A bottom up sensor testbed

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1 Pilot Charter

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1.1 Pilot purpose or justification

The purpose of this pilot is to build a sensor platform that can be attached to guifi nodes to gather and share sensory data.

1.2 Measurable pilot objectives and related success criteria

- Gather data about temperature, humidity, light and noise.
- Share the data as open data.
- Deploy at least two nodes and gather data for at least two weeks.

1.3 High-level requirements

- Outdoor enclosure.
- Use open hardware and open software to the possible extent.
- Use standardized interfaces to integrate with other projects.

1.4 High-level pilot description

The goal is to use an arduino platform to create a bottom-up broadband wireless sensor networks. As guifi.net has already over 20,000 nodes, the idea is to co-locate the sensory platforms together with the guifi.net nodes and use the guifi.net network to transmit the data. This data should be gathered and shared. Ideally, the pilot should include a presentation interface for the users to visualize the data.

1.5 High-level risks

A possible risk is that the prototypes are not rugged enough for outdoor environments. It is also a risk that the prototype is not stable and needs to be reset very often.

1.6 Summary milestone schedule

- From 20/09/2013 to 23/09/2013
  - Establish the general idea of the TFG and specifics goals.
- From 23/09/2013 to 11/10/2013
  - Specify the tasks to do and make a planning.
- From 11/10/2013 to 30/10/2013
  - Connect first sensors to the Arduino.
- From 31/10/2013 to 10/01/2014
  - Connect to guifi network and upload data to an open data platform.
- From 10/01/2014 to 01/06/2014
  - Integration of sensors and communication aspects.
  - Install prototypes.
  - Data sharing and visualization.
  - Data analysis and evaluation of the testbed.
- From 02/06/2014 to 30/06/20014
  - Preparation of the final memory.
- From 01/07/2014 to the date of the presentation
  - Make the presentation.

1.7 Summary budget

The cost of this pilot will be approximately 4000 . This quantity is for the scholarship to the student that will develop this pilot, budget for attending a conference or visiting collaborators, and the purchase of the necessary hardware.

2 Tutorial

I want to do an easy example to how to connect an arduino with a server running in my computer, what I want to do is mix the two examples of the arduino IDE (Blink and UDPSendReceiveString). The final result should be a program in my computer that comunicates with the arduino with an UDP command to light a LED fot 10 seconds.

This is a reduce problem of the real "bottom-up sensor testbed" because, at the end I will have a program that will ask all the arduino devices to send the data that they have, stop sending or reset it.