

# Master's Thesis

## « Rent a Sensor: A Support Platform for Conducting Sensor Networks Experiments in a Shared Environment »

### Background

While simulation is a useful evaluation tool for developing sensor network protocols, in the end the protocols must be tested there where they are supposed to run: in a real world sensor network deployment. While sensor hardware is expected to become cheaper, at the moment having a nontrivial sensor network size at hand still requires some financial effort and is not always possible. Consider as an example a wireless sensor network class where each participant is expected to run experiments in a 100 node network deployment.

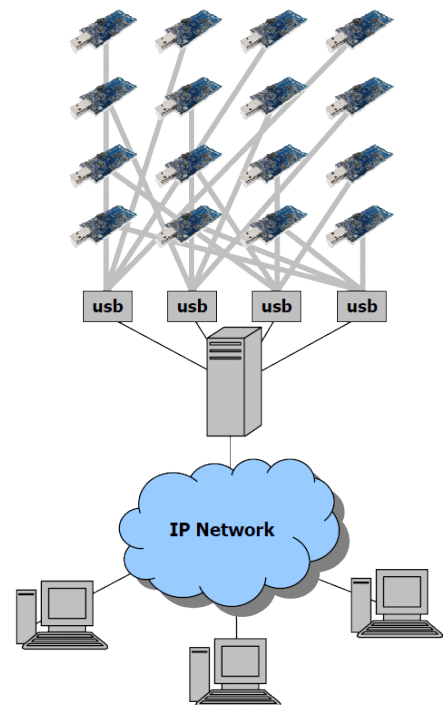
### Work Description

This work forms one of the first steps of our long term goal to build an open hardware/software platform which supports a detailed monitoring of real-world sensor network deployments. The task of this thesis is the design, implementation and evaluation of an open sensor testbed architecture which can be shared by many users over the internet.

As sketched in the figure, sensor nodes will be connected to a server using a set of USB hubs. The server will bridge the sensor nodes to the internet allowing clients controlled access by means of an experiment schedule (e.g. using GoogleCalendar as Web-Service). The server allows flashing nodes with new program images, configuring nodes for experiments, conducting experiments, collecting log file data, and retrieval of experimental results.

The milestones of this work are as follows:

- Setting up a small testbed.
- Developing the server backend.
- Developing the client frontend.
- Conducting experiments with legacy code.



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