IoT systems

- IoT system applications
- IoT system architectures

IoT system applications

- Soft real-time networked embedded system.
  - Input devices: tags, sensors, etc.
  - Output devices: motor controllers, displays, etc.
- Examples:
  - Computer-readable identification code for objects.
  - Appliances controlled by cell phone interface.
  - Sensor network with analytics.

Devices

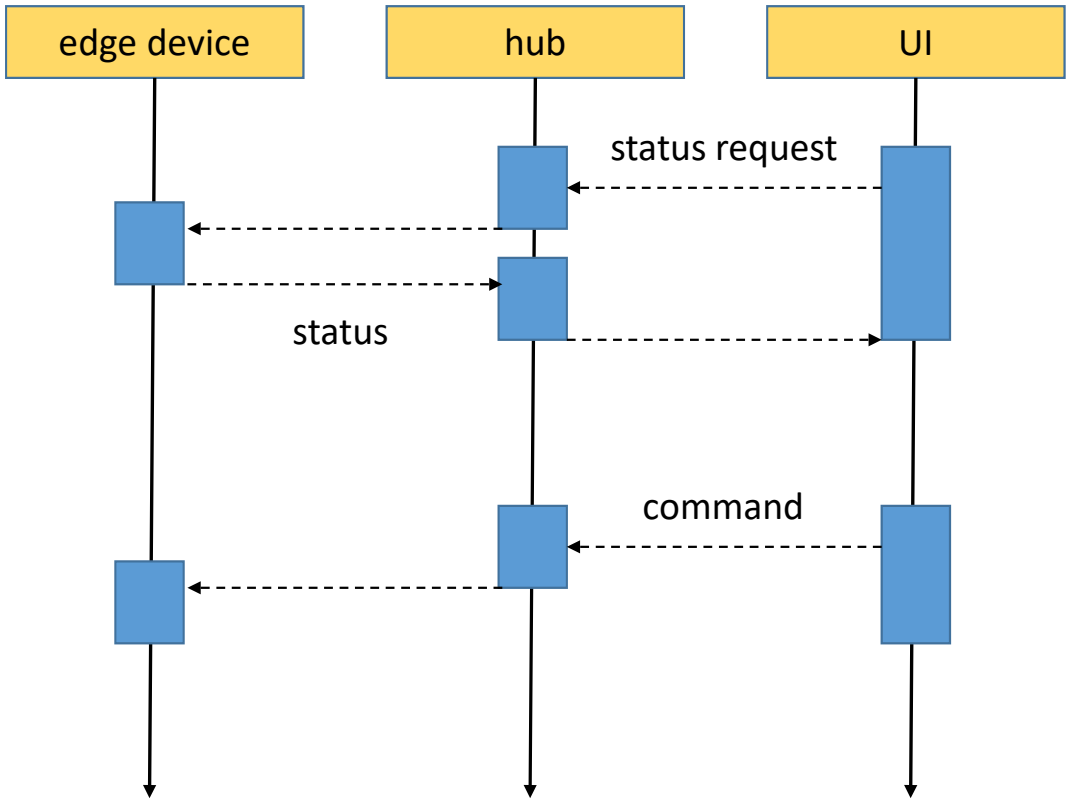
- People:
  - Implanted devices in the body.
  - Wearable devices on the body.
  - Environmental devices outside the body.
- Objects:
  - Interior: temperature sensor, etc.
  - Exterior: RFID, etc.
  - Environmental: camera, motion sensor, etc.

RFID

- RFID tag can provide object ID (Electronic Product Code, etc.), other information.
- Many tags are read-only, some are writable.
- Two types of tags:
  - Passive transmits only when it receives a request.
  - Active tag both transmits independently and responds to requests.
- Passive may also be used to refer to tags with no internal power source.
- RFID tags may operate in several different bands and at different ranges.

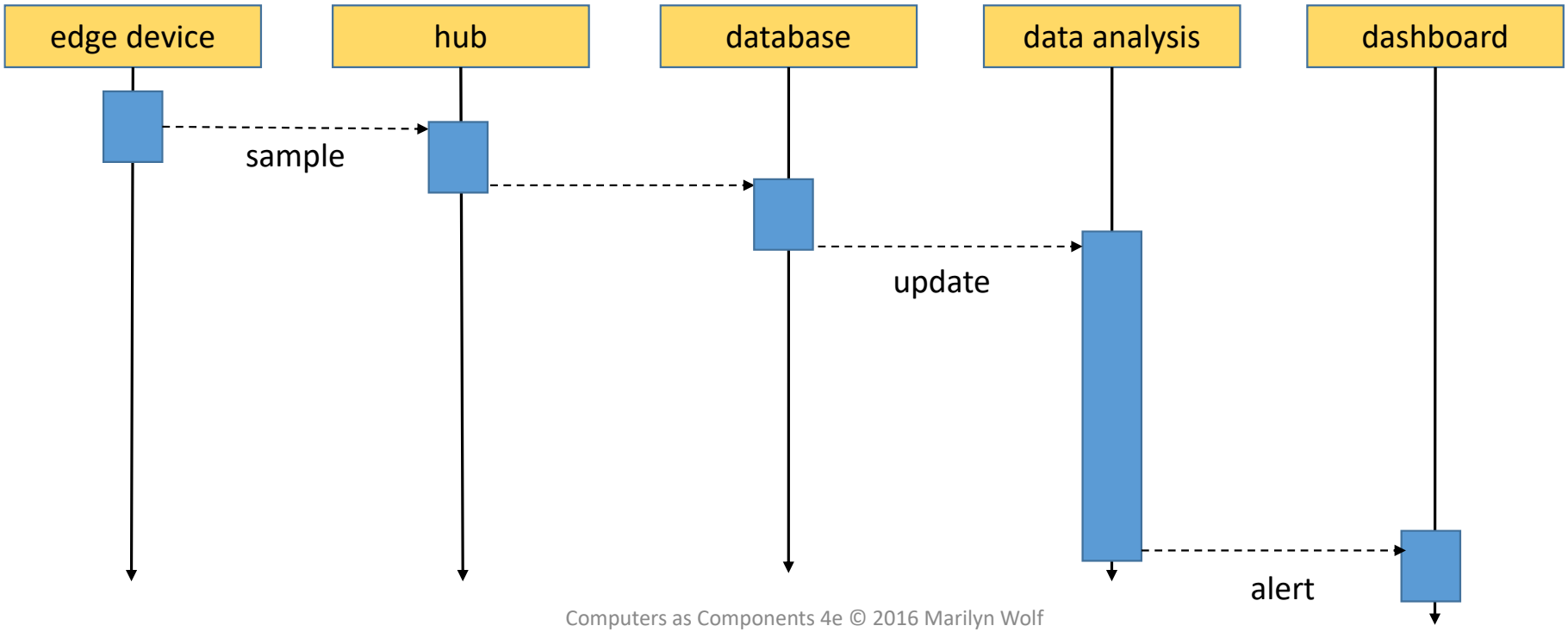
IoT system architectures

- Edge: I/O devices.
- Cloud: centralized processing.
- Smart appliance = connected appliance + network + UI.



IoT system architectures, cont'd.

- Monitoring system = sensors + network + database + dashboard.



IoT system architectures, etc.

- Control system = sensors + database + controller + actuator.