Knowledge Graph Application Project

The main objective of this project is to create an application to generate meaningful information from row data.

Step 1: Choose a set of resources (Thermometer, presence detector, humidity, wind speed, air pollution, glucometer, etc.) and the domain where they are deployed (Domotic, smart cities, HealthCare, tourism, environment, transport, etc.)

Step 2: Use existing datasets to build your own dataset as a part of or a fusion of existing datasets
Step 3: You can use RDF translators to translate CSV or JSON to RDF:
- JSON-RDF https://www.w3.org/2016/01/json2rdf.html
- RML http://rml.io/ et https://rml.io/tools/rmleditor/
- RDF123 https://ebiquity.umbc.edu/project/html/id/82/RDF123
- RDF Extension https://logd.tw.rpi.edu/technology/rdf_extension_google_refine
- XLWrap https://xlwrap.sourceforge.io/
- Csv2rdf4lod https://www.w3.org/2001/sw/wiki/Csv2rdf4lod
- Tarql https://tarql.github.io/

Step 4: Create an ontology that describe your domain
Step 5: Use/adapt the Jena lab to generate meaningful information and actions (alarms, recommendations, actions on objects (open, close,...), etc.). For this purpose, you have to write appropriate sparql queries and rules.

Useful Resources:
- A study of existing Ontologies in the IoT-domain: https://hal.inria.fr/hal-01556256/document
- Linked Open Vocabulary for Internet of Things: http://lov4iot.appspot.com/?p=ontologies#home
- City Pusle dataset collection http://iot.ee.surrey.ac.uk:8080/datasets.html
- CityBench : https://github.com/CityBench/Benchmark
- IoT datasets : https://github.com/thieu1995/iot_dataset
- CASAS : http://casas.wsu.edu/datasets/
- ARAS : https://www.cmpe.boun.edu.tr/aras/
- Data Gouv : https://www.data.gouv.fr/fr/datasets/
- UCI : http://archive.ics.uci.edu/ml/index.php
- Ontologies :
  - SSN https://www.w3.org/2005/Incubator/ssn/ssnx/ssn,
  - SAO http://iot.ee.surrey.ac.uk/citypulse/ontologies/sao/sao

Recommendations:
The proposed steps are not necessarily sequential:
- You can start by choosing an existing ontology about a particular domain (eventually adapt it for your proper project) and then try to find datasets that fit a part of your ontology. If not possible, you can simulate a suitable dataset. Or,
- You select a specific dataset and then build a corresponding ontology. This ontology can be enriched by existing ontologies in the domain

Work organization: groups of 2 students
Restitution of the work:
- A synthetic report that explain your choices and the design of your application
- An archive with the project code