



28 oktober 2019

# 6-IoT Low Power

## Project: Smart Dumbbell

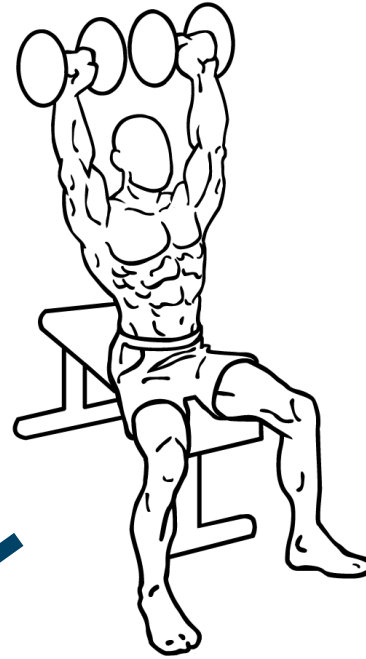
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*Mohammad Amir*

*Wouter Jacobin*

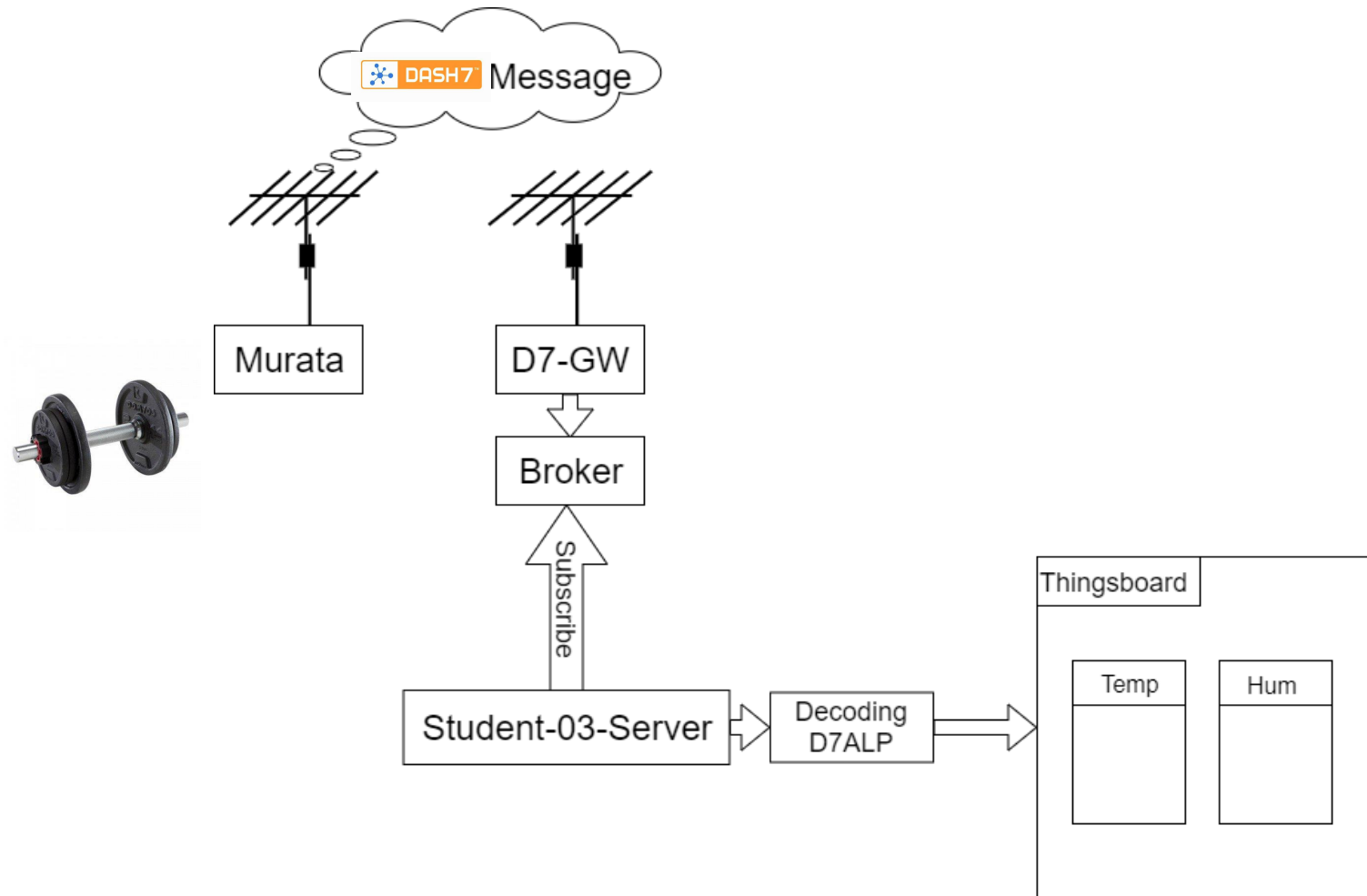
*Gauthier de Borrekens*

# Concept



- Alert if people don't put their dumbbell back

# Concept



# General scheme

1. Dumbbell is picked up → accel sends interrupt
2. Each min a dash7 message is send with
  - a. RSSI's to each gateway
  - b. Humidity and temperature
3. Ready to rep? push button → rep count starts → send dash7:
  - a. Bluetooth config
  - b. Humidity and temperature
4. Done with rep? push button → rep counts stops → send dash7:
  - a. Bluetooth config
  - b. Number of reps
  - c. Humidity and temperature
5. If no interrupt for 1 min → go to sleep
6. If location  $\neq$  rack → error on thingsboard
7. If 3 consecutive send fails → switch to LoRaWAN

# Embedded

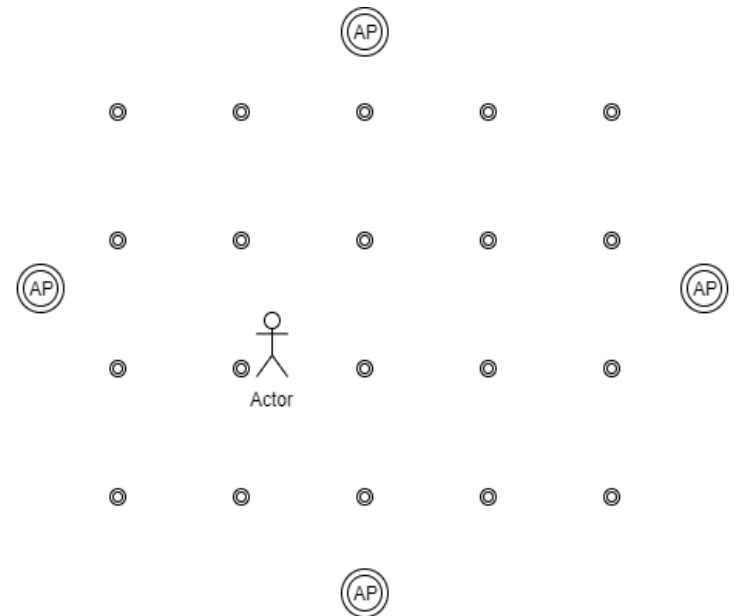
- Done
  - ✓ Humidity and T is measured
  - ✓ Accelerometer interrupt when picked up
  - ✓ Accelerometer interrupt each rep
  - ✓ Sleepmode implemented
  - ✓ Timer1 → LoRaWAN message sent each min
  - ✓ Timer2 → 1min no interrupt → go to sleep
  - ✓ Button → Start/stop rep count
  - ✓ Check success of dash7 message
- To do
  - Implement payload
  - Switch from dash7 to LoRaWAN
  - Bluetooth configuration

# Communication

- Done
  - ✓ Subscribing to Message broker
  - ✓ Implementing D7ALP decoder on server
  - ✓ Sending information to thingsboard
  - ✓ Visualizing Data on Thingsboard
- To do
  - Implementation + visualization entire payload
  - LoRaWAN thethingsnetwork to thingsboard

# Localisation

- Done:
  - ✓ Algorithm for KNN-localisation
  - ✓ MongoDB
- To do:
  - Creating trained dataset
  - Integrating failed connection
  - Implementing on server







17 juni 2019