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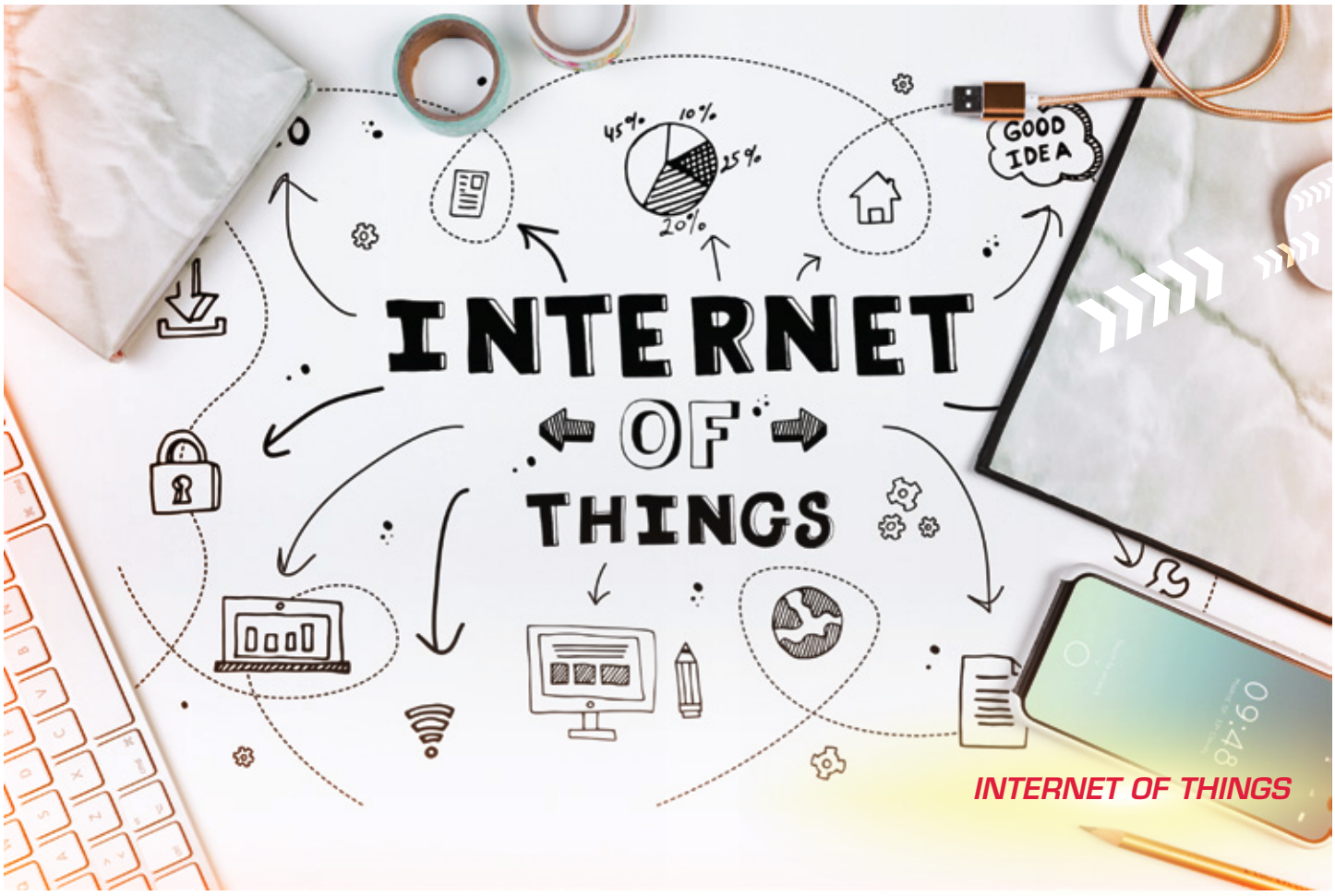
Tech Mahindra
BUSINESS PROCESS SERVICES

INTERNET OF THINGS (IoT)

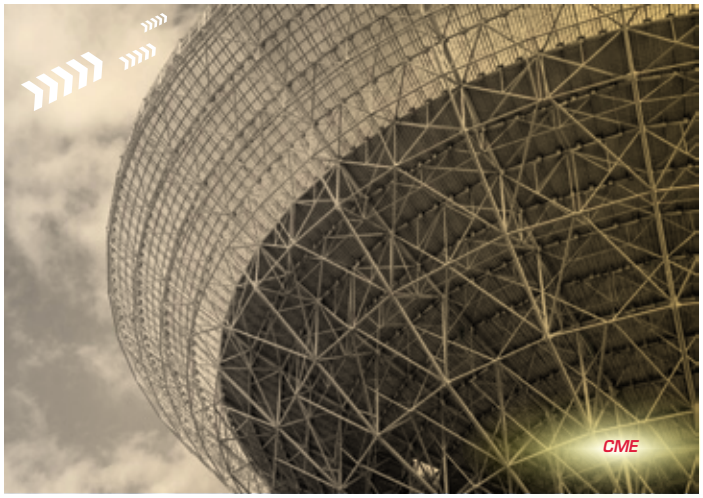
ENABLING SMART VALUE CHAIN



Internet of Things is not a new concept altogether. In early 2000, there were many such projects performed by high school students which were sensor based like water tank full alert, open door alarm etc. But it wasn't exactly what we term today IoT. All those things had sensors but did not produce any data nor were they connected to internet, making them passive and static electronic systems. With internet connectivity to sensors they can now communicate with each other, store data, react and sometimes even learn by themselves. These sensors are embedded into objects and humans, forming a huge network of sensors which is interconnected over network which can be termed as Internet of Things!

Internet of Things, the phrase itself is quite patchy but it has become one of the most talked about key phrases in the digital journey. However, when we term products as smart and connected then it appears more tangible and people can then relate that it's not about the internet but it's about product and things. When things becomes smart they become more efficient, insightful and reliable and give improved outputs with minimal inputs. When such smart things are part of the value chain, it becomes a smart value chain. Inbound logistics, operations, outbound logistics, marketing & sales and services (after sales services) are the major components of a value chain. When things forming each of these components are smart, needless to say, these activities will also be.

The major factor which will influence the smart value chain and its proper functioning is good and well planned cloud strategy. Since sensors when emit data, will be stored on cloud to access and assess from any point having right mix of cloud offerings would serve the purpose. So IoT will enable value chains to be smart but then mobility technologies, cloud strategy, network planning and the robust analytics platform are the one which will make it a success. Let's have a look at how IoT will enable smart value chain for different businesses across various business verticals:



CME

The Telcos are tweaking their strategies and traditional services to keep in sync with the changing behaviour of consumers. But that won't be enough and hence they are also revisiting their substructure, partnerships, infrastructures and business models to be relevant and sustainable in the highly volatile market of smart next-gen devices. Quicker adoption of cloud strategies would be seen by many Telcos to deliver flawless network, platform and solutions for efficient functionalities. There are many IoT use cases available and that is the reason why all eggs in one basket approach will not work anymore with Telcos. Newer IoT applications are being released regularly making mobile network providers stay on their toes in order to deliver fully connected and scalable high bandwidth network to make sure machine to machine connectivity remains uninterrupted and there is no loss of data being captured every micro second. Hence from supplier's suppliers to customer's customers, Telcos are trying to be more agile and relevant to their customers.

Energies and Utilities

The energy and utility landscape is constantly changing and as customer expectations grow, government regulatory requirements change and energy sources shift, companies realise the need to adapt to these changes and drive greater efficiencies. Thus, enterprises are employing new and improved technology to assist their transformation. Internet of Things is at the forefront and is growing rapidly in the industry – Gartner predicted that the IoT energy market is expected to grow at 21.1% CAGR, reaching a global market value of $22.34 Billion by 2020. Installing temperature, vibration, moisture sensors and tooling for preventive maintenance or predicting failures of power lines, drones to inspect exteriors of large power plants and/or power lines, sensors used to monitor equipment over time at power plants, conduct predictive maintenance, and provide additional safety oversight. Utility providers use smart meters to track customers' energy usage and communicate that data to the company's central system, allowing companies to predict demand, spot outages, and conduct preventive maintenance.

BFSI

Internet of Things will be a big boon for the banking industry. IoT will allow banks to gather more personal and transaction-based data, banks can offer personalized solutions to customers with automated data processing & analysis. Wearable technology will play a vital role in the development of IoT. Right now most of the watches are connected to the Internet and they have potential to replace the electronic cards as a payment facilitator. Along with wearables, voice devices like Amazon Alexa can be utilized for basic banking like balance check and transaction history. With the availability of the larger personalized database, banks would be able to get information about the life events of customers. Banks have a huge opportunity to act as trusted infomediaries – not only in providing real financial offers but also by supplying advice and rewards in other areas of life to attract and retain customers. Insurance companies can charge premium based on driver's driving pattern gathered from connected cars. Hence the value chain in BFSI is already shedding its skin and has become smarter than ever.

SCM

SCM is very complex business and highly dependent on its components like suppliers, vendors, partners, distributors, logistics etc. With IoT coming into picture, SCM has become smart. Sensors at various levels give data which can convey many information like status of the shipment, current position of fleets, raw material replenishment alerts, temperature management for perishable goods, alerts to climate sensitive shipments and many other. Many labour intensive processes in SCM can be erroneous due to wear & tear, mishandling and poor knowledge of products in shipments. In all such cases, there is no vital maintenance of the records and there can be ambiguity in terms of reporting. With IoT, all such mis-reporting can be very well tracked and that too remotely. Proactive steps can be taken based on past data analysis and current state as shared by IoT sensors making SCM process smart. Hence now a days many shipments, deliveries and many other activities like warehousing, replenishment, freight outwards can be seen as sensors enabled.

Manufacturing

Manufacturing be it discrete, automobile, utilities or any other product manufacturing, have a lot of dependencies on many external factor before it comes out of the factory. Even after it's inside journey, the outward journey unless it is brought to use by an end customer, is very busy. Thus the value chain of manufacturing is one of the most complicated yet vastly adopted in different form by many other industries as well. With IoT being implemented by manufactures in their value chain, it has turned smart and is driving the fourth industrial revolution commonly known as Industry 4.0. IoT enabled systems are helping shop floors to become more agile and thus have helped in reducing go to market time for the products. With products now being smart the important aspect of value chain which is "After sales services" is been smartly taken care of. As they have sensors so timely servicing of products and predictive alerts for the untimely breakdowns can now be very well intimated in advance to the customers. This shortens the service cycle and due to improved quality of customer services, the customer retention probability also increases.

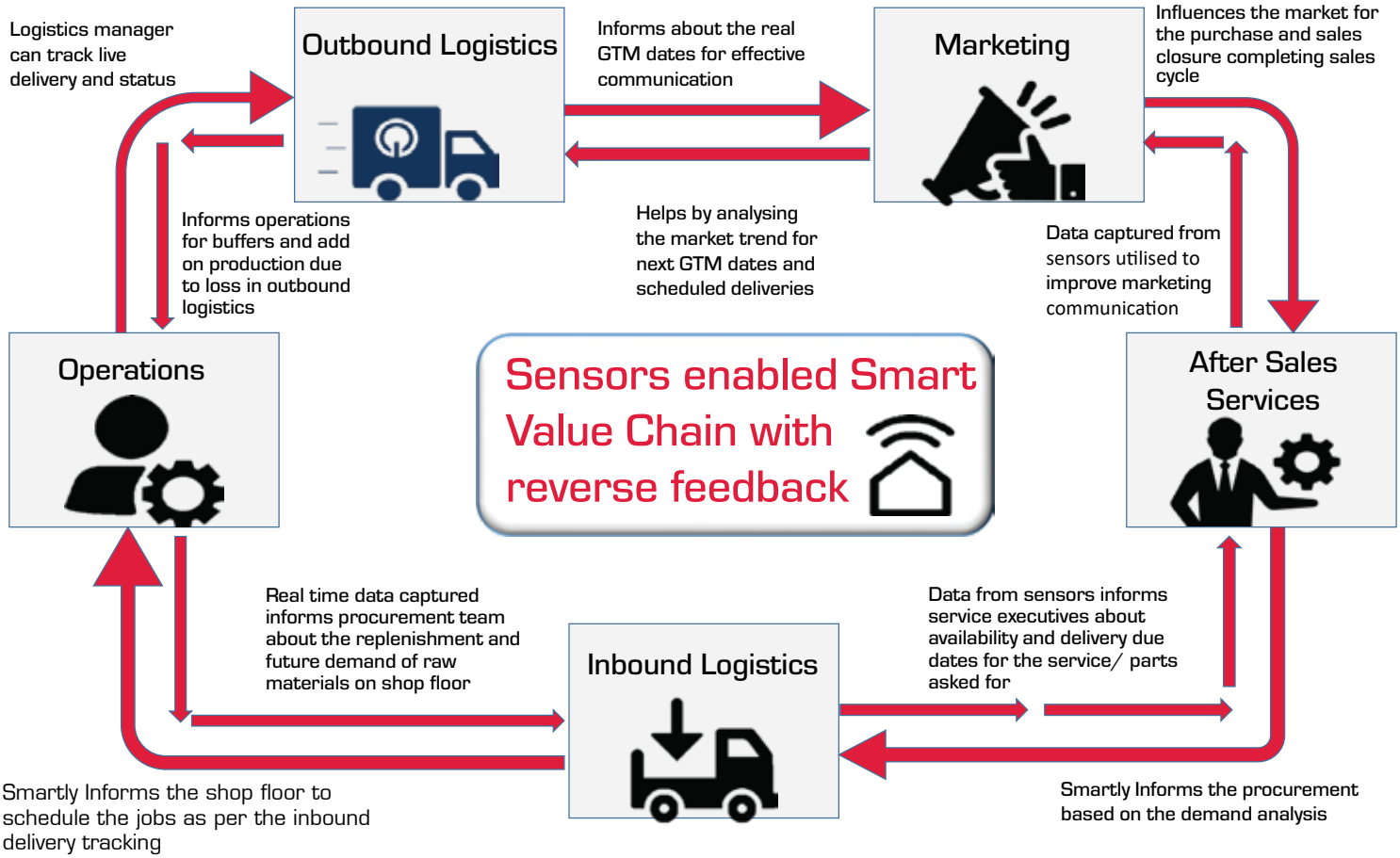
Retail and CPG

IoT is driving Retail industry in three major areas; customer experience, newer revenue streams and supply chain. With smart shelves which helps in inventory management, RFID on inventory as it moves across various stake holders, auto payment through QR code readers eliminating long queues at POS, VR based mirrors which cuts on trial room tantrums, smart shopping carts which helps customers to trace their path to the desired shelves based on the shopping list input to the application, IOT helps in collects data from such applications which is very useful in market basket analysis for customers to determine the customer lifetime value. It will also help in defining various target segments for the range of product offerings by speciality retail stores. With IoT it is now easy to perform RFM analysis which tells about the engagement pattern of the customers with the retail outlets. IoT is a boon to the retail industry. Managing data with low cost and reaching the target market with minimal marketing cost is one of the major focus of all the retailers. IoT with its power of sense, collection, think , act and learning capabilities making it happen and that too with low costs through entire smart value chain.

Healthcare & Pharma

Pharma is known as one of the most regulated industries while healthcare is spreading its wing, thanks to social awareness. Given to modern and fast lifestyle, there are many health alignments which need to be constantly monitored. Previously this could be done only via a diagnostic centre but due to lack of time, the market demands these monitoring on the go and within reach. This introduced many sensor enabled patient health monitoring devices. These devices are wearable and portable. One can check and keep keen eye on blood sugar levels, BP levels, cardiovascular movements, etc. These devices being IoT enabled are connected to network and give away significant amount of data. This data when put through the standard analytics tools can predict a patient's health and proactively suggest measures to mitigate any occurrences of illness in future. IoT enables devices are also used by many doctors for remote health monitoring and prescription. They are also helpful in accessing aged people from any location and plan their medication doses accordingly. Hence IoT is enabling healthcare & pharma industry go digital with smart devices.probability also increases.

Different businesses will have different smart value chain components. If we look at this value chain in general with sensors embedded it will be a two-way mechanism with reverse feedback to inter-dependent components. Below figure illustrates the same. Outer link tells about the sensor enables sequential flow in the value chain while the inner link indicates the sensor enabled reverse feedback.



Implementing the smart value chain is now on the "must do" list of CXOs globally. However IoT enabled smart value chain actualization has its own challenges. There are factors which decide the success rate of any IoT implementation. Below discussed are the most relevant in purview:

1. Standardization of IoT

IoT industry itself is not standardized. It is extremely fragmented and there are no protocols defined for IoT integrators to offer solutions on common platforms. Hence whenever one has to setup an e2e full-fledged IoT landscape, there is a need of interfaces development which can help connecting the dots and make the ecosystem work. Hence when it comes to system integration for IoT based applications and platforms, open source is first choice due to low lost. But licensed interfaces will always offer sophisticated algorithms for seamless execution of IoT ecosystems.

2. Apt cloud strategy

The feature of IoT which makes it cheaper to implement is no premises hosting. All thanks to cloud, massive unstructured data generated from IoT devices can be efficiently stored in it. However many organizations fail in implementing appropriate cloud strategy which may result in loss of data. Even few seconds of unavailability of cloud can result in loss of important decision points which can have mashing impact on the value chain execution. A proper mix of private, public could and cloud vendor is the key to the smooth execution of IoT biome.

3. IoT Security

Today's era is also known as the connected era, thanks to wide and mature network technologies. Wider the network, more are the chances of an intruder attacking and taking away the precious data. Data leakage is the most common issue which cannot be ignored. With tremendous data floating over networks and in the cloud, IoT has to be secured and to be built on secure-most algorithms and network protocols. The kind of data breach that happens in many smart home IoT applications can be due to same reasons of online portals data leaks like weak passwords, not changing passwords and unsecure protocols. However with SI layer implementation in between, the security aspect can be very well taken care of.

4. Big Data and AI

Needless to say, data from IoT application will certainly need big data based databases to store and access data. However deciding the correct database among many in the market is very crucial. Network partition, availability and speed will continue to be major factors deciding the database selection. IoT application are strongly integrated with self-learning capability, hence AI will play vital role. With AI, sensors will have decision making in many contingent situations and will help systems with actionable insights.

As we discussed the four major factors for IoT success, keeping focus on them while implementing IoT in any business value chain will certainly yield next-gen and smart outputs positively impacting the bottom line.

Brijendra Sharma
BTS (Consulting) Head

Brijendra heads Business Transformation Services, the consulting arm of TechM BPS. He has 20+ years of work experience in BPS industry across various domains ranging from BFSI, Supply Chain, Telecom to name a few. He has helped clients in their front, middle and back office transformations. He has 19+ years of experience in BPS industry across many domains.He is Lean Six Sigma Master Black Belt holder.

sbrijendra@techmahindra.com

Rahul Agarwal
Principal Consultant

Rahul is accomplished Lean Six Sigma Black Belt certified consultant with over 12+years of experience across multiple domains and verticals as Telecom, e-commerce, Retail banking, Investment Banking, Supply Chain and Manufacturing. He has an extensive experience of consulting on technologies as RPA, IoT, Analytics, Next gen platforms etc. He is a Science Graduate in Chemistry and certified ISO auditor as well.

rahul.agarwal22@techmahindra.com

Sarang Banubakde
Sr. Business Consultant

Sarang has 5+ years of experience in IT delivery, consulting and training. He is management graduate with experience in Pharma, Telecom, SCM and Retail & CPG. A techno-functional, he has experience in technology with hands on. He has worked on lean projects and has also been a trainer in Digital stream and have trained more than 1000+ associates on digital.

sarang.banubakde@techmahindra.com

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