The Internet of Things (IoT)

They say the Internet of Things (IoT) is the future, but the future has already begun.

Barcelona city is making wonders in the world for the setup of a Smart city. The city created for the people by the people uses the technology and power of IoT. The sensor system driving the change in parking lots, street lights, waste disposal, bike system, bus transit system and many more such things has made Barcelona a top smart city.

IoT transforms the physical objects around our ecosystem into a meaning full data. These are created to enrich our everyday lives by allowing us to live in a digital space. IoT is a set of devices that collect the data from our ecosystems and analyze them.

Working of IoT:

IoT is a technology that works on four distinct devices or components. These components work together as a sensor, collecting data, UI input, and processing of the collected data.
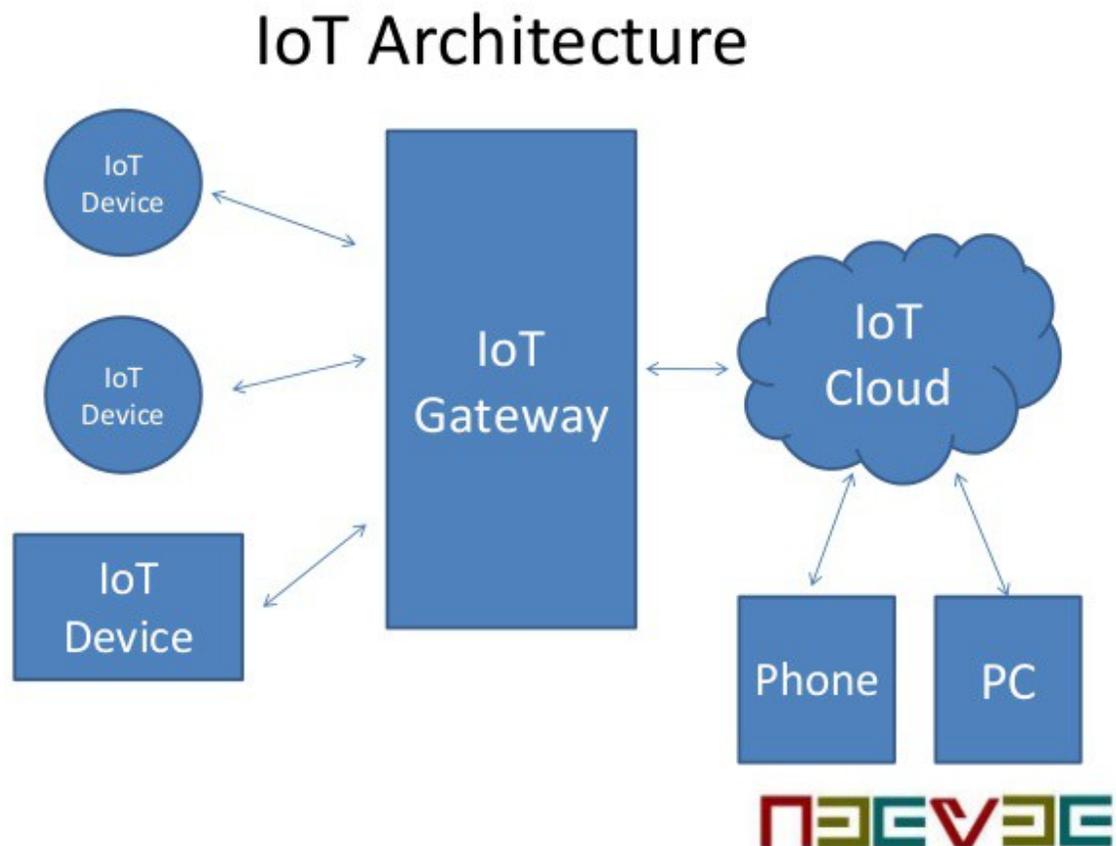
IoT Architecture

Below are the components that work collectively for any setup or industry.

1) Sensors:

Sensors collect data from the ecosystem. The data may be from the environment or a given feed. The data collected may come from one or multiple sources.

2) Connectivity:

The sensors are connected to the cloud through LPWAN, cellular satellite, Bluetooth, or even WI-Fi. The connectivity depends upon the range, bandwidth, consumption, and location.

3) Data Processing:

The reading is been processed using algorithms or follows simple data analysis. The threshold set for the data enables humans or other devices to act accordingly.

4) User Interface:

The user interface interacts with humans by sending alert messages through a device or email. As programmed it can even change the setting in the app to enable the changes.

Though the automation takes over the human's decisions, human invention is always welcome. IoT based solutions are accepted worldwide. the systems like driverless cars, home automation, smart grids, smart street lights are already in use.

Case Studies of IoT:

IoT has huge potential to increase the productivity of various sectors. Here we will look into the real-time case studies of the different sectors where IoT is used.
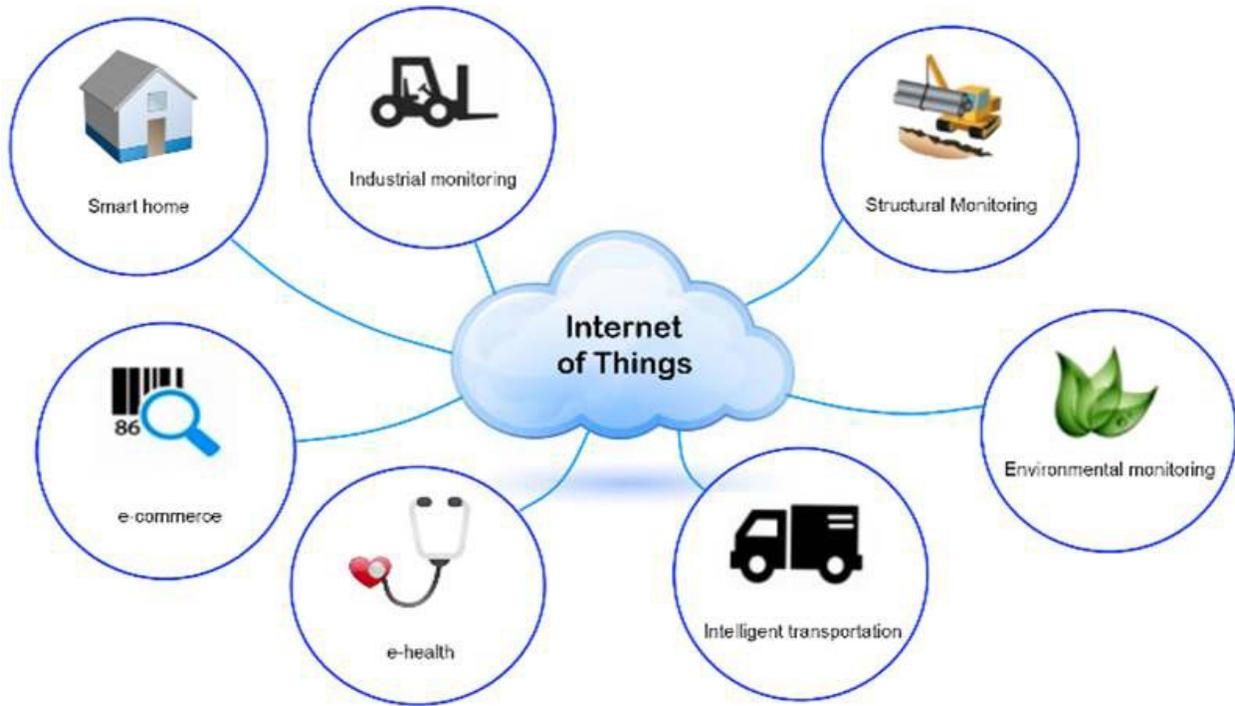
1) Tracked and Connected Trucks:

Daimler Trucks North America (DTNA) used IoT to streamline the vehicle manufacturing process. The heavy-duty truck manufacturing company even offered customized vehicles for customers. Each truck was different and managing efficacy, cost control, fast and better delivery was the call of the hour. Cisco teamed with the DTNA to upgrade production facility for quick customer orders and scaled-up its needs. The visibility and monitoring of the plant were increased by wireless connectivity across factories. Shared network with robust security helped meet compliance needs ensuring streamlining of units.

2) Smart Transport:

Taiwan YouBike deals with a public bike system, where the public can commute free for 1st 30 minutes. It has 700 docking stations in four different cities. The bikes are monitored by sensors attached to the bikes. IoT devices added in the docking centers helps to locate the bicycles. Additionally, the gateway terminals are also added with the IoT devices to collect the data and screen the cycles. Intel and Microprogram support for the IoT system provided rapid growth in users along with the streamlining of the process that enables management to run the service.

3) Smart Vaccine Fridge:

Storing a vaccine in a refrigerator environment is a problem in the health care sector. These need 6 to 8c for storage but the commercial fridge lacks the setting to storage the vaccine. Weka with Microsoft developed an IoT based Smart Fridge. A fully automated smart fridge is controlled by sensors to keep its temperature optimal for vaccines. It is designed to fit in the small slot of the fridge with slots the maintain vaccines. This reduces the spoilage of vaccines and takes care of inventory management.

3) Smart Education:

Education in the digital age needs interactiveness with the active and collaborated approach. Though projectors or computers and widely used by educators, IoT has redesigned the classes of Archbishop Edward A. McCarthy High School by introducing the interactive flat panel. This creates an opportunity to apply the knowledge and explore the topics through interactive sessions.

4) Smart Buildings:

Tyréns AB of Sweden creates sustainable, safer better buildings. By installing 1000 IoT sensors with support of IBM, Intel, Yanzi, and SVSi at his headquarters, it managed to know the usage of the building. It monitored the building temperature, the rooms and office properties using these sensors. The data was processed using cloud-based applications. Using such a building allows you to tackle unwanted incidence in less time.

5) Smart Shoe:

GTX shoes using IoT technology from Telefonica that act like active GPS units to track humans with dementia, autism-like disabilities. Having these shoes it is easy to track loved once. The location of users is sent to their caregivers using a GPS.

6) Smart Lights:

Industries using smart lights have seen major cuts in energy power consumption per year. Atlas global solutions in their new manufacturing unit of 200,000-square-foot have reduced energy consumption by introducing a smart LED lighting system from Digital Lumens.

7) Smart Beverage Dispensers:

Drink dispenser Cornelius, added IoT sensors to its machines to track the defects, its usages and enhance the proactive support for customers. Along with monitoring data, IoT improved supply chain management and reduced the cost of IT infrastructure.

Companies providing IoT platform:

We have already seen companies like Cisco, Intel, IBM and Telefonica providing the IoT services. The companies that provide IoT platforms are Amazon AWS, IoT by Google Cloud, Bosch IoT, Salesforce, Kaa, Mocana and Mindsphere.

Advantages of using IoT:

Using IoT, the profits of companies have spiked and streamlined companies' units and processes. In this section, we will see how IoT benefits common people using smart solutions.

1) Collect data using sensors:

IoT devices or sensors collect data and these are analyzed in cloud-based solutions. Being on the cloud it can easily update its analyzed results on various platforms irrespective of users' geolocation. These solutions help during disasters, pandemic, crisis. The data can be used to track and monitor unwanted movements in suspected locations.

2) Decreases IT infrastructure:

Cloud-based solutions are known to reduce the cost of infrastructure. It is also true with IoT, the data is collected on the cloud with protected security and network solutions.

3) Better life with quality solutions:

Smart homes, smart buildings, smart appliances can affect the quality of life. A smart home solution work by tracking your positions, maintaining the room temperature and alerts you with suspicious movements.

4) Efficient utilization of ecosystem and resources:

Smart devices and applications can enable us to use resources efficiently by reducing wastage.

An IoT solution used in industries helps to save energy consumption, monitor the process, and streamlines the units. The wireless devices bring all the units under one umbrella. Sectors like energy and mining, power and utilization, automotive, hospitality, healthcare, retail entertainment, technology, financial services have introduced IoT to reap the benefits.

At Expert Coders, we help to build IoT solutions for your business. We have experience in different industry sectors like oil gas, healthcare, automotive and many more. Our experts provide you the best engineered IoT solutions for your business.

Conclusion:

IoT is changing the world by collecting and analyzing your ecosystem. It helps to increase the business across the globe and also reduces your cost on infrastructure. The world is already experiencing smart solutions using IoT.

We at Expert Coders, are looking forward to assisting you on IoT based projects. For more information visit us at [Expert Coders](#) or [contact us](#).