Networks and Protocols

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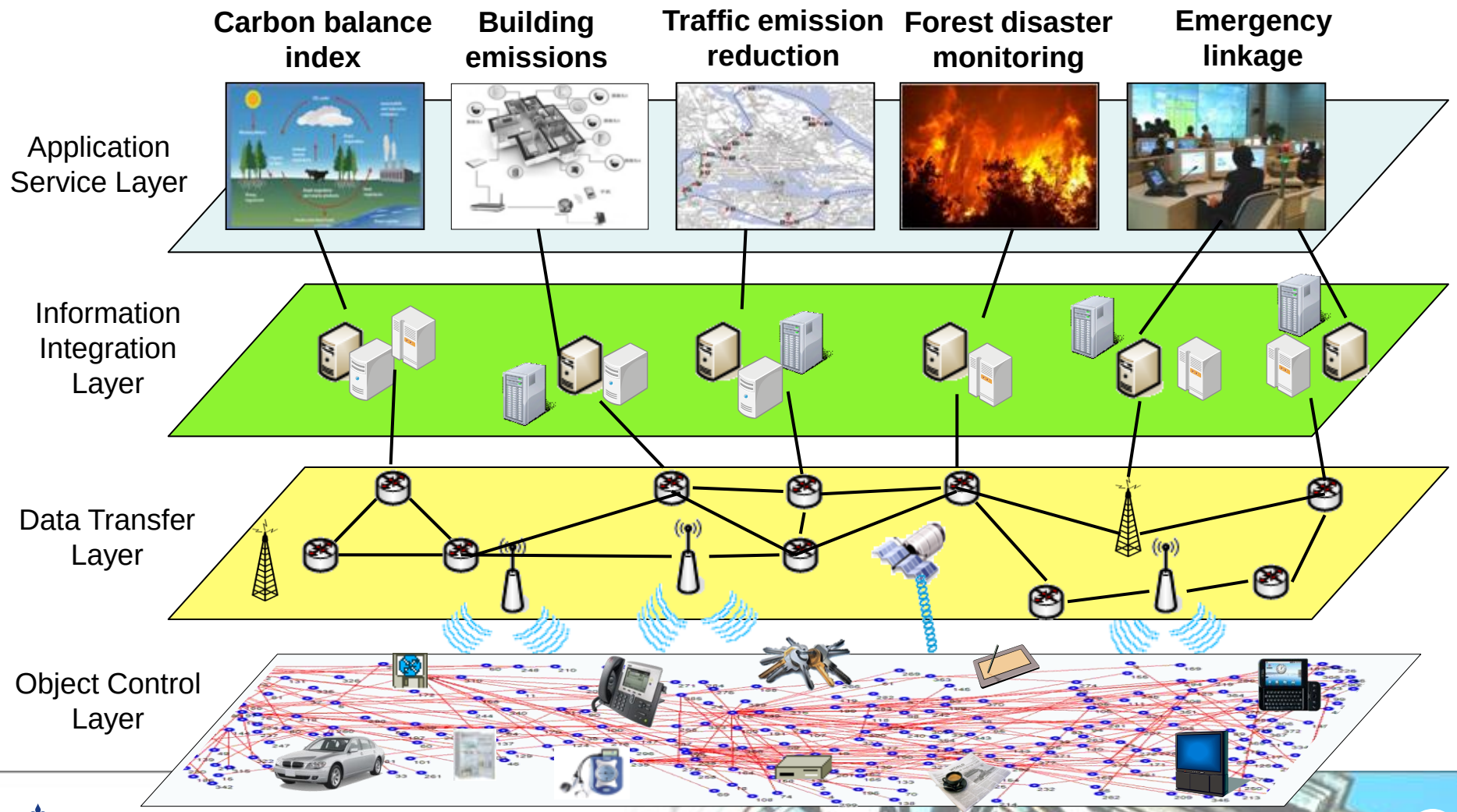
What is Internet of Things?

What is Internet of things (2)?

Available from International Telecommunication Union (ITU) website

How do these things connected together?



Internet of things - Challenges

- Low power
- Large scale devices/objects
- Better connectivity
- Smart and automated

Module Aims

- This module provides basic communications theory and descriptions of protocols for IoT scenarios under personal-area and local-area networks.
- By the end of this module, you should be able to understand, analyse and design communication systems, specifically those for communication between objects for IoT scenarios.

Module content

- The module provides a broad coverage of the principles of modern telecommunications systems including underlying theoretical concepts of :
  - Modulation
  - Transmission systems including equalisation
  - Information theory
  - Coding source coding
  - Queuing theory
- Wired and wireless network protocols considered for PANs and LANs

Assessments

- Exam – 88%
- In-class tests– 12%

Course materials

- Data communications and networking, Behrouz A. Forouzan, ISBN: 0073250325
- Communication Engineering Principles, Dr Ifiok Otung, ISBN: 0333775228
- Fundamentals of Wireless Sensor Networks: Theory and Practice (Wireless Communications and Mobile Computing), Waltenegus Dargie, Christian Poellabauer , ISBN: 0470997656
- PPTs and reading materials from Qmplus

Schedule [1]

- **Part 1: OSI, WLAN and PAN access techniques**
- OSI and IoT architecture model
- Data link layer attribute
- Multiple access: Reservation based approach and contention based approach
- Underlying technologies
  - Wireless LANs
  - Wireless PAN

Schedule [2]

- **Part 2: Basic communication theory**
- Sampling, quantisation and pulse code modulation, delta modulation
- Information theory
- Modulation
- Line coding
- ISI and Equalisation
- Radio propagation
- Error coding