Internet of Things

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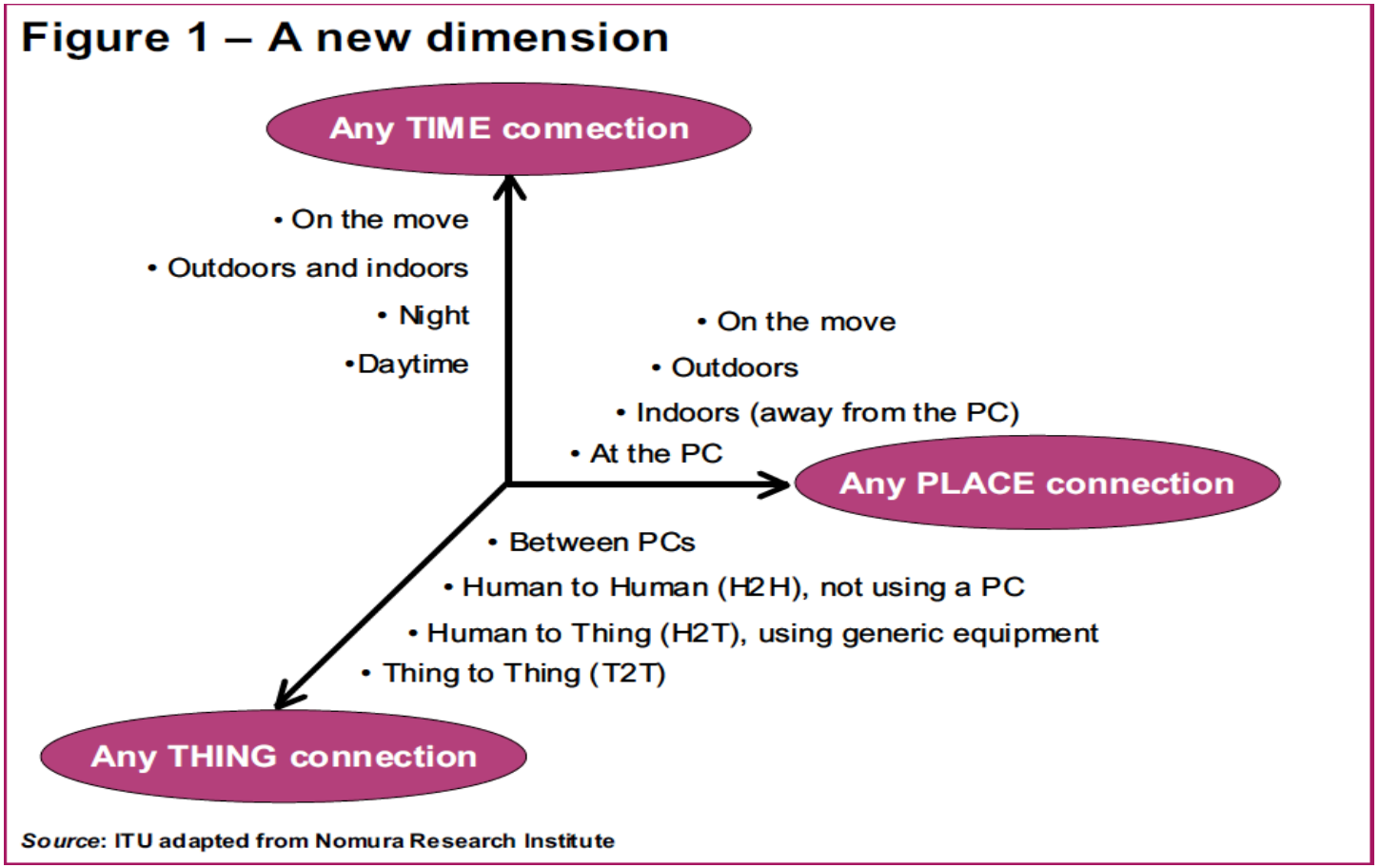
What is Internet of Things?

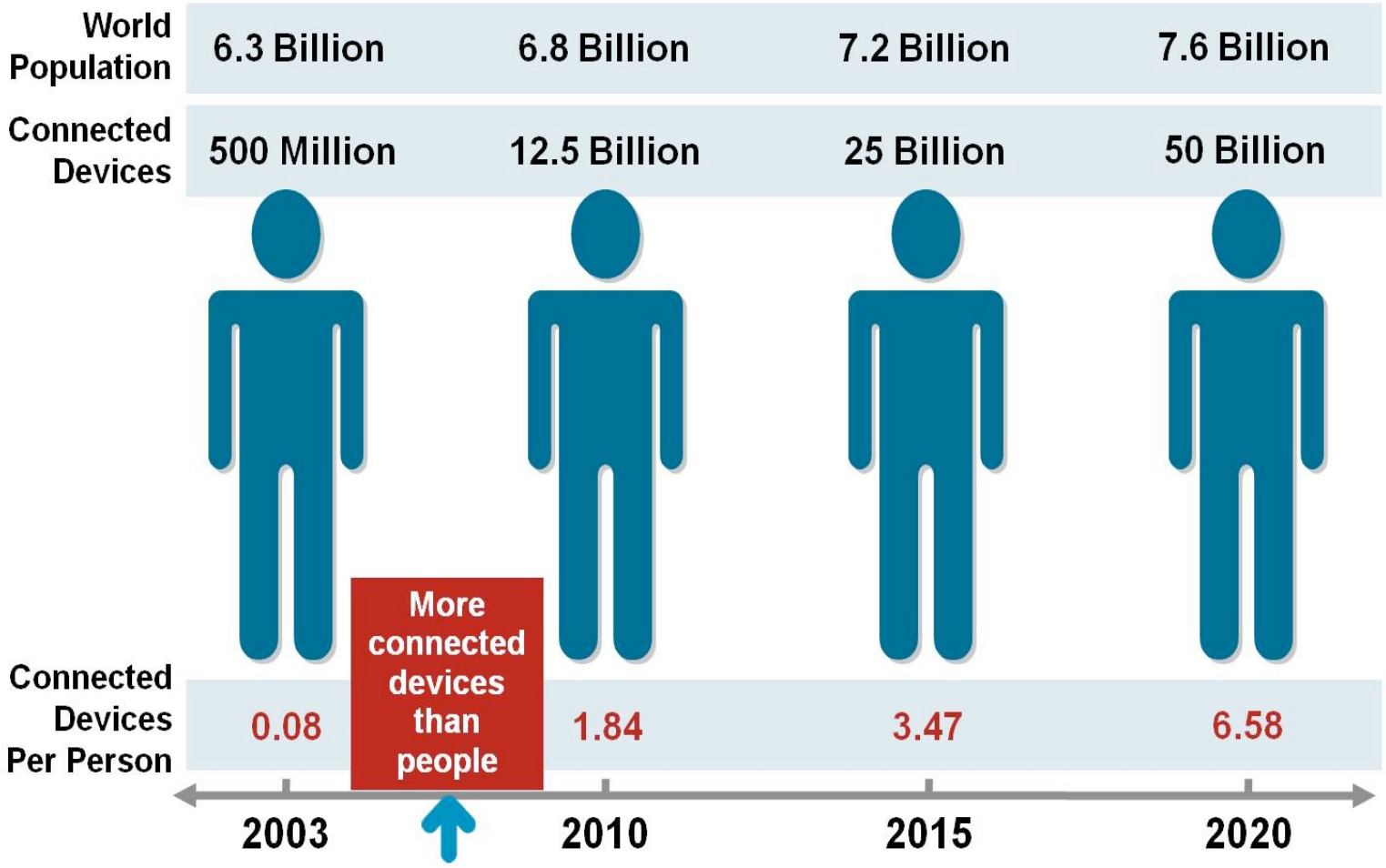
- The Internet of things refers to a wireless network between objects. The Internet of Things (IoT) is the interconnection of uniquely identifiable embedded computing devices within the existing Internet infrastructure
- The term Internet of Things was proposed by Kevin Ashton in 1999.
- Internet of Things first became popular through the Auto-ID Center at MIT.
- Today the number of things connected on internet is more than the people living on Earth.

Internet of things

- From any time, any place connectivity for anyone, we will now have connectivity for anything



according to abi research more than 30 billion devices will be wirelessly connected to the internet by 2020.



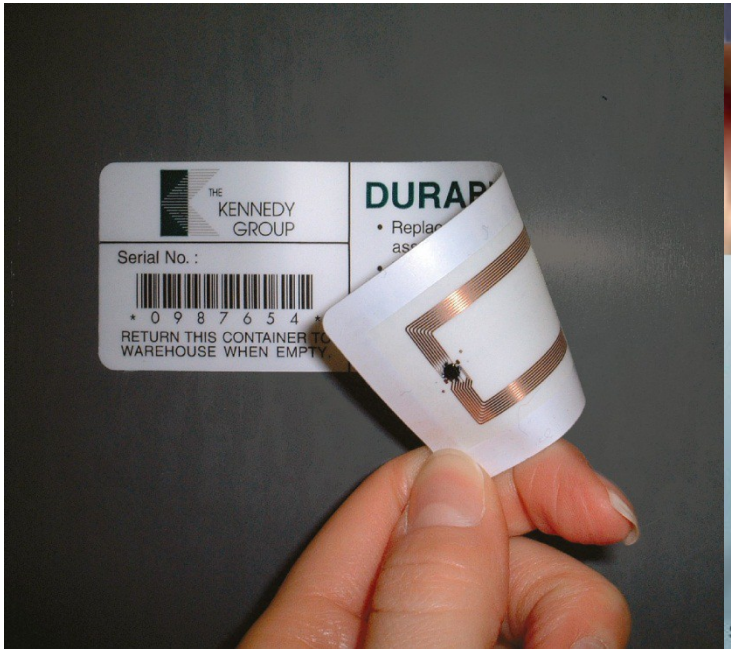
Why internet of things ??

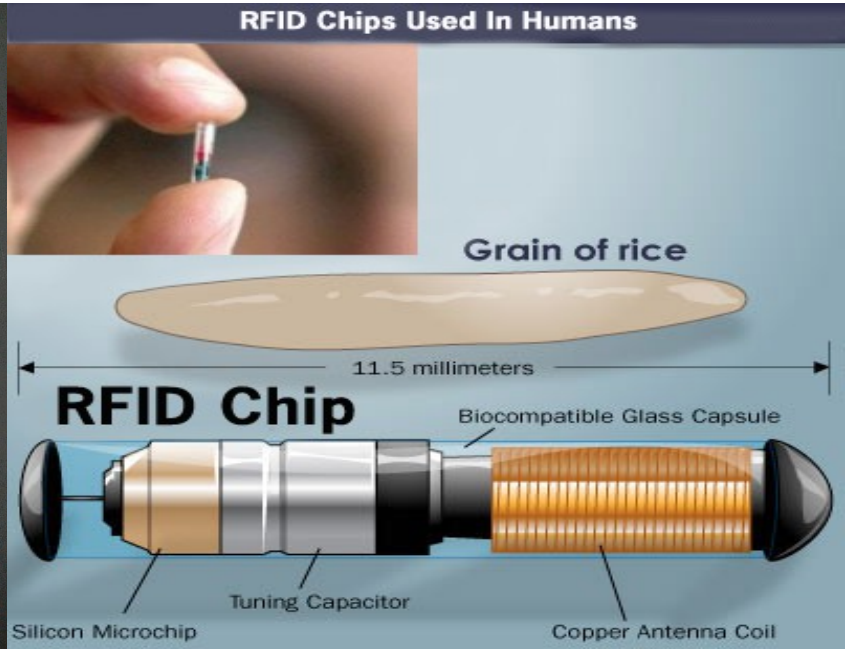
- Better Relationship Between Human and devices.
- Universal transport & internetworking.
- Integration with the Internet implies that devices will utilize an IP address as a unique identifier
- Improve the resource utilization ratio.
- Dynamic control of industry and daily life.
- IoT is recognized as one of the most important areas of the future Internet.

Technologies

- **RFID (Widely used in Transport)**

- A radio-frequency identification system uses tags, or labels attached to the objects to be identified.





RFID Applications

- Widely used in Transport and Logistics.
- Tracking of persons and animals.
- Tracking of goods.
- RFID inserted in passports.
- RFID can help detect and retrieve stolen cars.

Technologies

- **Wi-Fi IEEE 802.11**
  - Connect to the internet wirelessly using radio waves)
  - Widely used for both indoor and outdoor environment.
  - Very common
  - General Purpose

- **Barcode & QR Code**
  - A barcode is an optically machine-readable label that is attached to nforma n.

Technologies

- **Sensors and Smartphones**

- Sensors are used in everyday objects such as touch- sensitive elevator buttons.

- In the near future almost everybody will probably have a Smartphone.

- **Zig Bee IEEE 802.15.4**

  Low cost.

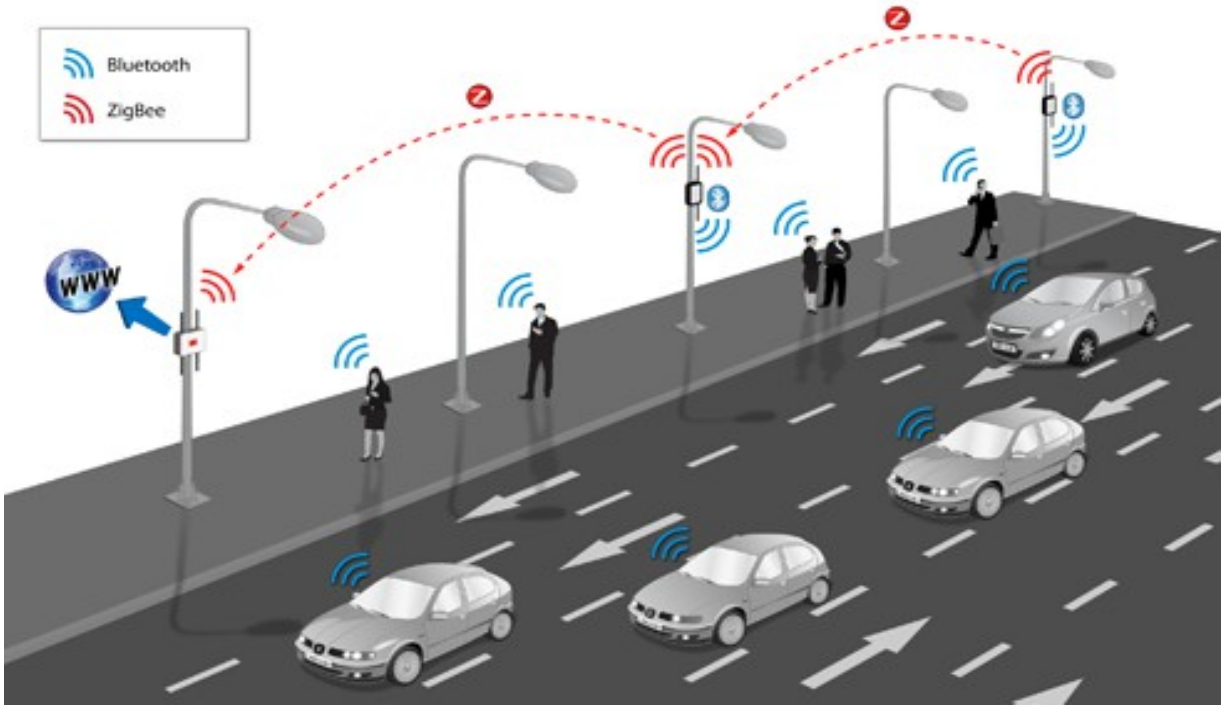
  Long battery life.

  Secure networking.

- Physical range10 to 100 meters.

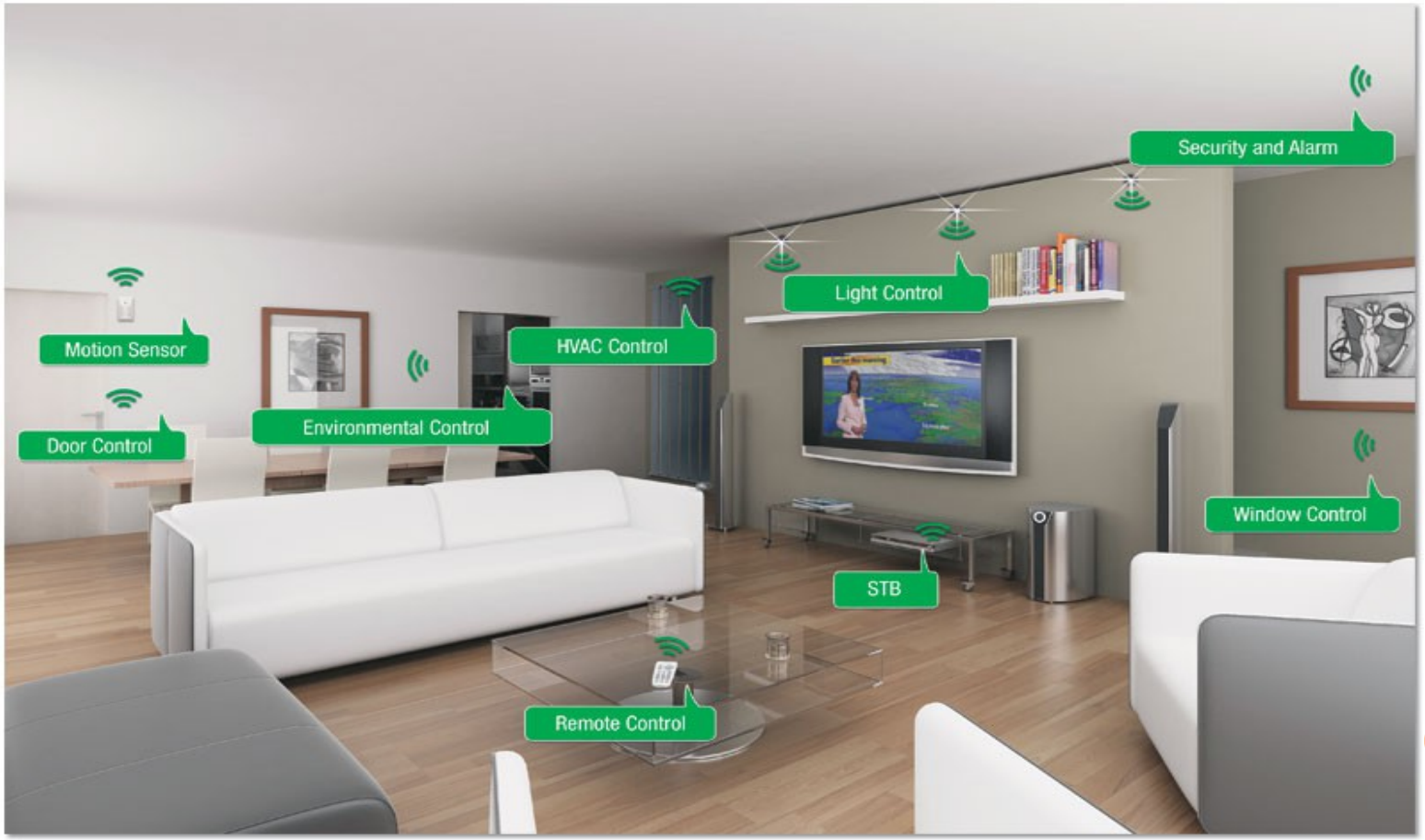
Applications

- Traffic Monitoring

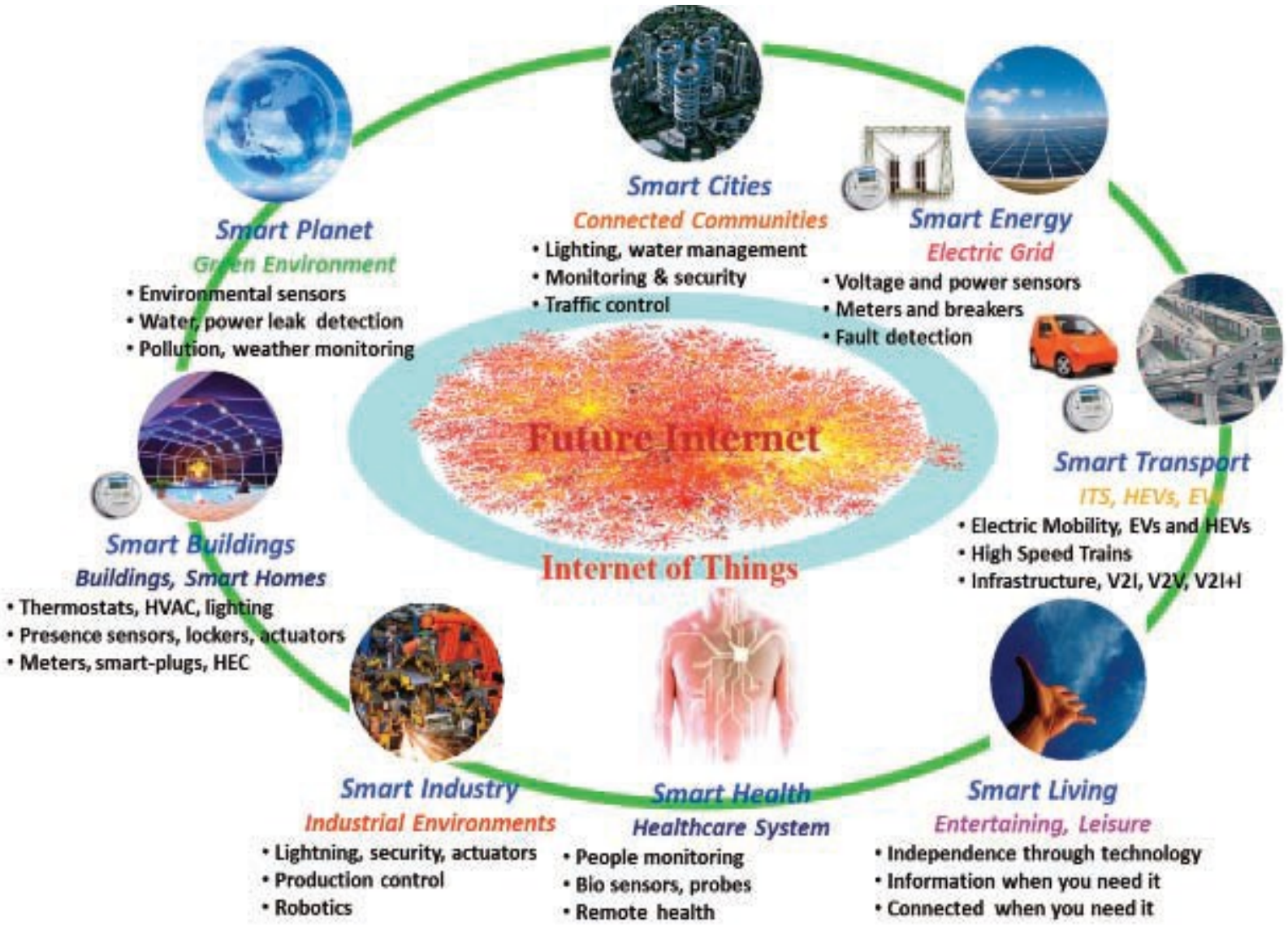


Applications

- Intelligent Home



Applications



applications

- **Smart Parking**

  Monitoring of parking spaces availability in the city.

- **Green Houses**

  Control micro-climate conditions to maximize the production of fruits and vegetables and its quality.

- **Indoor Air Quality**

  Monitoring of toxic gas and oxygen levels inside chemical plants to ensure workers and goods safety.

- **Water Leakages**

  Detection of liquid presence outside tanks and pressure variations along pipes.

- **Animal Tracking**

  Location and identification of animals grazing in open pastures

IoT future focuses

- As the "Internet of Things" continues to grow, businesses will uncover new ways to use machine-to-machine technology to increase business intelligence, revenue streams, cost savings and business proficiency.
- So far important focus on sensors and architectures
- Standardization
- Design
- Environmental impact

IoT future focuses

- Privacy
- Autonomy and control
- New considerations on
  - Identification
  - Privacy and Security
  - Users Interface

International cooperation

- Joint IoT activities are encouraged (e.g China, Japan, Taiwan, S Korea)

- IEEE International Conference on Internet of Things was held in Beijing, China during August 20-23, 2013.

- IEEE World Forum on Internet of Things 2014 will be held in Seoul, South Korea in March 2014.

conclusion

- The Internet of Things is closer to being implemented than the average person would think.
- Most of the necessary technological advances needed for it have already been made, and some manufacturers and agencies have already begun implementing a small-scale version of it.
- The increase in development will lead to innovations for new product lines and services that will impact the way we live our everyday life.