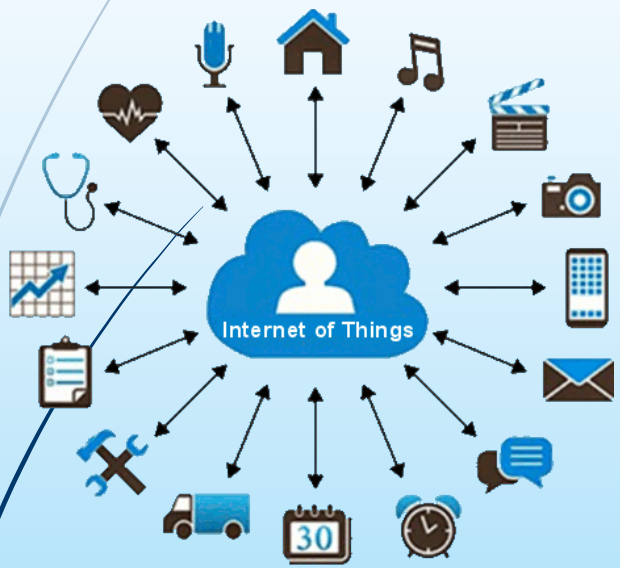
EPC for IoT - MBED OS



- 4th Week: Hands-on-lab
  - Exercise

RTOS – Hands-on lab

- **Exercise: to design a simple brightness control system**
- **mbed OS 6 empty project from mbed studio**
- **15% of the final assessment!**

- **Considerations:**
  - Be aware that RGB LEDs may be either common anode/cathode mode
  - The USER button already integrates a debounce circuit

RTOS - Hands-on lab

Minimal features:

- Two working modes: NORMAL and BLUE modes. The USER button switches the working mode.
- A brightness measure must be taken every 2 seconds in NORMAL mode. Depending on the read value, the RGB LED…
  - turns RED if brightness is below 33%.
  - turns YELLOW if brightness is between 33 and 66%.
  - turns GREEN if brightness is above 66%.
- The RGB LED may be controlled either using DigitalOut or BusOut classes.
- In BLUE mode the RGB LED is BLUE and no brightness measures are taken until back in NORMAL mode.
- In both modes the information is displayed on the mbed studio terminal [1p]
- To control brightness measure and serial connexion with an independent thread (using a new file for it) [1p].

Extra features:

- If a long press (1 second long) is detected in the USER button, the system enters OFF mode. In such case, RGB LED turns OFF and serial connexion sends the message “System OFF”.
- ~~[discarded] To read from the sensor at least one of the Humidity/Temperature parameters.~~

Assessment:

- Minimal features – Up to 5/10 points
- Extra feature – Up to 5/10 points