Letter of Intent

To which grant program are you responding?

Mozilla Science Mini Grants

If you were invited to apply by a Mozilla staff member, please provide their name.

Individual Applicant

Individual Applicant

Type of Support

Project Support

Fiscal Sponsor

No

In one sentence, summarize the purpose of the grant

This request is in support of a six-month project for prototyping an open source water quality monitor in a local hacklab in Buenos Aires in order to help the community of Lobos -a small town located 100KM from Buenos Aires- generating scientific evidence of water pollution in the community's lake.

Project Title

Sea lion: A open source water pollution monitor

What is the total project budget? (in USD)

4938

How much money are you requesting (in USD)

4938

Anticipated project start date

April 1, 2018

Duration of the project in months

6 months

Project Description

The Laguna de Lobos is located in Buenos Aires province, 15KM from the city of Lobos and 115Km from the City of Buenos Aires. The lagoon is very important for the region as per tourism and recreational activities, besides its ecological relevance as a wetland. Main tourist attractions are fishing and activities such as kitesurf, windsurf, rafting, rowing and water skiing. A wide diversity of species thrive in this wetland: mammals such as the coypu or nutria (*Myocastor coypus*) and the pampean fox (*Licalopexgymnocercus*); fishes like pejerrey (*Odontesthes bonariensis*) and catfish (*Rhamdia quelen*); birds such as the biguá (*Phalacrocorax olivaceus*) and the siriri pampa duck (*Dendrocygna viduata*), and reptiles such as the gold tegu (*Salvator merinae*), among others. Vegetation is dominated by the rush (*Schoenoplectus californicus*), which protects the coast and the nest of the birds, the deposit of fish eggs and is used as a shelter by some mammals. Also, the lagoon is a part of the greater system of wetlands of Buenos Aires province, a key flood control mechanism[1].

The inhabitants of the area report that the pollution levels in the lagoon are increasing, endangering the whole ecosystem and the continuity of recreational and tourism activities, without any government action.

Community-developed environmental monitoring devices, based on now available low-cost sensors combined with open source ethics, offer an alternative solution[2]. Prototyping methodology helps empowering and developing tech skills in people, integrating different kinds of knowledge in the building of a material object[3]. Environmental monitoring allows us to engage with a more diverse group of people that usually wouldn't approach Hacklabs by default.

A few open source water quality monitors have been documented[4]. Based on this former experience, our main and specific goals are:

1. Gather water quality data from the lagoon

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[1]
https://geoeducar.files.wordpress.com/2015/08/estudio-dr-malagnino-valle-de-inundacic3b3n-rc3ado-lujc3a1n.pdf
[2] publiclab.org
[3] 2013. 'The prototype: more than many and less than one.' Journal of Cultural Economy 7 (4): 381-398. Special Issue, Prototyping cultures: art, science and politics in beta, ed. Alberto Corsín Jiménez.
[4] http://www.instructables.com/id/Water-Quality-Monitoring-and-Notification-System-U/

a. Develop a device able to measure pH, conductivity, turbidity and temperature in the lake;

b. Install the prototype in the lagoon and configure available networks in order to report data in real time;

c. Install additional devices to take more samples so we can provide accurate data

2. Visualize the pollution data in real time

a. Develop a twitter bot to display pollution data in real time;
b. Develop a public API to allow the community perform their own visualizations

3. Document the whole process thoroughly using diverse formats so it can be easily understood and replicated

We expect to generate evidence of the potential of open source tools combined with citizen science for empowering communities, produce reliable data and documentation for replicating the experience more widely in the future.

On which Internet health issue does your project focus. Chose one or more of the following:

Open Innovation, Digital Inclusion, Decentralization, Privacy and Security, Web Literacy.