ARDUINO 101
AN INTRODUCTION

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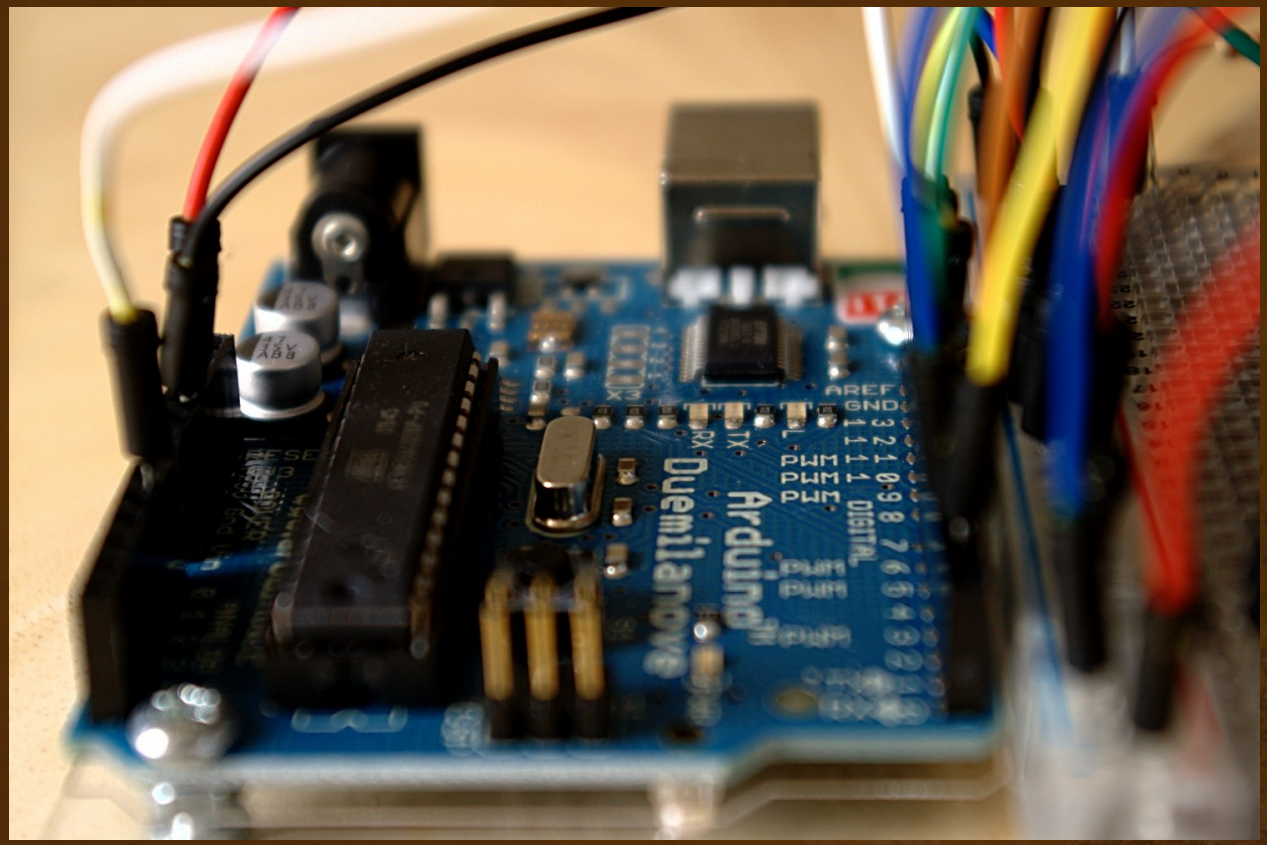
WHAT'S AN "ARDUINO?"

I mean, really, what sort of a name is that?



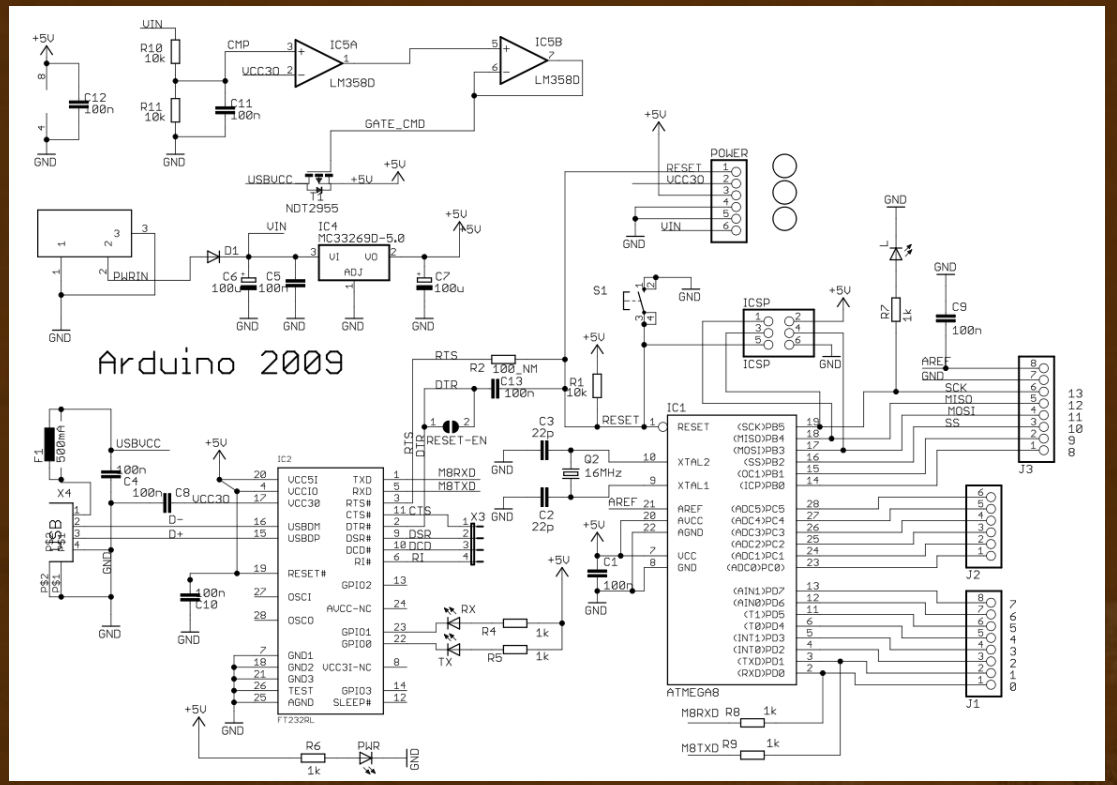
- Rapid electronics prototyping platform
- Developed in 2005 as an educational tool
- 120,000 shipped as of February 2010

“The goal (and the importance) of Arduino is about empowering others to do things for themselves”

David A. Mellis
6th June, 2009

OPEN HARDWARE

I know what Open Source is...



- CC-Attribution-Sharealike licensed designs
- Build your own!
- Only official boards can be called “Arduino”

WHAT MAKES AN ARDUINO?

Still a stupid name.

Hardware

- ATmega 328P
- USB data/power
- Fully open-source design

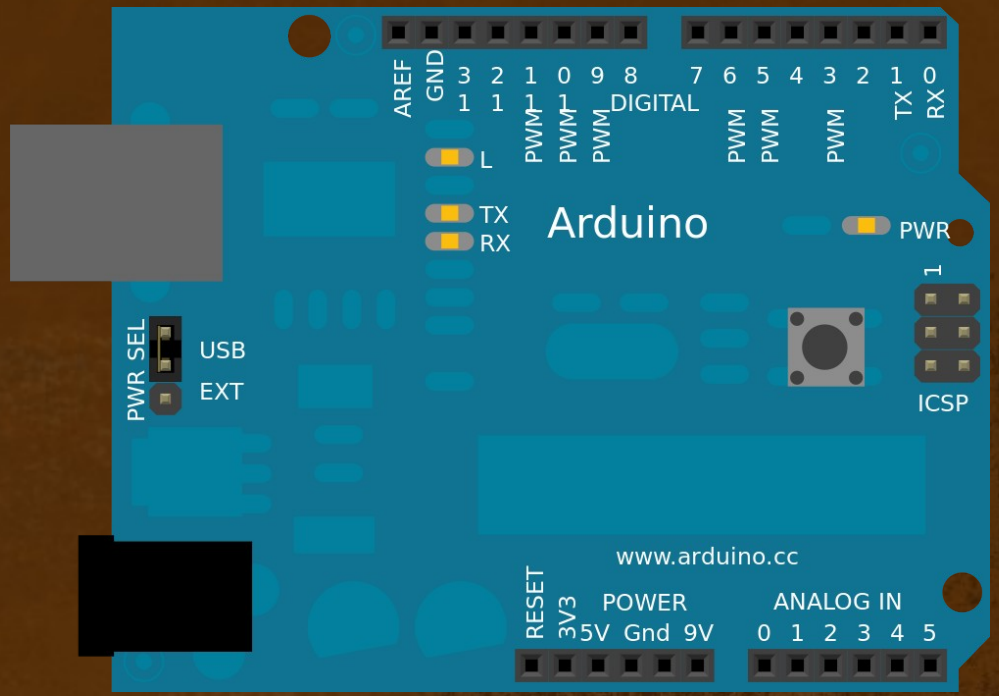
Software

- Java - cross platform
- Based on Processing
- Wiring library makes development easy

WHAT DO YOU GET?

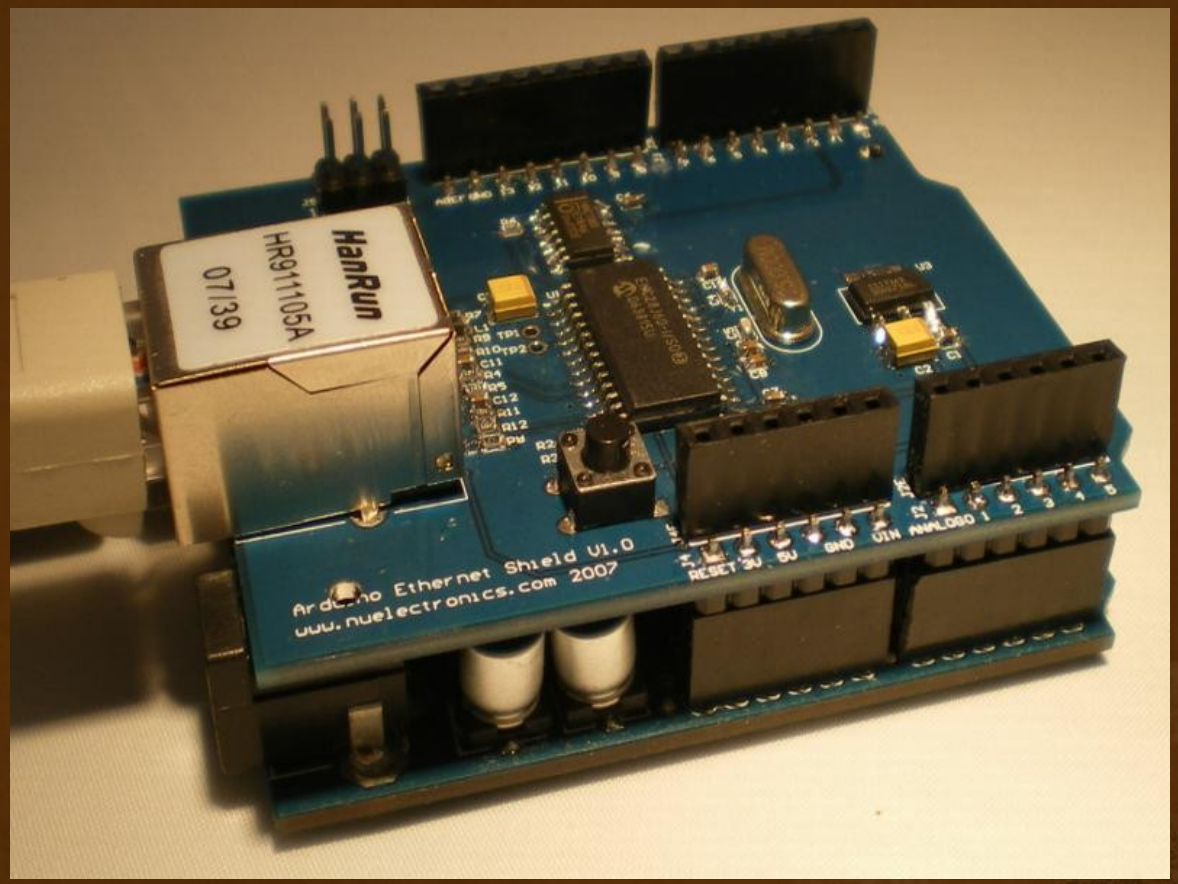
In other words: what's in it for *me*?

- **6 analogue inputs**
- **14 digital outputs with 6 PWM pins**
- **5V power**



WHAT ARE "SHIELDS?"

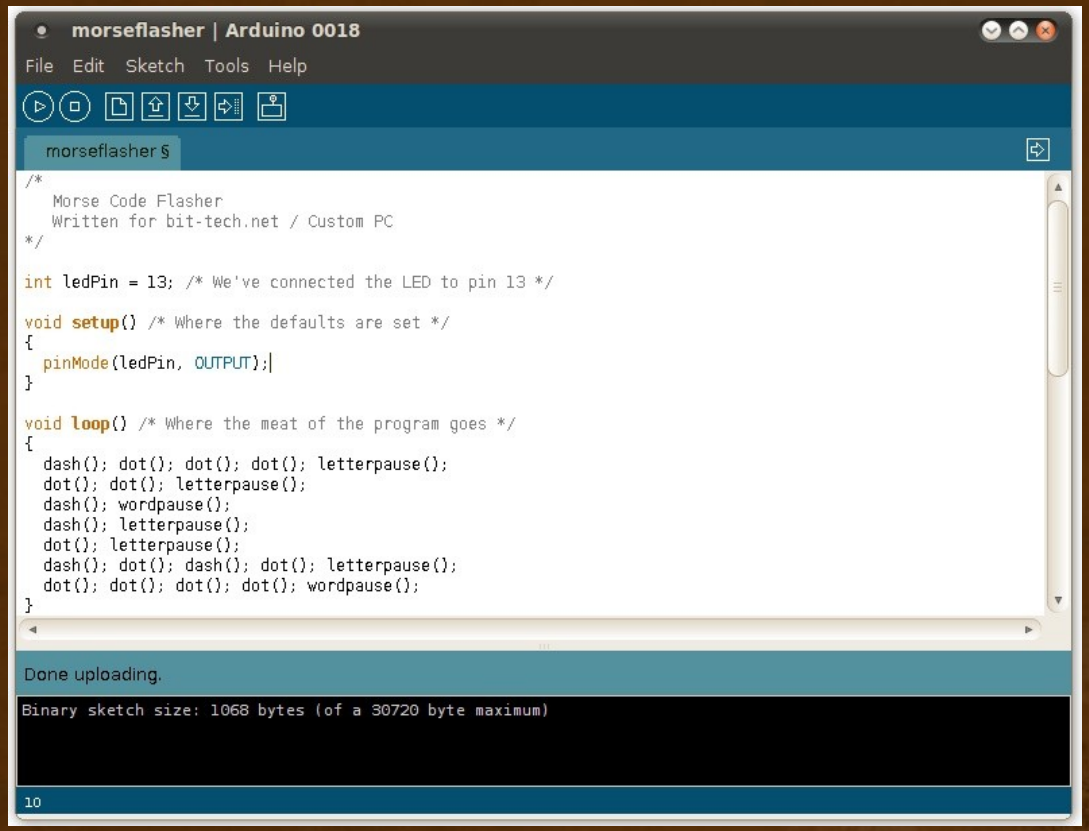
Have we moved on to medieval re-enactment?



- **Plug-in add-ons**
- **Expand the capabilities**
- **Pictured: Ethernet shield for network connectivity**

HOW DO I USE IT?

Just how complicated is this thing anyway?



- Uses the C language & Wiring library
- Designed to be pick-up-and-play
- No experience required!

WHY SHOULD I BOTHER?

I mean, I could just buy an ATmega myself...

Pros

- In-circuit programming
- Community support
- Simple code

Cons

- (Relatively) expensive

ARDUINO 101
JUST WHAT IS POSSIBLE?

THE ARSSDUINO

Because shameless self-promotion is *awesome*.

- **Displays RSS or Twitter feed on 16x2 LCD**
- **Built on day #1**
- **Data transferred from a Python back-end**

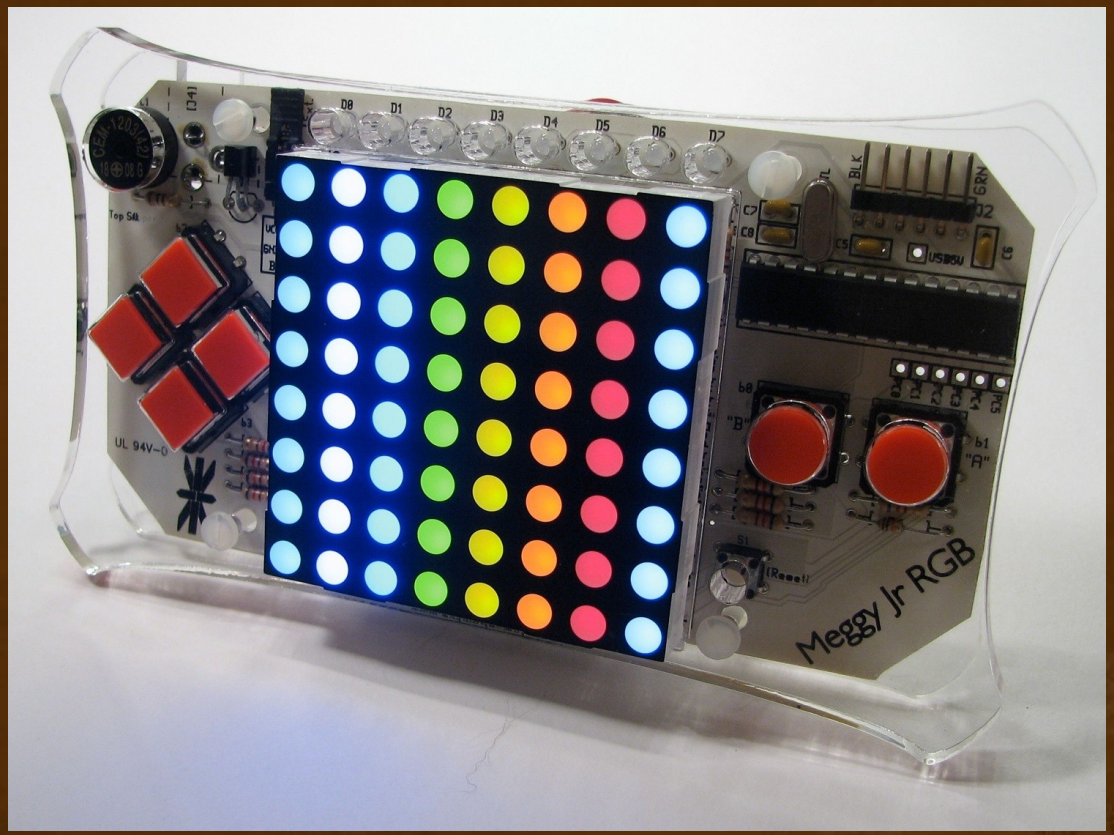
THE VIRTUAL USB KEYBOARD

From: http://bit.ly/9YIz06

- Create a custom input device
- Details in *Practical Arduino Projects*
- Also add joysticks, touch-panels...

THE MEGGY JR. RGB

From: http://bit.ly/rStF



- Arduino Compatible games console
- 8x8 RGB LED matrix
- Write games in the Arduino IDE

THE STEAMPUNK SECRET LOCK

From: http://bit.ly/dAAXBy

- **Simple piezoelectric knock detecting circuit**
- **Complex, steampunk-inspired housing**
- **Relay triggers magnetic door lock**

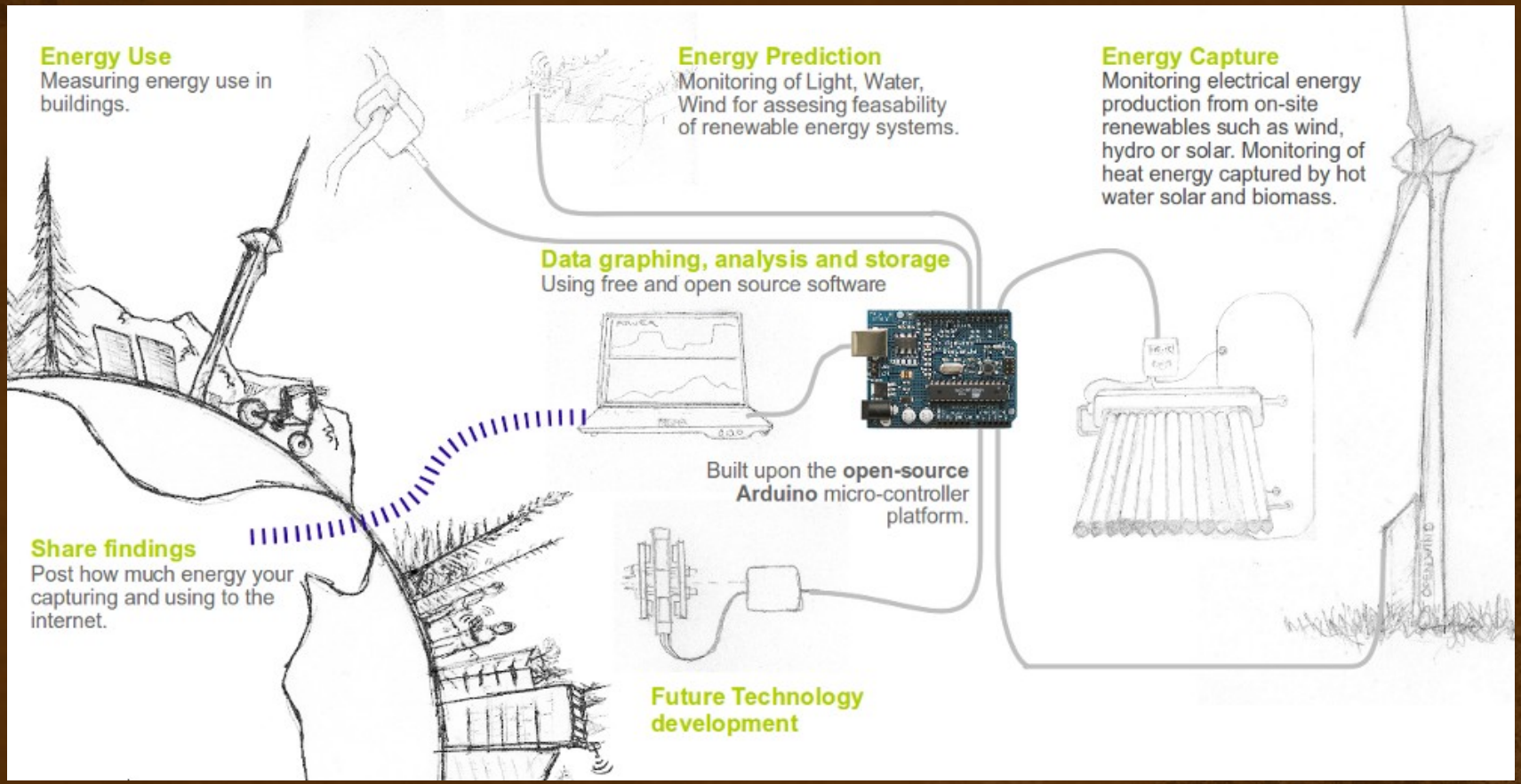
THE ANIMATRONIC TURRET

From: http://bit.ly/azuS5H

- Based on Valve's *Portal* game
- Moves, talks, and shoots
- Deactivates when lifted or knocked over

THE OPEN ENERGY MONITOR

From: http://bit.ly/MgiJ1



- Open-Source energy monitor
- Uses Arduino's 10-bit analogue inputs
- Aimed at microgeneration projects

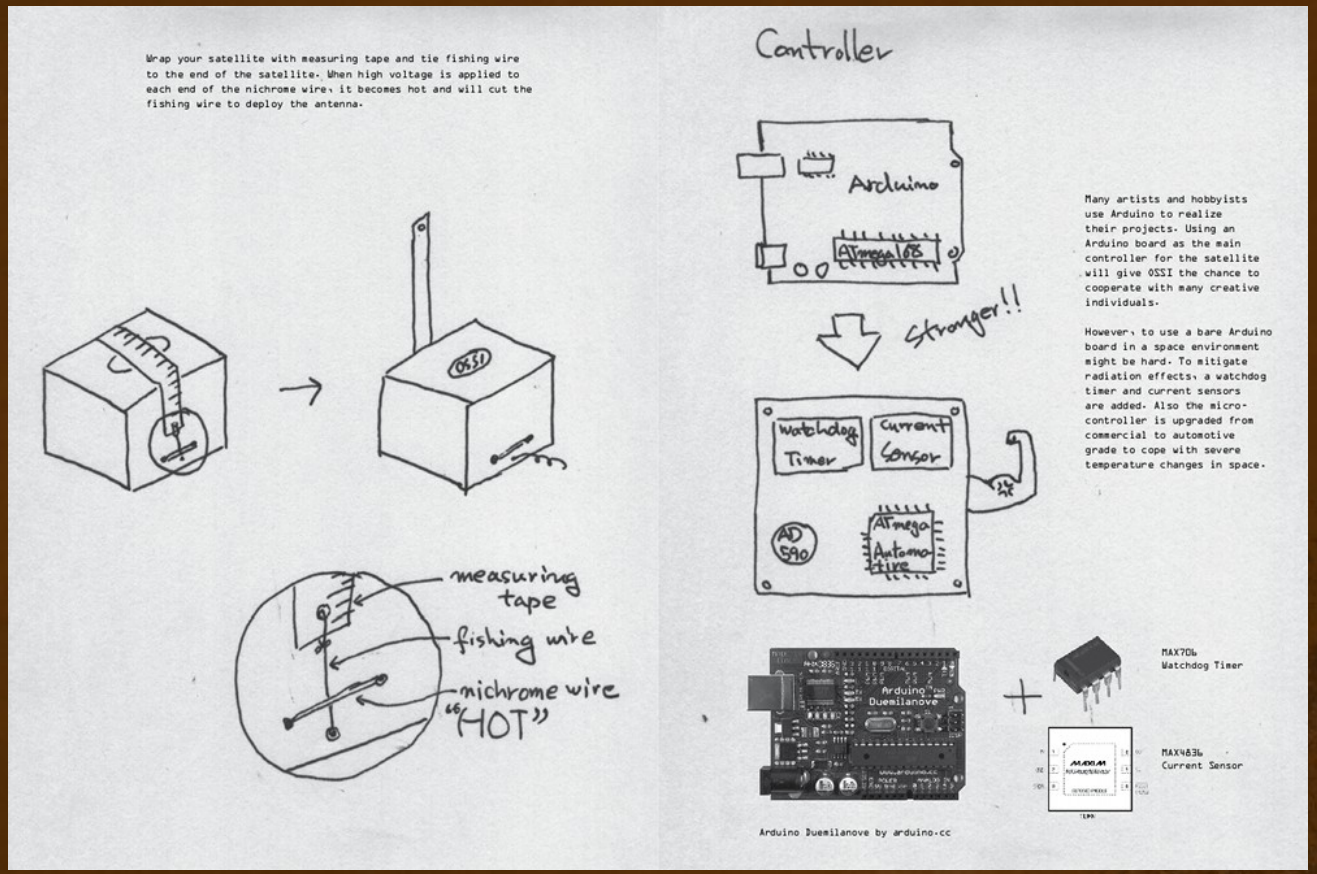
PACHUBE

From: http://www.pachube.com

- Crowdsourced sensor data
- Monitor *everything*
- Register public or private sensor feeds

THE OPEN SOURCE SATELLITE

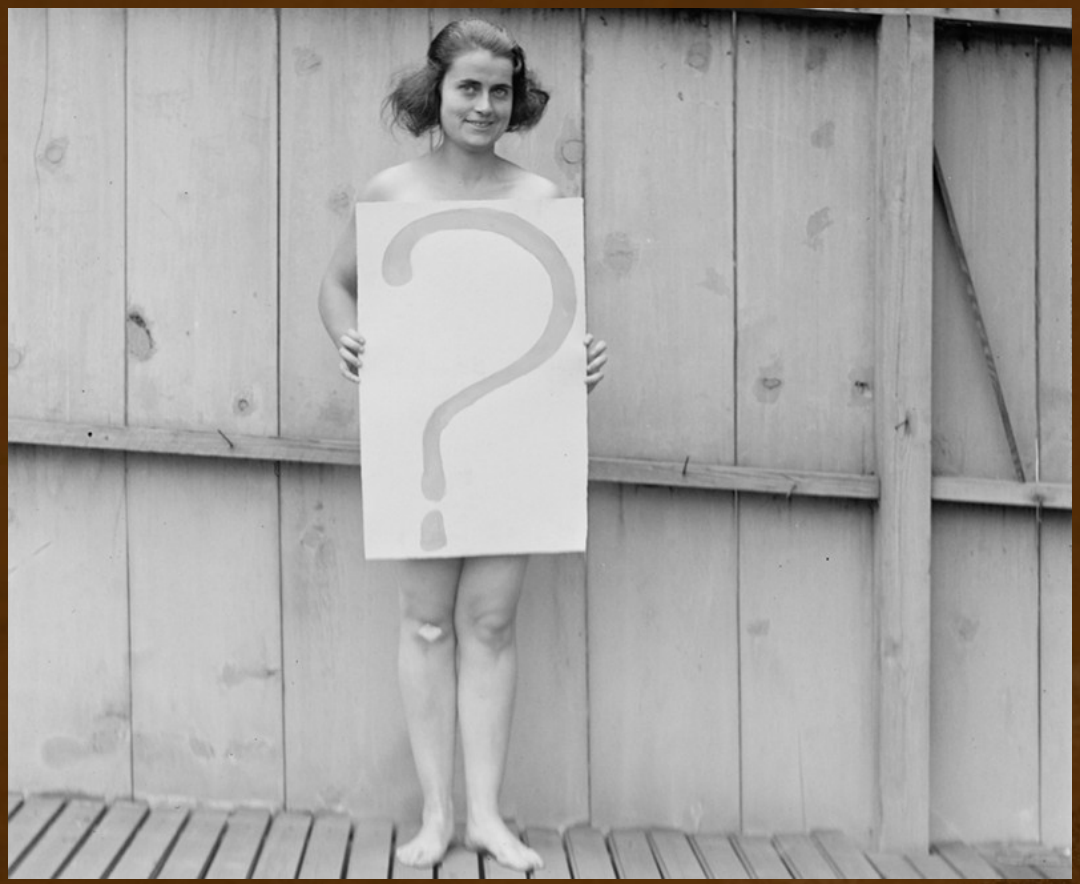
From: http://opensat.cc/



- Arduino-based orbital satellite
- Open-Source design
- “Creative” approach to documentation

YOUR PROJECTS

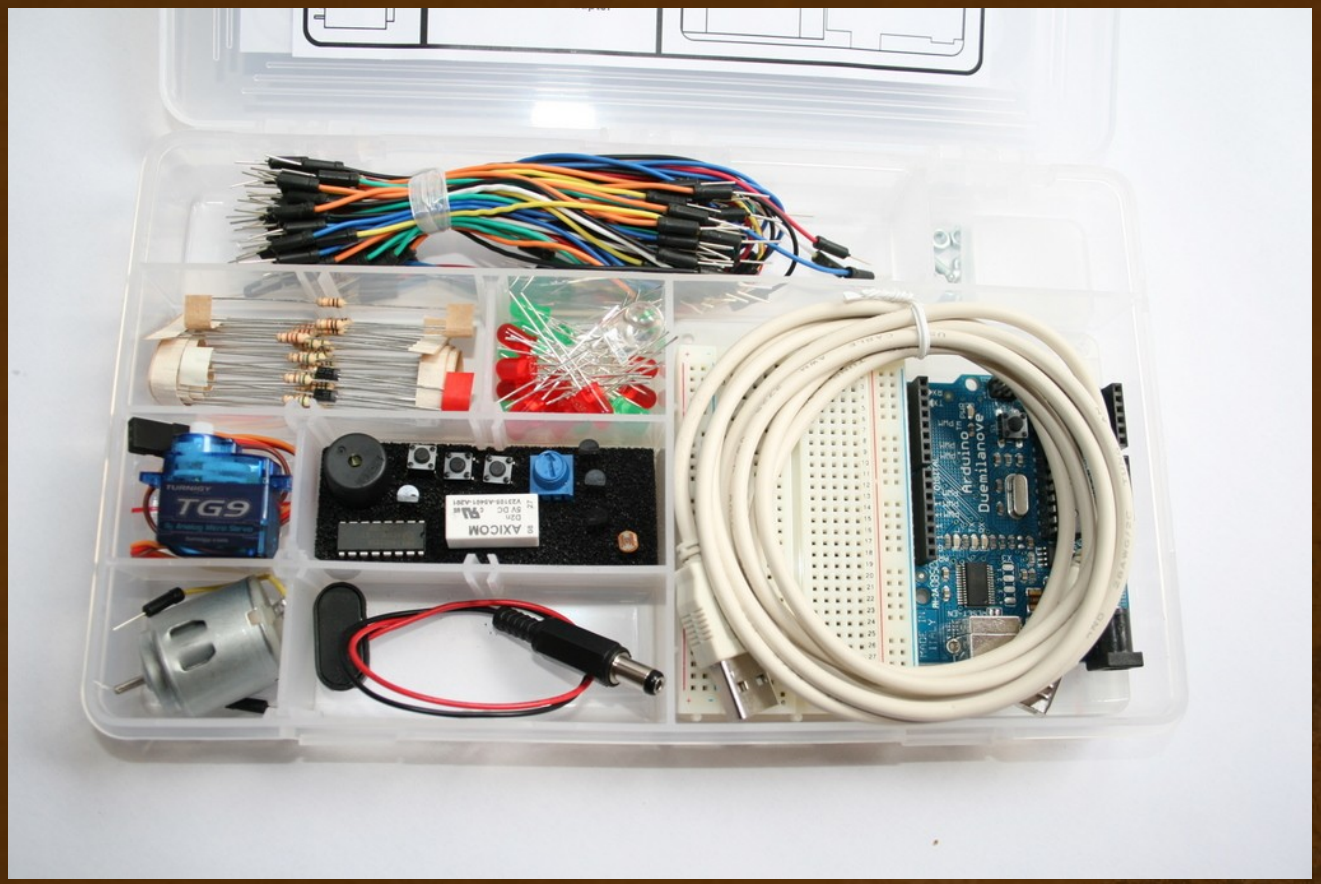
From: http://whatever-your-site-is.co.uk



- Low barrier to entry
- No experience required
- What are you waiting for?

WHERE TO START?

Because the journey of a thousand miles... yadda-yadda.



- **Oomlout Arduino Experimentation Kit**
- **Designed for learners of all ages**
- **http://bit.ly/cqLnVZ**