant or important aspects under discussion? Does the account adequately contextualise the generic to the specific or is it merely regurgitation? Is the content expanded in context or just a collection of bullet points?

The scope of the discussion. Each of the titles invites consideration of legal, social, ethical,

Professional, political, philosophical and economic issues and consideration. Does the discussion demonstrate understanding of the potential or actual impact of technology and insight into how these aspects are interrelated? Is the scope too wide, essentially just listing (e.g. applicable law) and lacking adequate contextual discussion?

The academic standard of the writing. Is the article entirely original or is there evidence of pasted content? Are citations provided to support facts and assertions? Are references provided to match the citations? Are the references credible sources or dubious hearsay? Are all references cited in the article? Are the references appropriately formatted?

A penalty proportional to word length will be applied to submissions that provide fewer than 2,000 words or more than 2,500 words (not including the title, preamble or references).