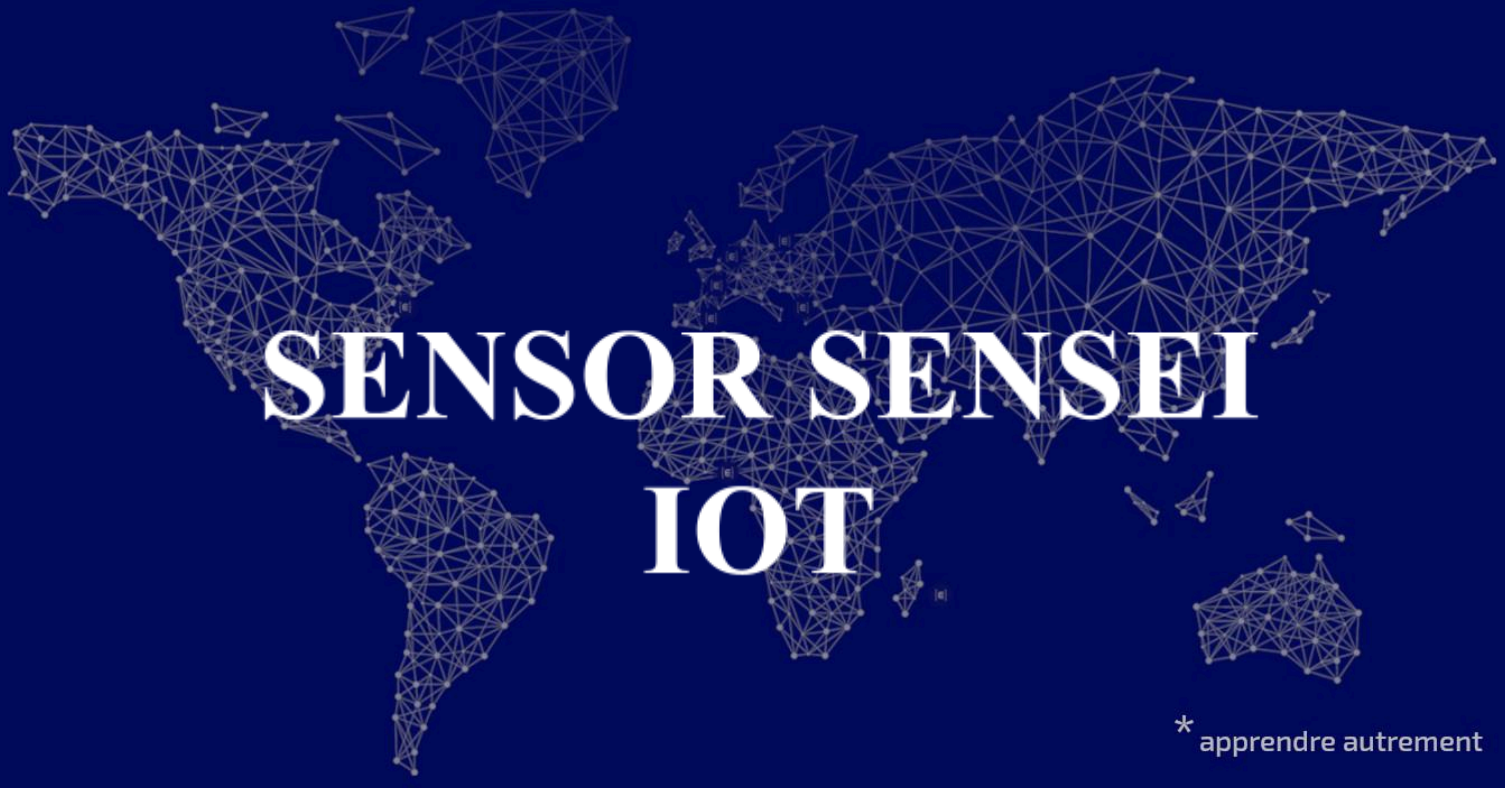
EPITECH.
L'ECOLE DE L'EXPERTISE INFORMATIQUE

Battery Life Analysis for ESP32 LoRa

T-IOT-902

MSC-2025



SENSOR SENSEI IOT

* apprendre autrement

ESP32 Battery Life Calculation with a 3000 mAh Battery

Operating Cycle Data:

- Total cycle duration: 3600 seconds (1 hour)
- Active phase: 11 seconds at 1.23 mA (sensor reading + LoRa transmission)
- Sleep phase: 3589 seconds at 0.80 mA (deep sleep)

Average Current Consumption Calculation:

Conso_avg = [(11 x 1.23) + (3589 x 0.80)] / 3600
= (13.53 + 2871.2) / 3600
= 2884.73 / 3600
= 0.8013 mA

Battery Life Estimate with a 3.7V / 3000 mAh Battery:

Battery Life = 3000 mAh / 0.8013 mA
≈ 3744.7 hours
≈ 156 days
≈ 5.2 months

Conclusion:

With an average current consumption of 0.8013 mA, the ESP32 is expected to run for approximately **156 days** on a **3000 mAh battery**, which corresponds to a little over **5 months** of operation.