

SMART BRIDGE IOT EXTERNSHIP ASSIGNMENT 1

GOWTHAM B.

TOPIC: List out 20 use cases of the Internet of Things.

1. Autonomous and Connected Vehicles

Cars running without drivers? Some people may faint after hearing this. But, this is going to be the reality, thanks to IoT. Experts are already working on up to level 4 autonomy, and the onset of 5G and IoT, through level 5 autonomy would transform the experience of car riding without human intervention.

The LIDAR, satellites, GPS, and onboard cameras will be used to capture and store the information about the road condition, traffic, and nearby cars, thus helping to prevent accidents.

Moreover, the IoT-equipped devices would help in enriching the GPS and infotainment arrangements. [IoT Applications and Examples](#) are proof of that.

2. Smart Security

The days of peepholes are gone, with the commencement of smart devices supported by IoT.

With the commencement of smart devices, for instance, internet-connected security cameras, smart locks, and thermostat have revolutionized the way you perceive your security 3-4 years earlier.

Smart security surveillance can provide you a more secure facility not just for your home, but in your business also.

Smart security or CCTV surveillance cameras are IoT based devices, through which you can get better visibility about the person entering and exiting.

In some advanced devices, the identity of the person can be informed through the device. You can access and monitor the device from any location provided you have a wifi connection.

However, in order to have such solutions, you need to [manage the IoT Security Challenges](#) really well. Otherwise, the solutions will be of no use.

3. Smart Home

Let us understand IoT by a simple example. Suppose, you have forgotten to switch off the lights in your room at the time of leaving your house for the office. Now, suddenly you remember the 'crime' you have done.

In earlier days, there was no way to save electricity, thanks to the work you have done. In the days of IoT, all you have to do is to instruct your smart home device to switch off the lights. Hurray, electricity is saved.

By enabling your household with the help of a voice-assistant device, you can perform tons of activities by just sitting in a corner, starting from instructing your TV to play your favorite show to dim the lights.

[Amazon Echo](#) and [Google Nest](#) are some of the Most Popular IoT Devices that can make your home smart.

4. Smart Watches, Fitness Trackers & Other Wearables

Now, the time has come in the days of IoT Use Cases when you can just get a wearable device and forget about your smartphones.

People are preferring to use a smartwatch, connected with their smartphone to perform tons of functions from receiving a call, keeping their health data, measuring heartbeats while running, finding a location, and so on.

But, due to some issues regarding screen size, ease of use, and privacy, the number of wearable users started to decline and that plunge has motivated the developers to build an alternative, and that is 'Hearables' which are voice-connected with wireless earphones.

5. Machine-to-Machine (M2M) Connected Devices

The era of the IoT revolution is not only perceived by the end-user of the product, but also by the manufacturing industry.

IoT Manufacturing Use Cases has become so rapid in the industries that it may help the workers to monitor the workload of the devices, thus avoiding damage and accidents.

Not only this, but IoT devices also help M2M connected devices to keep track of the depreciation that a machine undergoes in the process of production and thus advising a timely replacement.

This highly advanced technology is going to transform the manual industries as automated industries and thus to enhance the efficacy of the machines.

6. Supply Chains

IoT Use Cases are on the rise, as the supply chain of global and regional trade has mostly become dependent on it.

Through the use of GPS and other technologies, IoT has improved the quality and management of supply chains.

The procurement of products, shipping, and delivery- everything is connected, thus forming a chain of communication. [Open Source IoT Frameworks](#) can help you to develop such smart solutions.

IoT devices can help to identify the location of any goods at any time. You may have experienced this while you have ordered an item online and they provide you the facility to track your item location.

IoT devices can also inform about the present capacity of the storage, and the condition of the goods in the storage and thus can control the temperature and management of the storage through a wider data management strategy.

7. Drones

The ubiquitous presence of drones has made it one of the most popular IoT devices in various fields. For instance, in agriculture, industry, mining, rescue operation, wildfire control, law and order administration, construction sites, photography, and filming, and whatnot!

Drones are now even used by e-commerce companies to serve their customers at their doorstep.

Police are using it to control riots and unforeseen terrorist activities, agriculturalists are using it for pest control, and directors nowadays can't think of making a movie without using drones.

8. Smart Cities

Smart cities are those cities that, with the help of IoT-enabled devices gather information and data about the things and people of that city.

By processing those data the city administration helps to improve the condition of public life, public utilities, and various public facilities.

Starting from automated traffic signals in terms of traffic, public communication, advanced transportation, environmental safeguards, easy parking to safety, and security, all these are the fundamental tenets of a smart city.

9. Farm to Tech to Table

In countries where Agriculture serves a great portion to bolster the GDP of a country, using IoT-connected devices to improve the way of agriculture is a necessity.

These days, farmers, having large livestock, use sensors to locate and identify each of the animals, and imminent dangers on a real-time basis.

In the field, they can get an idea of the temperature, the soil moisture, based on which they can use the fertilizer and irrigation system.

They can also identify any disease in the livestock population which helps them to identify and isolate that particular animal to avoid contamination.

10. Inventory Management

Inventory management has been a great challenge in the retail business, but IoT Retail Use Cases has reduced the problem in several aspects.

As mentioned above, apart from tracking the location of goods and items, IoT-enabled devices are capable of using technology to keep a better record of all the goods and products coming in and out of a store.

Inventory management entails both shelf management and warehouse management. Through IoT devices and sensors, retailers can have a look at the condition of the products (broken or rotten).

IoT enables better and efficient Inventory management through accurate and cost-effective technology.

11. Predictive Maintenance

Any company or industry that relies on heavy and dedicated hardware machines, like vehicles, automated Kiosks (in banks and corporates), and manufacturing machines have seen the machines undergoing wear and tear in the due course of time.

A timely and early notification regarding the repair of the machines could lead to preventive maintenance and thus helps to save a huge amount.

IoT-enabled devices are nothing but internet-connected microcontrollers that always keep a close look at the condition of the machines, and provide early warning signs whenever necessary.

This has improved the working efficiency of the machines to a great extent.

12. Optimized Production

IoT Use Cases in optimized manufacturing of products have been proved very effective to bring in new approaches, technology, and infrastructure. To optimize production, a detailed analysis of big data is necessary for the production units.

IoT enabled devices to help to analyze and process this big data to use manufacturing intelligence to optimize and channelize the production to be adapted in a new business model.

IoT helps to glean a lot of information from various sources. With the help of artificial intelligence and internet-connected devices, it tries to improve the capital investment in the right direction, and area of production and manufacturing to satiate the thirst of targeted consumers.

13. Patient Monitoring

In the time of Coronavirus, the invention of various IoT-enabled devices for patient monitoring has come to the forefront. It has been proven the importance of IoT in the healthcare industry.

IoT technologies not only keep the records of the patients, but it also does make sure that the patient is taking the right medication at the right time without any human intervention.

Starting from telemedicine to use the voice and clinical symptoms of patients to detect any disease, it has been clearly understood by most of the people that without IoT, the next-generation medical system is bound to collapse.

So, Patient Monitoring is one of the best IoT Use Cases for the healthcare industry.

14. Fleet Management

Suppose, you run a retail e-commerce business, and the vehicles you use for transportation purposes, have faced some accidents or any other issues on the road.

You would get the location and problem of the vehicle on a real-time basis. It would help you to track the fleet and take decisions as early as possible. You can also develop [Web Applications Based On IoT](#) for this purpose. If the truck is running out of fuel, IoT enabled devices would provide the information to the truck driver to take the shortest route to reach a petrol pump.

So, this automated system generated data by the IoT devices would help you maintain better routing and efficient fleet management. So, it is one of the finest IoT Use Cases.

15. Smart Metering

A smart meter, unlike traditional meters, is not only capable of showing the consumption unit, but also can show which electrical devices have consumed how much electricity and thus helps for better management of your electric consumption.

Smart meters break the total consumption units in small segments and thus provides the consumers with better satisfaction as it enables them to have awareness, and better control over energy consumption.

- Reduce power outage
- Lower Cost
- Accurate forecasting

16. Asset Tracking

According to experts, nearly 3/4th of companies are aware of the enormous advantage of IoT-enabled asset tracking devices, but even today only 1/4th of companies have utilized it.

There are umpteen instances where the Internet of Things Use Cases has been proved effective. For instance, cargo containers on the seas, monitoring of cold-chain and temperature-sensitive goods and products, insurance companies to detect health information, and in construction sites.

Asset tracking with the help of real-time databases and information helps the farms in better management.

17. Connected Vehicles

IoT-enables devices that are connected with vehicles will surely shape the road traffic in the future. IoT connected vehicles can detect anything

imminent and thus can react faster than humans to prevent any accidents and mishaps.

IoT connected vehicles, by the use of GPS, sensors, cameras, and radars can visualize anything in rain, snow, and dark. It is one of the classic IoT Use Cases.

Apart from that, the sensors and wifi collect huge data from the working of IoT vehicles. And, sends it back to manufacturing companies. Thus assisting them to develop a more advanced design based on safety and security.

18. Power Grid Optimization

One of the most successful Internet of Things Uses achieved in transforming the power grids into Smart Grids(SG).

In Power grid optimization, IoT devices act as an integrated data communication network. It collects data from various sources, for instance, transmission lines, production houses, distribution centers, and ultimate consumers.

In many instances of a power cut or power failure, the connected devices can provide early warnings. These IoT devices can act smartly to provide information according to power demand and supply. It can save a huge amount of electricity.

19. Thwarting Illegal Fishing

The problem of illegal fishing is on the rise. The United Nations (UN) has framed many policies to thwart illegal fishing on the high seas.

Nevertheless, illegal fishing is one of the greatest challenges the countries face still today.

IoT Use Cases is a savior in case of preventing illegal fishing. As these devices can track the unknown boats that are coming within the marine area of a country. It can also collect information about the underwater marine life to improve the quality of legal fishing.

20. Pest Control

For agriculture industries, the IoT Use Cases considered a boon. As the biggest threat of farmers, i.e., pests easily controlled by the help of IoT devices. It's by collecting real-time data and preventing pest activities by taking immediate action.

Pest Control with the help of Semios, an IoT-device, has been a major contributor to achieve food safety.