

1. What is Internet of Things? Why this technology, is being considered as the foundation of smart cities? Also enumerate the challenges involved in Internet of Things.

Answer:

- The Internet of Things (IoT) is a computing concept that describes a future where everyday physical objects will be connected to the Internet and be able to identify themselves to other devices. The term is closely identified with Radio Frequency Identification (RFID) as the method of communication, although it also may include other sensor technologies, wireless technologies or QR codes.
- The IoT is significant because an object that can represent itself digitally becomes something greater than the object by itself. No longer does the object relate just to humans, but is now connected to surrounding objects and database data. When many objects act in unison, they are known as having “ambient intelligence”.
- Smart city planners need to approach their developments holistically to ensure inter-operability. Machines can make cities smarter. Machine-to-machine (M2M) — also known as the ‘Internet of Things’ technology, designed to communicate autonomously, is underpinning developments that will improve everyday life in evolving urban environments.

Here are five ways in which sensors and data communications are changing the way that we live.

1. **Smart driving and connected cars:** Transportation is perhaps one of the biggest challenges faced by a modern city. Using M2M technology to sense real-time traffic information and feed back to a central point can help city planners adapt to changing traffic flows, both in real time and strategically for the long term.
2. **Smart parking:** Parking is another everyday transportation activity that can be made smarter with M2M technology. Using sensors to detect free spaces and relay the information to drivers, cities can decrease congestion and increase parking revenues.
3. **Smart water:** Water wastage is a huge problem for modern urban environments. Only 11 of the 28 European capital cities have wastewater collection systems. Water metering is vital to conserve this precious resource, and M2M technology can help in it.
4. **Smart environment:** According to the World Health Organisation, exposure to particulate matter reduces every resident’s life by an average of one year. Monitoring air quality is a big challenge for the smart city.
5. **Smart trash:** The back-end software uses historical data to predict when the containers will be full, and schedules pickups dynamically based on the information.

The work flows in analyzed enterprise environment, home, office and other smart spaces in the future will be characterized by cross organization interaction, requiring the operation of highly dynamic and ad-hoc relationships. At present, only a very limited ICT support is available, and the following key challenges exist.

1. Network Foundation—Limitations of the current Internet architecture in terms of mobility, availability, manageability and scalability are some of the major barriers to IoT.
2. Security, Privacy and Trust—In the domain of security the challenges are: (a) securing the architecture of IoT— security to be ensured at design time and

- execution time, (b) proactive identification and protection of IoT from arbitrary attacks (e.g., DoS and DDoS attacks) and abuse, and (c) proactive identification and protection of IoT from malicious software.
3. Managing heterogeneity—managing heterogeneous applications, environments and devices constitute a major challenge.

PRACTICE QUESTIONS

Answer the following Questions

1. It has been argued that traditional approaches to corporate social responsibility (CSR) are inadequate. Discuss. Also, examine the role of Social License to Operate (SLO) in this regard. (150 words)
2. It has been argued that over the years there has been a steady decline in the efficacy of Parliament as an institution of accountability. Analyse and also suggest appropriate measures to address the relevant concerns. (150 words)