



The Internet of Things: Emerging opportunities for IT consultants

Fact File

- Economic impact of IoT could reach US\$11 trillion per year by 2025 (McKinsey Global Institute)
- IT industry projected to grow by 50% before 2020 (Cisco)
- 96% of global businesses leaders plan to use IoT by 2018 (psfk)

Introduction

The Internet of Things (IoT) goes by a number of other acronyms and names including M2M (machine-to-machine) and loE (Internet of Everything). They each centre around connecting devices over the internet and enabling them to talk to other devices, applications or users. A popular example is the connected fridge which can sense when there's no milk left or it's about to go out of date and remind the owner to buy more by texting their phone.

The hype surrounding the IoT has continued to grow dramatically over the last five years. More recently, all the talk around IoT has been matched by the proliferation of high speed broadband internet and the growth in the number of devices with WiFi capability. Combined with falling technology costs, this has created fertile ground for the development of more and more IoT applications in increasingly broader areas of business and life. As business leaders wake up to the considerable opportunities IoT offers, the demand for skilled IT consultants has sky-rocketed.

The ability of these devices to adapt often sees them being referred to as being 'smart' and the scope of applications for their use is enormous. Think about your working day as a good example. If you have a meeting diarised in your phone for 9am, but your traffic app knows that it will take you an extra hour to get into town, your IoT-enabled alarm clock will wake you up earlier and your coffee machine will have a drink ready for you when you get out the shower. On the way to your meeting your car will show you the best route to take and email the people you're meeting, letting them know what time you'll arrive. The possibilities are limitless and go well beyond merely managing meetings. IoT systems could apply to anything from a heart monitor in a hospital to a component in a nuclear power station.

Today, Cisco estimates that connected devices outnumber the planet's population 15:1. By 2020, another tech giant, Intel, predicts that proportion will double – which means over 200 billion connected devices.

- ***Connected devices outnumber the planet's population 15:1***
- ***IT departments will be not only enablers but also game changers***
- ***The opportunities for IT specialists and consultants will increase dramatically***

Changing the corporate mindset

The impact of IoT on businesses and the way we do business will be fundamental and far reaching. Unsurprisingly, the big names in technology, such as Apple, Google and Samsung, realised this years ago and already have a significant number of IoT products and services in the marketplace or in development – Google’s self-driving car being a notable example. However, for businesses in more traditional sectors, there is still some way to go before boardrooms realise what IoT can do for their organisation. This requires a change in mindset as leaders must be prepared to move away from strategy development based on experience and gut instinct to truly embrace data-driven decision making.

For many this will mean a fundamental change in the way their organisation operates and how projects are structured and delivered. This will require significant investment in IT skills and infrastructures which will see IT departments as not only enablers but also as game changers.

Employment opportunities

Advances in technology have always spawned new jobs and roles, and the evolving IoT market is no different. Forward thinking organisations are now following the lead of the big tech firms who have already made roles such ‘Head of IoT’ a core part of their structure.

As more and more organisations adopt IoT strategies, the opportunities for IT specialists and consultants will increase dramatically. Cisco expects to see the IT industry grow by 50 per cent before 2020. Initially, roles are likely to be around managing the transition to IoT strategies but then we expect to see diversification into new fields of IoT roles which haven’t been seen before. These are likely to be complex and cover a range of areas including sensors, data management, analysis, delivery and customer relations – all of which require specific skills and experience. There is also a critical role which links, manages and interprets the relationships between IT teams and boardrooms.

Data security

The potential of IoT is clear but one of the biggest barriers for investment and implementation of IoT systems is security. According to the Harvard Business Review, 46 per cent of IoT early adopters encountered issues with privacy and security compliance. A more recent survey by Business Intelligence confirmed that security topped the list of concerns about IoT, well ahead of a return on investment.

The concern is genuine. As the IoT market grows and more devices become connected, so do the opportunities for hackers to access customer data or intellectual property. Back in 2013, the issue was highlighted by the hack of 40 million credit card numbers from US retailer Target via the company’s internet-enabled heating, ventilation and air-conditioning systems. The knock-on effect of these concerns has put a premium on data security insight and advice, providing significant opportunities for IT consultants and cyber security experts.

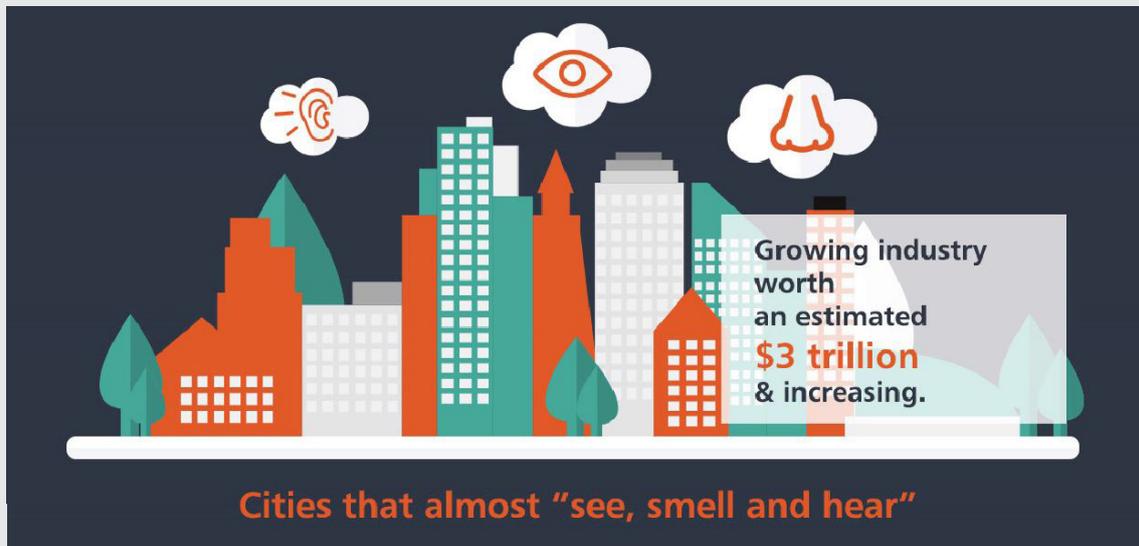
IoT sectors

It’s hard to think of any sectors which won’t be affected by IoT. It has the potential to disrupt every industry imaginable, from agriculture and energy to retail and transport. According to McKinsey, three sectors which are emerging as offering the biggest opportunities are manufacturing, health and cities:

- **Manufacturing** – In any production environment, such as a factory or assembly line, there are a multitude of opportunities for IoT-enabled components to provide major productivity improvements, whether through energy savings and maintenance scheduling or inventory management and health and safety. This is expected to be a major growth area for IoT jobs in next 5-10 years. In the US, for example, it’s estimated that just 10 per cent of industrial operations currently use IoT systems.
- **Health** – IoT has the potential to be genuinely transformative in helping us manage our health and well-being. From the familiar wearable fitness trackers, which enable people to monitor and better understand how they move, sleep, eat and drink; to devices which monitor those with chronic health conditions such as diabetes and help them manage their treatments and hospital appointments.
- **Cities** – With 75 per cent of the world’s population expected to live in cities by 2050, there is a huge potential for IoT technologies to improve the way we live and work in major urban areas, creating so-called ‘Smart Cities’. Already large IT companies are working with universities and local governments to use data-driven systems to manage transport networks, traffic flow and pollution levels as well as waste management and energy use to improve the lives of citizens.

Case Studies

Smart city



Built just 15 minutes' drive from South Korea's busiest airport, Songdo is one of a growing number of 'aerotropolises' – newly built cities next to existing airports. However, by building the 1,500 acre city from scratch, on land reclaimed from the sea, Songdo developers have been able to embed IoT-related sensors and smart technology into the city from the start, rather than retrofitting. This has led to the development of what is regarded as the world's first 'Smart City' and a blueprint for the future of urbanisation.

Songdo won't be fully complete until 2020 but it is already home to 40,000 people and another 55,000 commute to the city every day. Underneath Songdo's streets, sensors detect traffic conditions and interact with radio identification tags in cars and bikes to report gridlock. Every home and office will have a built-in terminal connecting it to the systems monitoring the traffic flow as well a host of other public infrastructure data. These systems will also incorporate a smart energy grid to monitor and regulate energy supply and demand to minimise the city's impact on the environment. Songdo also boasts a unique waste disposal system where rubbish is literally sucked from homes by a pneumatic system into processing centres that automatically sort the material and recycle it. There are plans to eventually use it to generate power for the city.

How will IoT give workers the edge?

Amsterdam is home to arguably the most connected office in the world. Aptly named 'The Edge', every facet of the building communicates with others as well as the employees. It all starts with a mobile app on employees' smartphones which enables the building to know preferences for room temperature, light levels, workload and even how that person takes their coffee. Based on this information, the app is able to assign the employee the best workspace for their tasks that day, be it sitting at a desk with colleagues, in a meeting room or working alone in one of The Edge's concentration rooms. By doing this, the building creates an optimised working environment for every employee.

Even the security and cleaning at the building is connected. Using information collected in the daytime, automated robot vacuum cleaners monitor the most used parts of the building and adjust their cleaning schedules accordingly. The expectation is that eventually every office in the world will be a 'smart' office, creating the best environment possible for all workers.

The outlook

The exponential growth of IoT means that in the future anything that can be connected will be connected, providing unprecedented access to data concerning every conceivable aspect of our lives. At this early stage for IoT, the opportunities for IT professionals with the right skills are considerable, whether its sensor hardware and software development, security, data management or the strategic bridge between IT teams and senior management.

With IoT strategies and systems evolving, the next opportunity for IT consultants will be in knowing what to do with all the data. US wireless company Verizon predicts the rise of the 'Analysis of Things', where businesses will ramp up their investment in interpreting data about customer behaviour, improving processes and defining new services.

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