IoT and Machine Learning for automated COM-B profiling: sedentary behaviour usecase

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Machine Learning
- Chair occupancy
- Learn COM-B profile
- Derive optimal personalized goals

Intervention Goals & Techniques

**REDUCE OCCUPATIONAL SEDENTARY BEHAVIOUR**

**STAND UP!**
- Standing time
- Num of sit-to-stand transitions per hour

**SIT LESS!**
- Sitting time
- Num of Prolonged Sitting cycles (>30 mins sitting)

**MOVE MORE!**
- Stepping time
- Number of steps
- MET minutes of moderate PA

IoT
- Smartphone app
- Xiaomi Mi Band
- Nordic Thingy 52
- Raspberry Pi 3
- Beacons

The Data
- Sedentary Behaviour/PA
  - Steps (SA, AT)
  - Activity Recognition (SA)
  - Chair Movement (NT)
- Automated COM-B User
  - Bluetooth Discovery (SA + SA, SA + RPI)
  - Microphone (SA)
  - Location (SA)
  - Environmental: CO2, humidity (NT)

Quantified COM-B Model

The Behavioural Framework (by Michie et al*)

Office Health Dashboard Screenshots

*The behaviour change wheel: A new method for characterising and designing behaviour change interventions, 2011