

Whitepaper

# IoT in Business: challenges and possibilities



April 2016 - IoT in Business

[www.pegusapps.com](http://www.pegusapps.com)

## WHY YOU SHOULD READ THIS DOCUMENT

This special report is targeted towards Board Leaders, CxO's, IT and Senior Business leaders seeking to make decisions to purchase or support business applications in 2016.

This vision paper illustrates PegusApps view on **transforming the enterprise** through a multidisciplinary enterprise application approach that considers technology, people and processes:

- Embrace new ways of working to unlock institutional knowledge and harness business intelligence
- Embrace mobility to drive efficiencies and return on investments through Applification
- Use technology to transform business processes, align to opportunity and/or cultural changes and enhance productivity
- Support a new working culture of velocity, transparency, innovation and collaboration for competitive advantage

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## INTRODUCTION

# What is IoT?

The Internet of Things (IoT), simply put, is the insertion of sensors and other computing devices into almost any object which is then connected to the internet wirelessly, via sensors or by wire. This offers the capability to enable communication between

previously unconnected devices such as household appliances, medical appliances, and industrial equipment. The implications for this technology will likely revolutionize how we interact B2B and B2C.

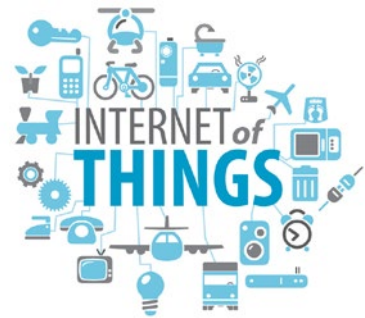
## EFFECTS OF IOT IN BUSINESS

### **It allows companies to make smarter products**

People expect a lot more from the devices they carry in their pocket or interact with. More useful, smarter products and connectivity will take business to the next level.

### **It enables smarter business operations and smarter decisions**

The tiny sensors can be attached to almost everything, They can transmit data and send it to the cloud. This allows businesses to collect more specific feedback on how products or equipment are used.

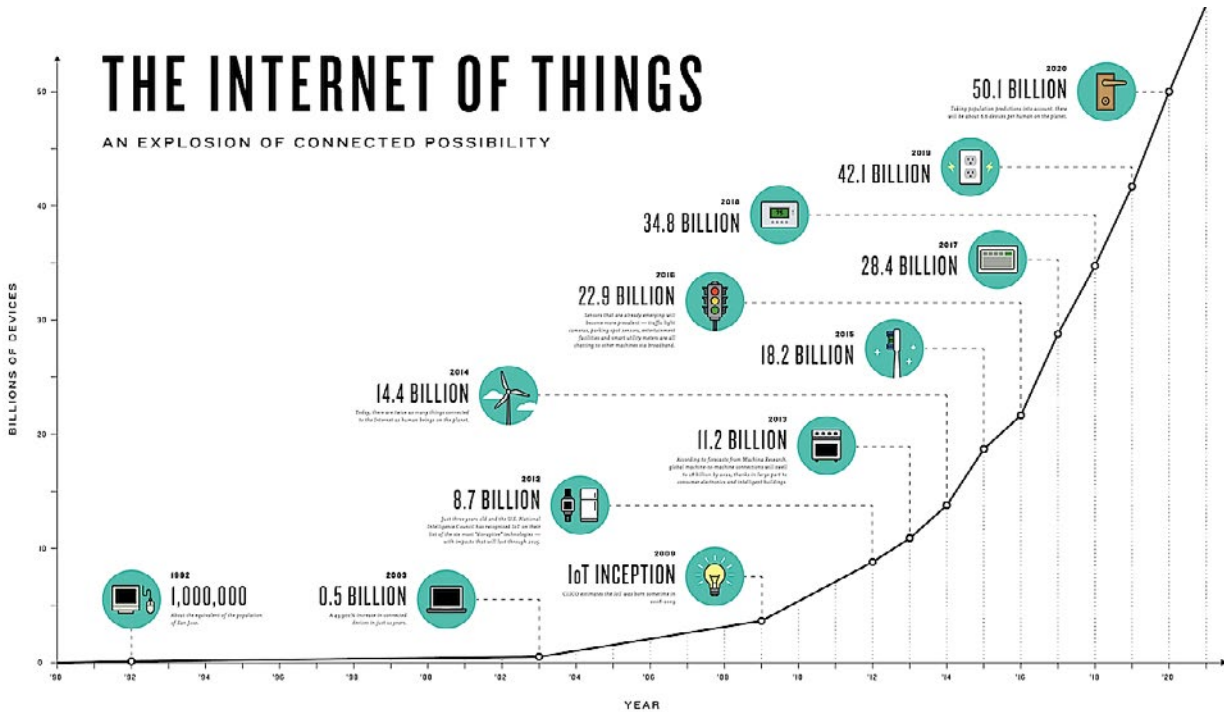


## A BRAVE NEW WORLD FOR YOUR BUSINESS

Needless to say, the Internet of Things is still at the early adopter stage, but as new and challenging as it is, it offers a vast playing field full of possibilities. There are already sporadic examples of existing and planned uses across a wide range of industries. Consider for instance an insurance company that is able to reduce risk and offer new value through sensors that track car users' driving habits. Or think of utilities achieving tremendous cost savings through the use of smart meters and associated infrastructure.

## GROWTH PROJECTIONS

Recent projections by major industrial, technology, and consulting organizations indicate the potential for the Internet of Things:



- Gartner anticipated 50 billion IoTs by 2020
- The Ericsson Mobility Report By 2020 anticipated 6.1 billion smartphones by 2020
- Gartner estimates 250 million vehicles will be Internet connected by 2020
- IDC state that wearable devices have grown 23% in the last year
- Verizon estimates 5.4 billion connected devices by 2020
- The McKinsey Global Institute estimates \$11 trillion impact
- GE believes the "Industrial Internet will add \$10 to 15 trillion to world GDP by 2035
- CISCO believes IoT could generate \$4.6 trillion over the next ten years and \$14.4 trillion for the private sector

<http://www.gartner.com/newsroom/id/2970017>

Ericsson Mobility Report; <http://www.ericsson.com/mobility-report>

<http://www.gartner.com/newsroom/id/2970017>

<http://www.idc.com/getdoc.jsp?containerId=prUS25872215>

<http://www.ge.com/digital/sites/default/files/industrial-internet-insights-report.pdf>

[http://internetofeverything.cisco.com/sites/default/files/docs/en/ieo\\_public\\_sector\\_vas\\_white%20paper\\_121913final.pdf](http://internetofeverything.cisco.com/sites/default/files/docs/en/ieo_public_sector_vas_white%20paper_121913final.pdf)

# Enabling technologies

The IoT is powered by the following technologies:

## BLUETOOTH BEACONS

Bluetooth beacons (*Bluetooth Low Energy Beacons (BLE) aka Bluetooth Smart*) are tiny low cost battery powered Bluetooth devices. Right now this is the enabling hardware for the IoT, a low cost, long endurance emitter of BLE.

History: First developed in Europe and released to the public in 2004, BLE was first installed in Apple smartphones in 2011 and soon followed by other manufacturers in 2012.

## IPV6

This enables larger address spaces needed for device identifiers. IPv6 networks will be vital to manage the enormous proliferation of URL addresses that the IoT will create.

## iBEACON PROTOCOL

iBeacon is a software protocol developed by Apple and first released in 2013. It uses Bluetooth low power proximity sensing to transmit a unique identifier. It has been of particular interest to retailers who want to “push” advertising as consumers walk by their products.



## EDDYSTONE

Google’s Eddystone platform broadcasts fixed URL detectable by Chrome mobile browser. Eddystone is an open source cross-platform protocol designed to compete with Apple’s iBeacon format released in April.



## **BIG DATA**

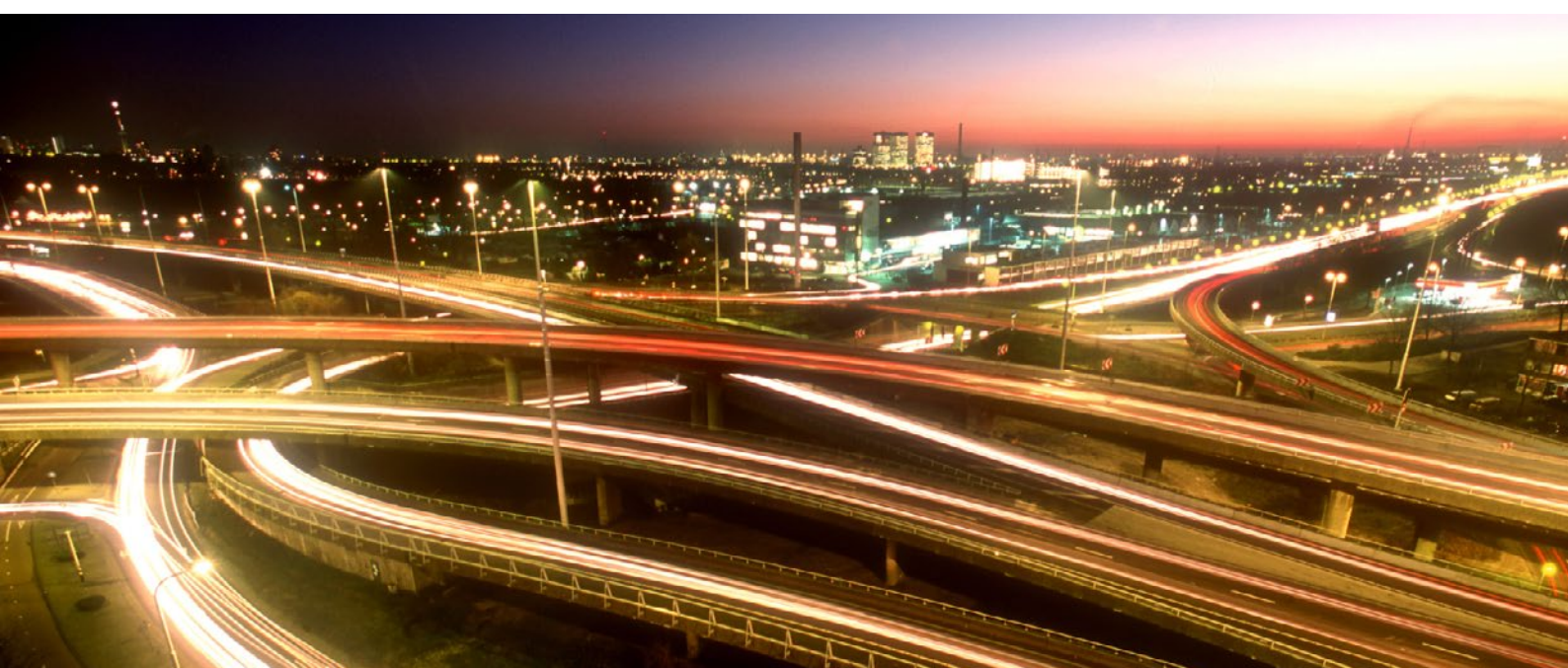
Analysis of large data sets are at the heart of IoT. This gives organizations a more intimate connection between producer and consumer. The proliferation of digital technology is into industrial equipment and consumer goods both wired and wirelessly. As digital technology embeds itself into all kinds of products IoT enables producers to collect data about product use and to enable internet diagnostics and software updates to better customer service.

## **WINDOWS 10 IoT EDITION**

Microsoft has recognized the opportunities in IoT and has developed support for it in its latest operating system as well as creating a truncated system specially designed for small devices with or without a display.

## **OPEN SOURCE STANDARDS**

Another driver of the IoT is the development of open source interoperability standards and frameworks that enable devices to communicate with one another. Major drivers in this area are the Allseen Alliance (<https://allseenalliance.org/>), the Open Interconnect Consortium (<http://openinterconnect.org/>), and the Linux Foundation IoTivity Project (<https://www.iotivity.org/>).



# Impact of IoT on industries

Regardless of the industry you are active in, IoT applications enable your business to operate in ways you never deemed possible. Every industry and line of business will soon work in astounding new ways. Whether your

business is in manufacturing, construction, healthcare or in another industry, these applications help you bring new and added value to your business.

## **MEDIA**

Traditional media has been transitioning to online business models for some time and the mobile market has taken the lead from desktop access. A recent Pew Research Center poll revealed that 39 of the top fifty news sites get most of their traffic from mobile devices. With IoT offering real-time feedback from consumers media will be better able to directly target their offerings to interested parties. In turn this ability also allows a better allocation of investment into content desired by the market. We expect that mobile applications will be a major player in this process.

## **BANKING & FINANCIAL SERVICES**

Insurance executives are increasingly interested in IoT as a driver of revenue according to a recent Accenture survey where 45% of sector executives surveyed indicated their belief that IoT will increase revenues over the next three years. This is up from 14% of executives surveyed last year. The same survey revealed that 39% of executives were interested in utilizing IoT technologies in their home and building insurance offerings.

## **PUBLIC SECTOR**

IoT offers substantial savings through management of water quality, atmosphere, and early warning systems for natural disasters. Such warnings can be directly pushed to mobile devices enabling people to take cover. IoT also enables better management of public assets such as traffic systems. Traffic lights could be adjusted to better manage load. Other moveable assets such as trash collection, and police cars can be monitored in real time and better managed.

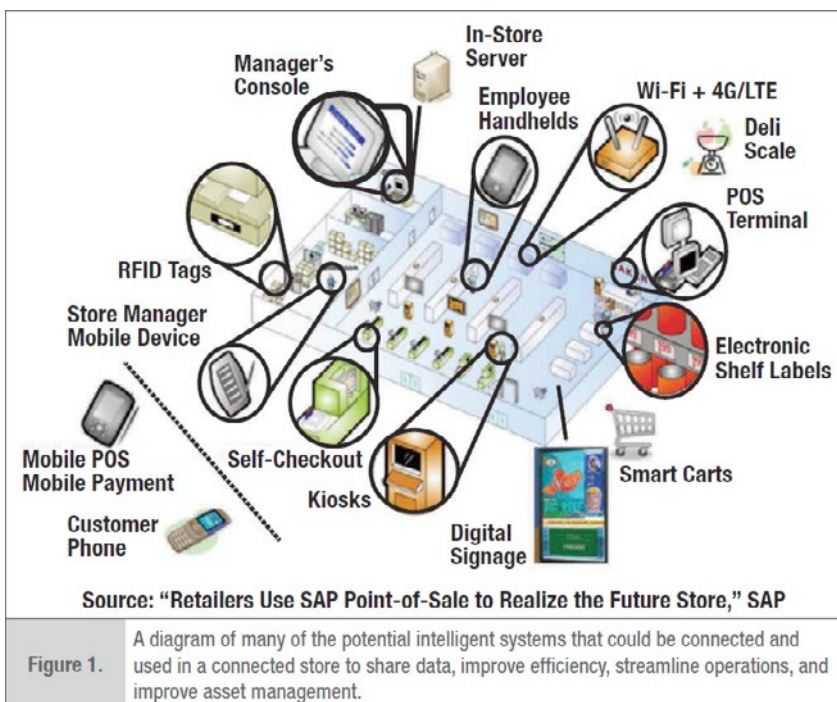
## AUTOMOTIVE AND TRANSPORTATION

Automobile manufacturers are relatively well along the process of exploring the impact of IoT in their future offerings with emphasis on customer engagement and information processing used by the customer through internet connectivity. A new wrinkle enabled by IoT is the “driverless vehicle” experiments by Google and all major auto manufacturers. BMW has actually been exploring this technology since 2005. Considering the intensity of these experiments IBM believes that the automobile will be the top connected appliance by 2020.

## RETAIL

IoT offers significant transformation of the shopping experience with the advent of GPS driven proximity coupons and a more customer friendly buying experience as the sales force is empowered by mobile device connectivity to inventory and other customer services that enrich the customer’s sales experience.

For example, IoT would enable a customer to be alerted to a sale or promotion in a nearby store the effect would be to draw traffic to the store or department. Once there the salesperson would utilize a tablet device to help the customer select a product, check inventory, and if necessary, enable special orders. The salesperson could then process the transaction, print out a receipt and send the customer on their way. This type of experience exists right now in certain retail environments and will no doubt spread.



Source: <https://embedded.communities.intel.com/docs/DOC-7712>



## MANUFACTURING

Digital controls and sensors embedded into manufacturing equipment enable enterprises to better control the entire manufacturing process including preventative maintenance and tying the whole process together along

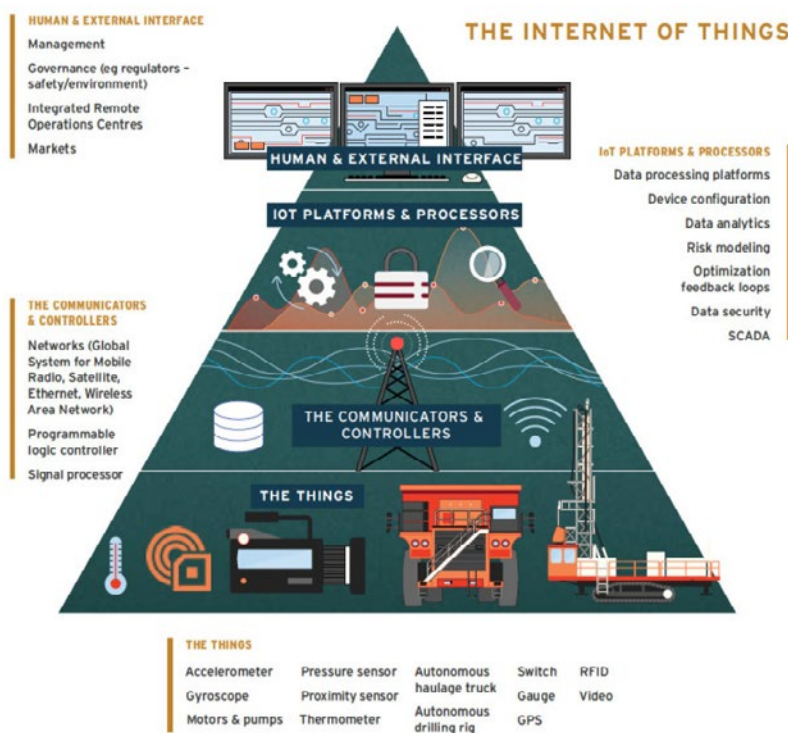
## ENERGY & UTILITIES

IoT and various sensor systems enable better management of generation facilities through the use of Smart Grid technologies which connect consumers with producers. Drones are also of interest here for use as remote facility inspection.

## MINING

IIoT challenges include the challenges of data being held in silos, multiple user types with different requirements and the security of data storage and residency. In the mining industry these are causes for concern, given IIoT has relevance in well effectiveness (injection and extraction wells), well efficiency (recovery wells and pump stations) and risk control (monitoring of wells and transportation piping). IIoTs can have a positive impact on industrials if executed effectively, serving to make their functional uses both efficient and sustainable.

Figure 1. The Internet of Things technologies in mining



<https://www.marsdd.com/news-and-insights/mining-industry-iiot-technology/>

## HEALTHCARE

Wearable tech connected with sensors can connect the patient with their health provider. As medical records become increasingly digitized we expect that medical sensors such as MRIs will directly connect into an internal internet to provide a paperless body of health data for physicians to diagnose and monitor patients through not only an enterprise wide system but also on mobile platforms. A first example is HealthTapp application available for iPhone users.

## HOME AUTOMATION

Automation has already entered the home with DVR and the ability to program it from mobile apps. Already there are products that enable remote programming of heating and cooling systems. We can certainly look forward to a fully developed home internet system enabling the remote control of all manner of home appliances including coffee makers, home security and others. Enterprises operating in this field have the opportunity to add functionality to their products in the form of remote control, remote diagnostics as well as collecting data that enables enterprises to modify their products to better suit their customers.



# Potential challenges

There are 3 potential challenges for CxO's in adapting to the new competitive context:

## 1. SECURITY

Cyber security will continue to be a concern to CxOs as the situation is set to become more complex on both legal and technological levels. IoT with its massive expansion of connectivity will require increased resources to address network security. On the legal front enterprises will also be held liable for failures in protection of PII (Personally identifiable information).

## 2. PII AND ANONYMITY ISSUES

The evolving legal landscape will also create increasing challenges for enterprises dealing with this type of information. IoT will vastly increase the amount of PII resident in an enterprise's data and thus the quality of a firm's custodianship will become more complex.

## 3. THE RIGHT TO BE ANONYMOUS

Another issue related to custodianship of PII is the "right to be anonymous." This developing issue raises questions on the type of data and the length of time that enterprises should have access to any PII. It is likely that enterprises will be increasingly drawn into compliance issues as this develops.

Executives, while excited about the possibilities for IoT have yet to make significant progress an Accenture 2015 survey revealed only 7% of enterprises surveyed have created an integrated strategy. An HfS Research report states that IoT implementation is in a early phase of development where most projects exist at a "proof of concept" stage rather than widespread deployment.

# Your innovation partner in enterprise apps.



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INTERNET OF THINGS



3D ON MOBILE



TV APPS



WEARABLES



CAR APPS

PegasusApps develops custom mobile and IoT solutions for enterprises and large organisations. We build products and services to increase your revenue, reduce your costs and make your organisation more efficient. We create new and added value, and align your business with the fast-evolving technological landscape.

Our mission is to help you get ahead, and stay ahead of the competition. We don't just mobilize business processes, we transform them. We build apps and solutions to reinvent your business processes, systems and data in the light of the rapidly evolving mobile world. We strive to help you minimize costs and risks while maximizing your company's efficiency and value.

We are proud to be working for esteemed clients such as TE Connectivity, Wordline, Atlas Copco, Locinox, Barco, Picanol, and many more.

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and services, please visit our website:

[www.pegusapps.com](http://www.pegusapps.com)

PHONE

**+32 (0)2 709 22 26**

EMAIL

**info@pegusapps.com**

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