# Labs and Teamwork

## QUICK GUIDE

Introduction to the Lab environment, available materials, conventions, etc.

# Organization

- Schedule
  - Every Monday
    - From 16:00 to 17:30 (with teachers)
    - Up to 18:30, with partial support (mainly in the second half of the course)
  - 4 in-lab exercise
  - 8 supervised group work for project development
    - with teachers

# Organization

- Lab PCs
  - Pre-installed with
    - Ubuntu Linux 12.04
    - Python 2.7.x
    - Eclipse + PyDev
  - Log-in
    - With your portal credentials
    - Procedure reported on the login screen
- You can bring your own computers/materials

# Materials (currently available)

- 3 Raspberry Pi
  - Bundled as development bench
  - Accessible through ssh or http
    - Shared components
  - Pi-1 hosts a RazBerry module (Z-Wave)
  - Pi-2 hosts a ZigBee dongle
  - Pi-3 is customizable on request

# Hue

- 1 Philips Hue bridge
- 3 Hue bulbs
- 1 Friends of Hue LED strip


# Z-Wave

- 5 Metering Plugs
- 3 Multiple Sensors
  - Light
  - Humidity
  - Temperature
  - Movement

# ZigBee

- 5-10 Metering Plugs

# MyHome

- Demo case with varius components
  - sponsored by BTicino

# Pebble

- 2 Pebble smart watch

# Material on request

- 3 Raspberry Pi
- 2 RaZberry (Z-Wave)
- 2 ZigBee dongle
- Arduino boards
- EnOcean devices (temperature sensor, rocker-switch)
- Spare hardware
  - Breadboards
  - LEDs
  - Resistors
  - ...

# Material to acquire

- 3 Z-Wave RazBerry modules
- 3 USB-Bluetooth adapters
- 3 USB-WiFi adapters
- 3 LCD Touchscreen 2.8”
- 2 USB Microphones for RPi
- 2 USB WebCams
- 2 Proximity sensors for RPi
- 5 Keyfob RFID/NFC
- 3 RFID/NFC Stickers
- 5 RFID/NFC cards
- 2 RFID/NFC bracelets
- 1 Active speakers
- 1 Mini Thermal printer
- 2 Bluetooth beacons

# Reference APIs


- Hue REST API
  - for Hue devices
- Dog REST API
  - for bridging multiple networks
    - MyHome
    - ZigBee
    - Z-Wave
    - ...
- Z-Way REST API
  - for Z-Wave devices

# Group projects

## SUMMARY

Requirements for the final projects and team composition.

# Final project

- Theme
  - The “Smart Cittadella Politecnica”
- Topic
  - Chosen together upon group proposal
- You can use the tools made available during the course
  - and build what you need, if not available
- Mainly carried during labs

# Requirements

- Code versioned on a private/public GitHub repository (1 per team)
  - https://github.com/AmI-2015
- Project documentation with photos / videos (GitHub pages)
  - linked to your team repository
- Must not replicate existing (available) devices
- No hardware-only projects

# Teamwork

- 3-4 people per team
- You choose the team components
  - we can help, if needed
- Your capability to work in group will be evaluated, too
- Team registration at
  - https://docs.google.com/document/d/1JXu_9am3sDKGkWT15lBFJND1jp3OF0f8zAO8Ba--g5c/
  - Deadline: **March 20, 2015**

# Questions?

**01PRD Ambient Intelligence: Technology and Design**

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