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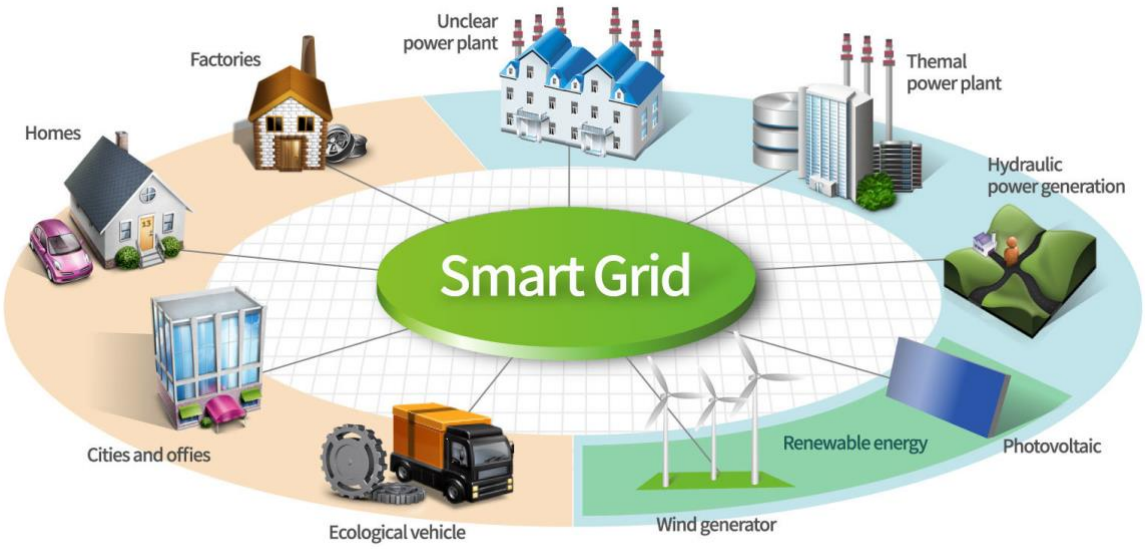
20 USE CASES OF INTERNET OF THINGS

1) Smart Grids: The smart grid is a industrial application of IoT. The grid allows real-time monitoring of data regarding supply and demand of electricity. It involves the application of computer intelligence for the efficient management of resources.

Utility companies can use IoT smart grid technologies for more efficient outage management. They can use the technology to identify load distribution and improve reliability. The technology can also assist in fault detection and repairs.

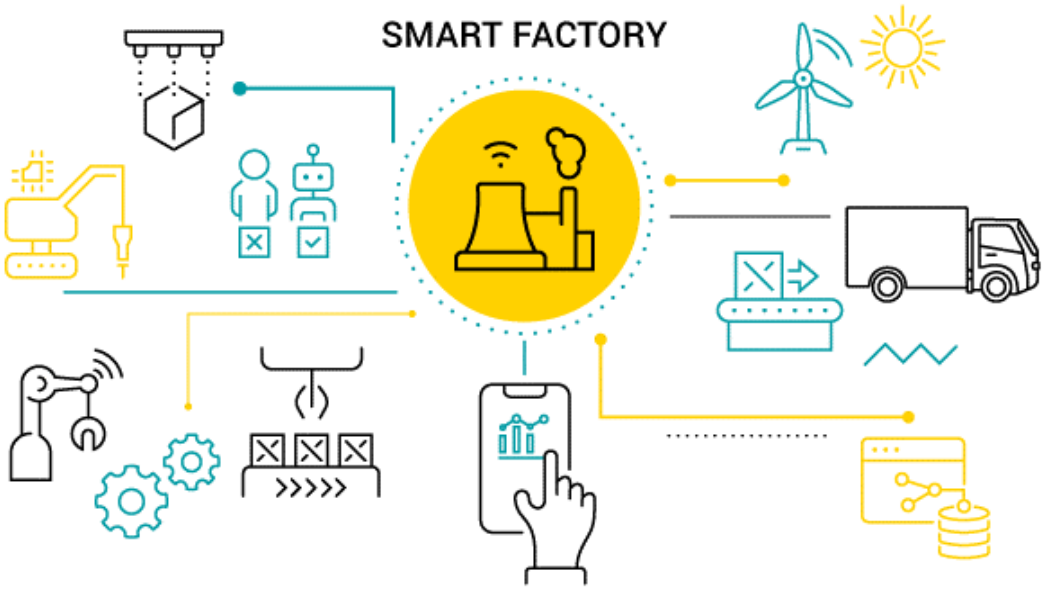


With the smart grid, utilities can interconnect all their assets including meters and substations. Applying IoT technologies to the grid ecosystem allows utility companies to exercise greater control over the power infrastructure and resources. Moreover, they allow consumers with better quality access to energy.

2) Factories Powered by IoT(Smart Factories): Businesses can also use IoT connected factory solution such as Azure IoT for management of industrial IoT devices. The connected cloud software can be populated with different resources that allow control of a range of devices.

Enterprise asset management involves: work management, asset maintenance, planning and scheduling, supply chain management and environmental, health and safety (EHS) initiatives. Businesses collect real-time data from an asset with IoT sensors.

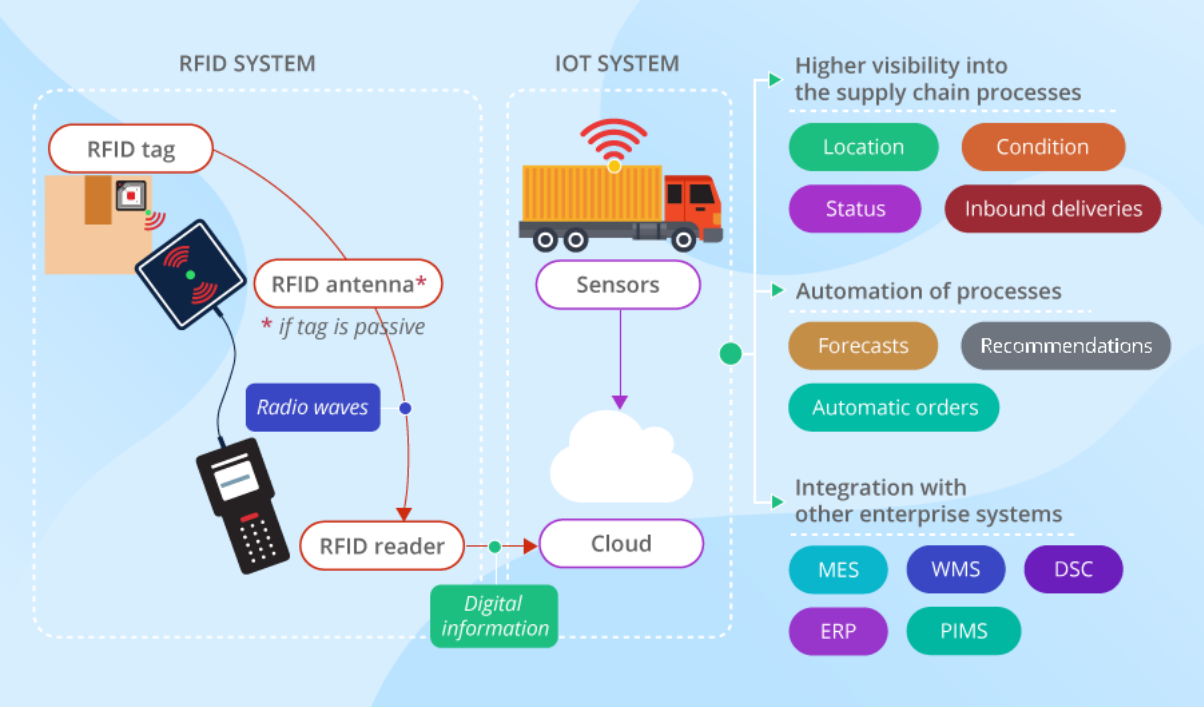
The connected factory solution can report key metrics data including equipment efficiency and telemetry data. The data can be gathered of assets located at different geographical locations. You can use the connected factory solution for connecting, monitoring, and to control of remote industrial devices.



Businesses are rapidly adopting smart asset management systems into their businesses. Due to their asset-intensive environments, we mostly encounter with IoT asset monitoring in industries such as logistics, retail, and manufacturing.

3) Smart Supply Chain Management: Supply chain managers can make improved predictions through smart routing and rerouting algorithms. Smart IoT devices connected to packages can provide instant after-the-incident facts via GPS and RFID signals that can help to make informed supply chain decisions.

IoT applications can help in mitigating uncertainty risks in supply chain management. Supply chain managers can make use of smart supply chain management programs for minimizing variance, reducing costs, and improving profitability.



IoT fleet tracking systems is an application of IoT powered logistic supply management. This improve security and provide precise and complete reports that give the fleet managers full transparency towards the fleet's activities. Through GPS monitoring and geo-location tools, companies can track the location of their trucks, optimize routes and monitor their fleet utilization in detail.

The programs can help in inventory management, vendor relationship, fleet management, and scheduled maintenance.

4) Smart Cities: Energy, Transportation, Parking and More: One of the most promising IoT use cases is in creating smarter, more efficient cities. Public energy grids can be optimized to balance workloads, predict energy surges, and distribute energy more equitably to customers. The same goes for transportation systems in dense, urban environments. Traffic lights could be synced to adapt to traffic conditions in real-time. During an emergency, first responders can communicate with traffic lights to synchronize and provide direct access to critical locations. Other apps digitally track parking, so that available spaces are automatically sent as push notifications to drivers looking for a place to park.

Some applications of smart cities can be listed out as-

- Smart Infrastructure
- Air Quality Management
- Traffic Management
- Smart Parking
- Smart Waste Management

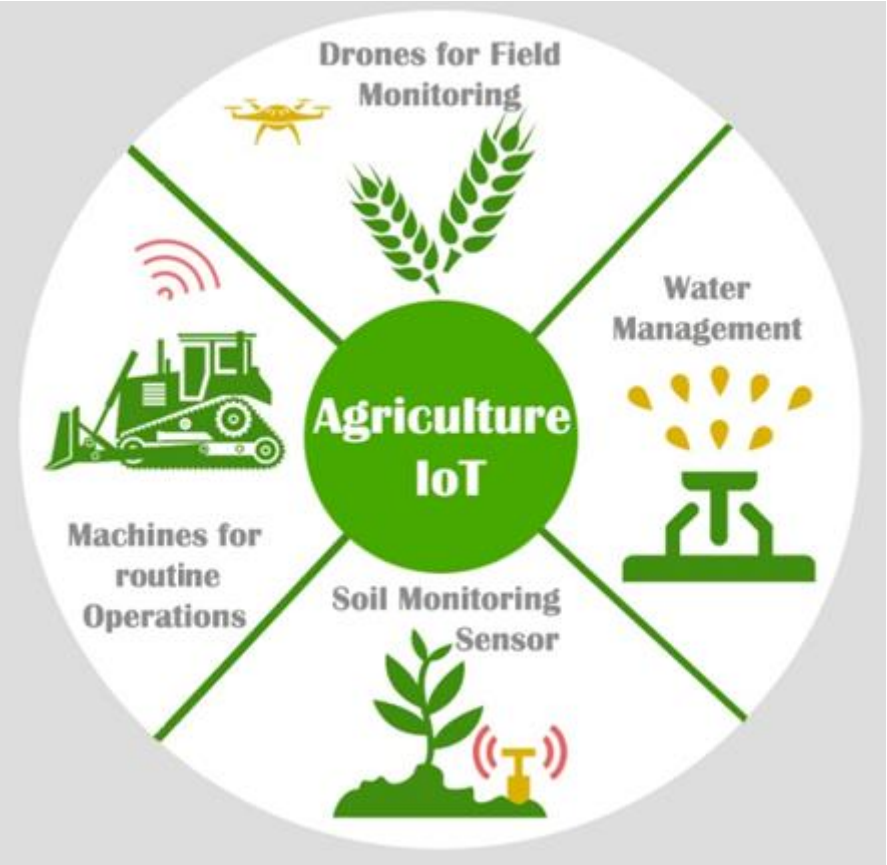
5) Connected HealthCare System: IoT has numerous applications in the healthcare industry. The technology can be used to provide high-quality medical services using smart medical devices.

Also called the Internet of Medical Things (IoMT), the technology can help in monitoring and supporting vital data which can help in making clinical decisions. With IoT medical devices, medical services can be made more accessible by the populace.

IoT medical devices can help in real-time monitoring of patients remotely. The devices can report an emergency like an asthma attack, heart failure, etc., immediately to a physician. This can help in potentially saving the lives of many individuals.

IoT devices can collect health care data including blood pressure, sugar levels, oxygen, and weight. Data is stored online and can be accessed anytime by a physician. IoT automates the workflow by allowing the provision of effective health care services to the patients.

6) Smart Farming: Farmers can use smart IoT farming applications for optimizing a lot of different activities such as determining the best time to harvest plants, creating fertilizer profiles based on the chemistry of soil, and sensing soil nutrients and moisture levels.



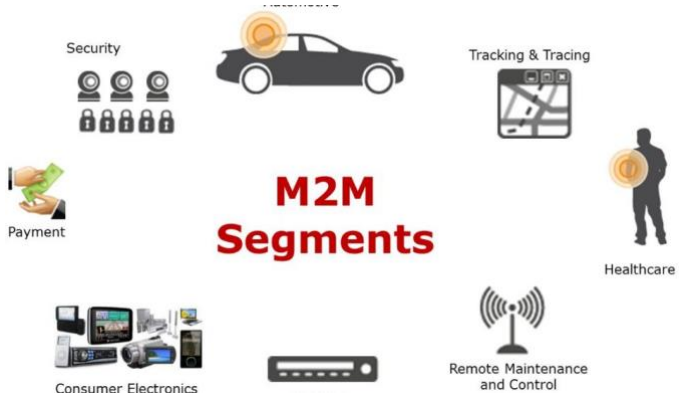
IoT technologies can help in precise farming which can result in optimized production. That market of agriculture IoT device installation will likely grow at the rate of 20 percent reaching 75 million by 2021, according to a BI Intelligence report.

Some examples of farming IoT devices include Smart Elements, AllMETOE, and Pynco. These devices can detect weather conditions and other environmental data. The concept of smart farming can revolutionize the agriculture industry. Applications of IoT technologies can help to boost both the quality and quantity of agriculture production.

7) IoT Data Analytics: Businesses are increasingly using IoT data analytics to determine trends and patterns by analyzing big and small data. IoT data analytics apps can analyze structured, unstructured, and semi-structured data to extract meaningful insights.

IoT can be applied to data analytics to investigate different types of data including motion data sets, geographical data, and health care data. It can be used by businesses for predictive and descriptive analysis to improve customer knowledge, enhance operational efficiency, and create business value.

8) Machine-to-Machine (M2M) Connected Devices: Today's factories are using IoT-enabled machines to work smarter, not harder. By equipping machines with sensors, factory managers can more accurately map machine workloads, inputs, and outputs. They can also more closely track machine wear-and-tear, which leads to maintenance that is predictive rather than reactive and improves lifespan. With these features, factories are increasingly becoming automated, thanks to the wave of Industry 4.0. Machine- to-machine (M2M) devices typically use embedded and removable flash solutions to aggregate data into a single stream at the edge.



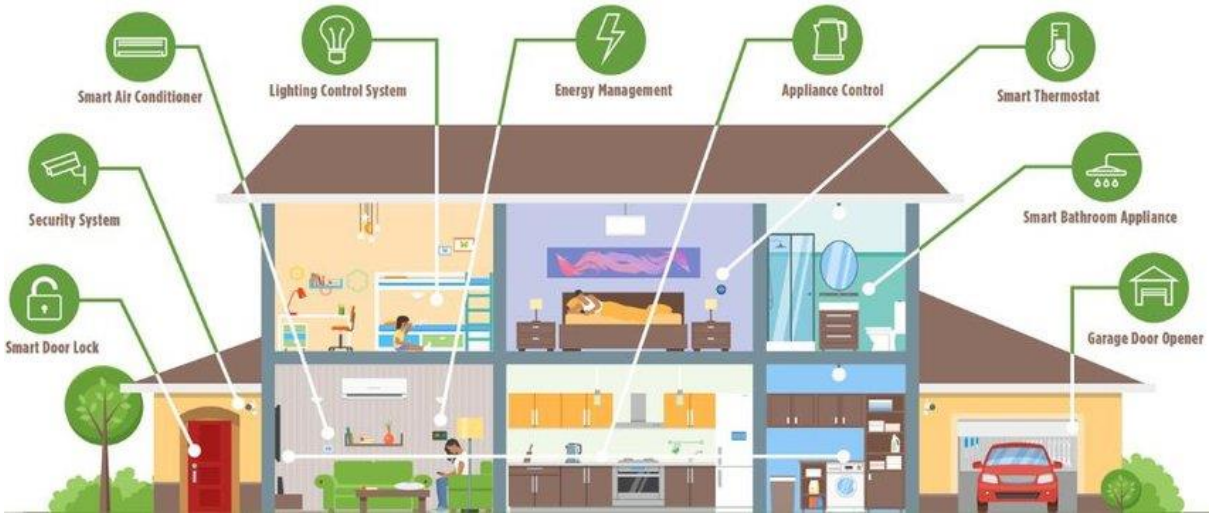
9) Water Conservation: Homeowners, as well as industrial facilities, seldom have an understanding of the available local water levels, whether in overhead tanks or underground storage systems. A part of the Internet of Things examples in this domain is monitoring these local water levels. When the people impacted realize that the water levels are low, they are more likely to indulge in water conservation activities.

10) Waste Management: Waste management is one of the most inefficient activities carried out in a city. It is primarily because waste management tools are not standardised, and the route being followed by waste collection trucks is often not well-planned. IoT devices can help municipal waste collectors monitor the schedule of their trucks, the capacity of waste dumps, and the overall efficiency of the process.

11) Leakage Management: The leakage of water in domestic and industrial water tanks, water transportation tankers, and industrial water storage systems is the reason for the wastage of millions of gallons worth of water every year. This is mitigated by using IoT sensors that inform you as soon as they detect water leakage of any kind. This doesn't just save water but also saves users the cost of the leaked water.

12) Water Quality Management: The rules of the water constitution have become more and more stringent over recent years. However, with water supplies being privatised, these rules can be flouted by companies providing unhealthy water to citizens. IoT examples in this sector involve fitting sensors in water supplies to continuously monitor certain levels of chemicals and check whether they are below the required threshold included in the regulations. If not, the company supplying the water can potentially be penalised.

13) Ultraviolet Radiation Monitoring: Around 10% of the sun's light includes ultraviolet radiation. These rays can be harmful to the skin and have been related to various health problems. The concentration of these rays is different during different hours of the day. IoT sensors fitted outdoors can regularly inform you of the UV levels and warn you not to step outside when levels are too high.



14) Fall Detection: Senior citizens can face the problem of falling to the ground but not having the strength to get up. To mitigate this issue, specific Internet of Things examples may come to the rescue. A product designed especially for senior citizens can detect the fall and summon local resources to help them. This way, they do not have to spend a prolonged amount of time on the ground.

15) Companion Robots: Companion robots seem like a part of futuristic Internet of Things examples but are already becoming a reality. Companion robots are becoming more and more prevalent across the world. These robots can carry out specific essential tasks for you, like talking to you and informing you of other IoT devices' conditions in your household. Likely, these robots will only become more and more popular over the coming decades.

16) Near Field Communication (NFC) Payment: NFC is one of the fastest-growing applications of the Internet of Things in the retail sector. In NFC payment, customers do not need to pay by cash or card but can use their NFC-enabled devices to make contactless payments. It reduces the time required to make the payment and also increases the surety of the payments. All that is required for making NFC payment on the vendor's side is an NFC payment device.

17) Layout Optimisation: NFC sensors can be used to monitor consumer habits in retail stores through the use of images and videos analysed using machine learning. This can help store owners gain an insight into the kind of sections that customers generally like to frequent. This information can then be used to optimise the layout of the store.

18) Sociometric Badges: Sociometric tracking is one of the most innovative IoT applications examples. Employers and companies can use IoT devices to track the interaction between team members. They can be used to segment different interactions, such as team meetings, one-on-one interactions, time spent in conversation, etc.

19) Platooning: Platooning is a transportation method in which a line of trucks follows a truck in the front at high speed. In such cases, the risk of accidents is always high since the trucks can crash into each other, even if one of the trucks comes to a sudden halt. IoT sensors fitted inside these trucks can be used to inform the whole line if even one truck needs to stop or increase speed to mitigate this risk.

20) Flood Alert: IoT devices can help coastal areas be alerted in case of incoming floods. Sensors deployed at a distance from the shore can detect tides and check if they are abnormally high, sending signals to emergency services in case they are.

CONCLUSION: IoT is slowly taking over all fields, and the applications of Internet of Things are growing by the day. The above Internet of Things examples provides us with only a partial picture of the technology's enormous potential. In days to come, the technology of IoT will only develop further to make most of our daily activities simpler, easier, and remotely controllable. Businesses must continuously search for applications of IoT in their domain, to be competitive and ahead of the curb in terms of implementation.