INFOSYS SENSE SUITE – AN IOT LED SERVICE DELIVERY PLATFORM

Abstract

Organizations are fast adopting IoT but are struggling to address the associated challenges of building an end-to-end IoT solution. They look up to system integrators to deliver an end-to-end IoT solution by unifying services offered by various players in the disruptive IoT ecosystem. Infosys, through various third party collaborations and Infosys Sense Suite provides a bunch of non-correlated accelerator service offerings across the IOT stack to rapidly prototype end-to-end digital solutions and derive customer benefits. Infosys Sense Suite with its evolving set of services aims at providing variety of data ingestion, processing and visualizations capabilities to derive insights and help customers in their digital transformation journey.

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Navigate your next

IoT led Digital Disruptions

With the advent of sensors, there is a growing urge to sense and analyse even the everyday activities. The implantation of sensors and related infrastructure have excited technology innovators for sufficiently long time now and various inventions have been made in this regard. Today, there is an ongoing attempt to gather data from unconnected living and non-living things and filter, process and analyze such data to derive insights. Though Internet of things has evolved gradually over a period of close to two decades, it is only recently that we have witnessed the greedy adoption of IoT across industries and enterprises. This sudden demand in IoT adoption can be attributed to the advent of 5G, Cloud, Edge and FOG Computing capabilities, rapid innovations in the field of sensing technologies in addition to the ever reducing cost of implementation.

The Current Market: Trends and Forecasts

With the increasing adoption of Sensor based technologies across industries and use cases, the IoT market is on a boom. Here are a few strong indicators of rising adoption index of IoT across industries:

- As per Gartner, more than 65% of enterprises (up from 30% today) will adopt IoT products. Also 20 billion devices/things are expected to be internet-connected by 2020.
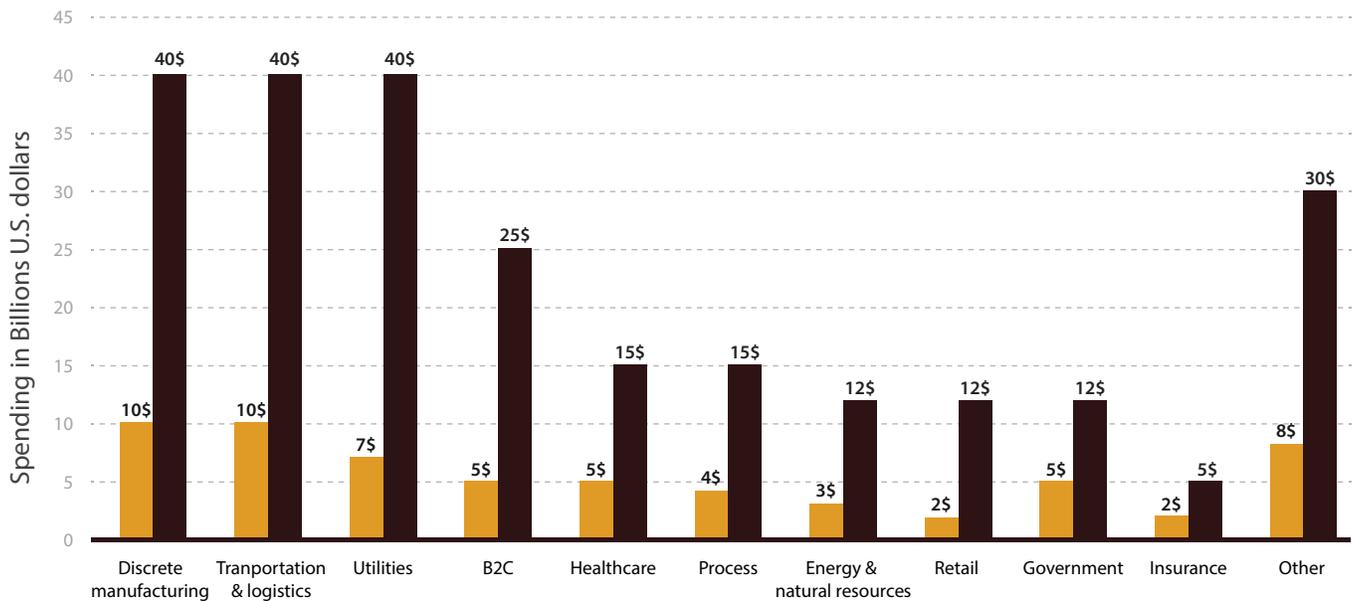
- The Industrial Internet of Things (IIoT) market is predicted, by Forbes, to reach $123Billion in 2021, attaining a CAGR of 7.3% through 2020.

- By 2020, transportation, manufacturing and utility industries are projected to spend $40 Billion each on IoT platforms, systems, and services.

- McKinsey predicts that the IoT market has a total potential economic impact of $3.9 trillion to $11.1 trillion per year in 2025.

Spending on Internet of Things Worldwide by Vertical in 2015 and 2020 (in billions of U.S. dollars)
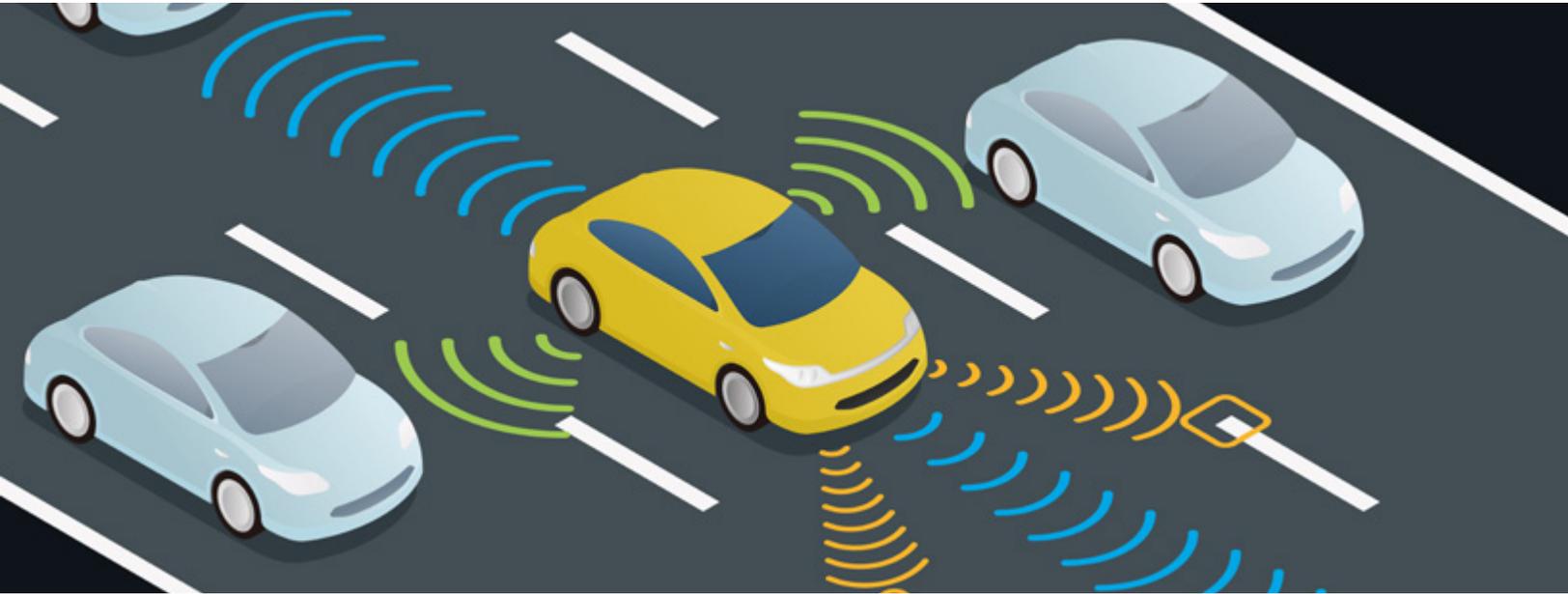
Industries are also set to witness many welcome changes in the functioning and capabilities of sensor based technologies. Following are a few welcome changes that are anticipated in the IoT market:

- **Rise and popularity of Smart Device/ applications:** There will be a sharp rise in the adoption and use of smart devices in a wide range of areas including automotive, transportation, healthcare, hospitality, and manufacturing solutions.

- **Domination of IoT Cloud platforms:** Intensified competition from industry giants such as Amazon Web Services (AWS), Microsoft, and Google, as large IoT platforms has become the norm. Enterprises will move towards adoption of cloud platforms and connected devices.

- **Enhancement of IoT by 5G:** Faster speed of data delivery and reliable communication over the air will provide

crucial benefit to areas like industrial IoT, manufacturing, health care, resources, utilities and logistics.

- **Sensor Innovation:** The sensor market will also evolve continuously with new special-purpose, low-powered sensors capable of executing complex computational analytics at the edge.

Market Gaps in Designing and Rapid Prototyping of End-to-End IoT Solutions

In spite of the rapid growth in IoT adoption, there are considerable issues that arise when it comes to implementation. Lack of organizational expertise in technology adoption, change management skills, need for knowledgeable service providers are only a few factors that hinder successful IoT implementation.

Here are a few broad challenges that organisations face while moving ahead with IoT Solutions:

- **Need for Multiple Expert Stakeholders:** Delivering IoT solution is unlike traditional enterprise IT applications. IoT is not a monolithic application but an amalgamation of heterogeneous key components like

sensors, communication channels, infrastructure and Cloud-as-A-Service capability. No single player can own the entire chain of this ecosystem. Enterprises look up to system integrators to deliver an end to end IoT solution by unifying services offered by various players in the disruptive IoT ecosystem.

- **Complexity, Confusion and Integration Issues:** IoT ecosystem has been flooded with multiple platform players; millions of APIs to consume and distribute data and numerous protocols to acquire and interpret data from various sensors throws a challenge to IoT system integrators who tries to rapidly prototype end-to-end IoT solution to derive customer benefits. This ambiguity

in correct vendor selection at every layer of the ecosystem decelerates adoption of IoT on some industrial shop floors and factories.

- **Evolving Architectures, Protocol Wars and Competing Standards:** The open source world has grown steadfast and its proponents are trying eagerly to set new flexible standards. There is bound to be ongoing turf wars with legacy companies who are trying to take their proprietary services to market. A customer in desire of building an IoT prototype needs to cut across, choose and potentially integrate a mix of such open source and proprietary offerings.

IoT led Digital Disruption the Infosys Way

With organisations looking to integrate multiple offerings, vendors and expertise, Infosys acts as an enabler in their customer's road map for IOT adoption and help better realize their digital transformation journey. With expertise across the IOT stack from sensor engineering to analyzing data and churning out insightful visualizations, Infosys helps drive tangible values for their customers.

Infosys offers exploratory services at various levels including:

- **Sensor Vendor/Startup Tie-Ups:** Infosys proactively ties up with sensor manufacturers to build solutions encompassing wide variety of sensor make and models to address customer needs.

- **360-degree partnership with IoT platform Providers:** Customer focus of building IoT solutions is taking a shift from on premise infrastructure investment to leveraging cloud based "pay per use" infrastructure.

Infosys stays abreast to this paradigm shift in IoT solutioning by proactive partnering with industrial IoT platform providers like Microsoft, Amazon, Google and IBM. Infosys targets rapid building and demonstration of solutions on these IoT platforms driven by highly configurable, scalable and robust use cases.

- **Systems Integration:** Infosys has established itself and proven competent in rapid designing and prototyping of end-to-end IOT solutions. These IoT solutions being a blend of

complex heterogeneous offerings from multiple players of the IoT value chain, Infosys has built accelerator components such as jump-start kits and reference architecture to speed up the development process.

- **Green field initiatives:** Infosys offered location based IoT solutions in hospitality domain to track people and goods arriving at a hotel or factory, enabling smart booking system for an enterprise or schedule optimized garbage pickups by trucks. Infosys has used IoT to the effect of improving parcel-sorting efficiency for postal companies and designed predictive health monitoring system for equipment used in drilling operation of an oil field company.

Infosys Sense Suite - Ecosystem

Keeping in mind the challenges in designing an end to end IoT solution with a multitude of players, technology options, and agility in the IoT ecosystem, organizations are moving towards building accelerator components that may speed up developing a solution by 20-30 percent or even more. This accelerator component can be in the shape of quick start document guides, code snippets or even

services that can help quickly integrate sensors supporting niche protocols.

As a System Integrator, Infosys through its 'Infosys Sense Suite' has made its mark in building such services that are independent and can help jump start the development of any IoT solution with readymade components. These readymade components can either connect to a

particular sensor to acquire data, or help perform some computations or create an engaging visual to communicate performance or alerts.

Infosys Sense Suite, in effect, is a Service Delivery Platform that provides a suite of components across IoT stack to help develop data ingestion, data processing and data visualization capabilities. It aims

to accelerate the path to production of IoT solutions/services and subsequent management of its operations. The suite offers industrial connectors and adapters for major IoT platform providers, sensor vendors, communication channel providers and infrastructure facilitating partners.

Infosys Sense Suite primarily offers three different layers of services for an IoT stack:

- **Sense Hub:** Constitutes of services that aim at providing ingestion adapters, abstracting the complexities involved in ingesting data from varied sources/ protocol connectors used for sourcing data from multiple sources like sensors, gateways and industry data platforms.

- **Sense IQ:** Constitutes of services that offers core stream analytics to process

streaming or static data sources based on kappa, lambda and other data processing architectures. Also offers data computation algorithms to derive various insights or alerts.

- **Sense XP:** Constitutes of services aimed at delivering quick visualization widgets, charting templates, admin functionalities like notification and alerting dashboards.

Applicability across Industries

Infosys Sense Suite is leveraged across industries for a wide range of usecases. Here are a few business operations for which Infosys Sense Suite is currently used:

- Location based services and notifications

for tracking people and assets – indoor and outdoor scenarios

- Asset monitoring systems (generators, turbines, etc.) in oil and gas, manufacturing and other industries from

a proactive maintenance point of view.

- Tracking and traceability of parts on an assembly line or a parcel-sorting center.

Features and Benefits

Infosys Sense Suite provides a basket of components across IoT stack to can help rapidly build any IoT solution end-to-end by:

- Providing micro service based independent services at every layer of the IoT ecosystem for ingesting data, computations or visual graphics

- Services built leveraging open source

technology components resulting in limited or no vendor lock-in

- Building service level source codes which can be tweaked based on use case demands

- Providing platform agnostic services that can be used AS-IS with minor configurations

- Ensuring faster time to market due to availability of ready to use accelerator components

- Reducing the cost of adoption as it is built leveraging open source technology and library sets

Infosys Sense Suite Success Stories

Infosys Sense Suite provides a basket of components across IoT stack to can help rapidly build any IoT solution end-to-end by:

- A European Hospitality service provider leveraged Infosys Sense Suite to build an indoor and outdoor location system

to track people and assets, draw walking paths, mark points of interest etc. It also helped to ascertain and communicate optimized route between two points.

- A North American Oil and Gas Major leveraged Infosys Sense Suite to build has also been leveraged to build an

exception base surveillance system to handle equipment failure in an oil field. It was also used for monitoring oil field assets by being a component of the Digital Oil Field offering.

Summary

IoT adoption has become quite complex today not only because of the volume and velocity of data but also because of the variety of technologies and vendors to choose from. In this era of IoT proliferation, system integrators have a huge role to play in helping organizations overcome these challenges by helping breakdown the complexity in conceptualizing and designing end-to-end IoT solutions. To help organisations in this context, Infosys has designed Infosys Sense Suite- a bunch of non-correlated accelerator service offering across the IOT stack to rapidly prototype end to end digital solutions and derive customer benefits. Infosys Sense Suite extends platform agnostic services across data ingestion, processing and visualization ensuring faster time to market and reduced cost of adoption. Infosys Sense Suite aims to help organisations fulfil their IoT aspirations and navigate their digital transformation.

About the Author

Animikh Ghosh is a Technology Architect at iCETS with more than 12 years of technical consulting experience in the area of IoT/Azure Cloud. He leads the IoT engineering and development at ICETS and comes with a strong research background. He has presented several peer reviewed publications at various prestigious conferences and has several patents to his name. He has been involved in multiple customer advisory engagements, Living Labs initiatives, NEXT (New Emerging Exploratory Technologies)/ First of a Kind (FOAK) projects.

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