



# Protei

## Open Source Sailing Drone

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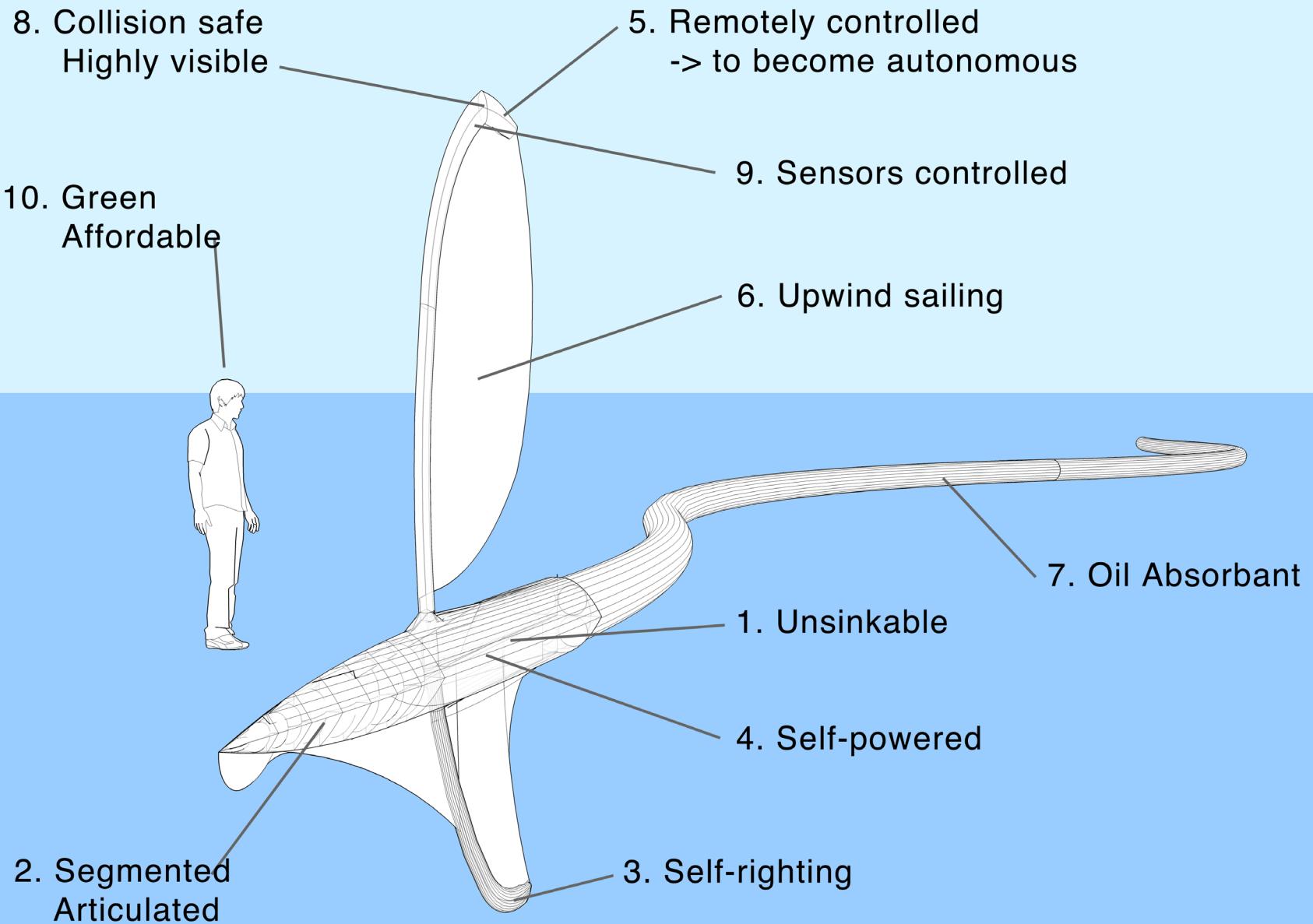
MPS candidate - ITP at NYU  
engineer / hacker - Protei





Protei\_006

# Protei





REPURPOSED MANNED FISHING VESSELS	PROTEI GOALS
Exposes crew to health risks and toxins	Unmanned and autonomous
Cannot operate during a storm	Able to operate during extreme weather conditions
Oil sensing limited to human eye sight	Sensing technologies
Not sustainable, environmentally destructive	Uses renewable energy
Expensive	Inexpensive
Proprietary design	Open-source hardware

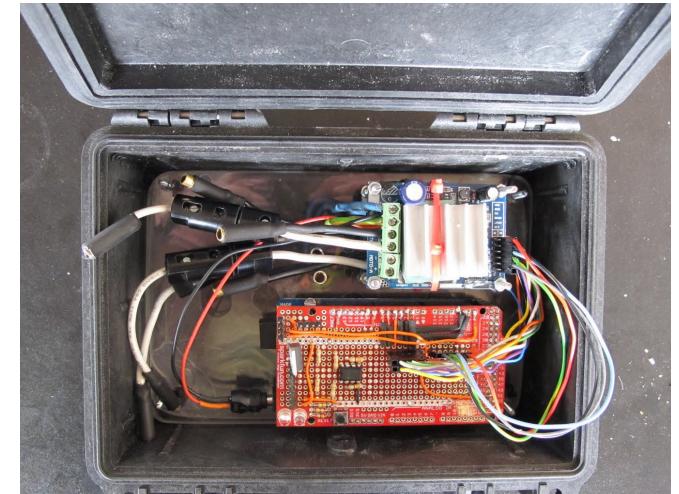
# How Protei implements Open\_source Hardware:

## Process:

- Shared design
- Open feedback loop
- Document development and progress

## Electronic architecture:

- Use of Arduino, XBee, gps and other sensors



Main Electronics Box (Arduino Mega)

## Mechanical Design:

- Built with consumer and industrial products
  - power drills, plumbing equipment, salvaged wood
- 3D models are available online for custom milled parts



Remote Control (Arduino and XBee)

# How Protei implements Open\_source Hardware:

## Documentation and distribution of information:



*The Protei Handbook, available in print and online*

# Why Open\_source?

## Collaborative:

- People from all over the world converging to share ideas of Protei's creation
- We function with an open workflow: horizontal rather than hierarchical chain of command for planning, budgeting, hardware, software, fabrication, design, testing



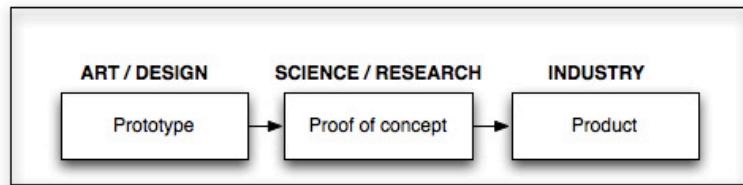
Protei\_team

# Why Open\_source?

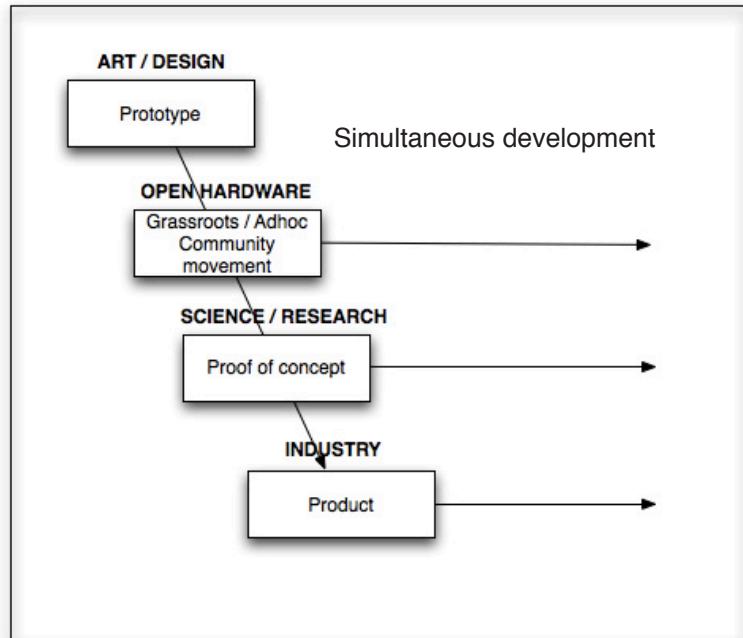
## Anybody can build one:

- low cost design
- shortens the time frame for development

Sequential Development (classical)

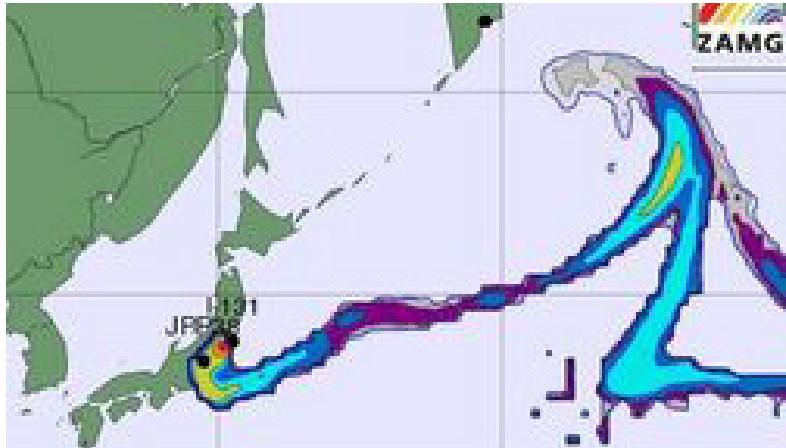


Parralel Development (Proposed for Protei with an Open hardware structure)

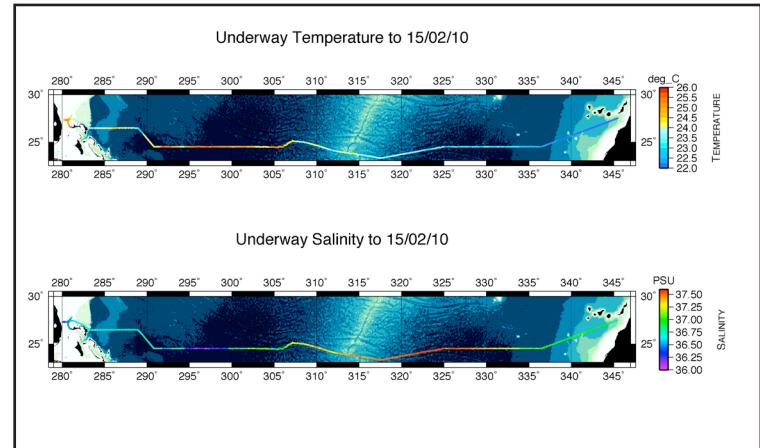


# Why Open\_source?

Reappropriated for other purposes



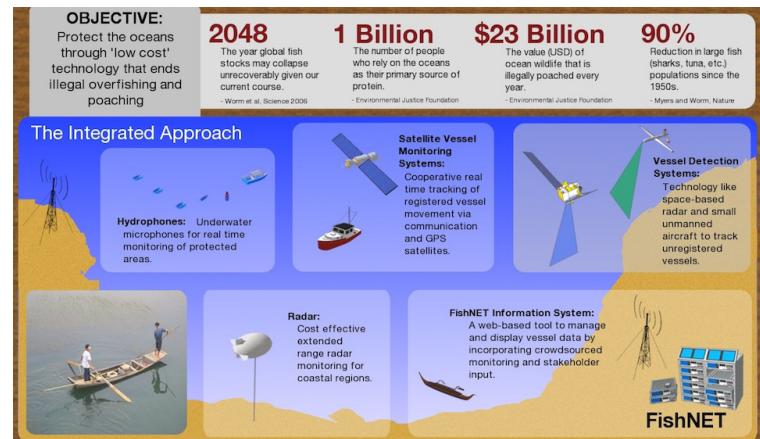
Radioactive plume over Japan



Ocean temperature and salinity data



Sample of plastic garbage

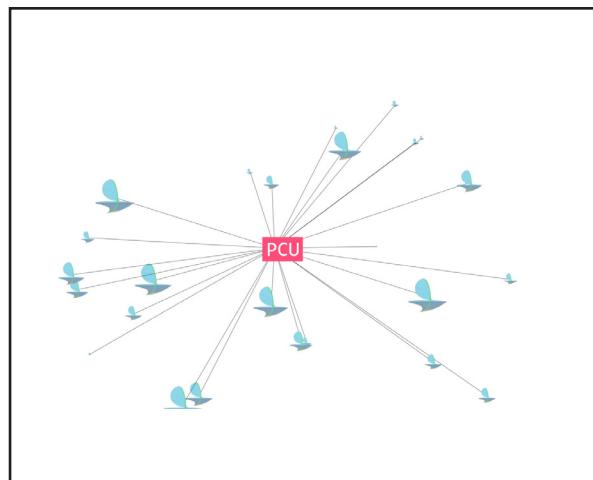


Fishery monitoring in marine protected areas

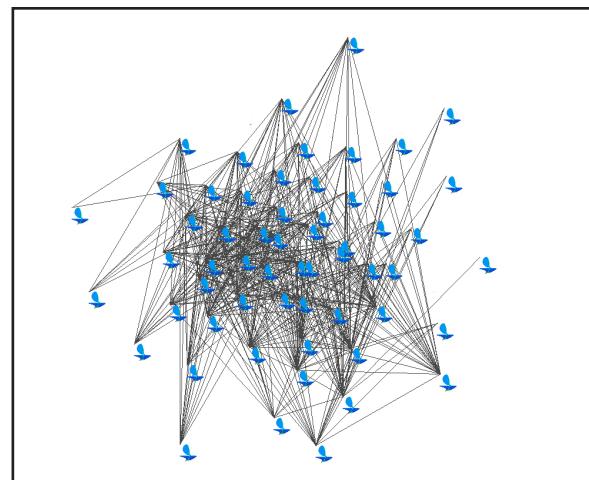
# Protei's goal in use of OSHW

## Fleets of DIY sailing drones

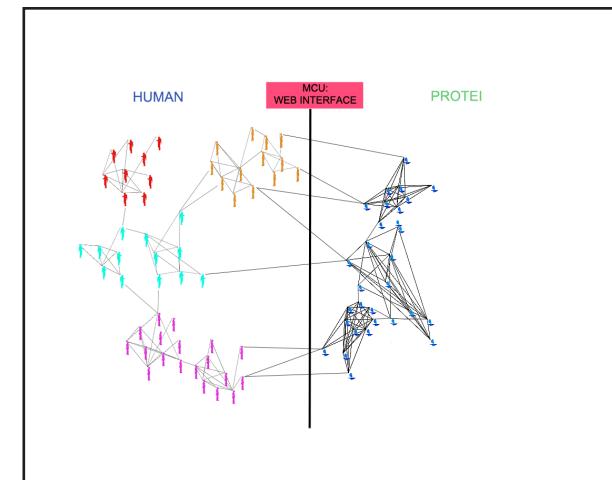
- Protei needs users (people to build and deploy it)
- Networks of autonomous vessels
- Boats controlled by onshore gamers, fishermen, etc.



*Centralized swarm*



*Decentralized swarm*



*Multi-platform network*

# Open\_hardware and Intellectual Property

Object,  
mechanical design



Documentation, texts, photos,  
videos,  
communication  
materials

Creative Commons BY-SA



Source code

GNU General Public License, version 3  
(GPL-3.0)



Name, trademark

US trademark  
regulation #85339997



Licenses that fall under the definition of  
Open\_hardware

- Licenses chosen according to the content of work that they protect
- The aim is that all of our materials can be studied, modified, reproduced, redistributed, with the credit of Protei.org

# Challenges Protei faces using OSHW

- Documentation takes organization and time
- Uniting many disciplines
- Encouraging continuous feedback
- Maintaining a sustainable business
- Efficiency in chain of command



# Ways to find out more about Protei, even how to build one yourself

Protei website: [protei.org](http://protei.org)

flickr: [www.flickr.com/groups/protei](http://www.flickr.com/groups/protei)

kickstarter

- documentation of work processes
- current events related to Protei
- **the Protei Handbook**

Github:

<https://github.com/Protei/Protei-005-6>

- source code
- orthographic views of parts
- SolidWorks files

Email:

- [contact@protei.org](mailto:contact@protei.org)
- **[gabriella@opensailing.net](mailto:gabriella@opensailing.net)**

THANK YOU!

