Conception and implementation of a distributed platform for the experimentation of distributed computing in the IOT

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JThings defines a P2P network of communicating components. It will be used at Université Côte d'Azur/Inria/I3S as soon as it is ready, to:

- investigate decentralized algorithms for IOT
- provides distributed DB for time-based scientific data

The main idea behind JThings is to be able to:

- deploy used-defined components on computers
- expose a complete yet simple communication API
- efficiently execute parallel/distributed code

#1

The student will have to:

- implement the following typical use cases
  - distributed/parallel computation on Inria cluster
  - IOT network simulation
- identify flaws and limitations
- propose/implement solutions and related unit tests

#2 — interoperability using REST

The student will have to:

- understand the architecture of Things' REST interface
- understand the requirements of Grafana's REST interface
- adapt JThings to be able to connect both
- defining Grafana workbenches to monitor JThings

#3 — Web monitoring interface

The student will have to:

- make a State of the Art of Web libraries for interactive data visualization
- identify the changes in JThings in order to enable interoperability (that I will implement)
- implement a Web-based demonstrator (most probably in JavaScript)

Working conditions

Depending of the sanitary situation:

on site the student would have an office at Inria

teleworking we would maintain a permanent contact using a collaborative solution (now using Slack with a student and it's just fine).