

INTERNET OF THINGS (IOT)

(NEXT STAGE OF DIGITAL TRANSFORMATION)

PREFACE

- It is a network of interconnected devices that can communicate with each other to perform a wide range of actions without requiring human-to-human or human-to-computer interaction. Each device in the IoT network is linked to a sensor that sends and receives data from surrounding devices.
- The technique of keeping IoT systems safe is known as IoT security.

HOW IOT WORKS?

01 Sensors/Devices

- Sensors or gadgets are an important component that allows us to acquire real-time data from our surroundings.
- A sensor detects and records changes in the surrounding environment. Sensors are extremely useful in IoT applications because of this property.
- Ex- Sensors in cell phone such as GPS which track our location and guide us to our destination. Camera's sense human movement to click pictures.

02 Connectivity

- The information gathered is sent to a cloud infrastructure. The sensors should be connected to the cloud via a variety of communication channels.
- Mobile or satellite networks, Bluetooth, WI-FI, WAN and other communication methods are examples.

03 Data Processing

- Once the entire data transmits to the platform, functions are performed to process the data and send back necessary outputs. Here data analysis took place, and it is the most important step in IoT technologies. To produce better results analysis must happen at a quick rate.

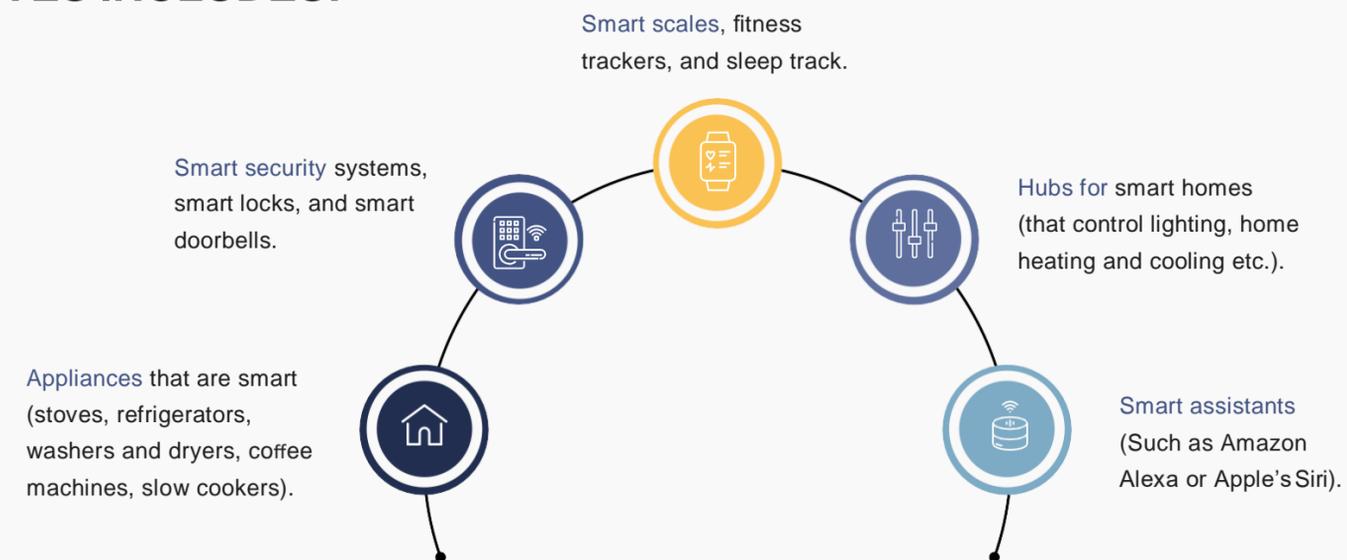
04 User Interface

- This is the final stage. This stage has direct contact with the user and generates the output that the user sees on their screen. Every IoT device has a unique interface since each device has a particular task or goal to achieve.

WHY IS INTERNET OF THINGS SO IMPORTANT?

- IoT has emerged as one of the most important technologies of the twenty-first century in recent years.
- Now we can connect everyday objects like kitchen appliances, cars, thermostats, baby monitors etc. to the internet via embedded devices. Seamless communication is possible between people, processes, and things with IoT. It helps us work smarter, live smarter, and gain complete control over our lives from anywhere at any time, on any device.
- With the help of low-cost computing, the cloud, big data, analytics, and mobile technologies, physical things can share and collect data with minimal human intervention.

EXAMPLES OF HOW WE USE INTERNET OF THINGS IN OUR EVERYDAY LIVES INCLUDES:



FACTS AND FIGURES ON THE INTERNET OF THINGS (IOT):

1 In 2020, \$749 billion will have been spent on IoT technology around the world.

2 In the global IoT network, there are 15.9 billion devices.

3 The IoT market is presently valued at \$388 billion and is predicted to reach \$500 billion by 2023.

4 By 2025, global consumer spending on smart home-related products is expected to reach \$88 billion.

5 By 2025, the number of IoT-connected devices worldwide is expected to reach 30.9 billion.

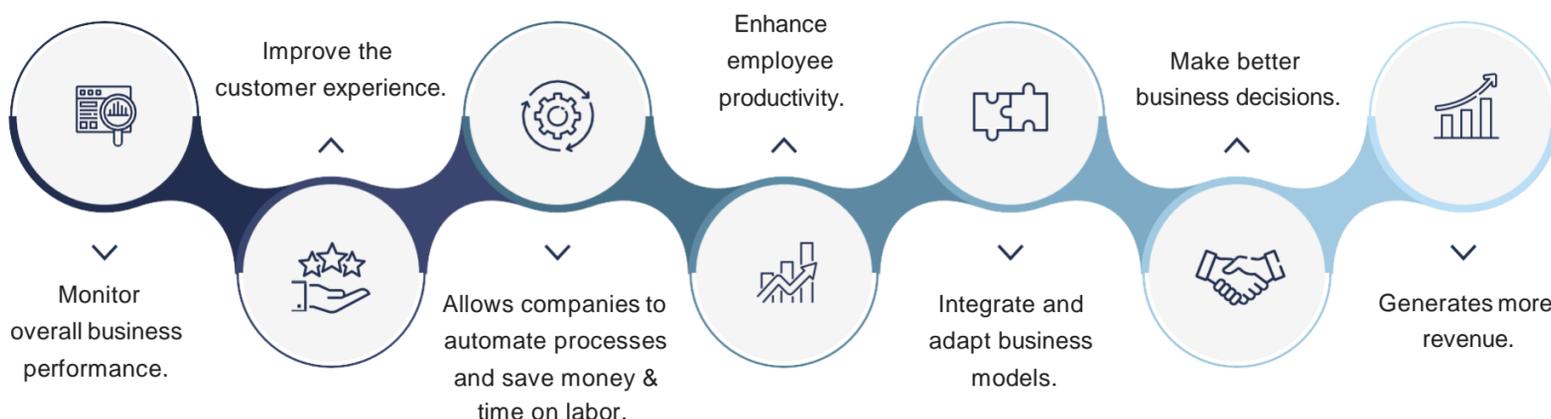
6 The number of connected IoT devices using cellular tech reached 2 billion in 2021.

7 Google Home have the largest IoT devices market share at 48% in 2021.

8 5G will continue to drive IoT growth, with 1.9 billion 5G cellular subscriptions expected by 2024.

9 For the next two years, the chip shortage will stifle IoT growth.

HOW IoT BENEFITS ORGANIZATIONS?



INTERNET OF THINGS (IOT) CHALLENGES:

- As the number of connected devices grows and more information is shared between them, the risk of a hacker stealing personal data grows as well.
- If there's a bug in the system, then every connected device will become corrupted.
- Insufficient testing, Updating and Software complexity.
- Integration with AI and automation.
- Enterprises have to deal with millions of IoT devices, collecting and managing the data from all those devices will be challenging.
- Devices require a constant power supply, which is difficult.
- Since there's no international standard of compatibility for IoT, it's difficult for devices from different manufacturers to communicate with each other.
- Users' knowledge and awareness.

HOW TO SECURE IOT DEVICES FROM CYBER-ATTACKS?



TOP CYBER ATTACKS ON IOT DEVICES:

01 The Mirai Botnet (aka Dyn Attack):
 Hundreds of thousands of compromised connected devices were pulled into the botnet dubbed Mirai in 2016. To launch a large-scale, cyberattack, a botnet can pool the processing power of many small devices. All major websites such as Spotify, Netflix, and PayPal were temporarily shut down.

02 Verkada breach:
 In March 2021 a group of hackers succeeded to access and control thousands of security cameras developed and managed by Verkada, a Silicon Valley-based company that sells security as a service. The hackers gained access after discovering a set of Verkada user credentials that were publicly available on the Internet. They moved laterally across the network after breaching the Verkada database and gaining control over a super-admin account. They were then able to take control of the cameras in order to launch future attacks and gain access to video footage stored on Verkada's over 24,000 client list's cloud.

Source- iotforall

CONCLUSION

One of the most profitable emerging technologies is the Internet of Things. The advancements in Artificial Intelligence and Machine Learning, industries have made the automation of IoT very simple. It will play a critical role in the advancement of all industries in the coming years. The Internet of Things will also create a shield to keep cyberspace safe and secure.

IF YOU THINK THAT THE INTERNET HAS CHANGED YOUR LIFE, THINK AGAIN.
 THE INTERNET OF THINGS IS ABOUT TO CHANGE IT ALL OVER AGAIN!!

-Brendan O'Brien

SKILLMINE CYBER SECURITY TEAM