What each group will do in the Project for the ICT part:

- Set up a Virtual machine with Ubuntu:
  - Oracole VirtualBox (https://www.virtualbox.org/)
  - Ubuntu 20.04 (https://www.ubuntu-it.org/)
- Set up a python 3 virtual environment
- From Design Builder generate an Energy plus file IDF and convert it to the 9.0.1 version
- Create a customized weather file for the case study location

What each group will do in the Project for the ICT part:

- Perform an iterative simulation over design parameters using or Eppy or Besos frameworks in order to find optimal design parameters

- Simulate the energy dynamics of the building using optimal parameters

- Emulate the presence of sensors and meter in building

Emulate the presence of sensors and meters in building:

- The csv output of the Energy Plus simulation contains data on:
  - Temperature profiles in the rooms
  - Hearting and cooling consumption
  - Presence of people
  - Electricity consumption
  - …

You have to read this data and collect it or trough MQTT or REST protocols

What each group will do in the Project for the ICT part:

- Store the data in to an InfluxDB database

- Create dashboards to show the collected data using Grafana

- Perform the energy signature characterization over the simulated and collected data.

What each group will do in the Project for the ICT part:

- Choose a possible prediction algorithm among the one shown in the course or from **literature review**
  - Grey Box modelling (E.g. Kalman Filters, …)
  - Black Box modelling (E.g. Neural Networks, Multivariate regression, …)

The objective will be the prediction of:

- Temperature profiles
- Heating/cooling power
- Air ventilation rate

Each group at the end will have to deliver us the :

- Python scripts for editing weather files

- Python scripts for find optimal values

- Python scripts for emulating the sensor presence

- InfluxDB data base with collected data

- Grafana service for the dashboards

- Python scripts for Energy signature characterization

- Python scripts for variable prediction

A pdf report that presents the **literature review** on modelling techniques (min 3 papers) and the results of the project.