

Open Sensor Networks

Project Planning

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1 Tasks

The following tasks have been identified as critical in order for the pilot to be completed.

1.1 Identify a topology

The topology determines many of the future decisions that will shape the project. There are many possibilities, each one with its own advantages and disadvantages. Also, the underlying protocols that will allow the messages to be sent can accept a limited number of topologies.

1.2 Analyze available protocols

Once a working topology has been identified there probably are many protocols that meet the requirements. Since this is a sensor network it is clear that the factors that have to be minimized are:

Energy consumption This is the most critical factor and each node should have some degree of self-sufficiency. The power source should be an end-user decision and that's why this is such an important factor.

Scalability Ideally the network would grow over time and it has to be able to accept all the requests as well as handling a bigger number of nodes.

1.3 Platform to implement the network

As well as in the previous section, there are a big number of platforms nowadays that can accomplish the task. A good start point is looking for OSH —*open-source hardware*— because it is fully configurable and cheaper than commercial solutions. Of course, it has to meet the previous requirements in order for this to work.

1.4 Gathered data

The data that must be recollected have to be identified. This would be the considered the *default* data, because each user has the freedom to add/remove the sensors he wants. Initially this data would be mainly environmental with the idea in mind that this could be adapted to any situation with the adequate knowledge. The corresponding sensors will be then bought to test the measurements and go forward with the project.

1.5 Point-to-point communication

Approaching the first milestone, there must be a communication between node and sink. It does not involve any other kind of communication but just from node to sink.

1.6 Data uploading

It is not enough to communicate between nodes but also, as the objective of the pilot states, make data publicly available. Depending on the protocol there will be a need of external scripts or not. In case there is, it will be implemented in *Python* due to its simplicity and flexibility. It would act as a kind of API between open data portals and the sink.

1.7 Network scalation

Once all this work is completed it's time to add more nodes to the network and maybe even do some simulation with software like *NS2*. Scalability is a very important factor as stated earlier. If necessary, some code readjustments would be necessary.

1.8 Web application

Although all the data is uploaded to the Internet, it is necessary to write a little web application to directly show where the nodes are located. This gives a better overview of the network status. This of course, would be synchronized with all the open data portals.

1.9 Project documentation

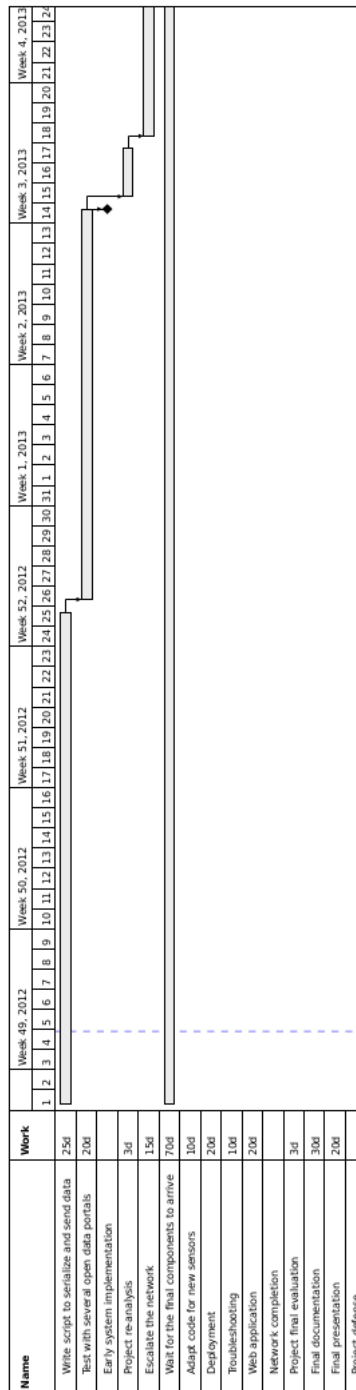
This is an essential documentation in case someone external to the project wants to replicate the project and/or adapt it to his needs. Since every aspect of this sensor network will be completely open, documentation will be easy to understand and write.

1.10 Pilot thesis and presentation

Final tasks. Necessary for the pilot to be graded in some way. They also complement the defense.

2 Timing

The following figure is the Gantt chart of the remaining tasks of the project and how they are scheduled. Right after this figure and to summarize all the previous information, there is the WBS —work breakdown structure—.



Week 15, 2013				Week 16, 2013				Week 17, 2013				Week 18, 2013				Week 19, 2013				Week 20, 2013				Week 21, 2013				Week 22, 2013				Week 23, 2013				WR				
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10			

WBS	Name	Start	Finish	Work	Duration	Slack	Cost	Assigned to	% Complete
1	Write script to serialize and send data	1 dic	25 dic	25d	25d	107d	0		0
2	Test with several open data portals	26 dic	14 ene	20d	20d	107d	0		0
3	Early system implementation	14 ene	14 ene	N/A	N/A	125d	0		0
4	Project re-analysis	15 ene	17 ene	3d	3d	107d	0		0
5	Escalate the network	18 ene	1 feb	15d	15d	107d	0		0
6	Wait for the final components to arrive	1 dic	8 feb	70d	70d		0		0
7	Adapt code for new sensors	9 feb	18 feb	10d	10d		0		0
8	Deployment	19 feb	10 mar	20d	20d		0		0
9	Troubleshooting	11 mar	20 mar	10d	10d	60d	0		0
10	Web application	11 mar	30 mar	20d	20d		0		0
11	Network completion	30 mar	30 mar	N/A	N/A	50d	0		0
12	Project final evaluation	31 mar	2 abr	3d	3d	47d	0		0
13	Final documentation	31 mar	29 abr	30d	30d		0		0
14	Final presentation	30 abr	19 may	20d	20d		0		0
15	Project defense	19 may	19 may	N/A	N/A		0		0