

the roles of IoT in apparel business and manufacturing, and presents the key technological drivers, potential applications, challenges in the domain of IoT. Therefore, the Internet of Things is a amalgamation of a hi tech technological push and a human pull to increase the connectivity with anything happening in the instant and wider environment – a logical extension of the computing power in a single machine to the environment: the environment as an interface. Iot has a wide application areas as smart home, smart factory, smart cities, smart logistics, retail health etc. This paper is about the application of IOT in apparel production.

**KEYWORDS**: IOT, RFID, IPv6, GPS, M2M, Sensors, IOT applications, Future Technologies, Smart Manufacturing, Applications in Apparel.

## 1. Introduction

Imagine a world between you and objects through the internet. A connection between the things through internet. There are lot of uproar about internet of things and how it is impacting our life from the way we do shopping, we travel, to the way manufacturers keep the track of inventories. It is a world in which in which every persons need and desires are inherently known by big data. Objects from pacemakers to roadways to furniture to apparel, nested with sensors and actuators will get the ability to transmit the message to people through the internet. IoT is a change in the predictable pathways the information used to travel from in the physical world. When objects get the ability to percept the environment and communicate, they will become a means for information transfer and sharing globally. All these are related to one word called "Internet of Things" or IoT. It is a giant network of connected things and people all of which share data about the way they are used in the environment.

These are some other buzzwords you may have been hearing, reading & very likely talking about endlessly. What is IoT? How does it Work? Is it really changing the way of our living style?



IoT applications in E-Commerce.

Fig-1 Source - https://eragon.einfochips.com/blog/post/iot-implementationin-e-commerce/

#### 2. Review of Literature Internet of Things

Internet of Things (IoT) is an idea and a paradigm that reckons extensive presence in the domain of a variety of things/objects that through wireless and wired connections and unique addressing arrangements interact with each other and collaborate with other things/objects to create new applications/services and bring about universal objective. The aim of the Internet of Things is to enable things to be connected anytime, anyplace, with anything and anyone impeccably using any path/network and any service. Basically we can that Internet of Things is a new revolution of the Internet.

In the concept of Internet of Things, the thing could be an animal with biochip transponder, a be a person with a heart monitor implant, an automobile with inbuilt sensors to alert the driver when tire pressure is low -- or any other natural or man-made object that can be assigned an IP address and facilitated with the capability to transfer data over a network. Internet of Things works on a idea of data transfer. There are vast areas where IoT technology can practically applied and found in many industries today, including agriculture, smart cities, healthcare, smart retail ,energy and transportation, Industry, manufacture, logistics etc. IoT brings about a paradigm were everything is connected and will redefine the way humans and machines interface and the way they interact with the world around them.

[1]The author basically describes about the applications of IoT in various sectors. They explain about the how the IoT is being used in various fields by sensing and collecting the data from the world and processing the data and utilizing for various purposes. The paper also explains about the applications of IoT in smart cities, medical field, security and emergencies and agriculture as well as domestic application. Basically IoT has emerged as a technology which applies, smart machines interacting and communicating with other machines, objects, environments and infrastructures.

[2]In this paper the author's reviews about the challenges faced by use of Internet of Things in terms of security and privacy settings. It also aims to provide an information about the steps taken to provides the reader a basic overview about Internet of Things, the major security and privacy challenges. To protect the users data strong security network is required. Any malicious or harmful use of data may restrict the user to utilize the IoT applications. This paper gives an idea about the security solution and also identifies the challenges and confronts with the security and privacy issues.

[3]The author in this paper focuses on wide applications and security challenges both. They share the vision of usage of IoT in coming era that all the networks will be interconnected and everything will be a part of this gigantic network. The paper also envisages the roadmap of IoT which is described in six layers, these are coding layer, perception layer, network layer, middleware layer, application layer, business layer. The authors also focuses on the relevant technology behind the development of IoT. These technologies are RFID system, nano technologies, networking technologies, Micro Electricalmechanical systems, Optical technologies, cloud computing . The paper gives insight about the challenges and threats faced by using IoT such as some unwanted access to RFID, security breach in sensors, and data breach in cloud computing which can result in data loss, hacking of accounts, and attack of harmful and data manipulating. Therefore in a wholesome we can say that IoT is requires efforts to tackle security and privacy threats.

[4]In this literature the authors focuses on the IoT, with future technologies which are interrelated and are responsible for connecting the communication with various things that work under a single platform. The IoT indicates of usage of new technologies in terms of cloud, fog, big data and security challenges. Smarter and advanced

applications with tackling security challenges can be developed for future applications which will make the new concept and idea of IoT possible.

## 2.1 How IOT Works?

It works on simple principles, all the devices with built in sensors are connected to the IoT platform which integrates data from different devices and applies analytics to share to share the most valuable information with applications built to address certain needs.

The information picked up by connected devices enables one to make smart decisions about which component to stock upon, based on real time information, which helps in saving time and money.

IOT is everywhere in health care, agriculture, transport, etc. The IoT is a huge network of people and other things which are connected. The liaison will be between people to people, things to things, and people to things.



### How IoT works

# Fig-2 Source - https://www.slideshare.net/TarkKeletemur/the-internet-of-things-overall

### 2.2 How IOT impact our lives-

The future of IoT will be anything in the world can be connected will be connected. But how it will affect people's life. There are few instances which gives better vision of IOT. Suppose you are on a way to a meeting and your car in which you are travelling can access to your mobile calendar and may be find out the best route to take for the meeting, may be your car will notify to your client that you will reach late. It will be so nice if your alarm clock wakes up you at seven am and then suggests to your coffee maker to start brewing coffee for you.

What if the wearable device you used in the work place could tell you when and where you were most active and productive and share the information with other devices that you used while working.

On a broader perspective IOT can be applied to the things like transportation, logistics network, smart cities, which can help to decrease wastage and enhance competency for things such as power used, thus helping us in discerning and improving our way of living and work.

The reality is that IOT allows for virtually endless opportunities and connections to take place, many of which we can't even think of or fully understand the impact of today, but it certainly opens the door to lot of opportunities and probabilities also.



## IoT affecting life

Fig-3 Source -http://blogs.allari.com/7-ways-the-internet-of-thingswill-impact-your-life

## 2.3 The Value of IOT-

The IOT has the power to change the world. IOT will play an important role in future. It has gained importance because lives have become technology driven. Every individual has to manage travel, bill payments, maintenance of all equipment's at home, health care, and business etc.lot has emerged as a boon for boosting productivity of business by making better use of data. Other factors of ecosystems are also helping in IOT, as invention of affordable devices, inevitable growth of internet and telecom and advent of intelligent machines.

The data collected from various devices will help the consumers, businesses and even absolute connected cities run more efficiently.

#### 2.4 How can IOT help?

IoT brings is about a concept were everything is connected and will reformulate the way humans and machines interface and the way they network with the world and surroundings around them.

IoT as interface provides a platform which can help organizations in reducing the cost through improved measures and adequacy, asset implementation and productivity. They can also benefit from real time insights and analytics with improved tracking of devices/objects using sensors and connectivity, which would help them make smarter decisions. More opportunities can be created for people, businesses and industries with the growth and convergence of data, processes and things on the internet which would make such connections more relevant and important.

Internet of Things has the ability to sense, communicate, network and produce new information and it implies that the environments, cities, buildings, vehicles, clothing, portable devices and other objects have more and more information associated with them.

The Internet basically a network of computers is a communicating and sharing device is not only a network of computers, but it has evolved into a network of devices of all types and sizes, vehicles, smart phones, home appliances, toys, cameras, medical instruments and industrial systems, all connected.

The Internet of Things had until recently different means at different levels of abstractions through the value chain, from lower level semiconductor through the service providers.

The Internet of Things is a "global concept" and requires a common definition. Considering the wide background and required technologies, from sensing device, communication subsystem, data aggregation and pre-processing to the object instantiation and finally service provision, generating an unambiguous definition of the "Internet of Things" is non-trivial.

#### 2.5Internet of Things in Apparel Manufacturing

What is the role of IOT in apparel industry? It is a biggest opportunity for the apparel industry. A research done by Retail System Research has shown that IOT is drastically changing the way the companies will do the business in coming years. The smart manufacturing will certainly modify the way of working, how the products are invented, produced and shipped.

These basically use the technology basd on automation, robotics which provide a platform for smart manufacturing.

IOT will give digital voice to people, process and things to improve the customer experiences enhance supply chain, visibiliyty and expand revenue opportunities.

Apparel items around the world will have a digital capability with IOT. This will help the sellers to make their products more interactive, informative and personalised for their customer. It will also help to tackle issues like product authentication, brand protection and improving supply chain transparency and efficiency.

IOT can help the apparel manufacturer, designers and retailers to create and sell products customised for consumer's individual tastes. Everyone involved manufacturer, designer and retailers, customers, logistics, can track their purchases, do the changes if required.

Effective Production – Going through the data and the records and studying customer's behaviour, purchases, preferences and

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movements in a store can help the manufacturers for better understanding of customer choices. This can help them in inventory challenges, such as overstocking or shortages possibly making supply chain more efficient. This will make the merchants become more responsive to their customer needs.

# Future of Apparel Manufacturing-

Internet of things is becoming more and more prominent in enabling access to devices and machinery which in manufacturing systems were not being used. This evolution will help the It to penetrate further in digitising manufacturing systems.

The IOT will connect the whole factory to a whole new range of application which run around the production. This includes connecting the factory, to the smart grid, sharing the production facility.

The first step towards a smart factory could be enabling access to today's external stake holders in order to interact with IOT enabled manufacturing system.

These stake holders includes machines suppliers as well as the production logistics (material flow), supply chain management.

In one roe manufacturers, retailers, customers, transportation all share common data around the world, do the changes whenever required.

Companies are using huge data available cloud services, embedded technology, sensor network, RFID, GPS, M2M, mobility, security, and id recognition technology, wireless network and standardisation.

3. Conclusion – Internet of things is a in a nascent stage of development and has a huge potential for development This is a new concept and lot of work can be done in future, but there are some security challenges also. Handling big data with proper security is challenge for internet of things. If these challenges are taken care of surely Internet of things has the power to change the model of business.

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