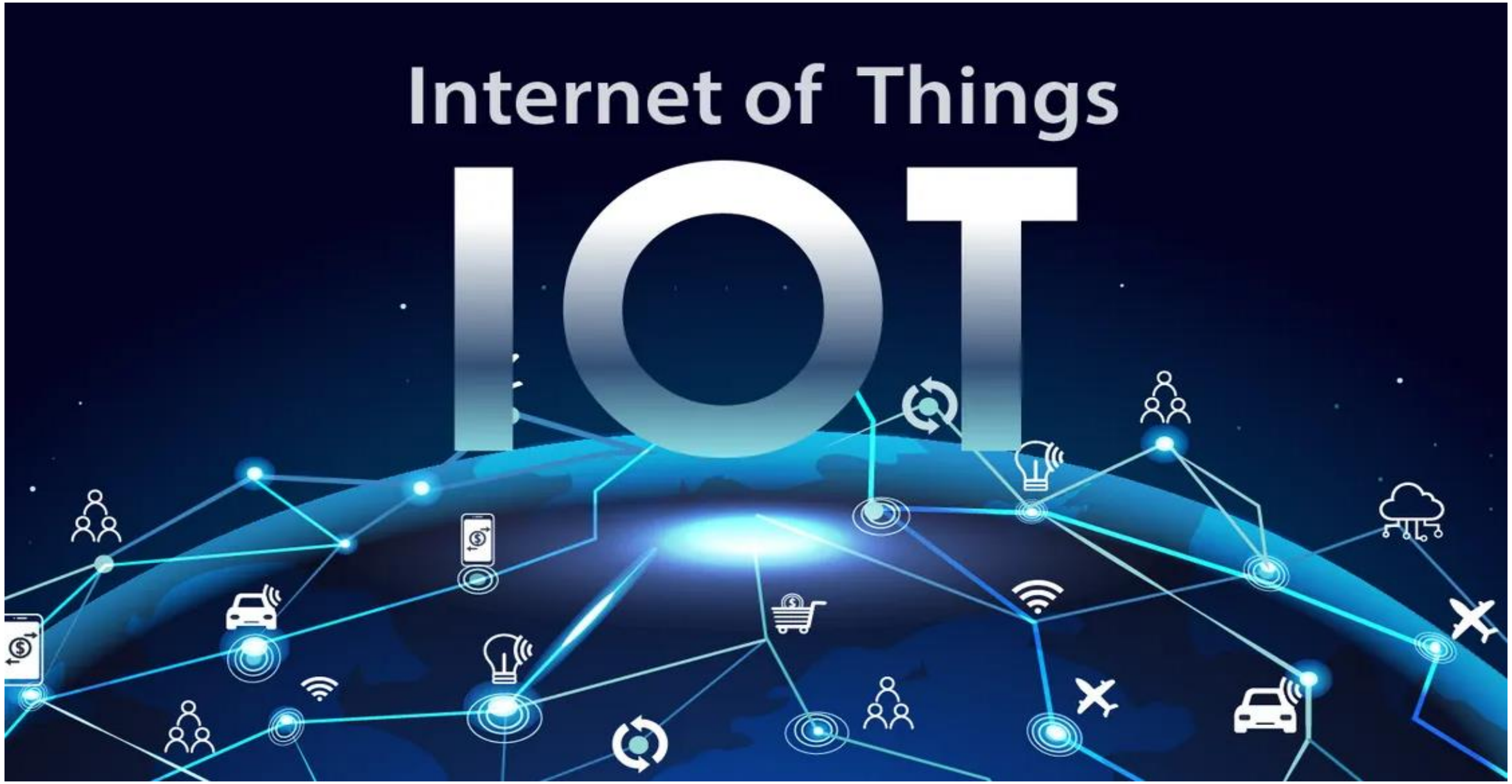

Internet of Things
IOT

WHAT IS IOT?

Internet of things or Smart Devices

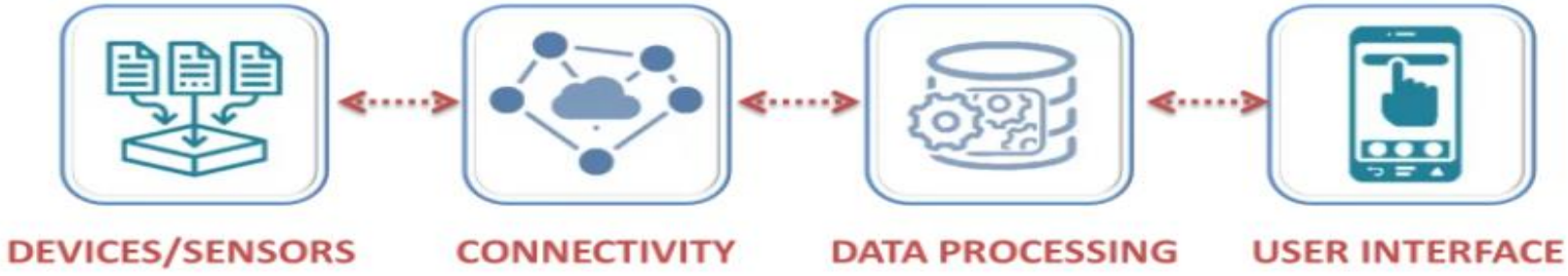
Physical Objects interacting with human world

In this connected world, digital systems can record, monitor, and adjust each interaction between connected things

Smart Plugs , TVs , ICS , Cars , Toys , cameras , Refrigerator , Heaters etc.

HOW DOES IOT WORK?

- There are four main components based on which an internet of things ecosystem works on, devices or Sensors, Connectivity, Data Processing and User Interface. Lets look at each one of them one by one.



Components Of IOT

SENSOR

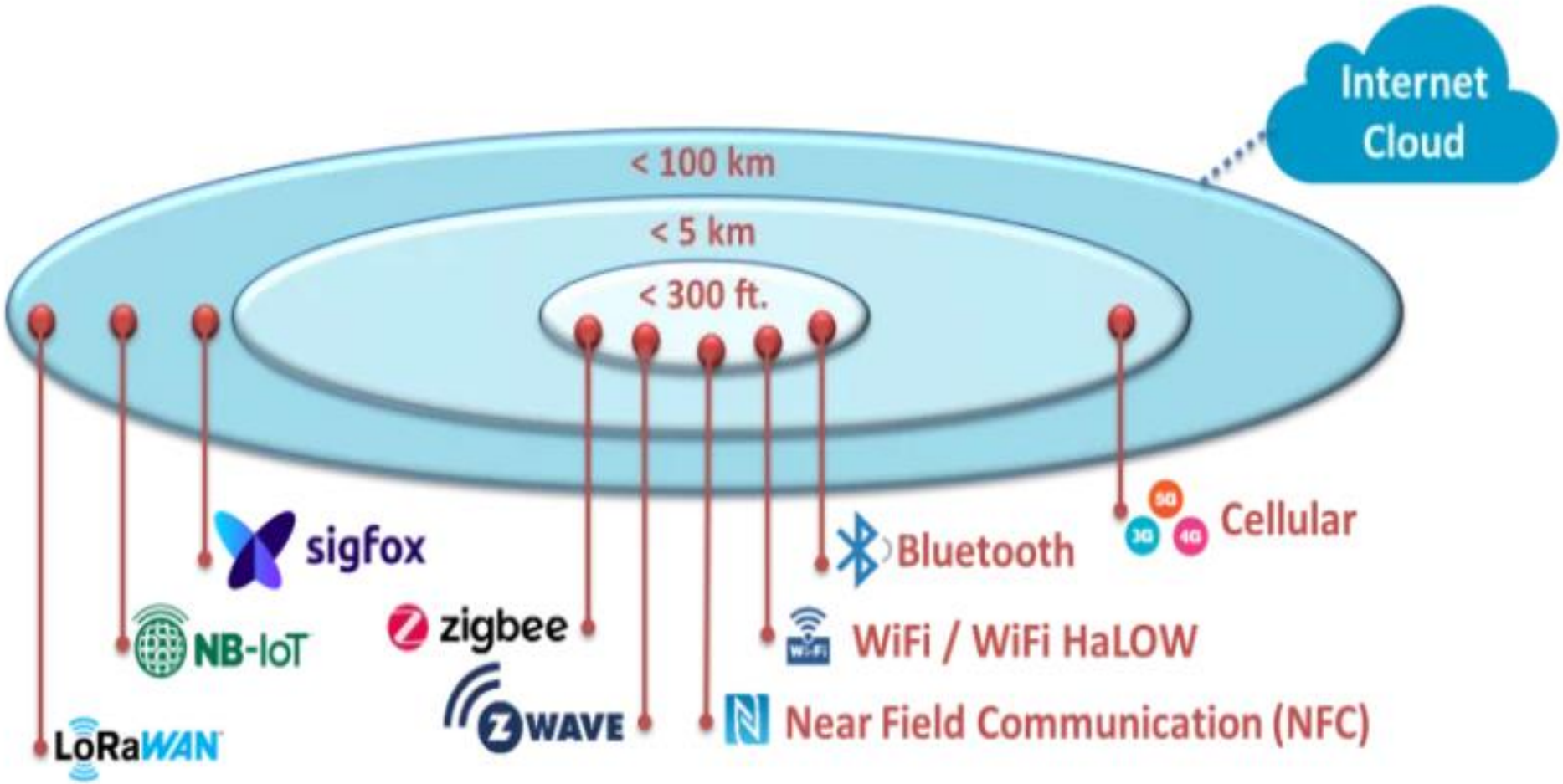
- **1. Sensor**
- It is a device that measures physical input from its environment and converts it into data that can be interpreted by a computer.
- There are various types of sensors available now, For e.g. sensing motion, temperature, pressure, light, sound etc.
- This sensor is typically integrated with a microprocessor based embedded system which can collect the data and connect to internet.


Touch
Speed
Position
Motion
Light
Levels
Chemical
Vibration
Sound
Moisture
Heat
Gas
Color
Flow
Load
Leaks
Smoke

Sensor

CONNECTIVITY

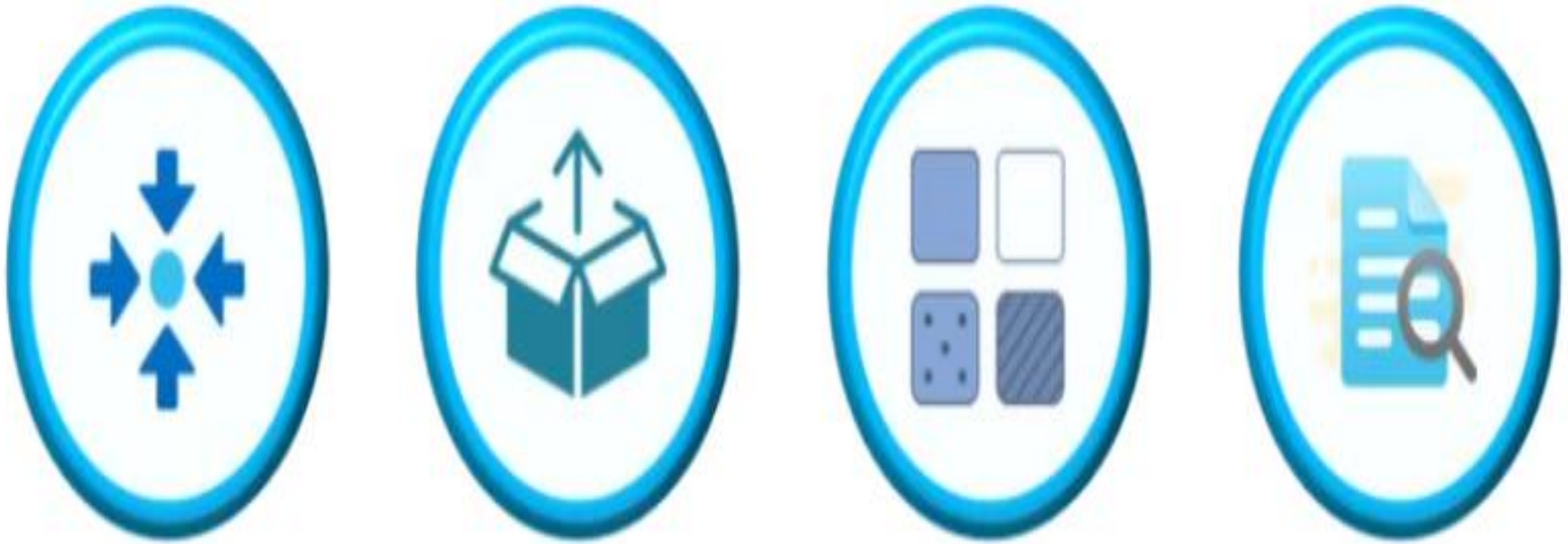
- **Connectivity**
- Several Communication Protocols and Technology used in IOT.
- Depending upon Range, Power Usage, Cost, Data Rate etc. right one is used. E.g mobile, Bluetooth, WI-FI, LoraWAN, etc.
- All the collected data is sent via internet to a cloud infrastructure.



Connectivity

DATA PROCESSING

- **Data Processing**
- In the processing stage, a computer transforms the raw data into information.
- The transformation is carried out by using different data manipulation techniques.
- This process can be just aggregating from multiple devices like AC or Light. Or it can be complex like extracting car number plates from video feed of speeding cars.
- It could be classifying the data or do real time analytics and identify patterns for human analysis.



Data Processing

USER INTERFACE

- **User Interface**
- The information processed is made available to the end-user in some way, like an app which can trigger alarm or send them notification through email or text message.
- It might provide the user with actual live feed or show trends etc.
- The application could also provide an interface to send instructions back as well, like resetting the temperature or releasing water to the plants based upon moisture reading etc.

User Interface

WHY IOT?

- **Organizations in a *variety of industries* are using IoT to operate more efficiently, better understand customers to deliver enhanced customer service, improve decision-making and increase the value of the business.**

BENEFITS OF IOT

IoT offers a number of benefits to organizations, enabling them to:

1. **Monitor their overall business processes;**
2. **Improve the customer experience;**
3. **Save time and money;**
4. **Enhance employee productivity;**
5. **Integrate and adapt business models;**
6. **Make better business decisions; and**
7. **Generate more revenue.**

EASE OF ACCESS

- Right now, you can easily gain the required information in real-time, from (almost) any location you are at. It only takes a smart device and internet connection.
- We use Google Maps to see our location, instead of asking a person in real life. Booking tickets is simpler than ever. Information is also easily accessible, even from the latest scientific research, or business analysis. It is only a click away.

MONITOR DATA

The primary and main advantage of IOT is monitoring. It helps us Know the precise quantity of supplies or the air quality in your home, it can also provide more data that could not have previously been possible to collect easily.

For instance, knowing that you are low on printer ink could save you another trip to the store in the near future. Also, monitoring the expiration of products will improve safety.

BETTER TIME MANAGEMENT

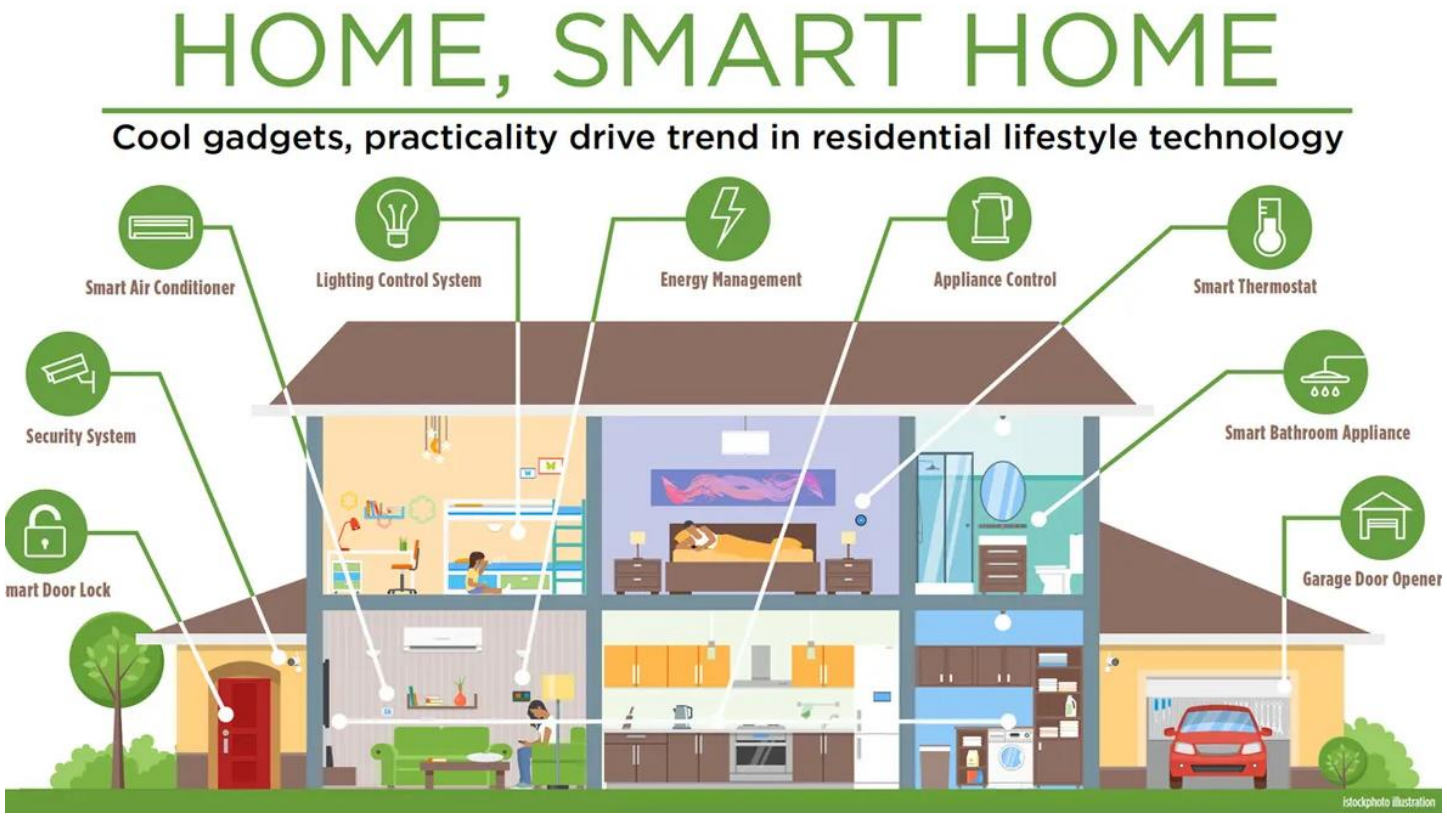
- Overall, it is a clever time-saving tool.
- We can look up the latest news on our phones during our daily commute, or check a blog about our favorite pastime, purchase an item in an online shop, we can do almost all the things from the palm of our hands.
  Eventually, we end up with much more time for us.
- However, nothing is perfect.

SPEEDY OPERATION

- All this data pouring in enables us to complete multiple tasks with amazing speed. For example, IoT makes automation effortless. Smart industries automate repetitive tasks, thus allowing employees to invest their time and effort into more challenging things.

IOT ECOYSTEM

- An IoT ecosystem consists of web-enabled smart devices that use embedded processors, sensors and communication hardware to collect, send and act on data they acquire from their environments.
- IoT devices share the sensor data they collect by connecting to an IoT gateway or other edge device where data is either sent to the cloud to be analyzed or analyzed locally.


HOME, SMART HOME
Cool gadgets, practicality drive trend in residential lifestyle technology
Smart Air Conditioner
Lighting Control System
Energy Management
Appliance Control
Smart Thermostat
Security System
Smart Bathroom Appliance
mart Door Lock
Garage Door Opener
istockphoto illustration

SMART HOME

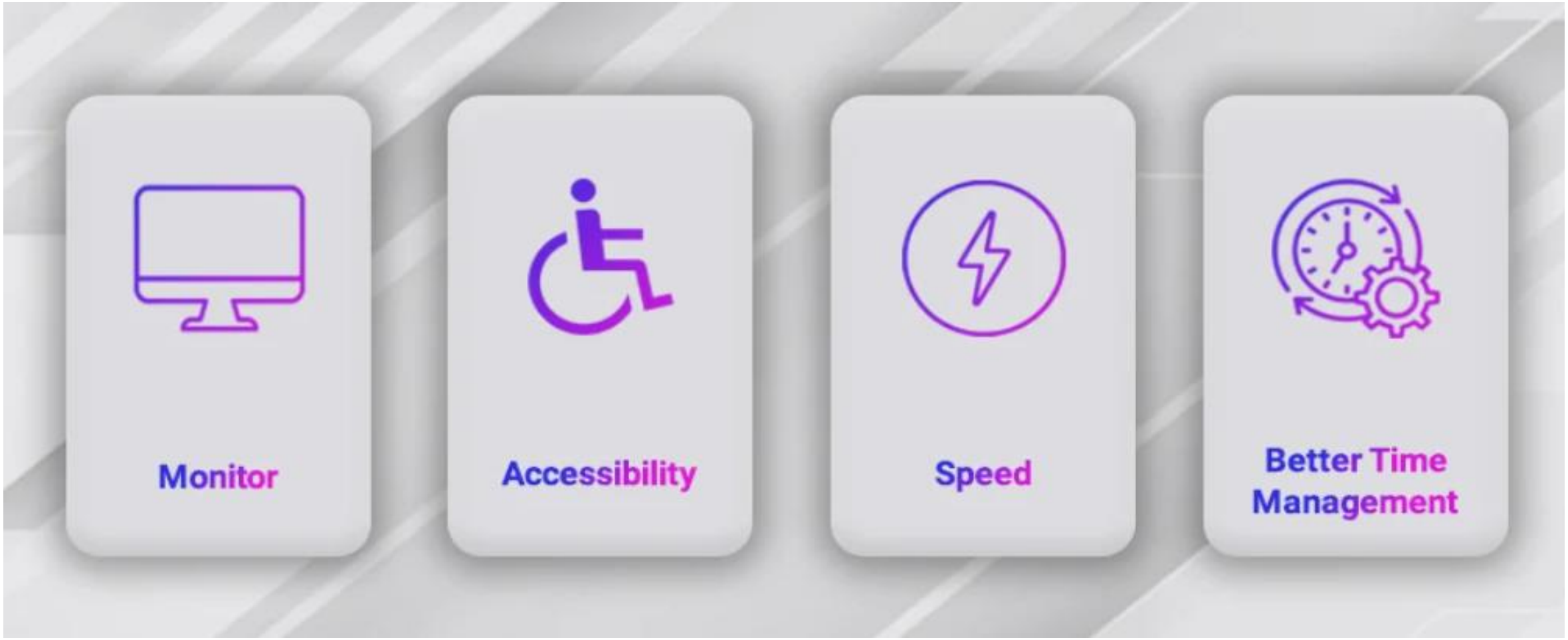
SMART CITY

SOME SMART DEVICES

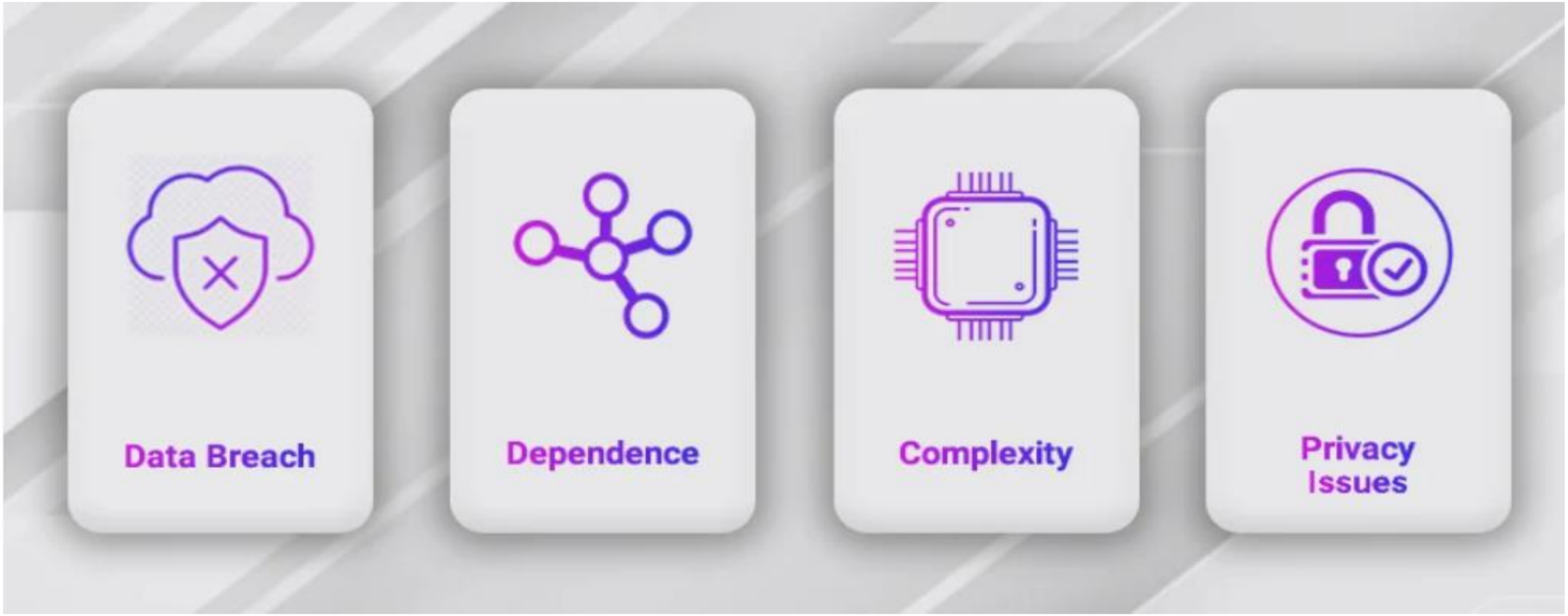
IOT PLATFORMS

- AWS IOT
- ARM Mbed
- IBM Bluemix
- IOT eclipse.org

ADVANTAGES OF IOT



DISADVANTAGES OF IOT



WHY IOT SECURITY

- Everything is getting “connected”
- New Smart devices is coming every month
- Adoption by both consumers and enterprise segment
- Not a lot of research done compared to traditional security domains

DATA BREACH

- Having access to data is excellent. Unfortunately, our personal data is more exposed. A credit card number is the most compromised information, followed by a debit card number.
- Data breaches are stressful. Companies also worry about them and can lose trust if their details are compromised by their clients. The worst devices are said to be: off-brand IoT gadgets, second-hand smart devices, and suspicious apps.

DEPENDENCE ON TECHNOLOGY

- IoT is mainly dependent on the internet connection. When there is none, it can't be used.
- On the other hand, we have become primarily dependent on the IoT's everyday usage. Business and private lives are also dependent on IoT.
- If we don't get access to the desired information quickly, we become upset, even about the most unnecessary content. IoT has contributed to the great decrease in our attention spans.

COMPLEXITY IN OPERATION

- IoT may seem to be managing tasks with ease, a lot of complex operations are done behind it. If by mistake the software makes a wrong calculation, this will affect the rest of the process.
- The above-mentioned can be very critical sometimes. We don't know how to deal with the wrong temperature in our home.
- At worst, an error code in water dam software could cause a disastrous flood.
- That is the reason, many times a mistake in IoT is not always easy to debug.