# Telecom Operations In Iot

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**Abstract:** *This paper is about the use of Telecommunications in IOT(Interent things) which is Emerging Technology in near future,this paper depicts the role about IOT by various service providers across the World for the day-to-day Telecom Operations.*

**Keywords:** *Telecommunication operations,IOT,Artificial Intelligence,Emerging Technologies*

## I. INTRODUCTION

The internet of things (IoT) is currently pervading across every industry and consumer world, improving efficiency and safety in the workplace. In the telecom sector, the technology can have a significant impact by showing its potential to advance business procedures and generate more revenue. Considering industry reports, IoT can garner US$1.8 trillion in revenue for communication service providers.

IoT in telecoms is used to deliver a collection of products and services that carry additional value to their existing networks. In some cases, telecom companies developed separate networks, particularly for their IoT platforms. And these IoT platforms can be leveraged as the foundation for developers and businesses to build their own IoT products and services.

The use of IoT in telecommunications is also given the ability to deliver high-value, scalable data-driven services that prioritize cost and convenience, while making an optimistic impact on people's lives.

## II. LEVERAGING IOT IN TELECOMS

The advent of IoT in the telecom industry is poised to revolutionize the role of network service providers in enabling effective communication between people and devices. Thus, for industry leaders, there is a need to innovate new IoT-powered services for their customers and applications to enhance their business processes. They can also deploy innovative business models such as SaaS, PaaS, and BaaS to make use of IoT effectively.By embracing this approach, telecom businesses can determine which applications can be beneficial for their organizations. Also, the major improvements that providers will need to make to implement IoT effectively are to heighten security, modernize telecom infrastructure and improve services.

The Telecoms businesses are fine-tuning their strategies and data services to keep in sync with the fast-moving behavior of the consumer. Besides, they are also revisiting their infrastructure, collaborations and business models to stay a step ahead of the adversaries in the next generation of smart devices. However, lowering to that chase, IoT is transforming the way the industry functions and would have a huge impact on it.

The industry may utilize IoT technology to streamline their business as well as limit energy usage in facilities and make supply chain operations more efficient. Orange, a telecommunication company, for instance, leveraged IoT in several ways. With the Orange Global Connectivity portfolio, IoT devices can connect to the network through data, SMS, or voice communications. In the company's portfolio, management for IoT connections is performed centrally through web-portal or API. The telecom firm's IoT platform, named Live Objects, is cloud-based and an open solution that follows market standards.

On another telecom giant, Verizon also utilizes IoT platform for smart cities, smart utilities, smart retail experiences, management of vehicle fleets, asset tracking, and IoT security credentialing. Its IoT platform, called ThingSpace, allows organizations to prototype, test, and connect IoT devices to the Verizon network. The platform also enables secure activation, locating devices, device diagnostics, and lifecycle management of all of an organization's connected IoT devices.

Thus, the impact of the internet of things on telecoms is immense as most telecommunication companies are adapting to the changing network usage, providing services that would benefit customers.

we present to you a few use cases from the telecom service provider vertical. Telecom has been the poster boy of high-technology industry for more than a decade. This is due to the rapid expansion, largely driven by innovation around internet and smartphones. Telcos have been capturing new geographies and promoting new services. All this adds complexity in optimally managing the network, combined with the thrust of launching new value-added services to thwart the competition.The emergence of IoT presents a few interesting

opportunities for telcos. The good news is that these opportunities can drive both the bottom line and top line, bringing in more operational efficiency as well as additional revenue streams. Let's check out some of the available options.

### III. IOT AS A TOOL FOR TELECOM OPERATIONAL EFFICIENCY

A significant portion of a Telcos' operational cost is eaten up by remote infrastructure. It is where the original use case of IoT plays a major role, i.e. remote monitoring and management. Consider a cellular mobile operator network. Such a network will consist of a huge number of mobile cell towers distributed across a vast geographical area

### 3.1. Asset Management and Monitoring

A remote cell tower site includes auxiliary equipment besides the main telecommunication equipment to make things work. A generator is one such component because power backup is an essential requirement for ensuring 24/7 network uptime. Air conditioning, UPS, energy meters are the other such vital assets. These are part of the passive infrastructure. Monitoring them for operational efficiency and predicting their failure in advance is an essential ingredient of remote management. IoT makes it possible.

### 3.2.Physical Secuirity

Physical security is of paramount importance in remote places where there is costly equipment installed.
An IoT-enabled intrusion detection system is a must. Added to this, there are pilferable consumables like fuel and batteries used in the site. Hence we also need a resource consumption tracking system to ensure timely alerts to minimize losses.

Remote sites are always under the threat of being vandalized by the elements. Constant hazards in the form of fire, water, and air are a major challenge. IoT can help in detecting such conditions, such as smoke, flooding, or weather conditions and can assist in issuing control commands to either take preventive measures or

shut down the system to avoid irreparable damages.

Figure 1 shows the reaction scheme of the syntheses of the derivatives of ibuprofen through the esterification reaction, which resulted in the production of 5 derivatives.

### 3.3.IOT as a service for providing access to Devices

While we have stressed upon the use of IoT to manage remote telco sites, one thing to be noted here is that IoT itself relies on a reliable communication link. And therefore, it is imperative to consider something which does not suffer from the drawbacks of the telco's own terrestrial link failure.

### 3.3.1 Satellite Links

One possible option is a satellite link. This kind of service is provided by Vodafone in association with Immersat. If deployed for telcos' remote sites, this obviates the need for sharing the terrestrial communication link, which in the case of failure, will also render the IoT system ineffective.

### 3.3.2 Low Power Radio

Telcos can also tap into the Machine to Machine(M2M) ecosystem by playing the service provider role. Unlike human to human communication which requires higher bandwidth and quality of service, M2M communication requires extremely low bandwidth. Traditionally we have tried to use the existing technologies such as GSM and WiFi to enable M2M communication. These high bandwidth-centric technologies are overkill for M2M. They are also power guzzlers and hence are not energy efficient in case of battery powered applications. Thus, in recent years, new standards have been developed for low-power, radio-based, wide area technologies which are optimized for low data rates, commonly known as LPWAN (Low Power WAN). These are extremely power efficient. Two such competing standards are NB-IoT and LoraWAN.
LoRaWAN has already taken up in some parts of the world. Typical use cases are in agriculture where we need to establish communication links with the sensors installed on the field. Similarly, in urban areas, LoRaWAN can be deployed for enabling public utilities such as parking systems.
Telcos have the opportunity to tap onto LoRaWAN by offering LoRaWAN services to businesses. Tata Communications Limited has already shown the way by adopting LoRa technology to be deployed across India to provide last mile IoT connectivity.

### 3.3.3 IoT as an Application for Delivering Intelligent, Value-Added Services

Being an IoT last mile connectivity service provider opens up new revenue streams for the Telcos. This offers a few new exciting avenues for the telcos, just like the way in which value-added services boosted basic telephony and mobile services.

### 3.3.3.1 Merging of Physical and Virtual Worlds

What if we could seamlessly find our way from virtual to physical world and vice versa. This concept is similar to the Physical Web proposed by Google. But Google's approach works only in a PAN(Personal Area Network) space.

ProSe (Proximity Sensing) is a standards-based implementation of a service on top of 4G LTE cellular service which allows two devices to detect their proximity and exchange data. Here are some practical use cases of this.

### 3.3.3.2 On the Go-Collaboration

This is yet another interesting use case of PreSe and adapts well to our urban lifestyle. Imagine this. You have to catch a flight and are looking to book an UBER to the airport. But with ProSe you have yet another option. Just enable ProSe on your phone and scan your neighborhood. The chances are that there is someone who is also planning to go to the airport and then you guys can pool together. You can leverage this even if you are taking your car out to go somewhere. You can advertise your route through ProSe and set the terms and conditions for anyone to hitch a ride.

### 3.3.3.4 Machine to Machine Collaboration

If people can find places and other people, then what is stopping the machines? After all, machines are also getting smarter. They can learn to collaborate with humans and interact with the environment. So what can we do with this?

Imagine you are traveling in a self-driven car and you changed your mind to alter your destination. Now your car needs to make a detour, for which it needs to change lanes. It can signal a "lane change" message to the other cars in the vicinity so that they can yield and allow it to do so. LTE-V is one such initiative under the ambit of 3GPP which is building a vehicle to vehicle communication protocol. This can enable vehicles to talk to each other and also the pedestrians and road infrastructure on the go. The use cases are many. Emergency braking notification, forward collision warning, hazardous location/intersection warning and many others.

## IV. CONCLUSION

IOT as one of the Emerging technologies redefines the operations in Telecommunciations given by Telecom Service providers.This simplifies the existing Traditional TDM Service operations to the greater extent & the operations are given to the subscribers with high Efficiency & Quality Assurance.

**Conflict of interest**
There is no conflict to disclose.

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Natarajan.R. "Telecom Operations In Iot." *International Journal of Engineering and Science*, vol. 12, no. 1, 2022, pp. 33-35.

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