

# The Public Laboratory for Open Technology and Science

@PublicLab @sdosemagen @lizbarry

Using inexpensive DIY techniques, we seek to change how people see the world in environmental, social, and political terms. We are activists, educators, technologists, and community organizers interested in new ways to promote action, intervention, and awareness through a participatory research model.



# Problems with Environmental Science and Health Research

- Expensive
- Limited to hands of experts
- Lag in knowledge between experts and people on the ground
- People on ground don't own the data
- They also don't understand how it is made
- Industry has far greater capacity to generate data

# Civic Science Approach to Environmental Health Monitoring

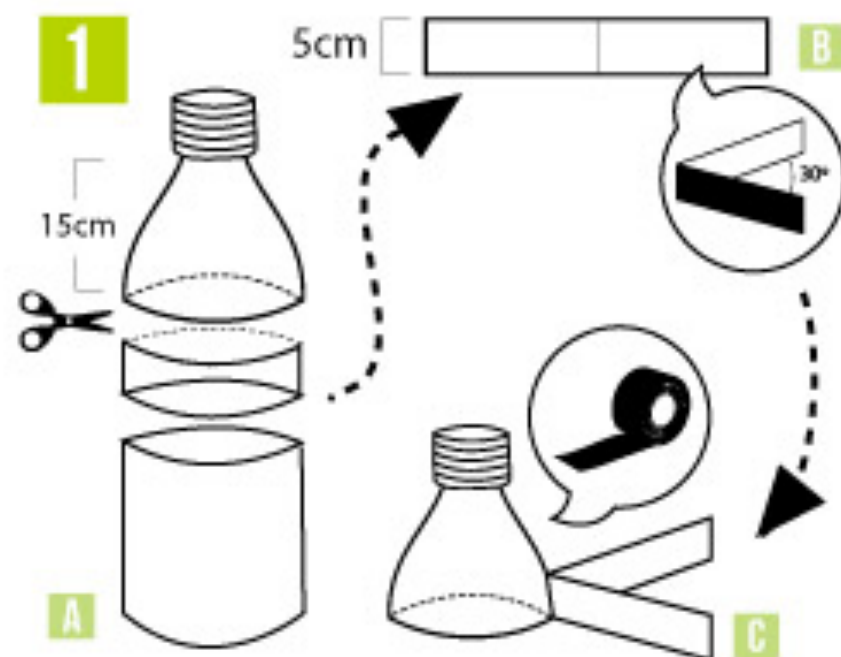
A background image showing a group of people, including a man in a yellow shirt and a woman in a red shirt, flying a kite. The kite is a small, colorful object with a camera attached to it. The word "kite" is written in white text above the kite, and an arrow points from the word to the kite. The word "camera" is written in white text below the kite, and an arrow points from the word to the camera on the kite. The background is a bright, cloudy sky.

- Community oriented and developed
- Community owned
- Tools can be adapted and spread in an open source fashion
- Supports public exploration and investigation of environments- locals are regarded as experts of their own environments

“The term ‘civic science’ has been used to describe science “that questions the state of things, rather than a science that simply serves the state” (Kim and Mike Fortun 2005:50)



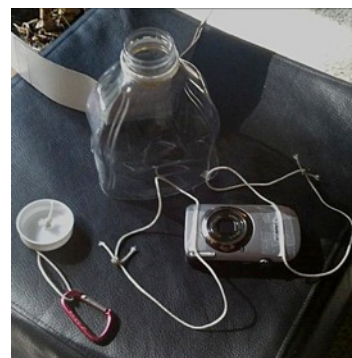
## Materiales:



### 1 Domo Protector

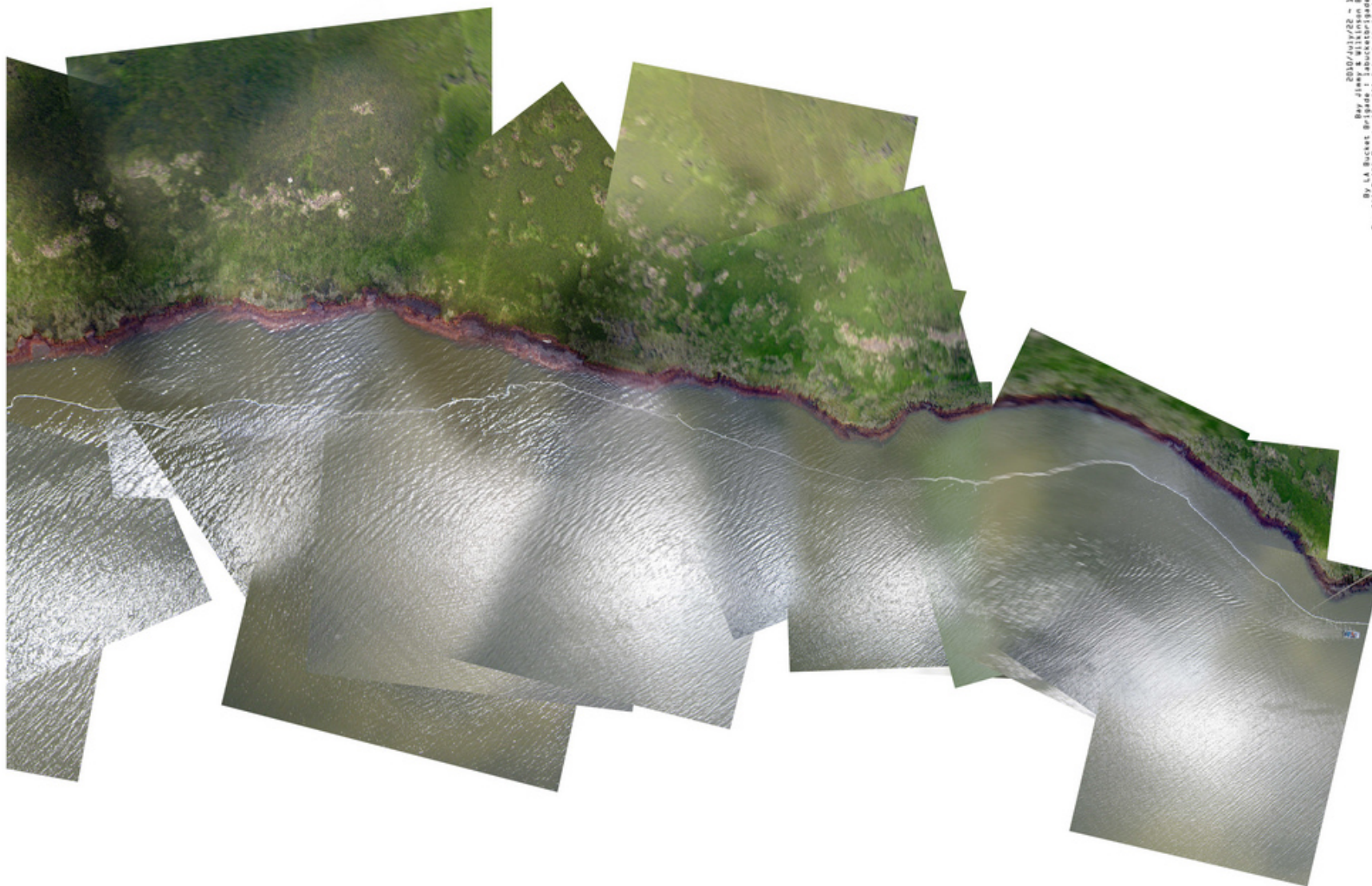
- A** Con una tijera corta una botella de plástico desechable en 3 partes como muestra el dibujo.
- B** La banda central debes doblarla en 30 grados para convertirla en unos alerones que estabilizarán la cámara.
- C** La parte superior protegerá tu cámara o teléfono, asegúrate de pegarla muy bien.





Balloon mapping  
kit  
variations





2010/04/02 ~ 11:20  
Bay View & Milliken Bay  
By LA Bucket Brigade | labucketbrigade.org  
For all the photos in this map, please contact  
With Graceland Mapping | gracelandmapping.org  
Map assembled by Cesar Heredia | cesarheredia.com

*Archive* [publiclaboratory.org/archive](http://publiclaboratory.org/archive)

## Recent Maps



[Low Water Bridge, Shenandoah River, Bentonville, Virginia](#)  
July 20, 2012



[Corn Maze, Edmonton, Alberta, Canada](#)  
July 11, 2012



[Davidson Middle School, San Rafael, California](#)  
May 15, 2012



[University of Kentucky W.T. Young Library, Lexington, Kentucky](#)  
April 21, 2012



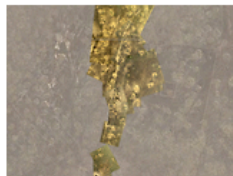
[Asheville Arts District, Asheville, North Carolina](#)  
October 22, 2011



[Carney, Asheville, North Carolina](#)  
March 10, 2011



[Caliente Ridge, Carrizo National Monument, Santa Margarita, California](#)  
January 1, 2009



[Carrizo National Monument, Santa Margarita, California](#)  
January 2, 2009



[Cementerio Cental, Bogota, Colombia](#)  
March 12, 2012



[Kamnolom, Dravograd, Slovenia](#)  
April 15, 2012



[Grovetown, Georgia](#)  
March 6, 2012



[Ezac Airfield, Axel, Netherlands](#)  
May 12, 2012

## Maps and available formats

[about these formats](#) | [about these licenses](#)

Location	Capture date	License		
<a href="#">Low Water Bridge, Shenandoah River, Bentonville, Virginia</a>	July 20, 2012	<a href="#">geoTiff</a>	<a href="#">jpg</a>	<a href="#">tms</a>
<a href="#">Corn Maze, Edmonton, Alberta, Canada</a>	July 11, 2012	<a href="#">geoTiff</a>	<a href="#">jpg</a>	<a href="#">tms</a>
<a href="#">Davidson Middle School, San Rafael, California</a>	May 15, 2012	<a href="#">geoTiff</a>	<a href="#">jpg</a>	<a href="#">tms</a>
<a href="#">University of Kentucky W.T. Young Library, Lexington, Kentucky</a>	April 21, 2012	<a href="#">geoTiff</a>	<a href="#">jpg</a>	<a href="#">tms</a>
<a href="#">Asheville Arts District, Asheville, North Carolina</a>	October 22, 2011	<a href="#">geoTiff</a>	<a href="#">jpg</a>	<a href="#">tms</a>
<a href="#">Carney, Asheville, North Carolina</a>	March 10, 2011	<a href="#">geoTiff</a>	<a href="#">jpg</a>	<a href="#">tms</a>
<a href="#">Caliente Ridge, Carrizo National Monument, Santa Margarita, California</a>	January 1, 2009	<a href="#">geoTiff</a>	<a href="#">jpg</a>	<a href="#">tms</a>
<a href="#">Carrizo National Monument, Santa Margarita, California</a>	January 2, 2009	<a href="#">geoTiff</a>	<a href="#">jpg</a>	<a href="#">tms</a>
<a href="#">Cementerio Cental, Bogota, Colombia</a>	March 12, 2012	<a href="#">geoTiff</a>	<a href="#">jpg</a>	<a href="#">tms</a>
<a href="#">Kamnolom, Dravograd, Slovenia</a>	April 15, 2012	<a href="#">geoTiff</a>	<a href="#">jpg</a>	<a href="#">tms</a>

1 2 3 4 5 6 7 8 9 ... [next >](#)  
[last >>](#)

*Archive* [publiclaboratory.org/archive](http://publiclaboratory.org/archive)





### This map was made for under \$200

by volunteers using a helium balloon, a digital camera, and a boat.

Know an area that needs to be mapped? Get in touch:

[team@publiclaboratory.org](mailto:team@publiclaboratory.org)  
(504) 358-6647

### Reimagining the data lifecycle

Shannon Dasmagun & Jeffrey Rimmer

One of the most powerful tools in the public laboratory's toolbox is the data lifecycle. It's a process that allows us to collect, analyze, and share data in a way that is both efficient and effective. In this article, we'll explore how we've reimagined the data lifecycle to better serve our community.

We are committed to making data accessible to everyone. By sharing our data, we can help others understand the world around them and make informed decisions. Our goal is to create a culture of transparency and collaboration where data is used to drive positive change.

### On Site

by Barbara Marcotte

When you think about data, you probably think of numbers and statistics. But what if you could see the data in a way that's more intuitive and engaging? That's what we're doing with our "On Site" project. We're taking our data to the people who need it most, and we're making it easy for them to understand and use.

Our "On Site" project is all about bringing data to the people who need it most. We're taking our data to the people who need it most, and we're making it easy for them to understand and use. Our goal is to create a culture of transparency and collaboration where data is used to drive positive change.

### Wetlands loss

Wetlands are a vital part of our ecosystem, providing a home for many species of plants and animals. Unfortunately, wetlands are being lost at an alarming rate due to human activities. In this article, we'll explore the causes of wetlands loss and what we can do to protect them.

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### Wilkinson Bay Louisiana

29° 28' 28.855" N, 90° 54' 29.220" W  
July 22, 2010

Public Laboratory  
200 N. 1st Street  
New Orleans, LA 70112  
<http://publiclaboratory.org/wilkinson>

They say that they are doing this under the guidelines of protecting people. Well, you're not protecting people if you intentionally leave them outside of a levee protection system and flood them.

MRGO, the Mississippi River Gulf Outlet, is a canal that connects the Gulf of Mexico to the Mississippi River. It's a controversial project that has caused a lot of environmental damage. In this article, we'll explore the impact of MRGO on the environment and what we can do to protect it.

### Public Laboratory Do-It-Yourself Guides

Part of our mission at Public Laboratory is to provide people with the tools and resources they need to map their own communities. We've created a series of do-it-yourself guides that cover everything from mapping with a helium balloon to mapping with a drone. These guides are designed to be easy to follow and to provide people with the information they need to get started.

The guide presented in this issue is one of our most popular. It's a guide to mapping with a helium balloon, and it's designed to be easy to follow and to provide people with the information they need to get started. We hope you find it helpful and that it inspires you to map your own community.

### The Public Laboratory for Open Technology & Science

Public Laboratory is a non-profit organization dedicated to making technology and science accessible to everyone. We provide people with the tools and resources they need to map their own communities and to make informed decisions about the world around them. Our goal is to create a culture of transparency and collaboration where data is used to drive positive change.

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Grassroots Mapping Forum [publiclaboratory.org/forum](http://publiclaboratory.org/forum)



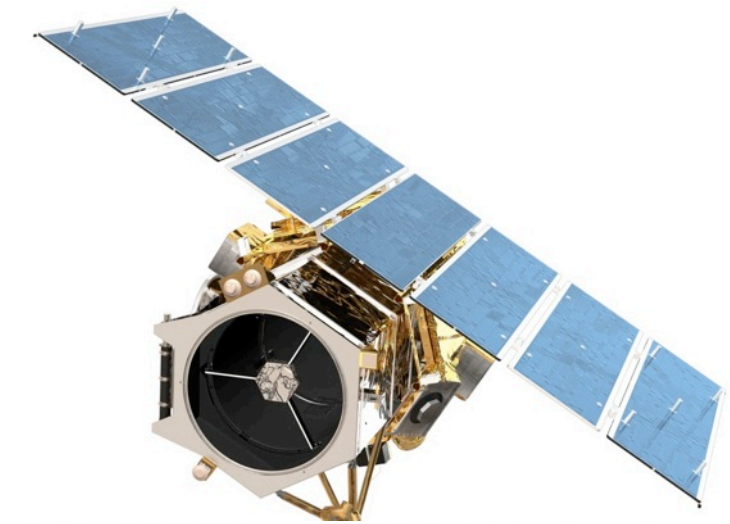


*1. Engage researchers not subjects*



*2. Pull complexity off the shelf: modify minimally*





102



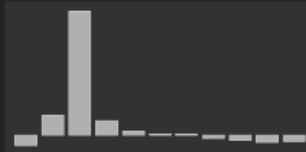
diydrones.com cyberquad

concealed operator



revealed operator

*3. Build in openness & accountability*



## Images from "2011-7-31-brooklyn-gowanus-vis-b"

Sorted best to worst | [sort only this site](#) | [view unsorted from this site](#)

(733 images, 49.5/100 average, ~33.54 votes per image, 100% have votes, >58 participants)

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10 out of 10 | 1 reviewers

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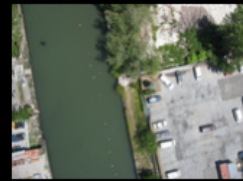
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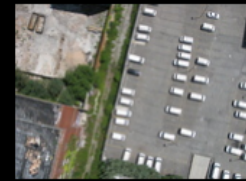
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8 out of 10 | 5 reviewers

[Open in Knitter »](#)



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8 out of 10 | 4 reviewers

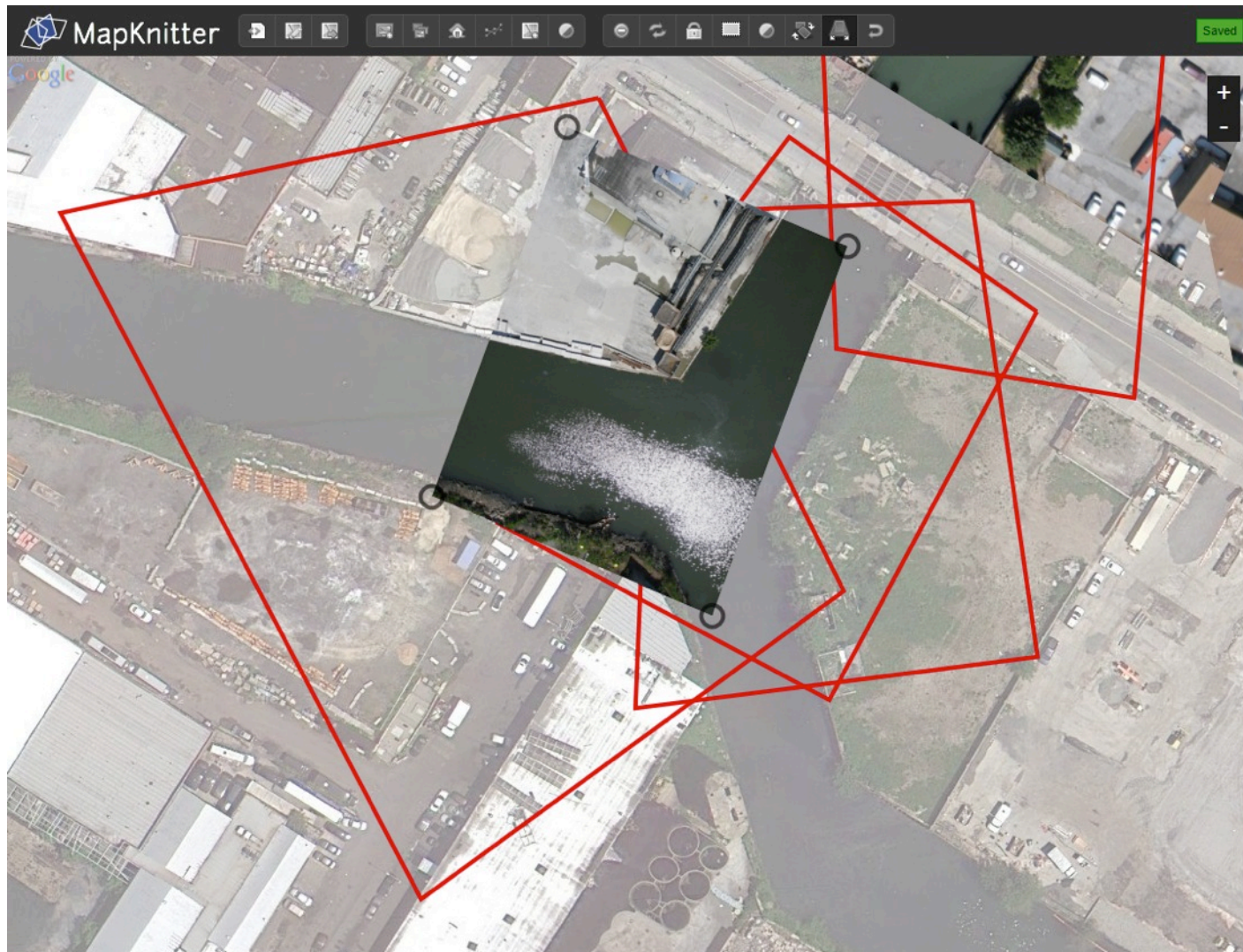
[Open in Knitter »](#)



± ~ =

4. *Create collaborative workflows*





4. *Create collaborative workflows*



## Post a research note:

**Title:** \*

**Body:**

**Main image:**

Choose File No file chosen

Upload

**Image Gallery:**

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Upload

Add another item

File attachments

Attach new file:

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Attach

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Authoring information

Enable rich-text

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Vocabularies

Note type

Places:

separated by commas

Most popular terms: [gulf-coast](#), [new-york-city](#), [providence](#), [sommerville-massachusetts](#), [lima](#)

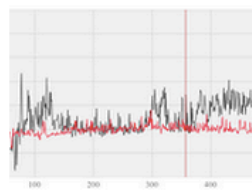
Tools:

separated by commas

Most popular terms: [balloon-mapping](#), [kite-mapping](#), [near-infrared-camera](#), [spectrometer](#), [thermal-photography](#)

Save Preview

Password protect this Note

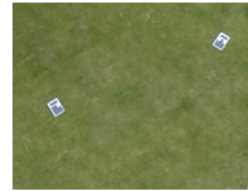


### [Analytics on aerial images -- using filesize](#)

by: [warren](#)  
1 day 8 hours ago  
I'm looking for some easy ways to sort blurry images from crisp ones (and good from bad) for a...

[Read more »](#)

Tags: [umbc](#)



### [Coded ground control points](#)

by: [Jasja](#)  
1 week 1 day ago  
Ground control point targets are useful to stitch photos on uniform or repetitive landscapes. They...

[Read more »](#)

Tags: [umbc](#)

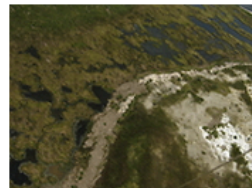


### [3-D Images- Big Branch Balloon Mapping](#)

by: [astoicof](#)  
1 week 2 days ago  
After the balloon mapping trip at Big Branch National Wildlife Refuge on May 14th 2012, I created...

[Read more »](#)

Tags: [big-branch](#), [gulf-coast](#), [louisiana](#)



### [Point Platte marsh restoration over time: air vs ground](#)

by: [eustatic](#)  
1 week 3 days ago  
Marsh restoration over time, by land, sea, and air In early 2010, GRN worked with bayou rebirth to...

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Tags: [gulf-coast](#), [louisiana](#)

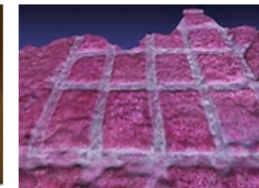


### [FABAoutfit for vertical KAP and BAP](#)

by: [Juan](#)  
2 weeks 2 days ago  
This work is released under the Creative Commons/CERN Open Hardware License. The FABA Collective (...)

[Read more »](#)

Tags: [Spain](#)



### [NRG images of cover crop trials](#)

by: [cfastie](#)  
2 weeks 4 days ago  
I used Ned Horning's ImageJ macro to produce false color infrared (NRG) images from 108 of the...

[Read more »](#)

Tags: [New Hampshire](#)

## Contributors

PLOTS members who have [contributed research notes](#) or [added to wiki pages](#) on this topic:

- [Jeffrey Warren](#) (283)
- [Stewart Long](#) (87)
- [MicheleTobias](#) (7)
- [Adam Griffith](#) (10)
- [Shannon](#) (23)
- [Liz Barry](#) (161)
- [Mathew](#) (104)
- [Cesar Harada](#) (2)
- [Jaekyung lee](#) (3)
- [Jeremy Crampton](#) (6)
- [maning](#) (2)
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- [Olivia](#) (2)
- [Chris Fastie](#) (35)
- [nateww](#) (4)
- [Joe Larson](#) (2)
- [Valerie](#) (2)

# 4. Create collaborative workflows

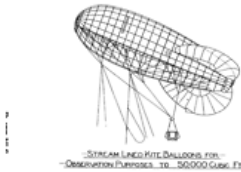


## Balloon Mapping

Status: [Proven in the field](#)

Over the last year, we've build a global community of mappers who are engaged in civic issues with low-cost mapping tools like balloons, kites, and remote-control airplanes. We're helping citizens on the Gulf Coast use balloons and kites to produce their own aerial imagery of the Deepwater Horizon...

Used in: [gulf-coast](#), [lima](#), [new-york-city](#), [portland](#), [western-carolina-university](#)



## Kite-Balloon Hybrid

Status: [In development](#)

A kite balloon combines a lifting gas with active lift structures like wings to fly in all conditions. A good design may solve the common difficulty of flying in light winds, which makes balloon mapping difficult, but still falls short of kite-flying weather. It may also help reduce helium use, and...

Used in: [lima](#), [new-york-city](#), [portland](#)

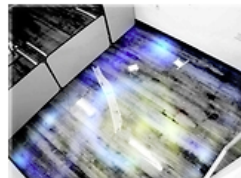


## Near-Infrared Camera

Status: [In development](#)

Infrared cameras for vegetation analysis Infrared photography can help assess a plant's health, and has been used on satellites and planes for agricultural and ecological assessment, mainly by vineyards, large farms and large-scale (read: expensive) research projects. By creating a low-cost camera...

Used in: [gulf-coast](#), [lima](#), [new-york-city](#)

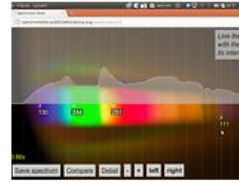


## Roomba indoor air quality mapping

Status: [In development](#)

The RISD Environmental Justice Research Cluster in Providence uses a Roomba as a medium in order to reveal the condition of our surroundings. Roomba--the room cleaning vacuum--is programmed to travel all around a room once it is left to roam. Therefore, it is an ideal tool to assess the quality of...

Used in: [providence](#)



## Spectrometer

Status: [In development](#)

toc\_collapse=0; Table of Contents Introduction The Tool: The Application: Online spectral analysis Resources, Downloads, FAQ Introduction What we often perceive as a single color actually consists of multiple blended colors- just as green paint can be made from mixing yellow and...

Used in: [gulf-coast](#), [new-york-city](#), [providence](#), [sommerville-massachusetts](#)



## DIY Touchtable with Wii Remote

Status: [Proven in the field](#)

PlaceMatters has built and tested a variety of interactive touch screens and touchables using Wii remotes and LCD projectors so participants can interact directly with maps, images, and brainstorming applications. Here is a video where we integrated the use of the touchtables with GIS and...

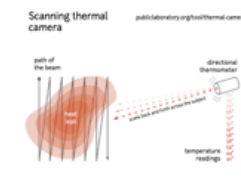


## Balloon Telemetry Kit

Status: [Early adopter only](#)

This kit was created as a means to improve the georeferencing of images captured using balloon mapping. This kit is based around the open-source Arduino microcontroller. Utilizing a GPS receiver, barometric sensor, three-axis accelerometer and data logger, this module allows for the synchronization...

Used in: [new-york-city](#)



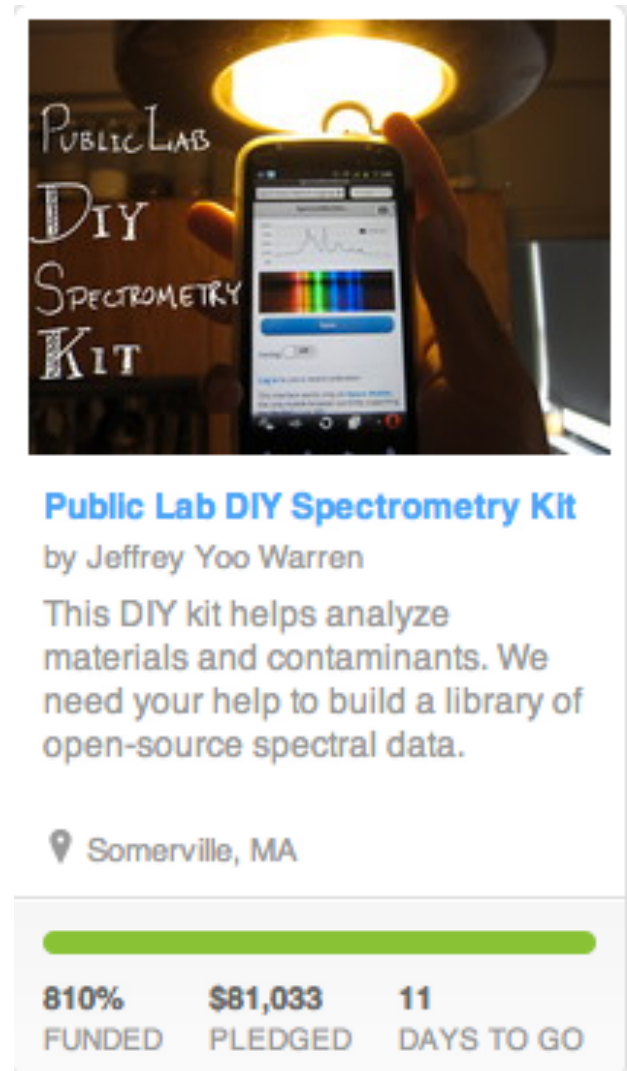
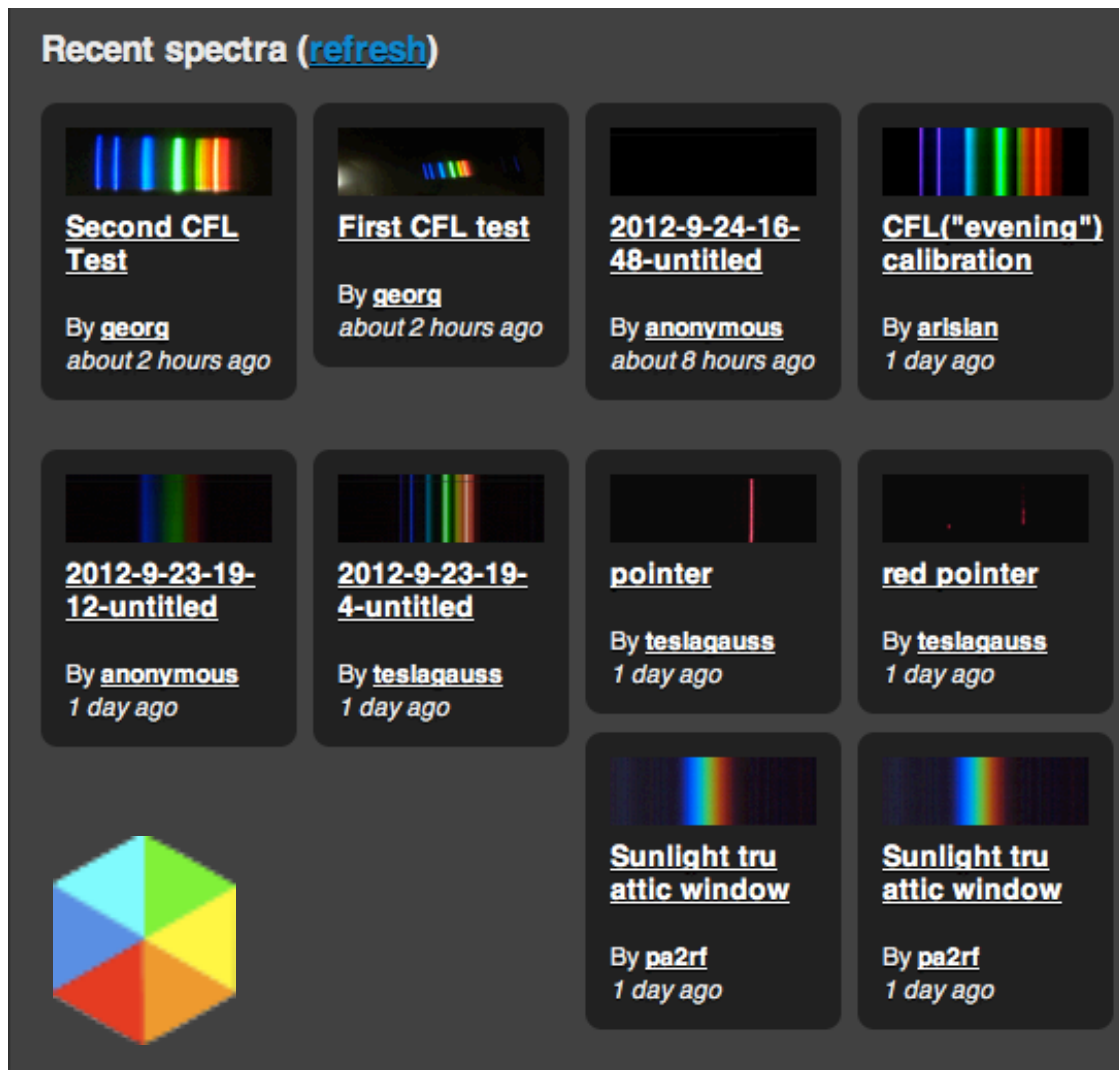
## Thermal camera

Status: [In development](#)

The DIY thermographer is a camera which creates an image of what temperature things are -- a 'heat' camera. We're making a 'scanning thermal imager' which means we just use a temperature sensor and sweep it back and forth across a scene, recording the temperature variation to build up an image that...

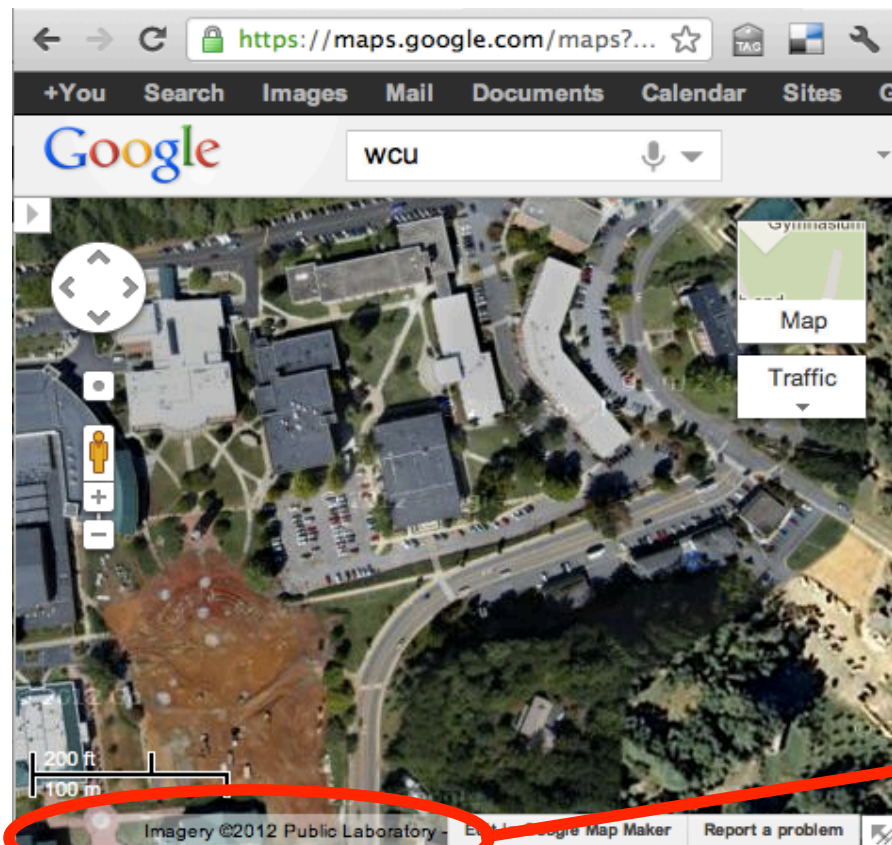
Used in: [new-york-city](#)

# 4. Create collaborative workflows

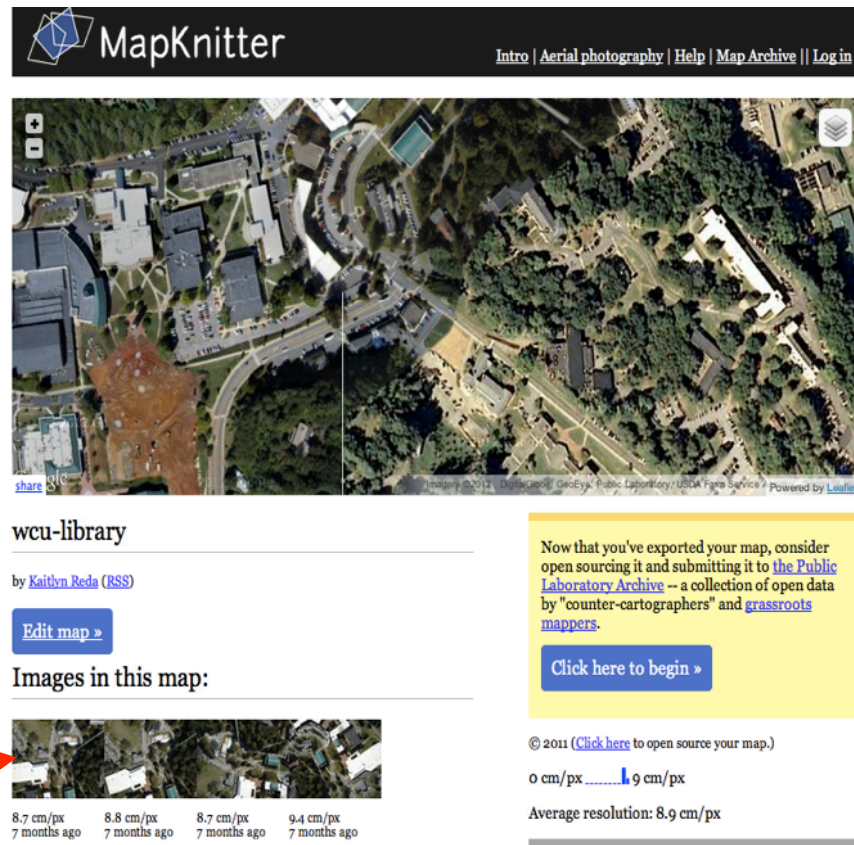


5. *Maintain public data archives*



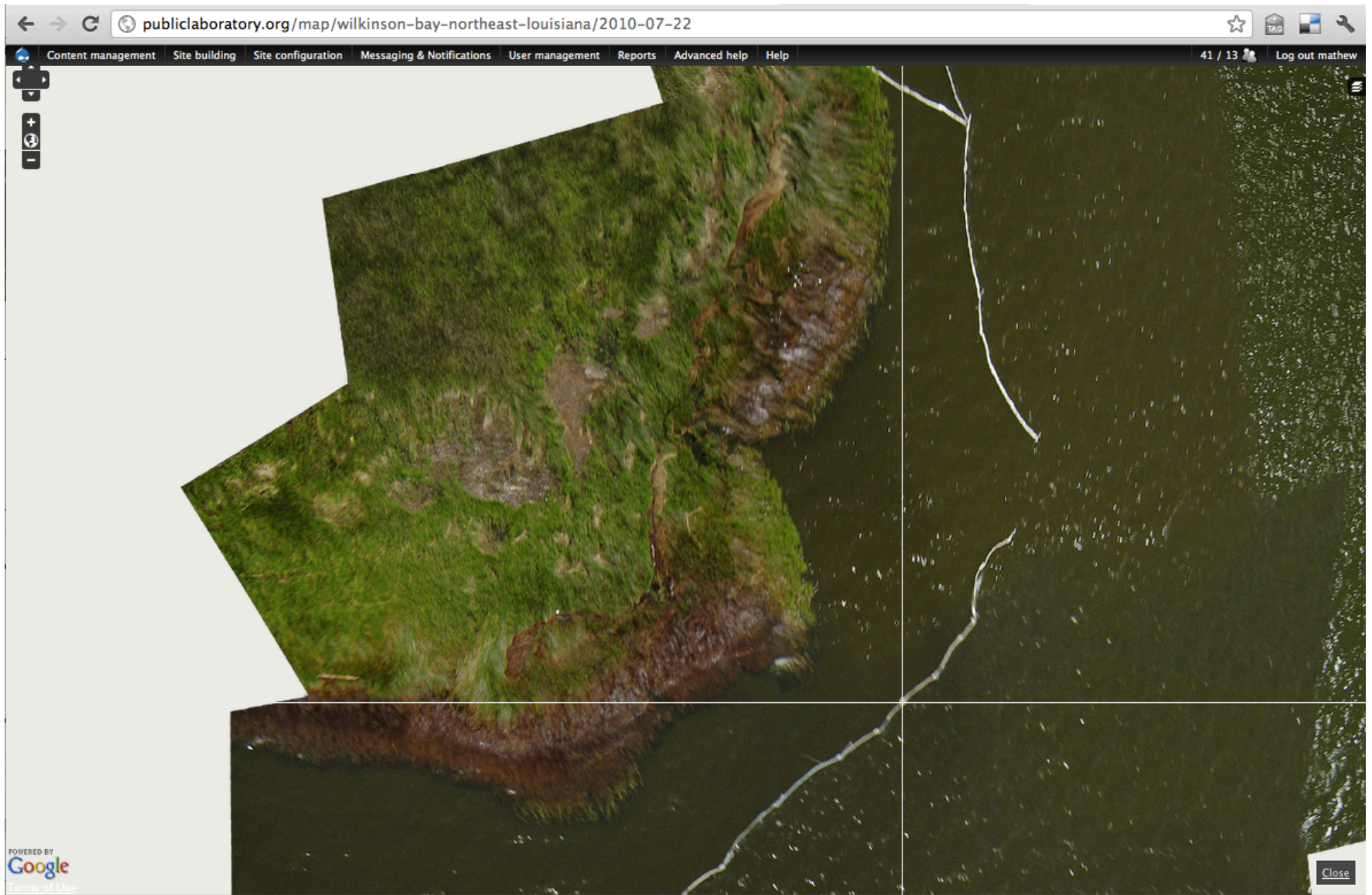


See © Public Laboratory



Find the mapmaker & images

## 6. Mainstream true accountability

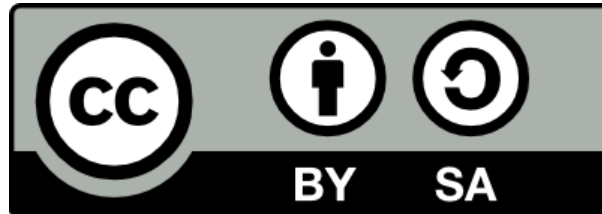


*7. Let images communicate complexity*





CERN Open Hardware 1.0  
Share Back with Attribution



Creative Commons  
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GNU Public License 3.0  
Copyleft Viral  
Software Licensing

*8. Protect openness with viral licensing*

# The Public Laboratory for Open Technology and Science

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liz@publiclaboratory.org

