# Internet of Things

## Session 26

## INST 346

## Technologies, Infrastructure and Architecture

# Cyber-Physical Systems

- Networked Sensors

- Networked Computing

- Networked Actuators

# Some Internet-Connected Devices

- Your refrigerator
- Your thermostat
- Your kid's My Friend Cayla doll
- Your Roomba
- Voting machines in Virginia
- Your car
- Malaysia Airlines flight 370
- The US electrical distribution network

# Interconnection

- Routable

- Firewalled

- Air gapped

# Some Applications

- Home automation

- Global supply chains

- Amazon Go (the cashierless store)

- Predictive maintenance

- Smart cities

# Enablers

- Embedded processing

- Wireless networking

- Cloud computing

- Sensors

- Actuators

# Sensing

- Feature detection
  - Light, sound, radio, temperature, pressure, …
  - Active or passive
- Tagged objects
  - RFID, QR, bar codes
- Untagged objects
  - Motion sensing, face recognition

# Actuators

- Lighting
- Heating and cooling
- Traffic signs
- Industrial equipment
- Drawbridges
- Dams
- Navigation systems

# Some Issues

- Security

- Privacy

- Robustness

- Interoperability

- Safety

- Trust