DRIVING REVENUE FROM THE INTERNET OF THINGS

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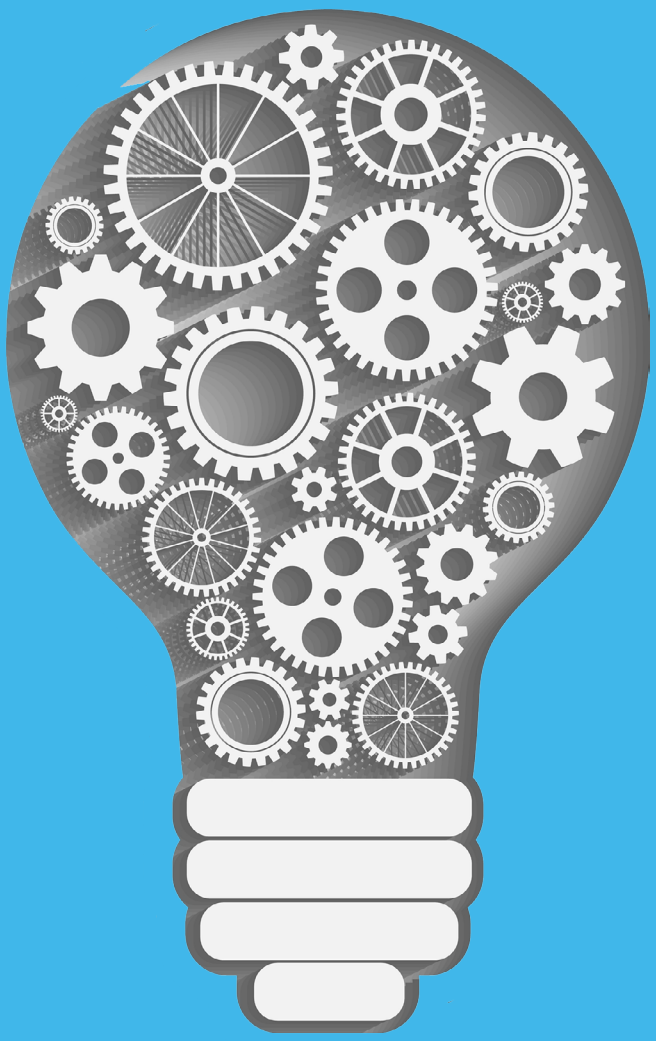


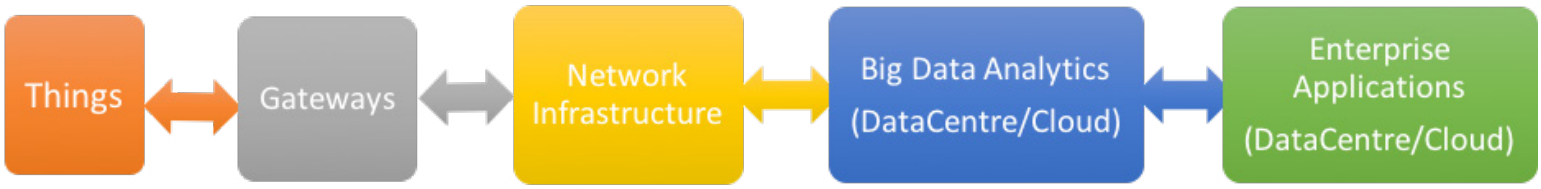
There is a significant amount of information available around the subject of 'The Internet of Things'(IoT) or 'The Internet of Everything' (IoE). The UK Government has even produced a report titled 'The Internet of Things: making the most of the Second Digital Revolution' created by the UK Government Chief Scientific Adviser, Sir Mark Walport, which was published in December 2014.

IoT is enabled by attaching/embedding intelligent sensors with all sorts of 'Things', from buildings, materials, vehicles, plants, clothes or even humans. Connection of 'Things' anytime, anywhere with anything and ultimately anybody enables the data to be applied to all manner of applications and services that analyse and compute the data in a meaningful and useful way. IoT is being used in all areas both home and work, in cities, manufacturing, vehicles, transportation, healthcare, energy and agriculture.

An IoT solution provides real time data on that item, data refers to raw material, when this data is analysed and presented in a form that enables decisions and actions to be made, then the data can be termed as information and provision of information becomes valuable to the user. Knowledge refers to the information, as it is often stated: 'Knowledge is Power'.

A correctly Implemented IoT solution can provide financial benefits with cost reduction, increased productivity, operational efficiency, reduced risk and a much improved customer experience.

IOT ARCHITECTURE MODEL



THE MAIN COMPONENTS OF AN IOT SYSTEM

'Things':
Sensors and sensor-related devices that are used to capture data from the environment, vehicles, airplanes, trains, machines, machinery, buildings and people.

Gateways:
IoT devices (including home consumer, enterprise or industrial) communicate with communications networks via these products.

Network Infrastructure:
Communication Networks, Wired and Wireless, LAN & WAN

Fast Data/Big Data Analytics:
The sea of data generated by IoT devices will need to be collected, stored and analysed.

Enterprise Applications:
CRM, Business Intelligence, Supply-Chain, Billing, Procurement and other applications that are indispensable to running a business.

What has made this possible is the development of enabling technologies, these changes provide benefits such as reducing cost, power consumption and physical size of the components, in turn accelerating the adoption of IoT into all manner of everyday applications.

Accelerating the implementation of IoT has been made possible with development in networking and communciation technology. The adoption of the latest internet protocol IPv6, which increases the number of addresses from around 6 billion (with the previous version Ipv4) to 3.4x1038, although, not limitless, but enough to support a significant amount of devices and 'Things' for some significant time into the future.

MARKET SIZE

Different sources predict the size and opportunity made available with these developments, today there are about 15 billion objects connected to the Internet, various industry analysts and technology manufacturers estimate the number of connected devices could be anywhere from 20 billion to 100 billion by 2020.

The reality is that the IoT allows for virtually endless opportunities and connections to take place, many of which we can't even think of or fully understand the impact of in today's world, let alone the future.

NOT A COMPLETELY NEW CONCEPT

Machine to Machine (M2M) is or was the predecessor to the Industrial/Enterprise IoT market and this used a wide variety of different proprietary communications and networking protocols.

The likes of SCADA (Supervisory Control and Data Acquisition) and DCS (Distributed Control System) which have been in existence since the 1960's, are examples of communications systems that are widely used in industrial processes as well as infrastructure and facility processes. These communications systems have been controlling all manner of things from power stations, vehicles, ships and heating systems. IoT will ultimately be used for these tasks, but currently they are solutions that are managing and controlling these items with properitary technology.

STANDARDS

IoT standards talk began in earnest in early 2013, clearly something that should have been addressed earlier. There is still a long way to go before a universal IoT standard, which includes the multiple areas from the model above may ever be seen combined into a single set of agreed standards. There does, however, need to be some common definition of what the things in the IoT might be. The technology industry is renowned for not waiting on standards to be defined before developing products and solutions, although there are a number of alliances formed and most of the major technology players are aligned to one of these groups, prompting self-regulation and standardisation.

DATA

Collecting masses of data on 'everything' is pointless without a clear set of objectives and a plan as to how and why the data set will be used, particularly as multiple data sets will need to constantly monitored, manipulated and analysed. The sheer volume, data rate and the real-time nature of IoT data will present challenges for traditional Relational Database Management systems (RDBMS) which were traditionally designed for static data sets.

With these large and complex data sets the term 'Big Data' or 'Fast Data' is being applied. Challenges include analysis, capture, data curation, search, sharing, storage, transfer, visualisation and querying and information privacy. Big Data often refers simply to the use of predictive analytics or certain other advanced methods to extract value from this data, and seldom to a particular size of data set. Accuracy in big data may lead to more confident decision making, and better decisions can result in substantial benefits for all organisations.

POTENTIAL AREAS OF OPPORTUNITY FOR A NUVOLA PARTNER

Due to the great breadth and complexity of the technology required to deliver the true value in the solutions, very few manufacturers and vendors, if any, will be able to succesfully solve all of the associated problems or deliver the complete end to end solutions required for specific project needs.

True System Integrators building customised solutions for specific market requirements or sectors will be the initial method of delivery building, these solutions with components from different vendors and then manipultating the data. The following are the main areas of interest;

1 NETWORK INFRASTRUCTURE

Building IoT solutions will require utilising and adapting existing IT infrastructure hardware and building infrastructure from new, this is one of the areas that Nuvola will continue to participate in developing, leading and implementing with its' partners. The optimisation of use, control and management and the interaction with the other components through Software Defined Networks, both Local and Wide Area, will be a key area of opportunity.

2 SECURITY

As we become increasingly reliant on the IoT we need to consider protection of potentially billions of 'things' from intrusions and interference that could compromise personal privacy or threaten public safety. In many cases we are relying on old technology to protect the emerging IoT world from cyber-attacks. IoT security spending will rocket as a result of emerging IoT-related cyberattacks, which are forecast to account for a quarter of all breaches by 2020.

Worldwide IoT security spending will reach $348m (€307.6m) in 2016, according to Gartner – a 23.7 per cent increase on 2015's $281.5m.

With everything communicating to everything, we need to make sure that we are able ensure that the right things communicate and inversely the wrong things do not communicate, otherwise the consequencies will be immensely devastating.

3 DATA PLATFORMS - IT, SERVERS AND STORAGE

IoT systems will require backend services, the choice is to deploy your own or outsource. With the evolution of IoT, either systems will require higher perfomance and capacity IT Systems, Servers and Storage.

4 CLOUD

Depending on the architecture the Cloud can be utilised with IoT systems especially in the use of cloud computing platforms. These platforms offer the potential to use large amounts of resources, both in terms of the storage of data and also in the ability to bring flexible and scalable processing resources to the analysis of data. IoT systems are likely to require the use of a variety of processing software and the adaptability of cloud services is likely to be required in order to deal with new requirements, firmware or system updates, whilst offering new capabilities over time.

5 APPLICATIONS AND SERVICES

There is a view that in the future every company will become a software company due to the data created by the products and the sytems that manage the data will eventually have more value than the products themselves. With IoT solutions the amount of data created means that the applications have to accommodate at least ten times more information than these systems are accustomed to, which presents an opportunity for innovators to challenge incumbents in the enterprise application space and with this opportunity Systems Integrators access to new Applications.

VENDORS

All the Technology vendors have a position on IoT.

Nuvola see that the IoT value chain is broad, extremely complex and spans many industries including those as diverse as semiconductors, industrial automation, networking, wireless and wireline operators, ISP's, software vendors, security and systems integrators. Because of this complexity, very few companies will be able to successfully solve all of the associated problems or exploit the potential opportunities.

As a Value Added Service Distributor with a focus on providing various 'value added services' around the products that we supply, we will also provide technology and services that enable IoT. Although we initially formed our solution sets around Unified Communications, this will continue as a focus, as will our ongoing dedication to supporting our partners and customers.

The reality is that the IoT allows for virtually endless opportunities and connections to take place, many uses have already been implemented but many more have not yet been considered. Some IoT things are: a live heart monitoring system, tracking agricultural activity in Dutch cattle, rubbish bins that post to Facebook, nappies that need changing when used, an egg tray that reports how many eggs are left, the New York sewerage system, home brewing plants, pavement control and maintenance, toothbrush usage, an Australian rules football shirt that fans can wear and will vibrate in reflection of the players on the field, a piggy bank that reaches capacity, traffic management and parking space management and Network Rail are installing sensors in and beside the tracks to inform when they need maintenance or possibly that there are leaves on the track.

The Internet has already affected the world, the Internet in the future will bring even more change. IoT devices will unleash a new wave of Internet-based services, in ways we can't foresee—much like the way the smartphone came along eight years ago and changed the world of computing.

Finally, a Quote from Charles Darwin, famous for his work in evolutionary theories:

"It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change."

ABOUT NUVOLA DISTRIBUTION

Nuvola are a true Service Value Added Distributor, we look to offer our resellers a total solution:

A complete and comprehensive product range
Technical support for all our re-sellers
A full portfolio of White Label Services including: Skype for Business integration
On-going support, 24/7/365 Helpdesk

In today's IT environment the reseller must be able to deliver the 'Total' solution and partnering with Nulova they will be able to ensure that they are always in this position to do this. The re-seller can work with our Technical Consultants to design the best solution for their customers with the necessary services to deliver the project.

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