FROST & SULLIVAN

VIRTUAL THINK TANK

Tapping the Value of our Interconnected World

By Dilip Sarangan, Industry Principal, Internet of Things, Frost & Sullivan

Introduction

Frost & Sullivan recently invited select companies to participate in a new and unique thought leadership forum – Frost & Sullivan's Virtual Think Tank. The executives who contributed their opinions and insights came from these top organizations:

- **Einar Landre**
  Lead IT Analyst, Drilling & Well Solutions
  Statoil
- **Steve Matthews**
  Practice Director IoT
  Teradata
- **Pranay Prakash**
  Vice President, Product Marketing
  Tridium at Honeywell
- **Brian Witten**
  Senior Director IoT
  Symantec
- **James Kishor**
  Vice President, Flow Systems
  Emerson Process Management

Virtual Think Tank Participants

We would like to thank the participants of our Virtual think tank for their participation and openness to discussing the importance of big data analytics in the Internet of Things (IoT). The session was moderated by **Dilip Sarangan**, *Industry Principal for IoT*, Frost & Sullivan and included:

- **Einar Landre**
  Lead IT Analyst, Drilling & Well Solutions
  Statoil
- **Steve Matthews**
  Practice Director IoT
  Teradata
- **Pranay Prakash**
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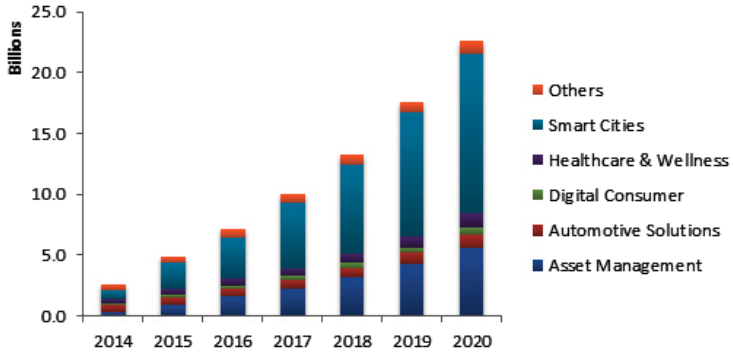
— Dilip Sarangan,
Industry Principal, Internet of Things,
Frost & Sullivan

The Analyst's Perspective

The Internet of Things (IoT) is the biggest buzzword in the industry today. Everyone's talking about connecting devices and creating a whole ecosystem around those connected devices. The reality is that there are close to 5 billion devices connected to different networks today. In the next 5 years, the number of connected devices will spike to about 23 billion devices, a net increase of 18 billion devices.

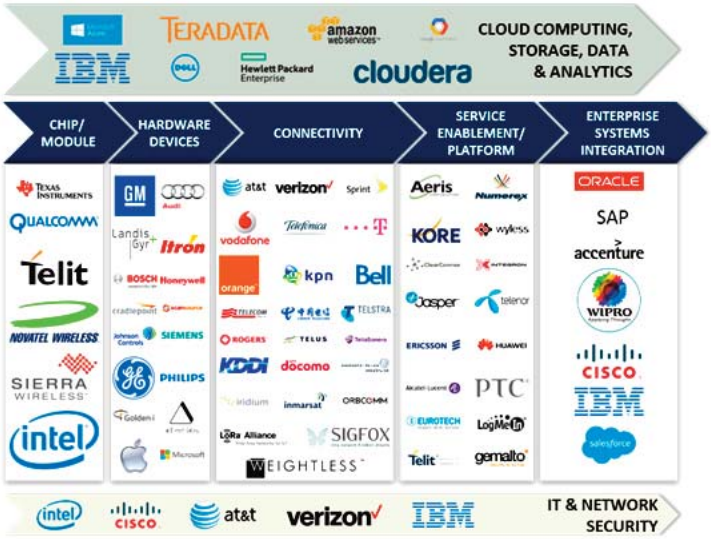
Total IoT Market: Number of Connections (Global), 2014-2020



Source: Frost & Sullivan analysis

The real value in IoT is not from connecting devices, but from data collection and data analysis. From a customer standpoint, connecting billions of sensors and devices has limited potential. Yet, the ability to transform the data from billions of devices to deliver actionable intelligence has the potential to transform a business, generate revenues and maximize cost savings.

IoT is the complete ecosystem that comes together to ensure that businesses are transformed with metric-driven insights. The IoT ecosystem is the combination of devices, connectivity, security, storage, and analytics working together towards optimizing business.



Source: Frost & Sullivan analysis

"IoT deployments today are about making dumb machines smarter. The real value is in combining edge processing with centralized processing to provide real-time and predictive intelligence using sensor data and data analytics."

The Use of Sensors and Analytics in IoT

We started the discussion by talking about sensors and how each of our participants used sensors and analytics in their own organizations. Each of our participants spoke in detail about the different deployments internally in their organizations. However, the most important point about deploying sensors is their integration with analytics capabilities to make sense of that sensor data. Today, most sensors are being used to increase uptime, decrease downtime, predict failures, reduce maintenance times and even enhance physical safety with t smart-connected physical systems.

The future of sensors and analytics is not just in gathering real-time data but in using the sensor data to predict machine health and fix issues with machines before they lead to downtime. This can be done with a combination of sensors on the edge of the network to gather real-time information and back end analytics that not only provide data in real-time but also predict potential points of failure.

Take the example of smart city deployments. It is essential to capture data from sensors on the edge and perform analytics to get real-time insight into different systems. However, the true value of the integration of data analytics and sensors is in correlating this sensor data with real-time weather data, traffic patterns, and other systems and being able to predict the impact of (for example) a weather event on the different systems deployed at the edge.

Currently, predictive analytics is in the proof-of-concept stage with most organizations. The focus is more around making machines smarter and more secure. The goal is to deploy condition-based monitoring systems for industrial machines to monitor the data over an extended period of time. Once that historical data is available, the analytics engine can help equipment operators by providing predictive data on machine health and preventing expensive breakdowns.

Changing Business Models with IoT – From Selling Machines to an Uptime Service Model

Over the past few months, many vendors, service providers and analysts have touted that IoT will help create new business models and value-added services. Pranay Prakash brought up a very interesting example of what General Electric is doing. In the Oil and Gas market, they are applying the same model to selling blowout preventers as they do in aviation with their aircraft engines. The model is to basically sell "uptime" or access to the service instead of selling hardware components. Replication of this model would help many industrial machinery vendors – instead of selling equipment that costs millions of dollars, lease out these machines and pay to ensure that the equipment manufacturer uses analytics to guarantee uptime. This moves away from the traditional CAPEX model for purchase of machinery to a complete OPEX model.

"These all-new business models are emerging because of gathering all this data and doing some analytics and managing that remotely. So, we definitely see quite a bit and that's increasing every year."

— **Pranay Prakash,**
Vice President, Product Marketing,
Tridium at Honeywell

"With a lot of these high-value assets, it's actually the integrity that is sometimes more important even than the confidentiality."

— **Brian Witten,**
Senior Director, IoT,
Symantec

This brings about a very interesting scenario – can this model be replicated across multiple industries and applications? The answer to this is yes, definitely. We have seen similar models pop up in the Agriculture Technology (AgTech) market. In India, Tech Mahindra and Aeris Communications are trialing out a leasing model for tractors and other heavy equipment for farmers – a variation of the Pay as you Go (PAYG) model. Similarly, companies such as Uber and AirBnB integrate advanced analytics capabilities to increase convenience for consumers and businesses.

With the GE model, the onus is now on the manufacturer to increase reliability and uptime for their equipment while giving the customer the option of paying for usage instead of buying expensive machinery and retaining the capacity to maintain it.

Data Security Should be the First Step – Not an Afterthought

Typically, data security has been an afterthought. Many organizations do not have established protocols to encrypt and transfer data across the network. IoT systems are deployed with sensors and software developed by many different organizations. Each of those organizations has access to the data. However, if the data is not encrypted on the edge then the integrity of the data is suspect, which means that the sensor data could have been spoofed or faked (as with Stuxnet computer worm), and the data is meaningless. In cases where the data is critical to measure machine health, fake data could show that there are no issues when the machine is about to fail, putting the factory in a worse position than known.

An important question that has risen from the Internet of Things is data privacy – who owns the data? For the past few years, organizations have struggled with that issue. As an example, in Oil & Gas, you often have one company that owns an asset, a partner company that operates the asset and equipment and services provided by multiple third parties. Many parties need visibility into that data. Who owns it and who gets visibility must be well defined by the business negotiation and written into the contract by lawyers.

Using the connected car as an example, you have a consumer that owns a vehicle, an automaker who made the vehicle, third parties who make components and accessories, and the mobile network operator, who's operating the telecommunications network for delivering the data. All of whom want a copy of the data. When a customer signs a deal for the car, they are actually accepting a lot of terms and conditions on the ownership and insight into that data. More than getting the contract right, the technology has to be there to actually protect the information:

- Protect the integrity of the information so that the data can be trusted, representing the state of the equipment, the behavior of the equipment, and
- Where there are privacy and confidentiality concerns, protecting the privacy of the information.

Conclusion

The Internet of Things is driving new dynamics where new business models are being created for traditional industries that have been slow to change. Data from IoT sensors and data analysis capabilities work hand-in-hand to deliver the promise of making things smarter; to help organizations either save money, generate revenues or increase productivity and efficiency. With billions of devices expected to be added on different types of networks over the next 5 years, data analytics has never been more important.

Organizations must realize a few things before they plan their IoT deployments – whether in an industrial, city or commercial environment – sensors, big data analytics and data security are not mutually exclusive solutions – if an IoT deployment does not account for each of these elements, the likelihood of success is minimal and the investment might not generate much of a return on investment (ROI).

Frost & Sullivan would like to thank the panel for joining us to discuss the important topic of "***Tapping the Value of our Interconnected World***." We are excited by the buzz created by IoT and how these technologies and solutions can help customers such as businesses, consumers and governments - adopt new business models and find new revenue streams.