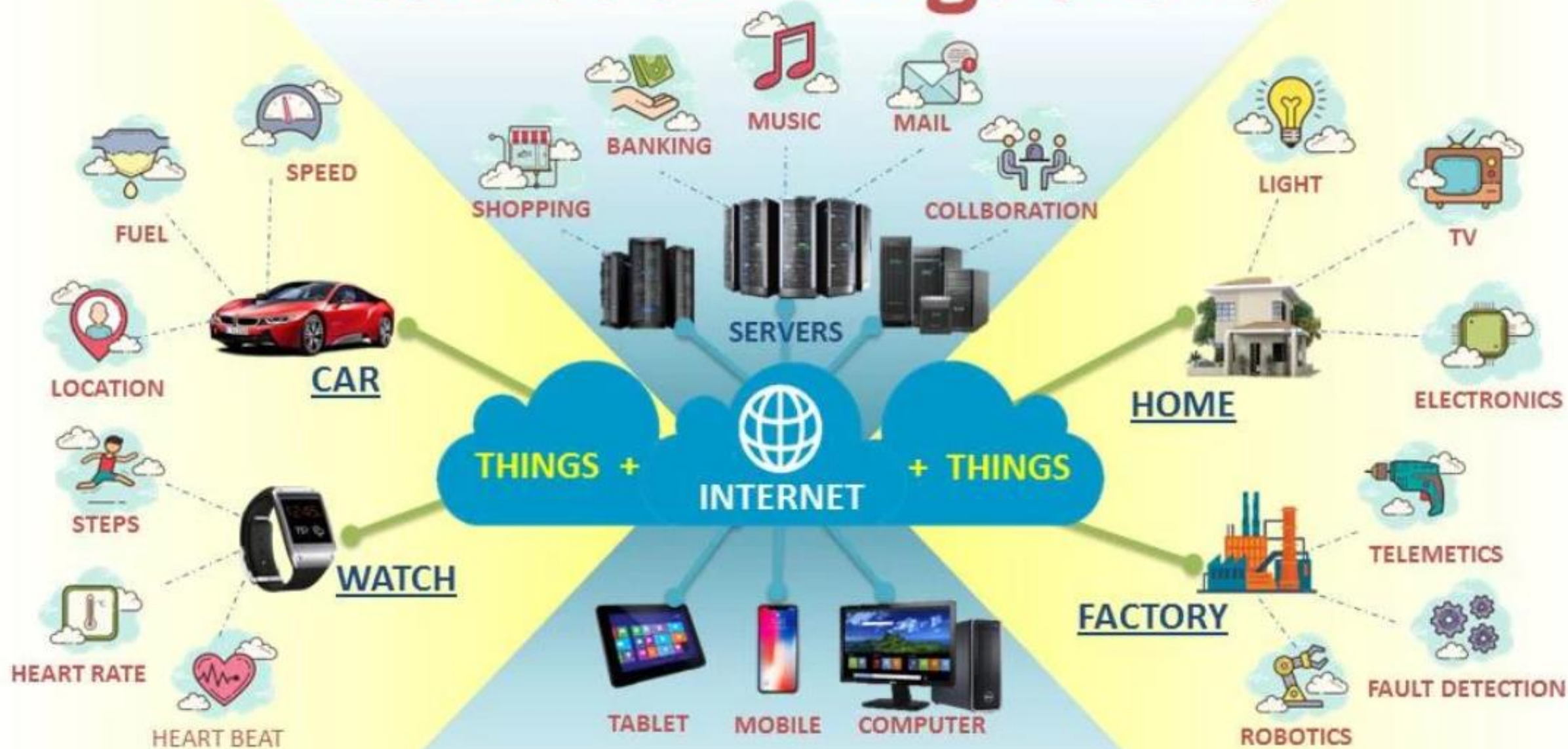


A collection of disassembled smartphone components, including a main green printed circuit board (PCB) with various chips and connectors, a white plastic back cover, a camera module, a fingerprint sensor, a battery, and various other smaller components like a display assembly and a charging port. The components are laid out on a light-colored surface.

# IoT: What is it and Why is it Important?

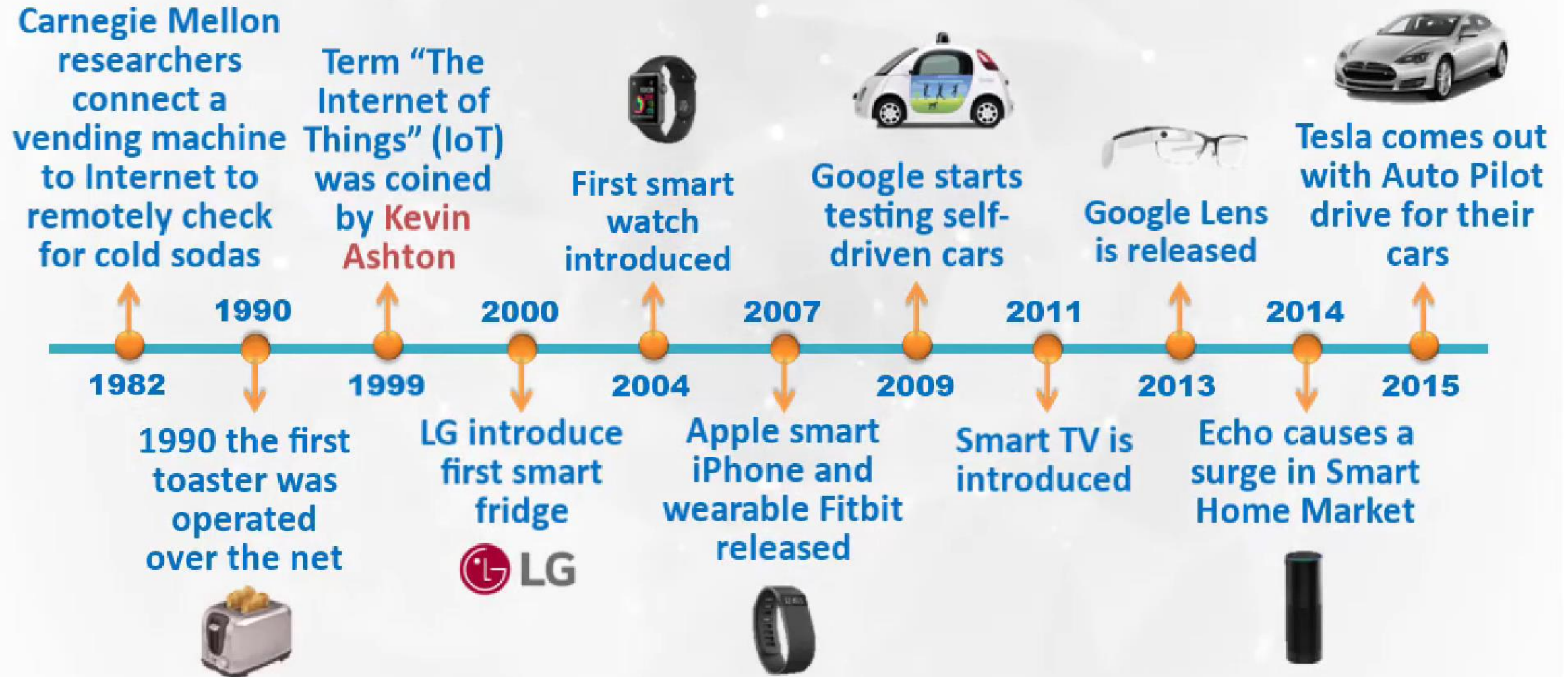
# Internet Of Things (IoT)



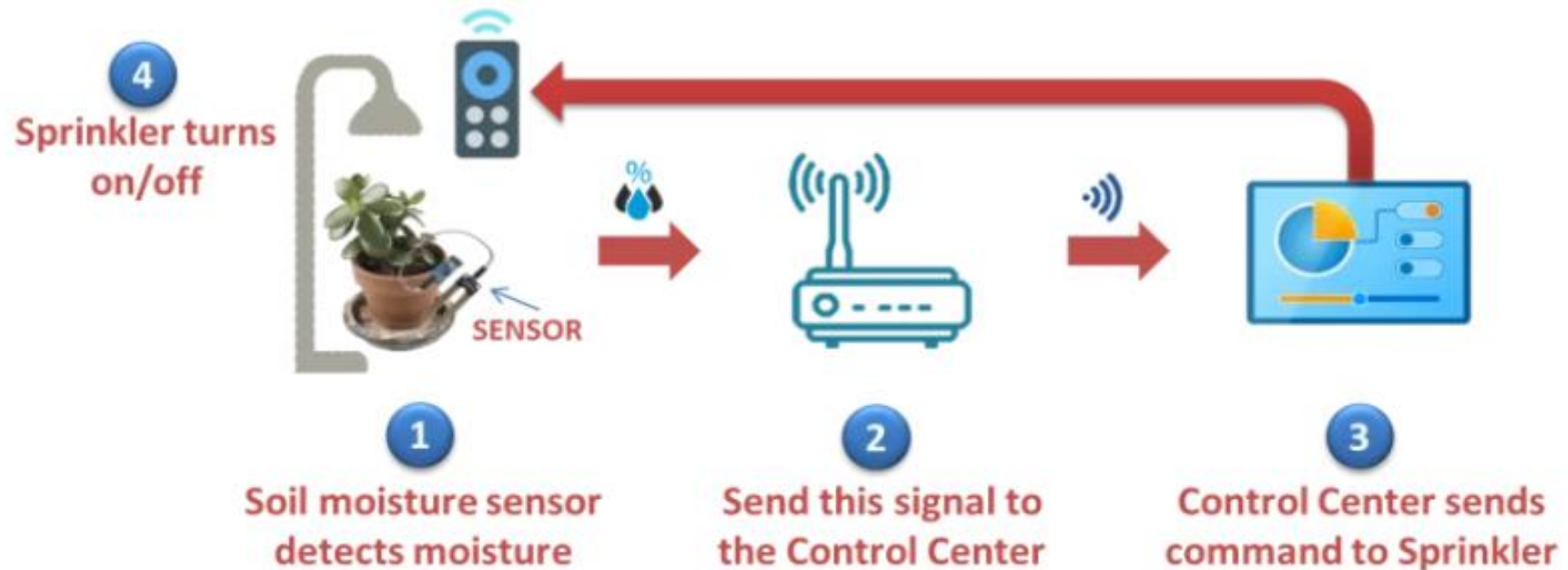
# IOT

- The Internet of Things, or IoT, is **a network of physical devices**. These devices can transfer data to one another without human intervention. IoT devices are not limited to computers or machinery. The Internet of Things can include anything with a sensor that is assigned a unique identifier (UID).
- Although IoT is a relatively new concept to most, the interconnective technology has been around for two decades.
- Kevin Ashton of MIT first used the term “Internet of Things” in 1999. From there on, LG introduced the first-ever smart fridge to the world in 2000, and seven years later, the first iPhone was released.
- The rest is history. Think anything from smart televisions to RFID tags within supply chains to self-driving cars. The IoT has made a significant impact on the world in its infancy and will only continue to grow as time goes on.

# History Of IOT



Taking everyday things, embedding them with electronics, software, sensors and then connecting them to internet and enabling them to collect and exchange data without human intervention is called as the **Internet of Things (IoT)**



**Example of IoT Sprinkler System**

# WHY IS IOT IMPORTANT?

## ■ Better Decision Making

- Since devices have multiple sensors, they can acquire considerable data from numerous sources, giving them more information to work with when acting on data received.
- A great example is smartphones. The device automatically tracks your behaviors on its interface and makes suggestions based on your activity, location, and age.
- The phone can also keep tabs on various activities. This includes the amount of screen time users spend each day, power consumption, and sleeping patterns. Massive amounts of data are being collected and sent back to smartphone companies each day to improve features on their devices.
- With the constant influx of big data, companies begin to see trends in the usage of their devices and can immediately pinpoint their strengths and weaknesses. This insight would not be possible without the help of embedded sensors and processors which analyze the data.

# REAL-TIME TRACKING AND MONITORING

- The potential for web-based tracking and monitoring systems is enormous. IoT tracking provides an efficient means to track and monitor anything from vehicle fleets, stolen goods, or shipping containers.
- Particular devices can even detect changes in the environment. There are multiple industries where IoT trackers can immensely improve the efficiency of companies. A malfunction in these products can lead to enormous losses for the company.
- IoT-based trackers need to be reliable to provide the best services.
- These devices should provide the following:

# REAL-TIME TRACKING AND MONITORING



# REAL-TIME TRACKING AND MONITORING

- **Real-time data analytics**

- Fast, accurate data is required in the industry to allow for quick, informed decision-making when assets or changes in the environment are being monitored.

- **Secure communication**

- Companies usually track and monitor high-value assets. It is essential that the shared data is protected and not under the threat of hackers.

- **Stable connectivity**

- The device should securely provide helpful information on asset locations, machine functionality, and temperatures. This is required at all times and from anywhere on the planet.

# AUTOMATION

- A big reason for the invention of IoT is convenience. Smart devices that automate daily tasks allow humans to do other activities.
- These devices ultimately lighten people's workload.
- Smartphones allow us to connect with people from all over the world. We can schedule when to send messages and even use dictation to avoid typing ourselves.
- Then there are smart fridges. Imagine having one that can detect when foods are about to expire and notify the owner to eat that food before it's too late. Perhaps the smart fridge could even register that the milk is nearly finished and automatically order more.
- Another example is a self-driving car, connecting to the Internet to find the quickest route to a destination. This is the ultimate convenience for humans. The room for innovation within IoT is massive.

## MORE EFFICIENT PERSONAL AND BUSINESS TASKS

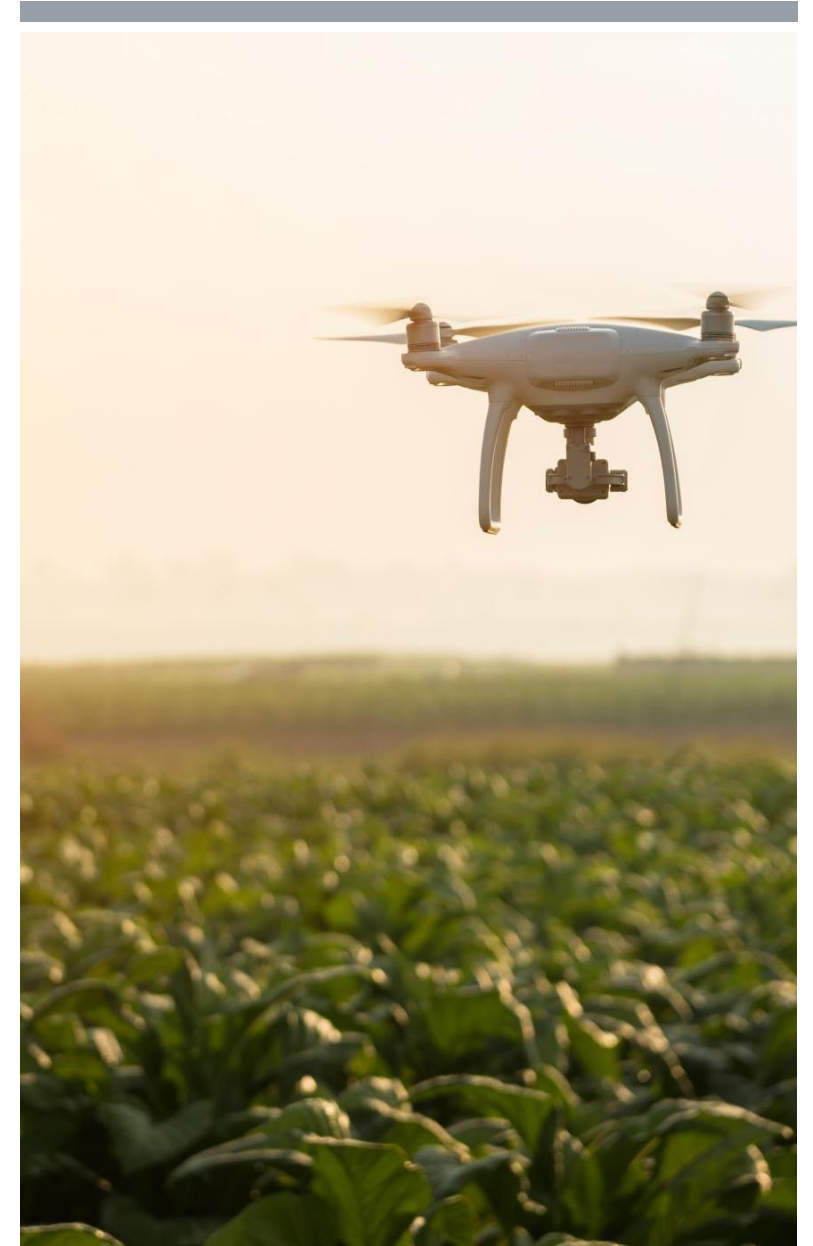
- Web-based devices save people money and time. This includes planning work schedules Time Tracking effective communication, and setting reminders for daily tasks.
- Having IoT devices track and order things for you, turn lights off automatically when you leave the room, and manage tasks for which you don't have time is the ultimate convenience!
- More and more of these devices will become available for use over the coming years, with an estimated total number of IoT connections to reach 27 billion in 2024
- It's no secret that human productivity has gone up with the technological age. People are busier than ever before, thanks to IoT. It's incredible to have the opportunity to do important things like spending time with family while an IoT device takes care of mundane activities.

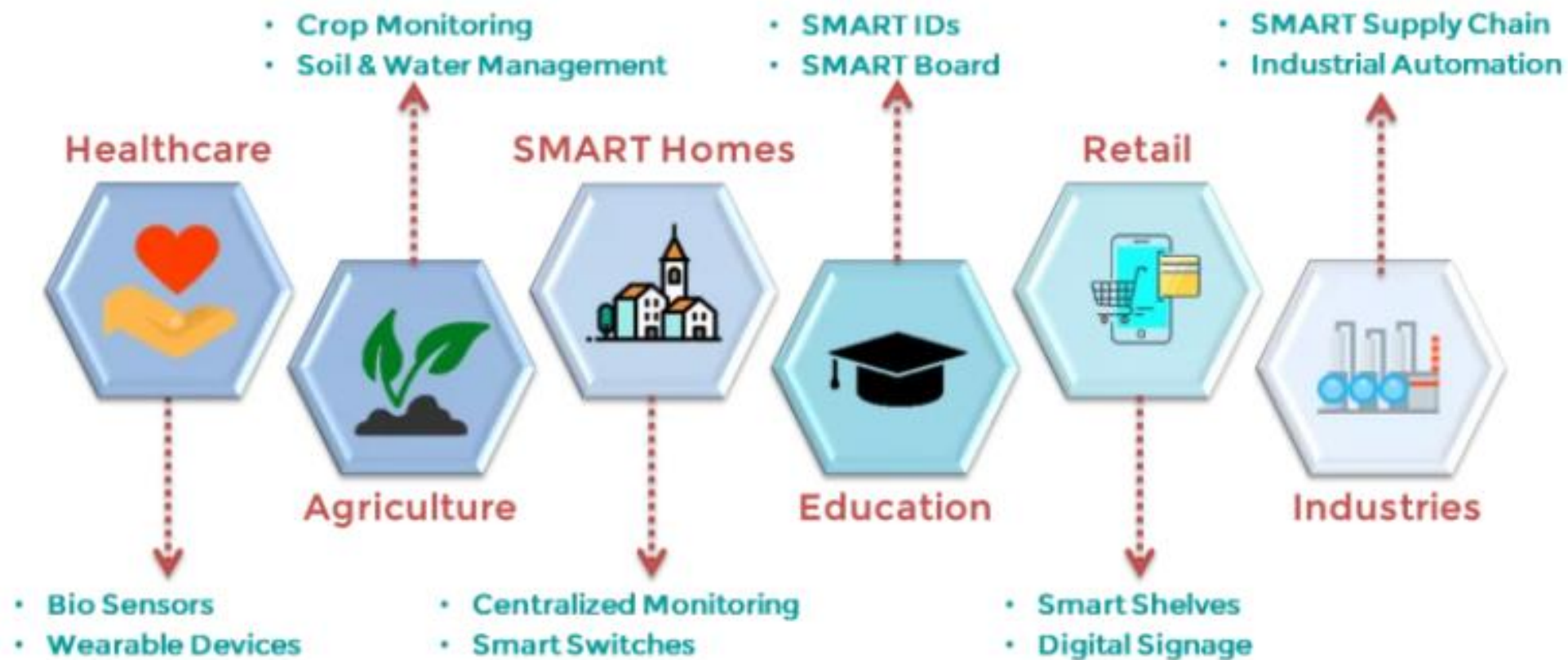
# COMPATIBILITY

- IoT is expanding in many settings, with various technologies vying for supremacy. When connecting devices, this will cause problems and necessitate the deployment of additional hardware and software.
- Other compatibility concerns arise due to non-unified cloud services, a lack of standardized M2M protocols, and differences in IoT device firmware and operating systems.
- Some of these technologies will become obsolete in the coming years. This is crucial since, unlike traditional computing products with a short lifespan, IoT appliances (such as smart fridges or TVs) will last much longer and should continue to work even if their maker goes out of business.

# APPLICATIONS OF IOT

- IoT solutions are widely used in numerous companies across industries.
- In the field of **health care** we have **bio sensors and wearable devices** which are used to monitor heart rate, blood pressure and automatically alert the doctors.
- In the field of **agriculture**, IOT can help in **crop monitoring** using drones. Moisture and soil sensors help in conserve **water and maintain soil balance**.
- To make our **houses and buildings SMART**, IOT is used to centrally manage Light, Camera surveillance, Sound detection, **SMARTswitches** and locks aid in for security. This helps in better manage the overall resources with considerably less manpower.
- In the **field of education**, Smart ID cards automatically **takes in attendance** while student is entering or leaving the school or school bus and send alerts to parents. A **smart board** allows teachers to display varied content and even surf the internet. The notes and HW on the board is automatically mailed to parents.
- IOT is used in **retail** for **Smart Shelves** which have digital price labelling and generating automatic notifications if shelves are lighter. **Digital signage** helps retail companies provide personalized and interactive shopping experience
- IOT is used in **industries** to maintain **SMART supply chain** leading to better inventory management. **Industrial automation** helps to increase productive efficiency and flexibility.





## Applications of IOT