

The Non-Technical Guide to the Internet of Things

How IoT is transforming Industries & Changing the Way We Live & Work



We are living in a truly transformative time and nowhere is that more apparent than with what is being referred to as the **"Internet of Things."**



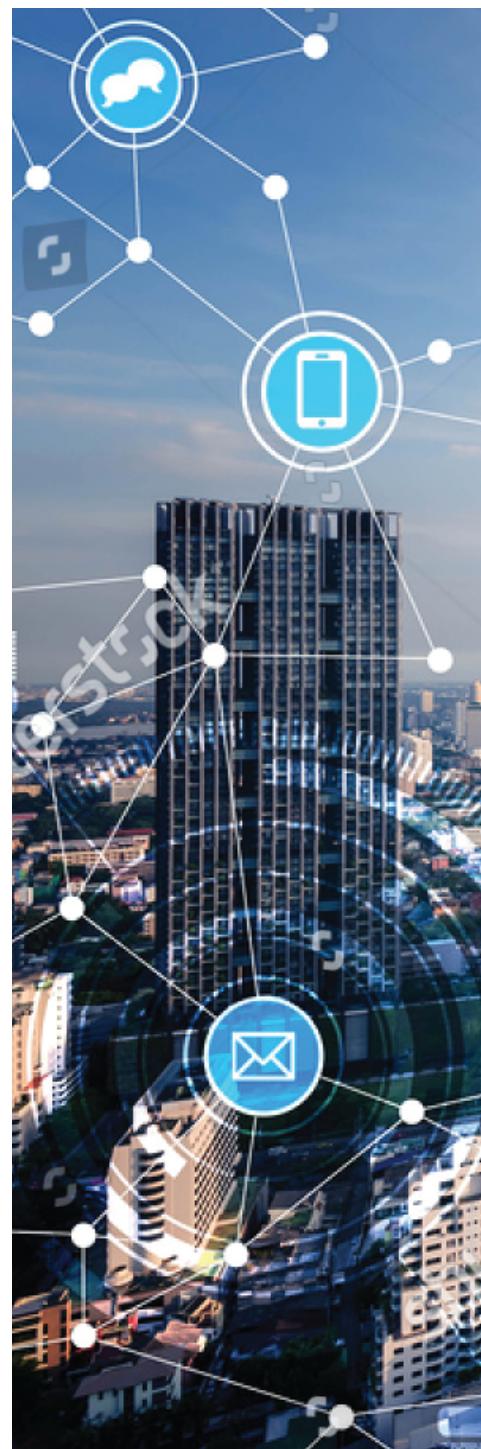
What's the Internet of Things or IoT?

It's basically the interconnection of everyday objects through the Internet. The objects have computing devices embedded in them that allow them to send and receive data. Objects can include cellphones, coffee makers, refrigerators, washing machines and various machines such as jet engines, manufacturing tools, oil drills and much, much more.

Gartner, an analyst firm, says that by 2020 there will be over 26 billion devices connected to the Internet.

In other words, the IoT is a giant network of connected things and as we move forward the new rule is going to be "anything that can be connected, will be connected."

There are many benefits to this type of arrangement. For example, your car will instantly know the best way to get you to an important meeting or your alarm clock can notify your coffee maker to start brewing coffee as you get up. Office equipment can identify when supplies are running low and reorder them for you.



But for the purposes of this paper, we want to take a closer look at how the IoT is impacting industries in particular. We want to look at industries such

as manufacturing, logistics, oil and gas, transportation, energy/utilities, mining and metals, aviation and other sectors. **This is referred to as the Industrial Internet of Things or IIoT.**



Initially, the IIOT Has been Used Mainly to Optimize Operational Efficiency & Rationalization/Automation/Maintenance

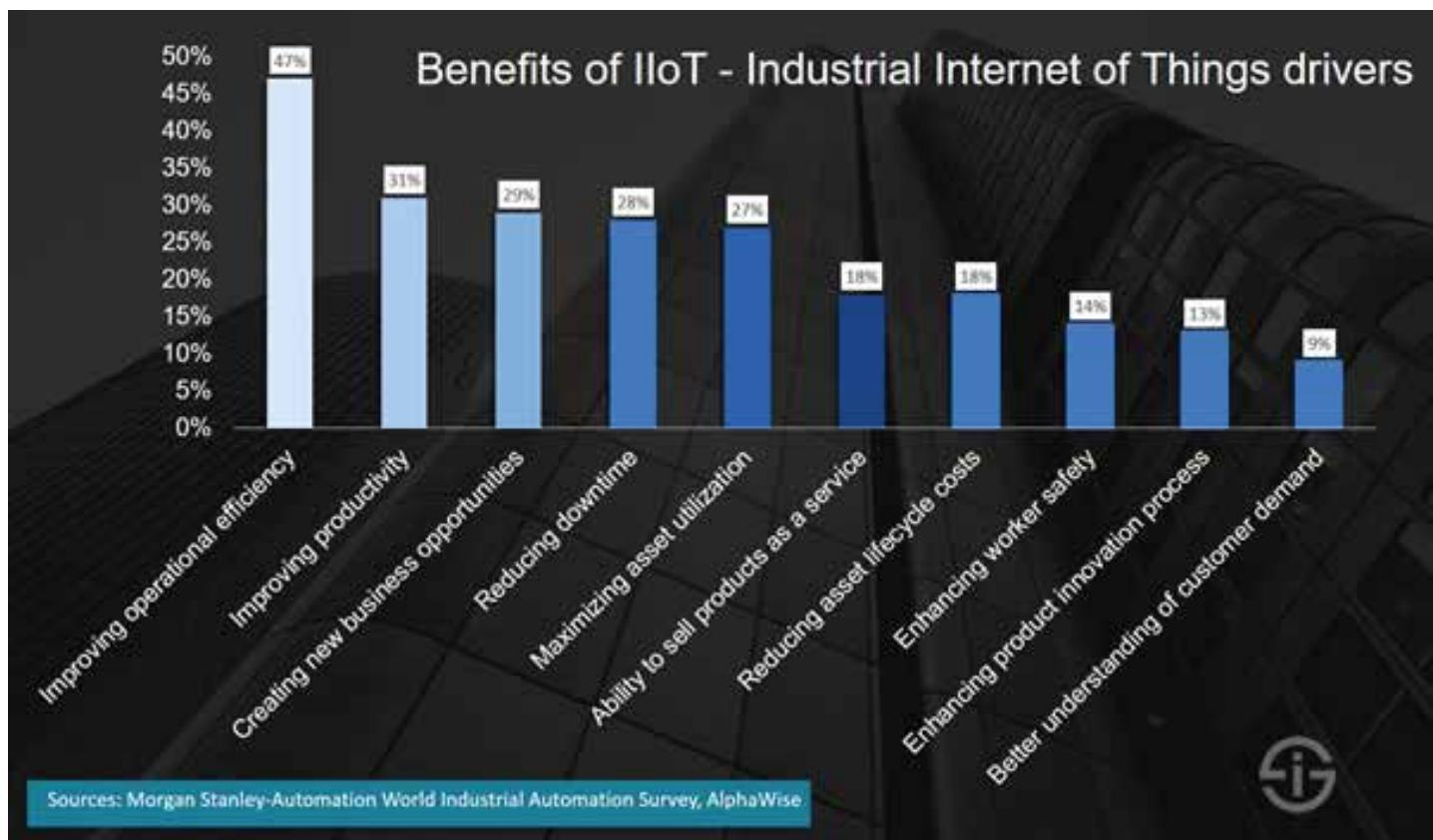
As IIoT has become more popular it has been found to open numerous opportunities in a wide variety of areas including automation, optimization, intelligent manufacturing and smart industry, asset performance management, industrial control, moving towards an on demand service model, new ways of servicing customers and the creation of new revenue models.

IIoT is playing a significant role in the industrial transformation that is occurring now.

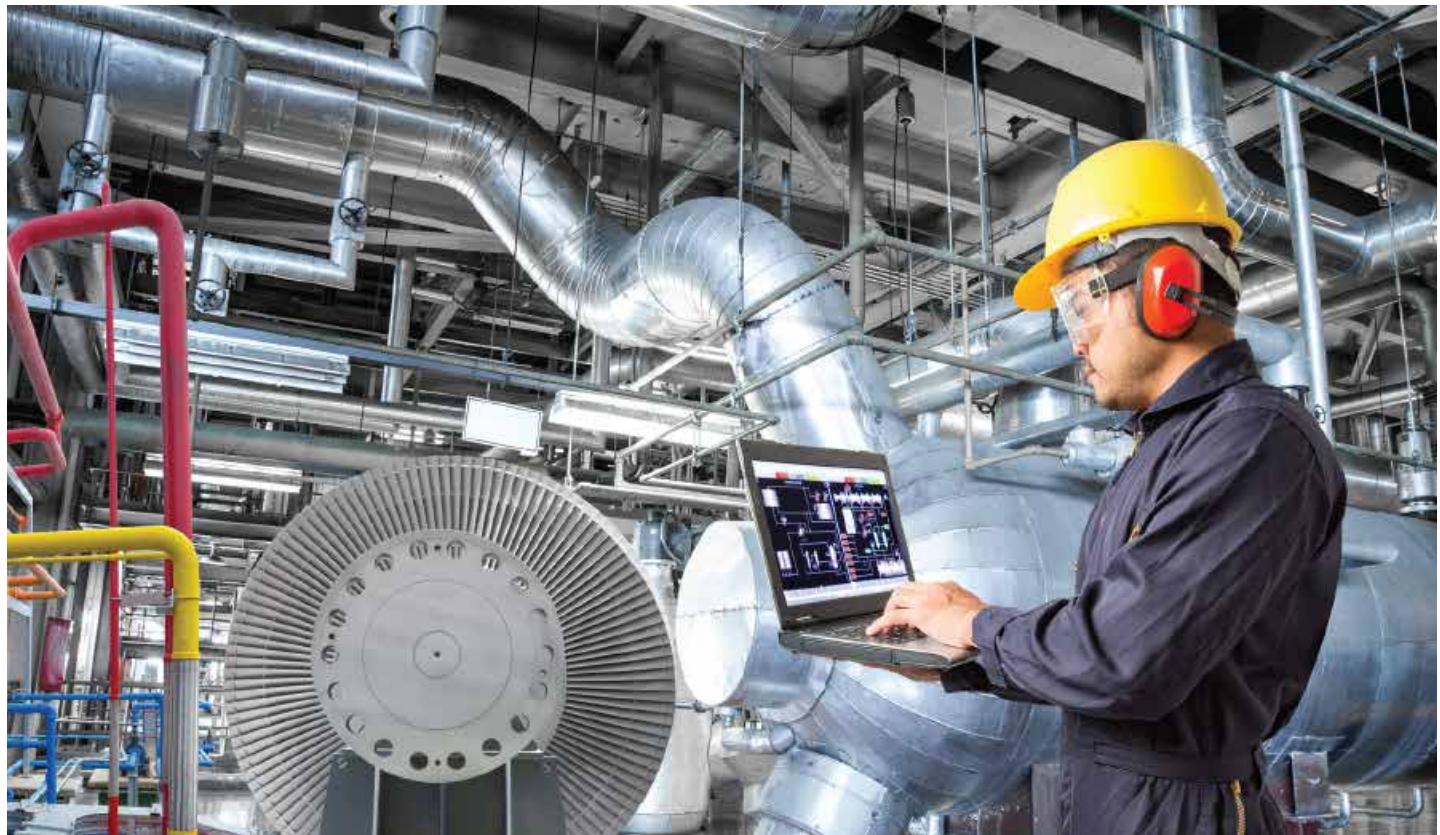
Fastest Growing Categories of IIoT Use Cases

It turns out that the fastest growing categories of IIoT use cases are currently cross-industry. Also, an average large IIoT project will leverage several forms of connectivity and solutions, of which some are generally used in consumer IoT as well.

Here are the main benefits of IIoT:



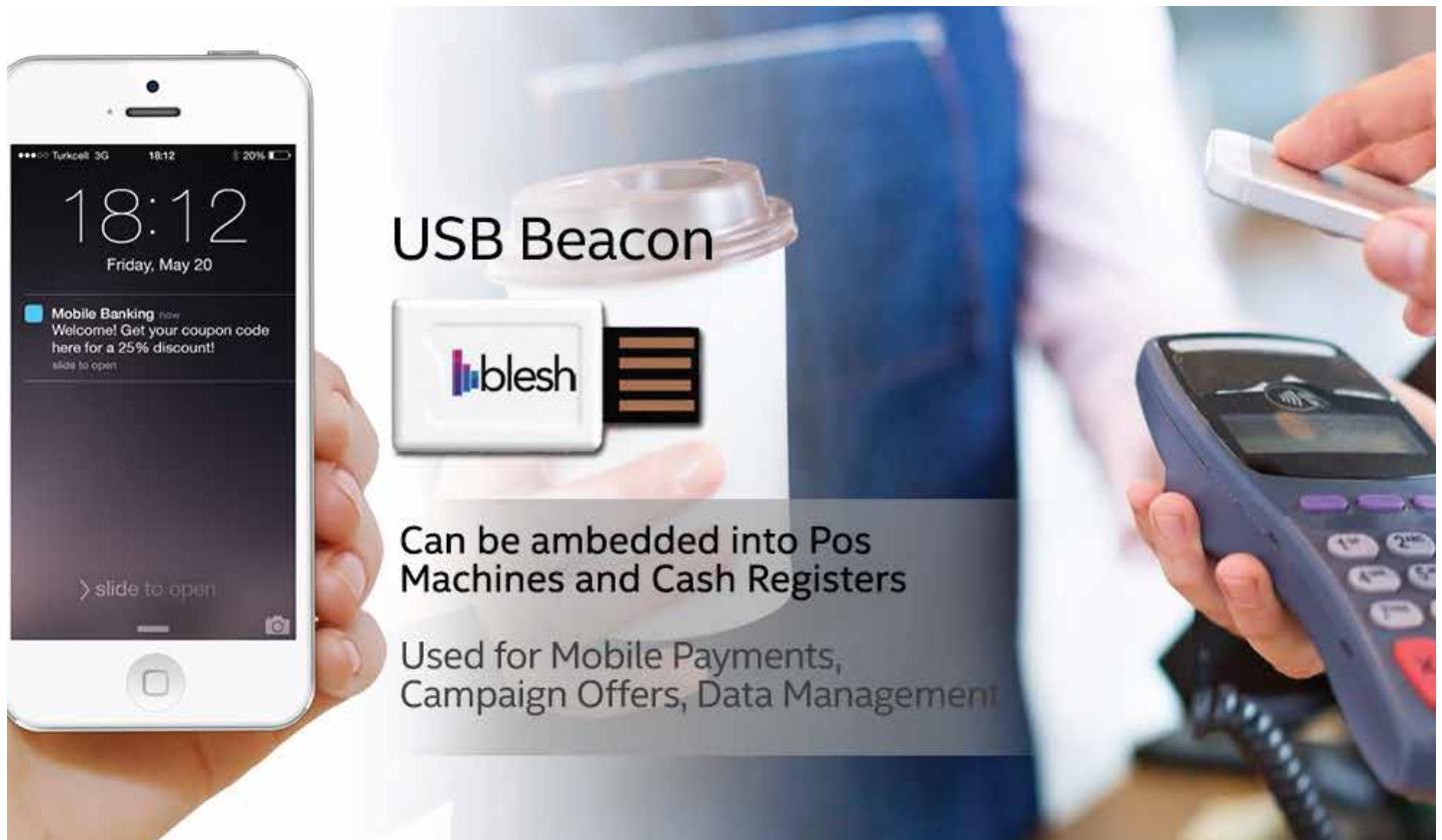
Now Let's Look Specifically at How IIoT is Impacting Certain Industrial Sectors:



Operations/Manufacturing

- To optimize logistics and more easily locate and monitor key assets as well as better track materials
- To unify and improve factory wide communication via active, passive and other RFID tags

- To support faster and better decision making through operational data silos connections
- To better detect key indicators through aggregation and contextualization of data and other assets
- To minimize downtime and avoid costly equipment failure through real time asset health monitoring
- To support Industry 4.0 initiatives leveraging ERP/MES and crowd-sourced intelligence



Banking and Financial Institutions

- To verify collateral and loan arrangements and ensure the following of a loan agreement
- To minimize insurance claim fraud through real time theft detection mechanisms
- To automatically sanction home improvement loans on detection of internal damage

- To allow mobile check-in to a branch and trigger branch staff preparation with relevant data before a client enters
- To generate automatic alerts on shopping loans when clients enjoy a day of shopping
- To pair IoT with analytics to provide location based real time discounts and targeted rewards programs
- To produce targeted credit/debit card offers on identification of a client stopping at a gas station
- To deliver applicable exchange rate offers when an airplane ticket is purchased
- To automate re-balancing of personal investment funds during health emergencies



Retail

- To analyze customer in-store navigation through sensors and provide deeper consumer insights
- To produce smart digital signage that showcases new inventory, promotes closeouts and allows for more effective messaging
- To develop intelligent workflow for improved identification and resolution of issues and better customer service

- To prevent loss through real time inventory tracking (RFID and asset tracking)
- To create new channels to generate new revenue streams
- To personalize the consumer shopping experience and boost profits
- To generate hardware and software that makes store shelves smarter and links them to the back store for effective inventory management
- To trace inventory, including its treatment and condition, throughout the retail supply chain, both before and after point of sale
- To deliver just-in-time promotions and coupons that leverage digital intelligence



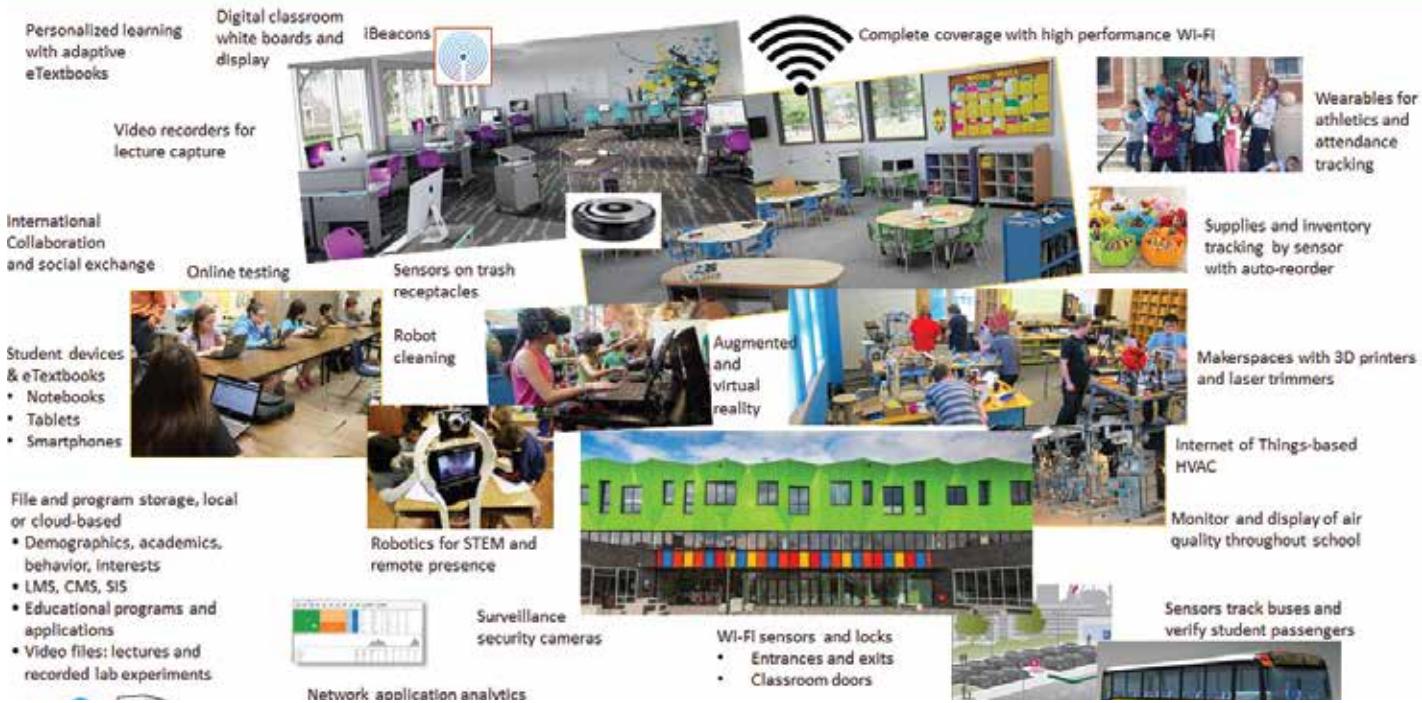
IoT In Healthcare Industry

Healthcare

- To optimize healthcare workflow using wireless infrastructure and tags like wrist bands, ID cards, badges, etc.
- To integrate medical devices like Fitbits with other fitness devices to bring patient data into the care delivery cycle
- To prevent wandering elder care patients through tracking and activity monitoring

- To develop and promote wearable devices, smart watches and fitness bands to give a more complete picture of the wearer's health
- To create T-shirts and other garments that actually track sport effectiveness
- To take continuous remote patient monitoring into the home setting thereby saving time, money and effort
- To collect meaningful and pertinent patient-generated electronic health records (EHR) for better care coordination and improved patient engagement
- To generate social media predictive analytics for everything from sleep disorders to identification of adverse drug effects by utilizing keywords, location and timestamps of tweets
- To enable mobile hospital services that could save millions of threatened lives
- To train technicians to visit pregnant women regularly and send patient vitals to doctors electronically, thereby ensuring better remote patient care
- To create a single secure information management platform that ensures improved patient care, better clinical integration, scalability & sustainability and interoperability & compliance

The Smart *Internet of Things* School



Education

- To promote digital collaboration and engagement of teachers and students via a 24/7 accessible education tool
- To develop a customized lockdown system that is accountable for automatic perimeter safety, immediate notification of authorities, video transmission to police in case of intrusion and more
- To conserve and manage energy using BLDC motor based fan, energy efficient lights and single remote controlled smart displays like projectors, LEDs, AV systems, etc.

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- To improve life for students with special needs by leveraging connected devices synchronized with important systems
- To leverage technology to design learning plans according to a particular student's capability, thereby aiming to bring the child on par with the rest of the class
- To promote connected communication, creating an excellent opportunity for school children to understand, build and control IoT systems
- To simplify the overall learning experience by utilizing elearning, institution effectiveness, operational efficiency and research management



Agriculture

- To monitor soil conditions of a plot of federal land, control water usage and determine custom fertilizer using sensors
- To manage animal husbandry and save money by utilizing cattle health and well-being data
- To monitor for endangered species to help conservationists protect them

- To generate farm resource savings using wireless sensors and remote monitoring devices
- To arm tractors with sensors and processors for driver assistance and capability of internet communication for geo-tracking, alert triggering and more



Automotive

- To promote connected cars with features like city navigation, location based services, drive-assist applications, car-on-demand services, remote diagnostics, usage-based insurance and lot more
- To perform real time fleet management and generate vehicle health and telematics solutions

- To improve driver safety systems, such as identifying highly practical seatbelt usage and creating driver drowsiness detection solutions that trigger automatic alerts
- To monitor steering movements and control in-lane positions



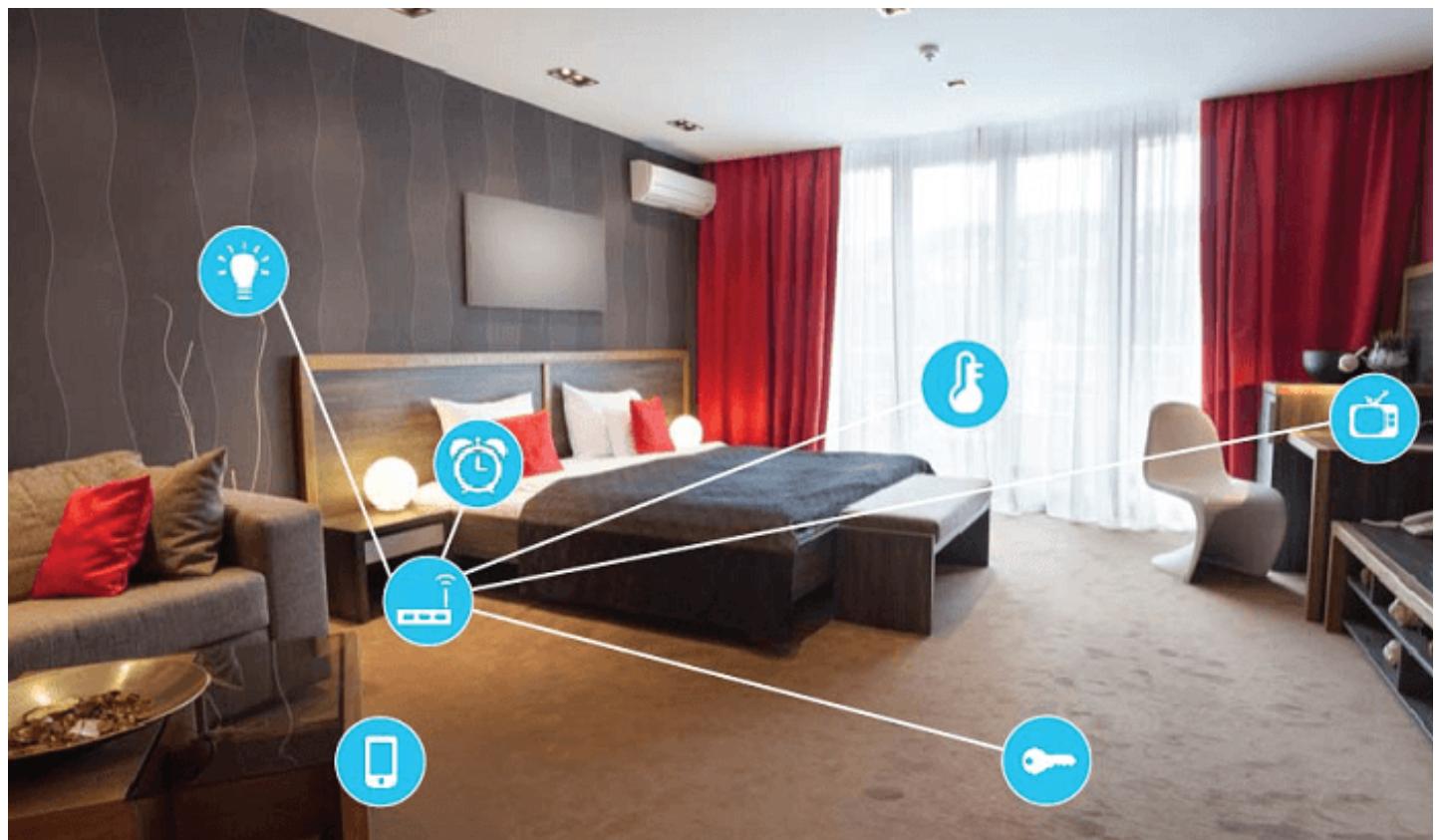
Smart Energy

- To allow smart meter networks, smart meter data analytics, smart billing and smart energy profiling
- To encompass remote asset monitoring, smart grid load balancing, machine learning based predictive analytics
- To develop remote based multi-appliance management solutions



Logistics

- To enable real time inventory tracking by speeding up warehouse operations
- To improve cargo integrity monitoring by embedding electronics in regular containers and track cargo



Travel and Hospitality

- To provide after sale product/service tracking and monitoring
- To deliver customer status monitoring through wearables and apps
- To ensure customer experience tracking at business premises
- To provide product/service operations tracking and supervision

Conclusion

The reality is that the IIoT offers virtually endless opportunities and connections, many of which we can't even think of or fully understand the impact of today.

The opportunities are there but there are also challenges. For example, security can be a big issue with IIoT solutions.

At Dedicated Developers, we have the experience and the expert knowledge to create IIoT solutions that improve workflow or customer experiences while maintaining security and ease of use.

Visit ([insert web address](#)) to schedule a free consultation and learn more. We can help you better understand how to use the IoT to grow your profits as well as the many opportunities and challenges presented by more and more devices joining the IoT.