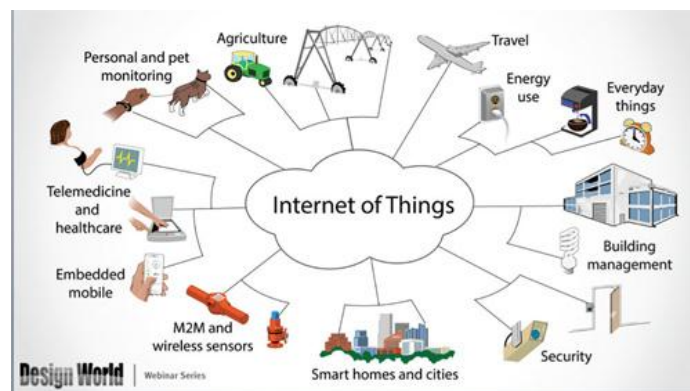# Internet of things

- The Internet of Things (IoT) is the network of physical objects—devices, vehicles, buildings and other items which are embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data.[1]

- British entrepreneur Kevin Ashton first coined the term in 1999 while working at Auto-ID Labs (originally called Auto-ID centers - referring to a global network of Radio-frequency identification (RFID) connected objects).[2]

- IoT is expected to offer advanced connectivity of devices, systems, and services that goes beyond machine-to-machine communications (M2M) and covers a variety of protocols, domains, and applications.[3]

- "Things," in the IoT sense, can refer to a wide variety of devices such as:
  - heart monitoring implants
  - biochip transponders on farm animals
  - electric clams in coastal waters [4]
  - automobiles with built-in sensors
  - DNA analysis devices for food pathogen monitoring[5]
  - field operation devices that assist firefighters in search and rescue operations[6]
  - And many more uses

- There are many technologies that enable IoT.[7]
  - RFID and near-field communication - In the 2000s, RFID was the dominant technology. Later, NFC became dominant (NFC). NFC has become common in smartphones during the early 2010s, with uses such as reading NFC tags or for access to public transportation.
  - Optical tags and quick response codes - This is used for low cost tagging. A phone camera decodes QR code using image-processing techniques. In reality QR

advertisement campaigns gives less turnout as users need to have another application to read QR codes.

➤ Bluetooth low energy - This is one of the latest technologies. All newly releasing smartphones have BLE hardware in them. Tags based on BLE can signal their presence at a power budget that enables them to operate for up to one year on a lithium coin cell battery.

➤ Low energy wireless IP networks - embedded radio in system-on-a-chip designs, lower power WiFi, sub-GHz radio in an ISM band, often using a compressed version of IPv6 called 6LowPAN.

- The interconnection of these embedded devices (including smart objects), is expected to usher in automation in nearly all fields, while also enabling advanced applications like a Smart Grid,[8] and expanding to the areas such as smart cities.[9][10]

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