



Taking Mash-Ups Beyond the Browser

Adventures with Digital & Real Hot Glue



Alan's idea:
attach the wires to
the middle tubing

Bill: copyright
visualization of license



Scott: a gate that shows
who walked through it last
Bill: a gate that measures
ceremonial gates

Developers: What it Means to be a Mashup

Posted by [ScuttleMonkey](#) on Wednesday August 09, @03:36AM
from the [development-has-to-come-from-somewhere](#) dept.

An anonymous reader writes

"IBM DevWorks has provided us with an introductory article that helps define what it [means to be a mashup](#). In addition to just defining what a mashup really is the author also delves into what they do for the community at large and where they may take us in the near future. From the article: 'Mashups are an exciting genre of interactive Web applications that draw upon content retrieved from external data sources to create entirely new and innovative services. They are a hallmark of the second generation of Web applications informally known as Web 2.0.'"



[Read More...](#) | developers.slashdot.org

[1](#) comment

maybe another term is appropriate? (Score:2)

by [macadamia_harold \(947445\)](#) on Wednesday August 09, @03:47AM ([#15872021](#))
(<http://www.planesonasnake.com/>)

Sorry, but this buzzword's taken.

mash up. v. To take elements of two or more pre-existing pieces of music and combine them to make a new song. n. A song comprised of elements of two or more pre-existing pieces of music.

2. I'm in the middle of mashing-up songs by Tom Jones and Michael Jackson. (verb usage)

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Working definition:

“A combination of existing technologies, glued together to achieve new functionality, as opposed to creating that functionality from scratch.”

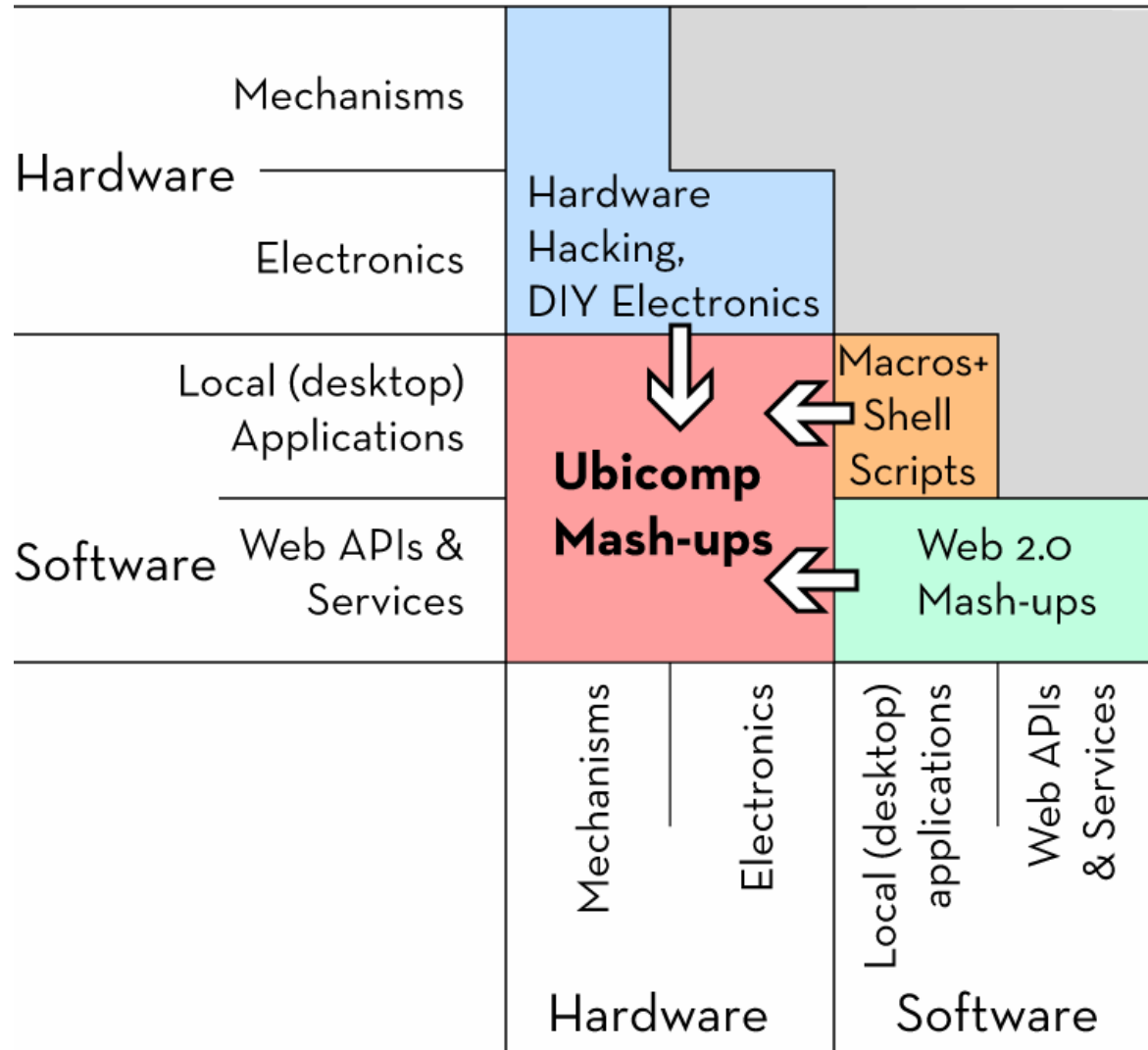
Working definition:

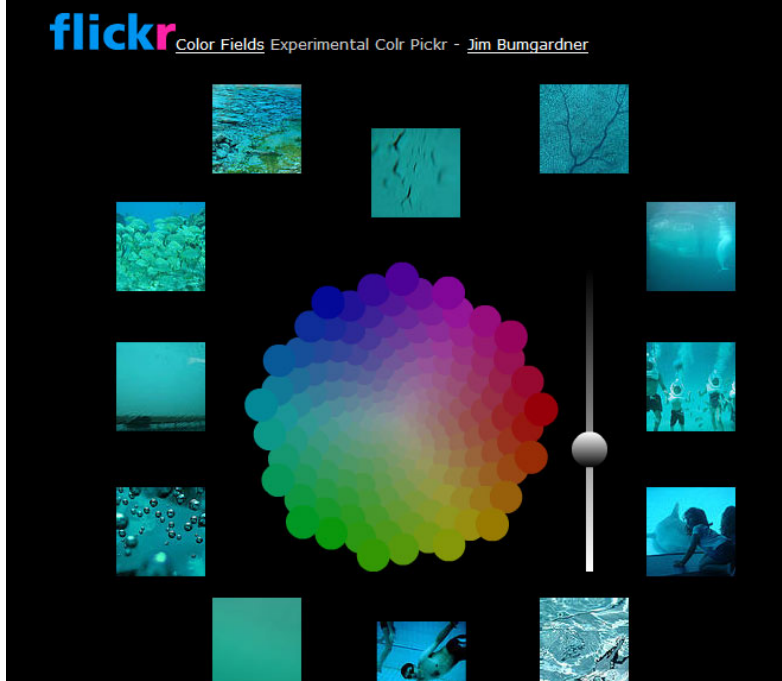
*“A combination of **existing technologies, glued together** to achieve new functionality, as opposed to creating that functionality from scratch.”*

**Wait a minute! Isn't this
just a fancy new term for
macros and scripting?**

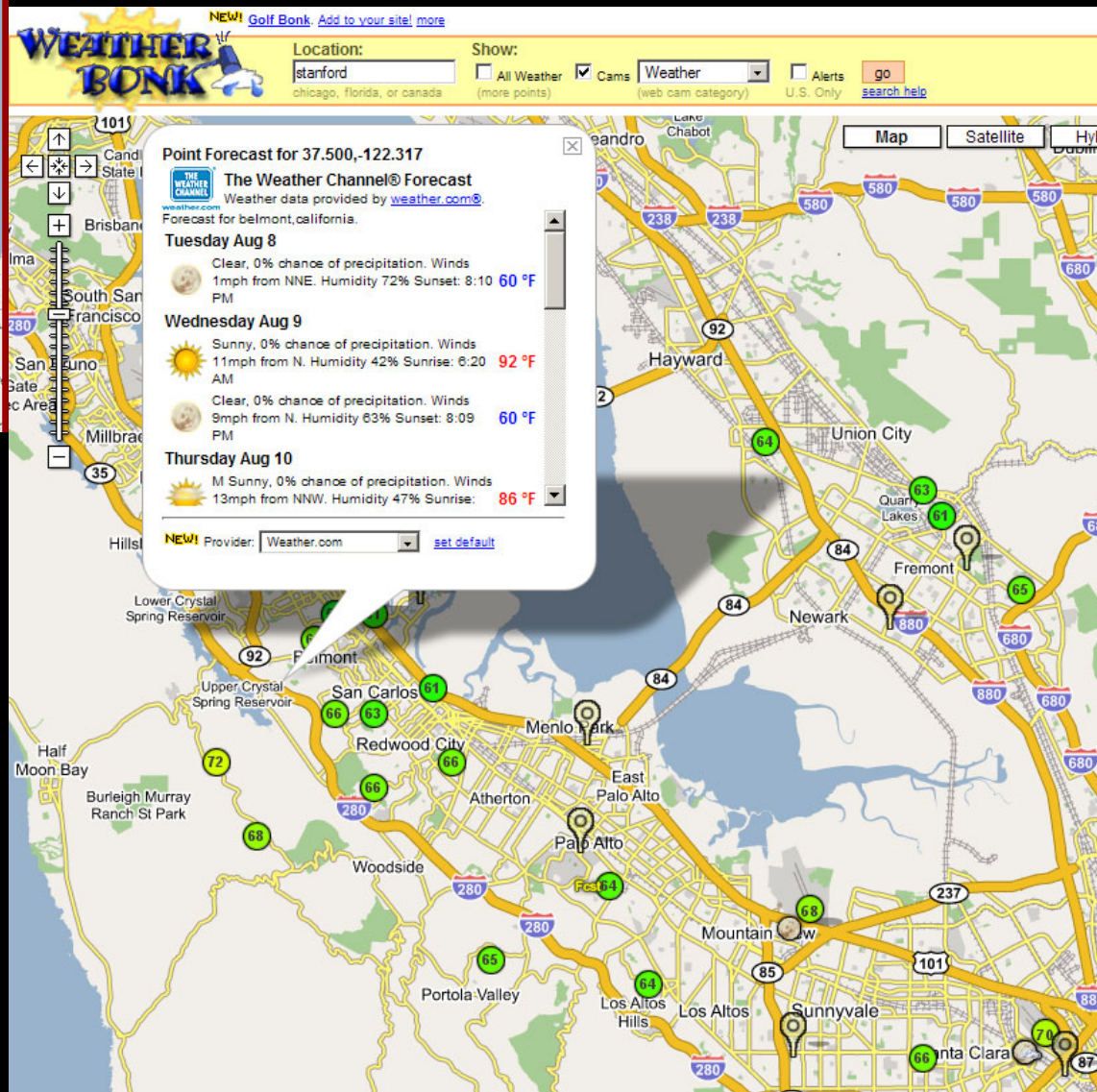
What's new?

Mash-Up Matrix

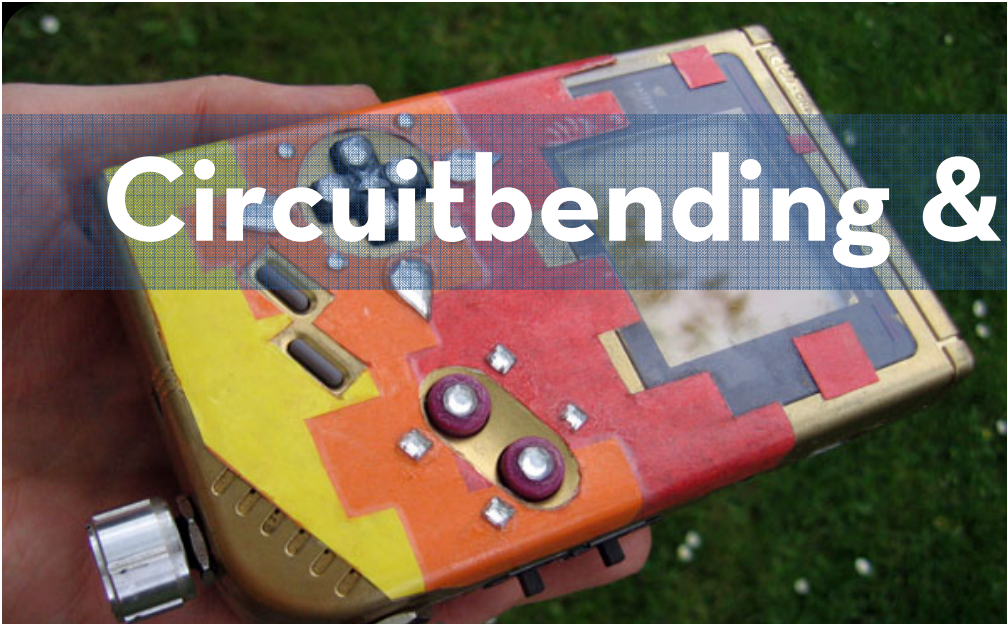




Web2.0 Mash-Ups



Circuitbending & Toy Hacking



Copyright Kevin Rees - Circuit-Bent.Net



Disclaimer:

The following examples are guaranteed to make real software engineers cringe.

But that's the point.

It's quick and dirty prototyping for a target audience of size $n=1$.

Ubicomp Example #1 - Where can I have lunch around here?

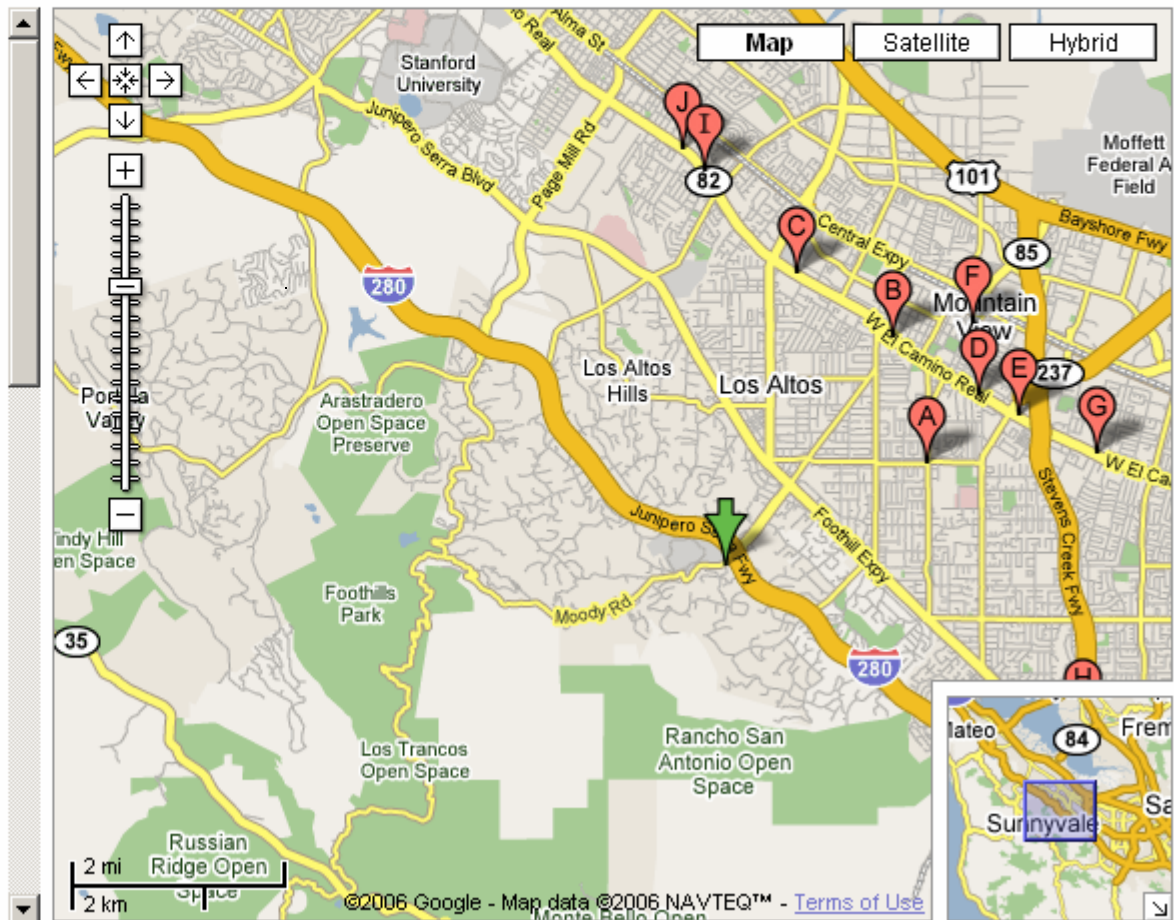
Maps

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Results 1-10 of about 14,700 for **sandwiches** near 37.359515,-122.121921 - [Modify search](#)

Categories: [Restaurant Sandwich Shops](#), [Restaurants](#)

- A** [Subway Sandwiches & Salads](#)
809 Cuesta Dr, Mountain View, CA
(650) 210-9325 - [1 review](#) - 2.1 mi NE
- B** [Quizno's Subs](#)
1711 W El Camino Real, Mountain View, CA
(650) 960-3634 - 2.6 mi NE
- C** [Subway Sandwiches and Salads](#)
2500 W El Camino Real, Mountain View, CA
(650) 559-7827 - 2.8 mi N
- D** [Subway Sandwiches](#)
451 W el Camino Real, Mountain View, CA
(650) 966-9666 - 2.9 mi NE
- E** [Quiznos Sub](#)
123 E El Camino Real, Mountain View, CA
(650) 564-9900 - [1 review](#) - 3.1 mi NE
- F** [Marchant Kitchens](#)
301 Castro St, Mountain View, CA
(650) 967-3680 - [1 review](#) - 3.2 mi NE





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sandwiches

37.359515,-122.121921

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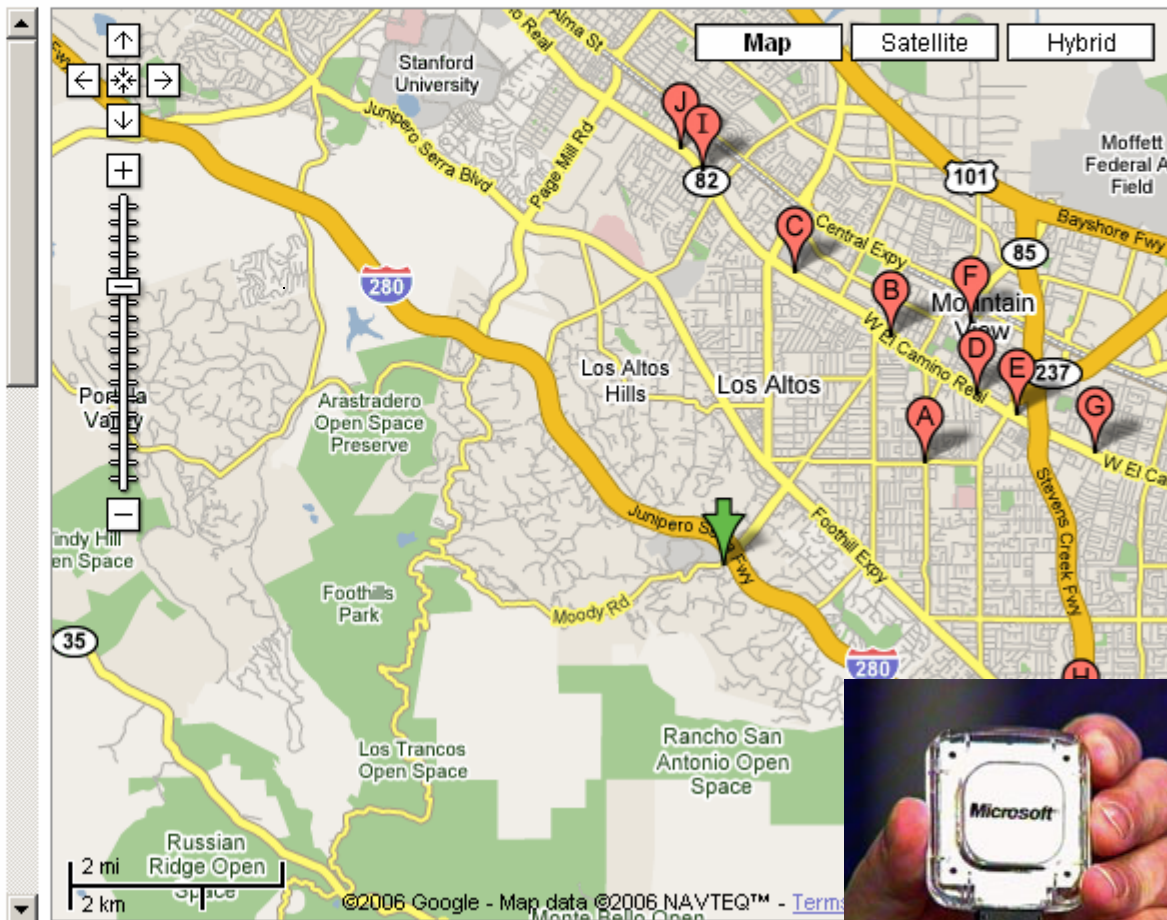
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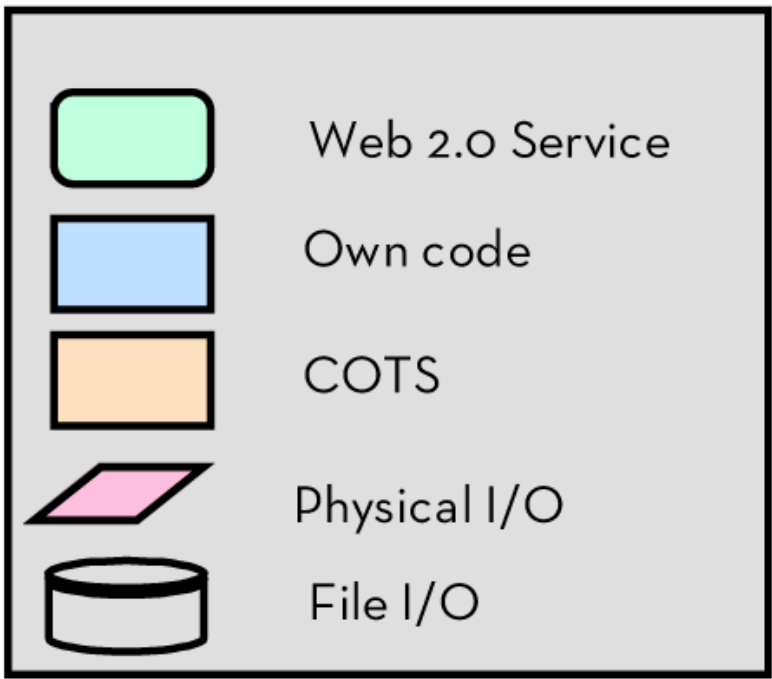
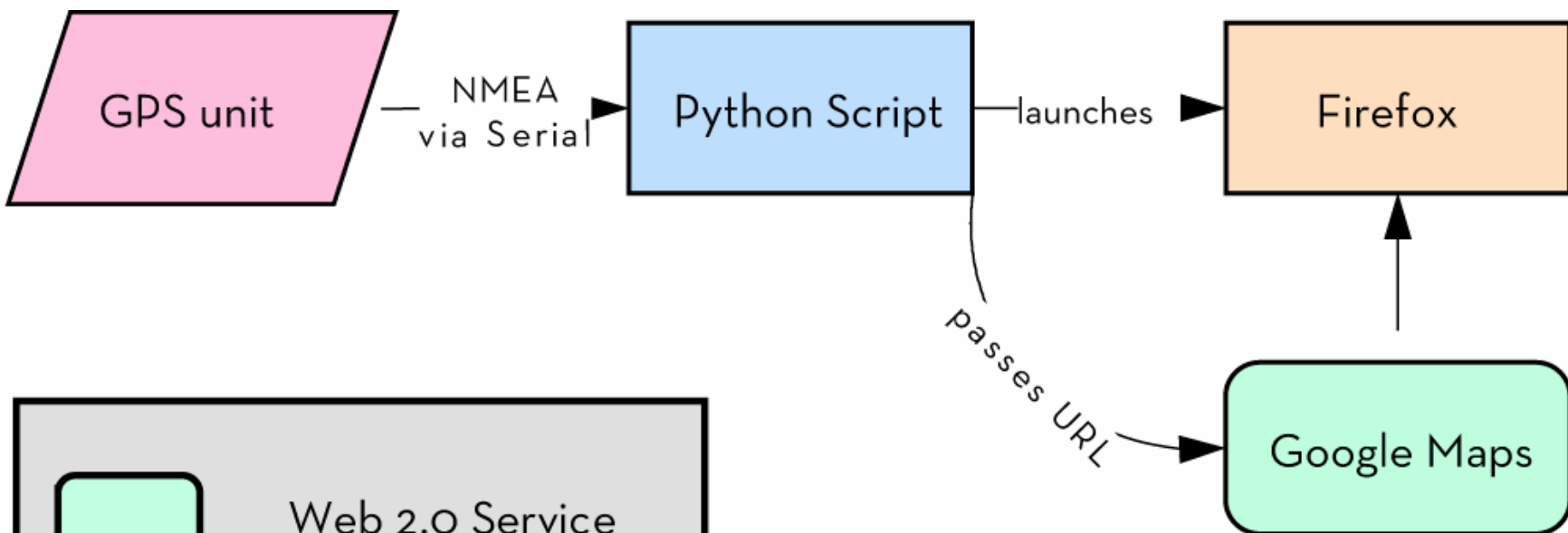


```
# open a connection to the GPS device
ser = serial.Serial(port='COM2',baudrate=4800,bytesize=8, parity='N',
stopbits=1,timeout=3)

# read lines until we find one with the GPS position in it
line = ""
while not(line.startswith("$GPGGA")):
    line= ser.readline()
ser.close()

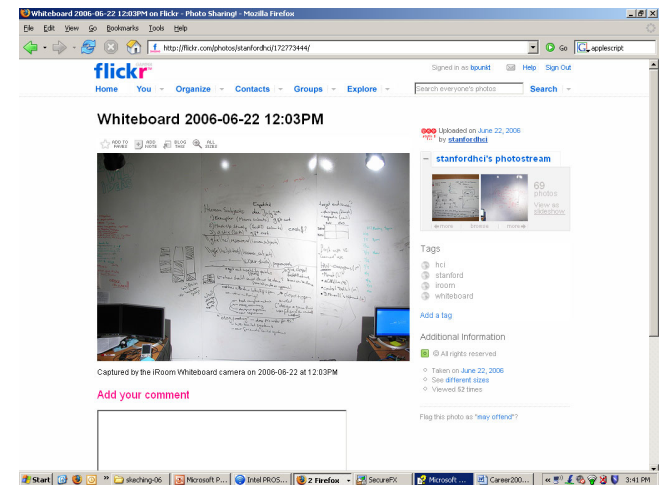
# get our lat+long
tokens = line.split(",")
lat = dmmm2dec(float(tokens[2]),tokens[3])
lng = dmmm2dec(float(tokens[4]),tokens[5])

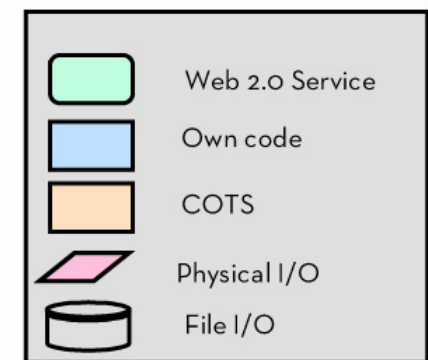
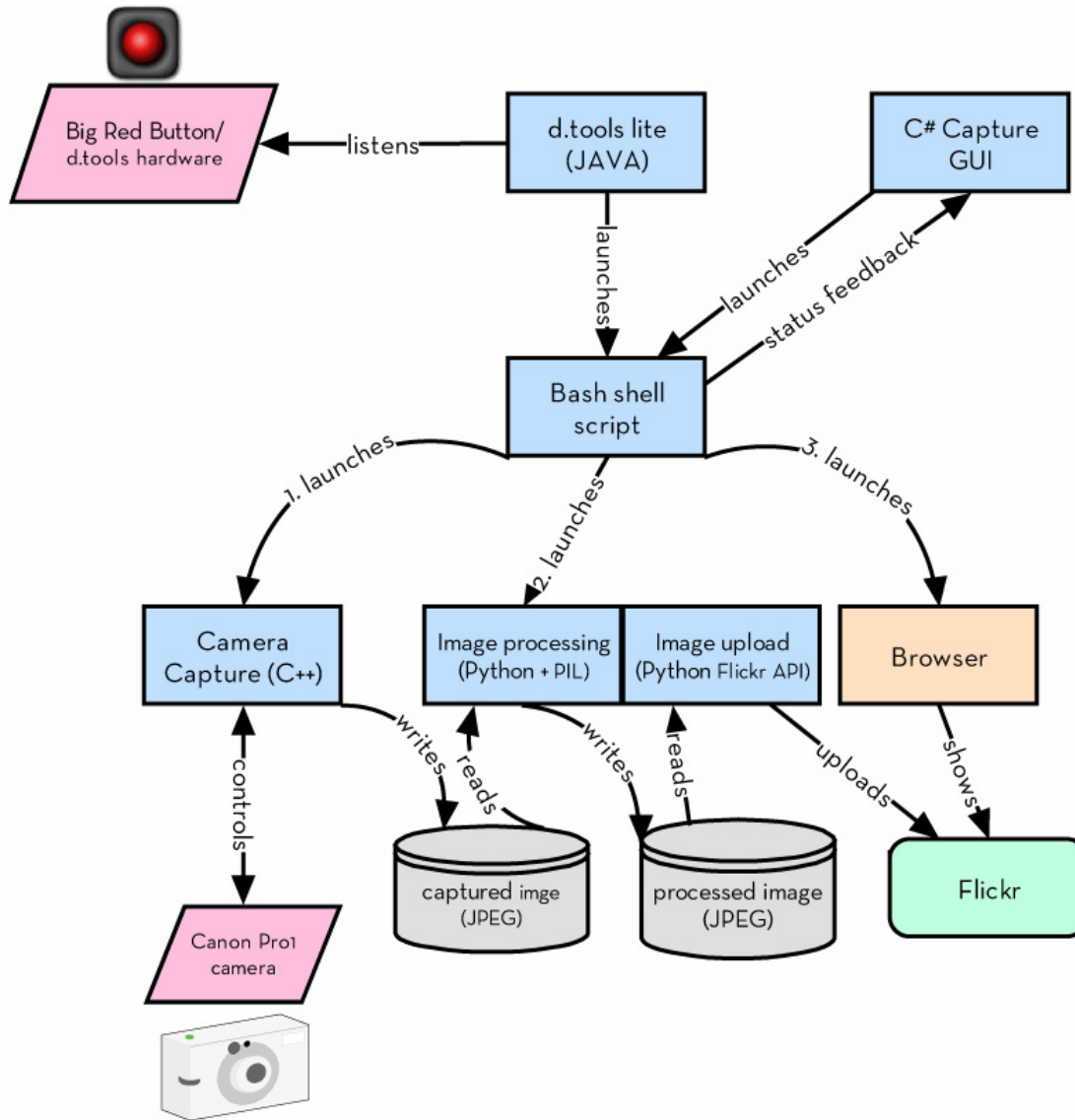
# launch location-based search in browser
query = "sandwiches"
url = r'"http://maps.google.com/maps?f=1&hl=en&q='+query+'&near='+str(lat)+
    ', '+str(lng)+'&ie=UTF8&z=12&om=1"';
run("firefox",url)
```



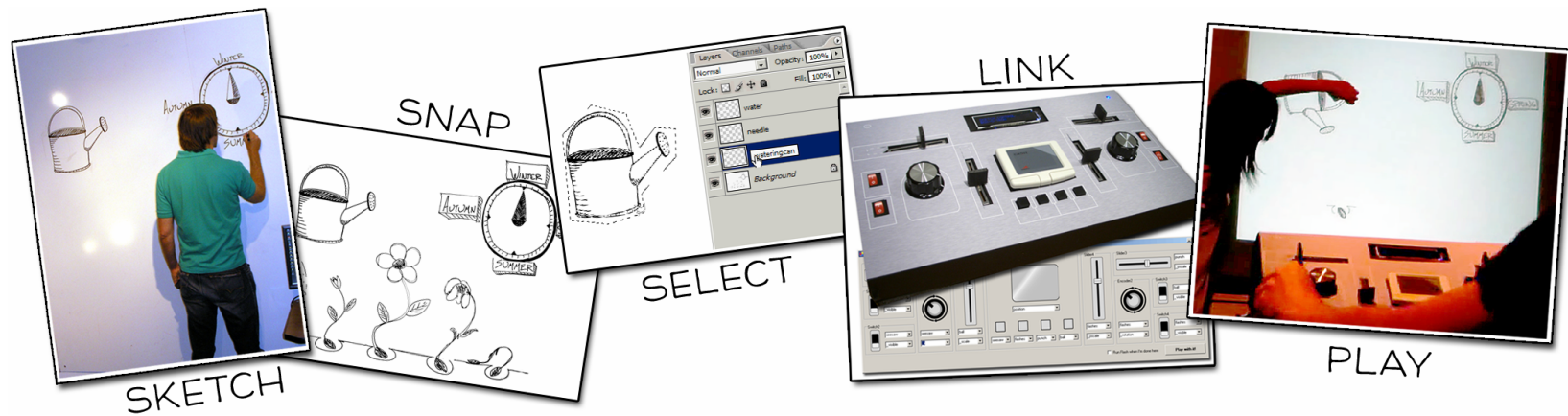
Example #2

Our whiteboard has a Flickr account



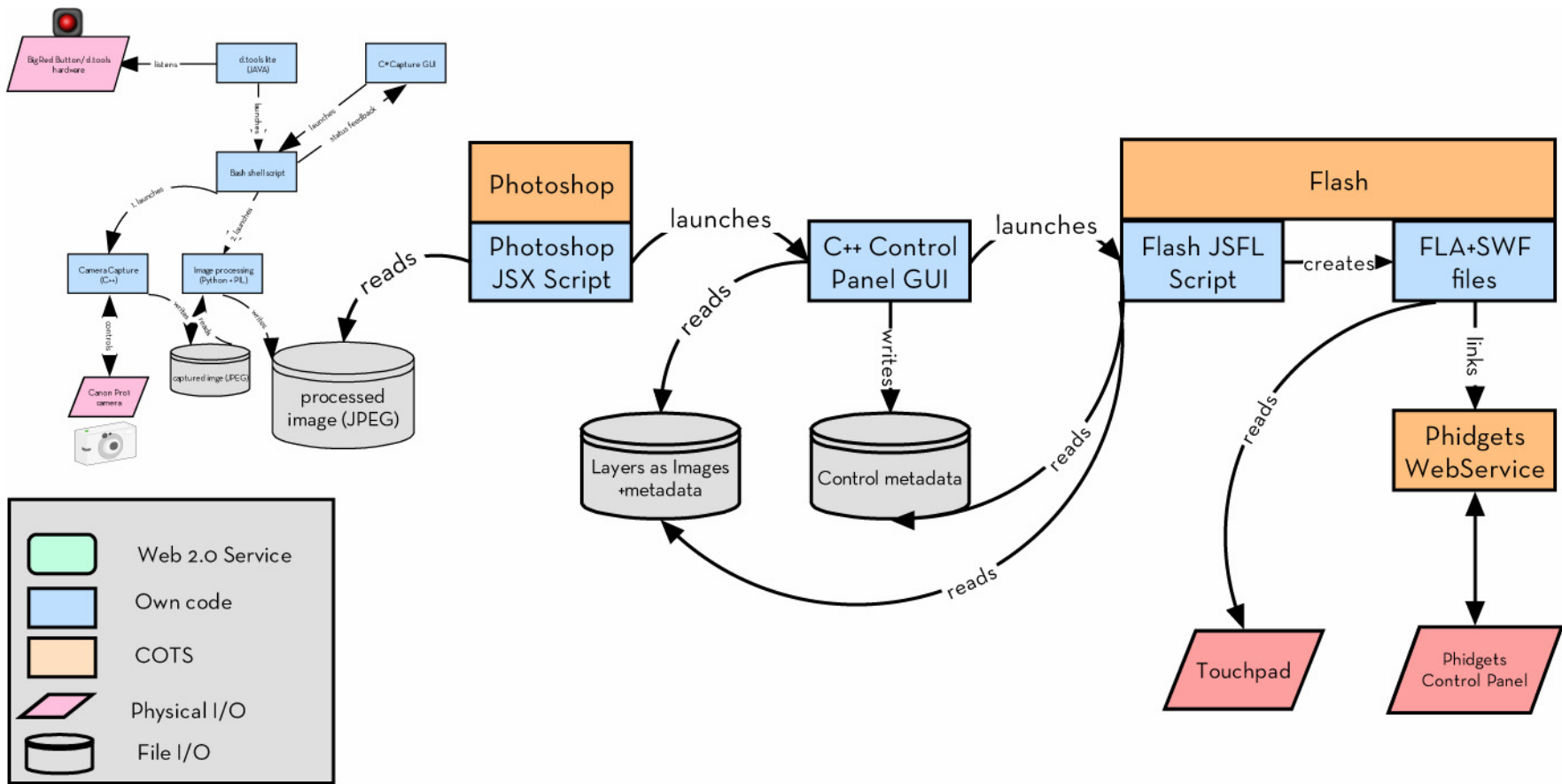


Example #3 - Ex-A-Sketch



<http://hci.stanford.edu/research/ex-a-sketch/>

Ex-A-Sketch Movie

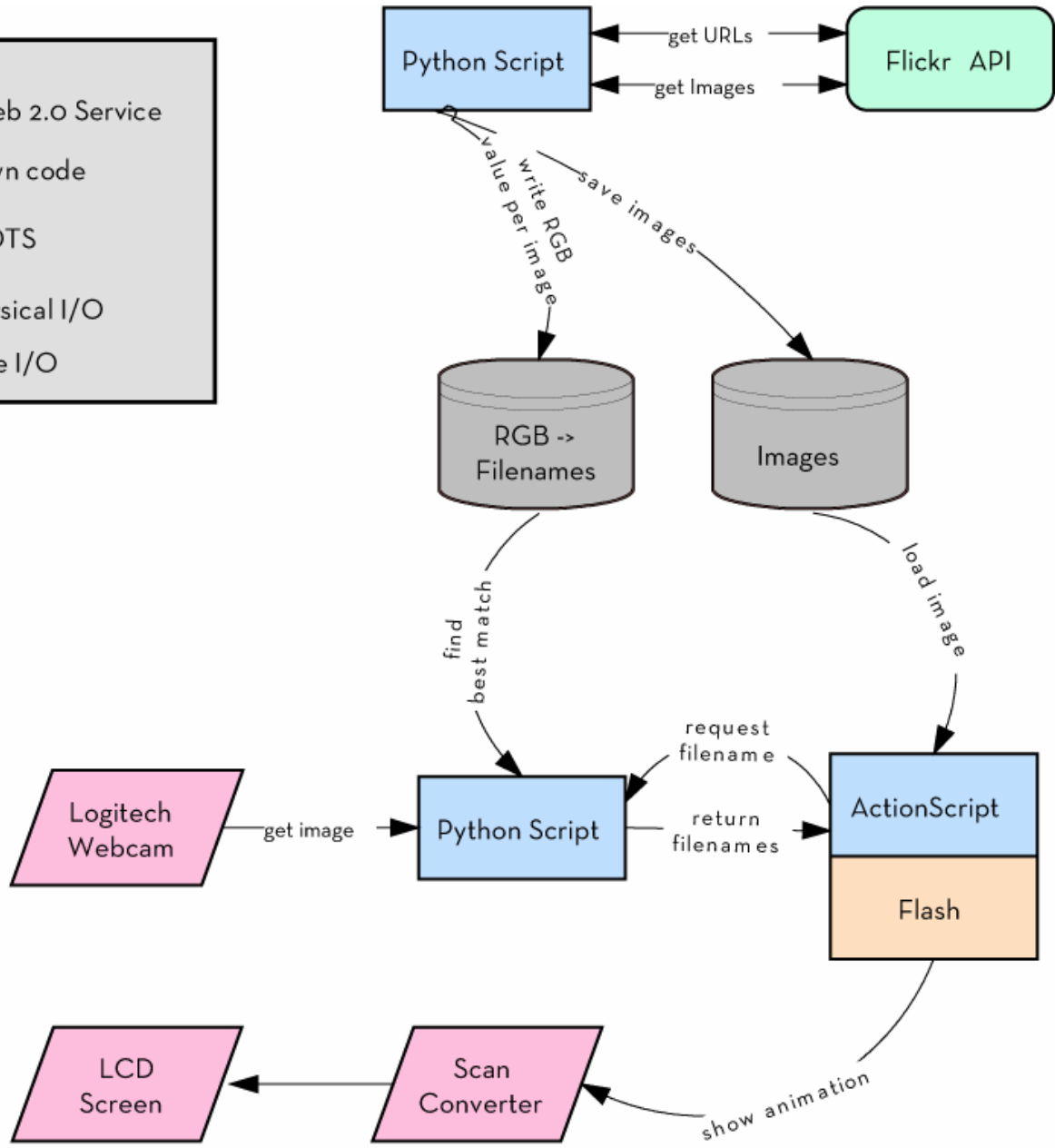
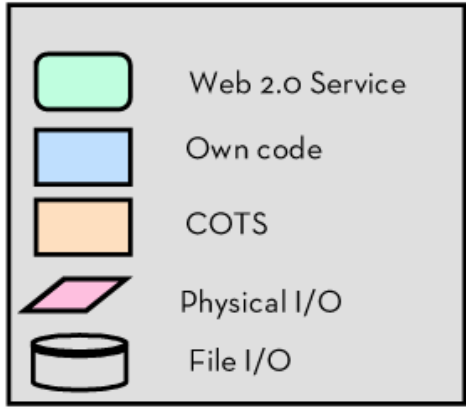


Example #4 - The Color Field Camera



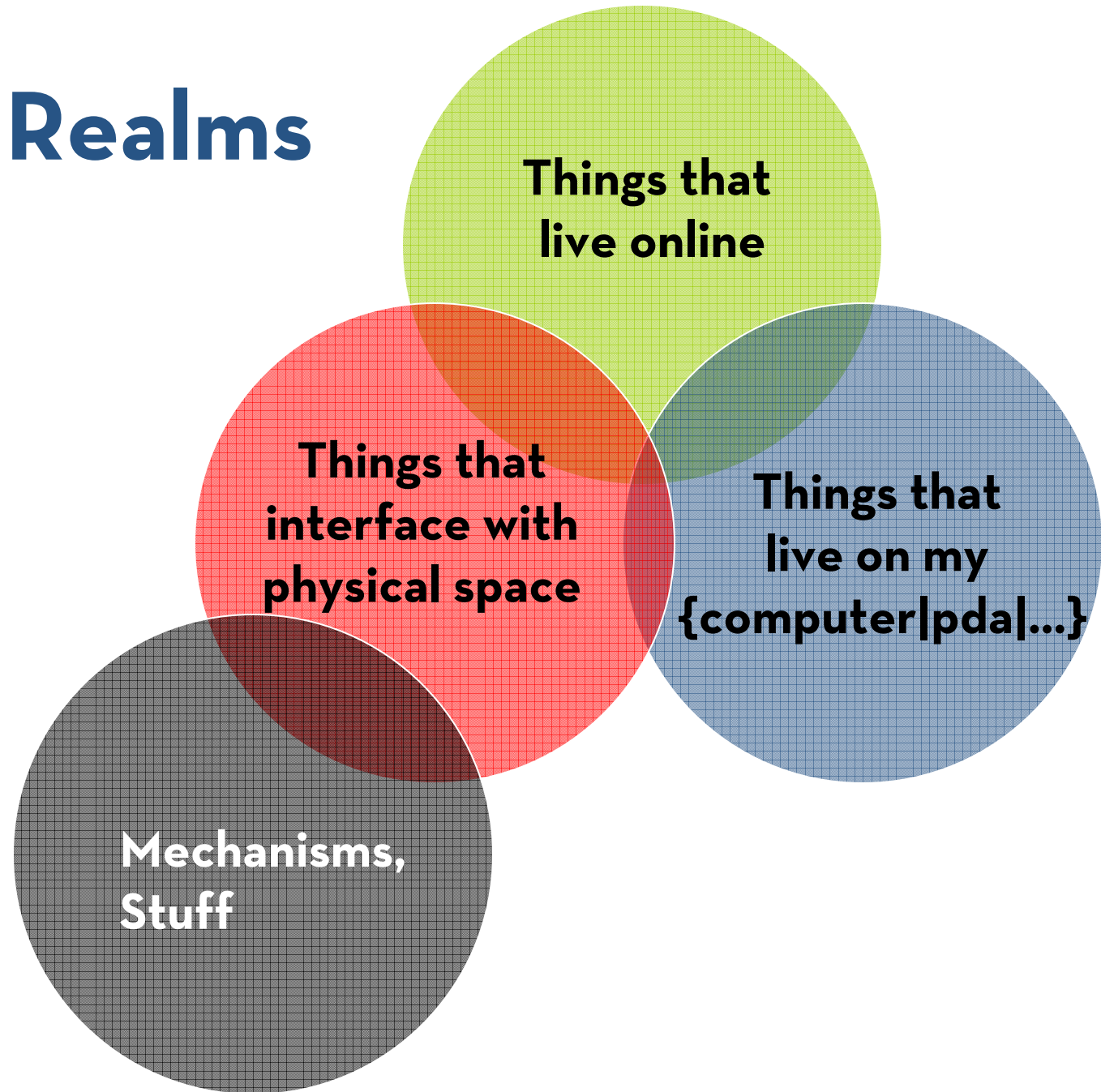
<http://bjoern.org/projects/cfcam/>

Color Field Camera Movies



**Gluing things
together:
What ? How?**

Four Realms



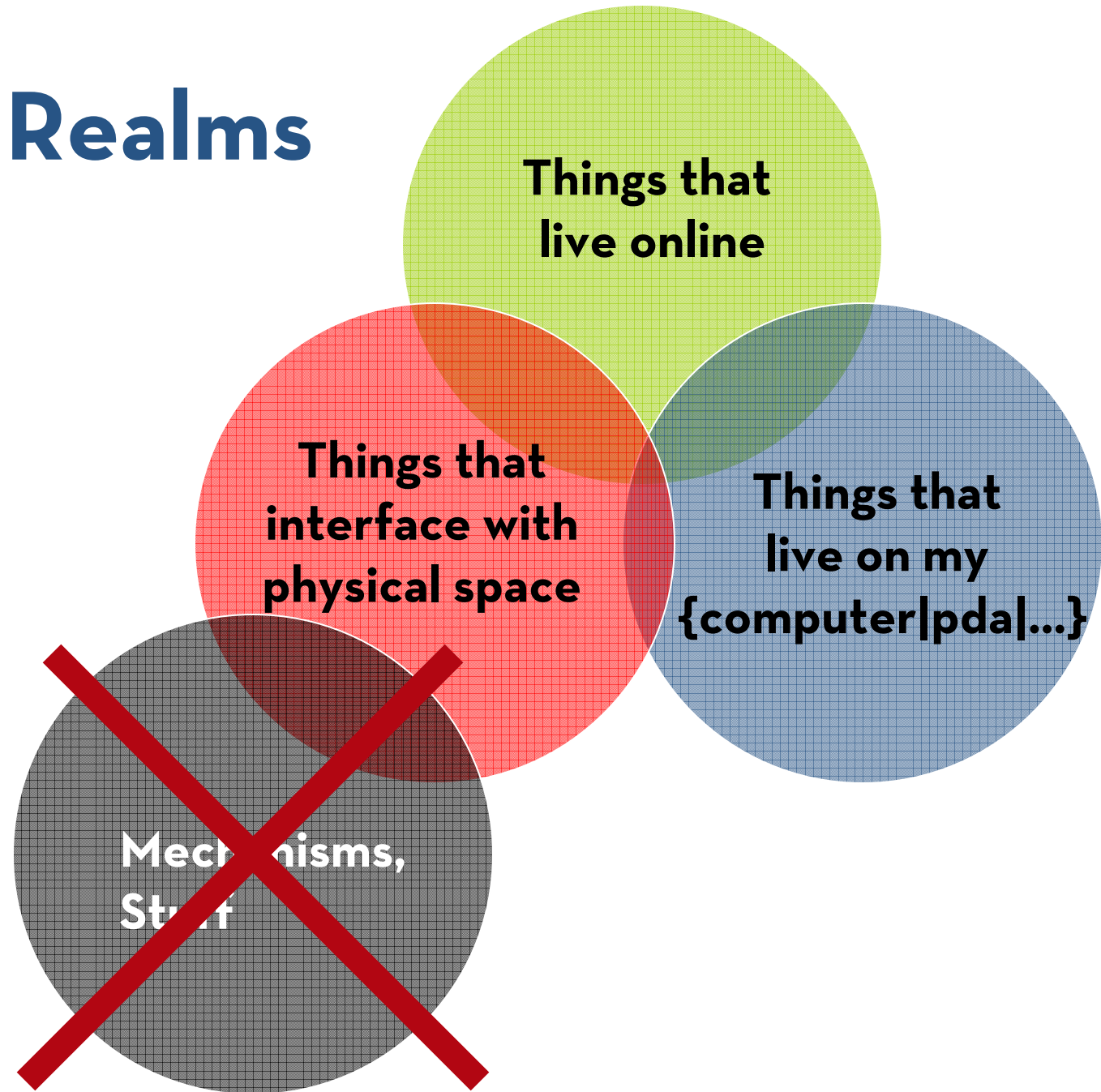
**Things that
live online**

**Things that
interface with
physical space**

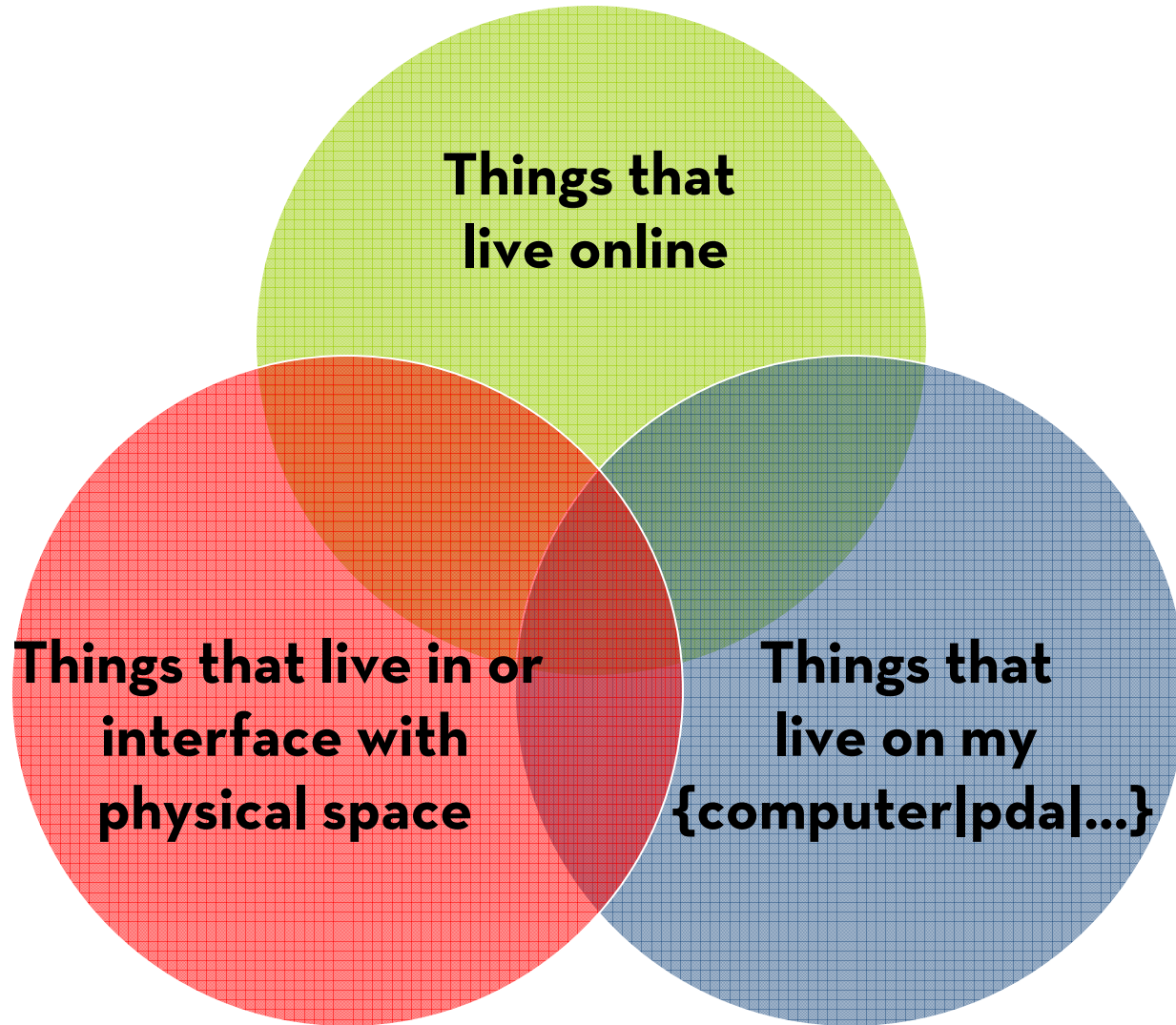
**Things that
live on my
{computer|pda|...}**

**Mechanisms,
Stuff**

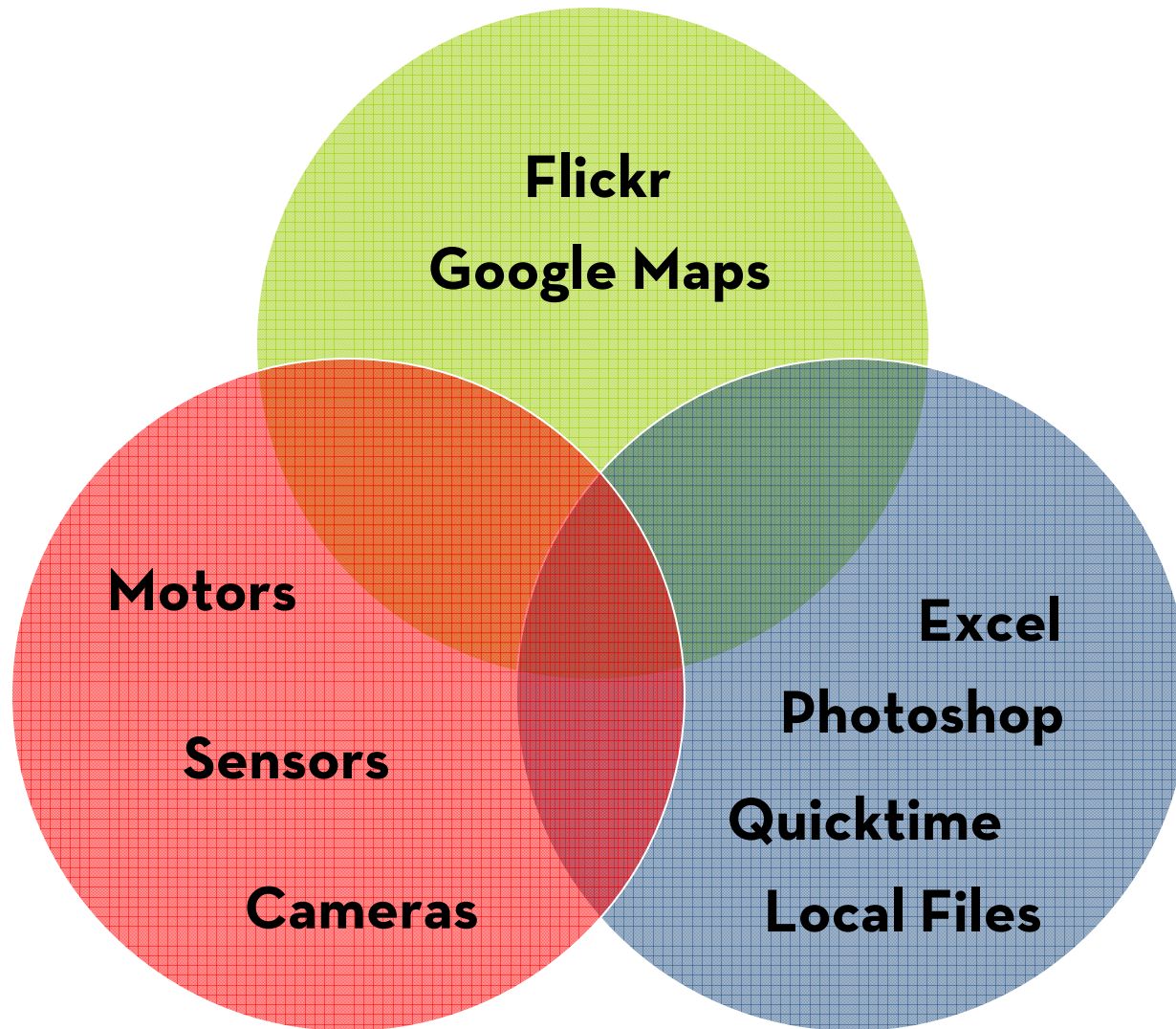
Four Realms



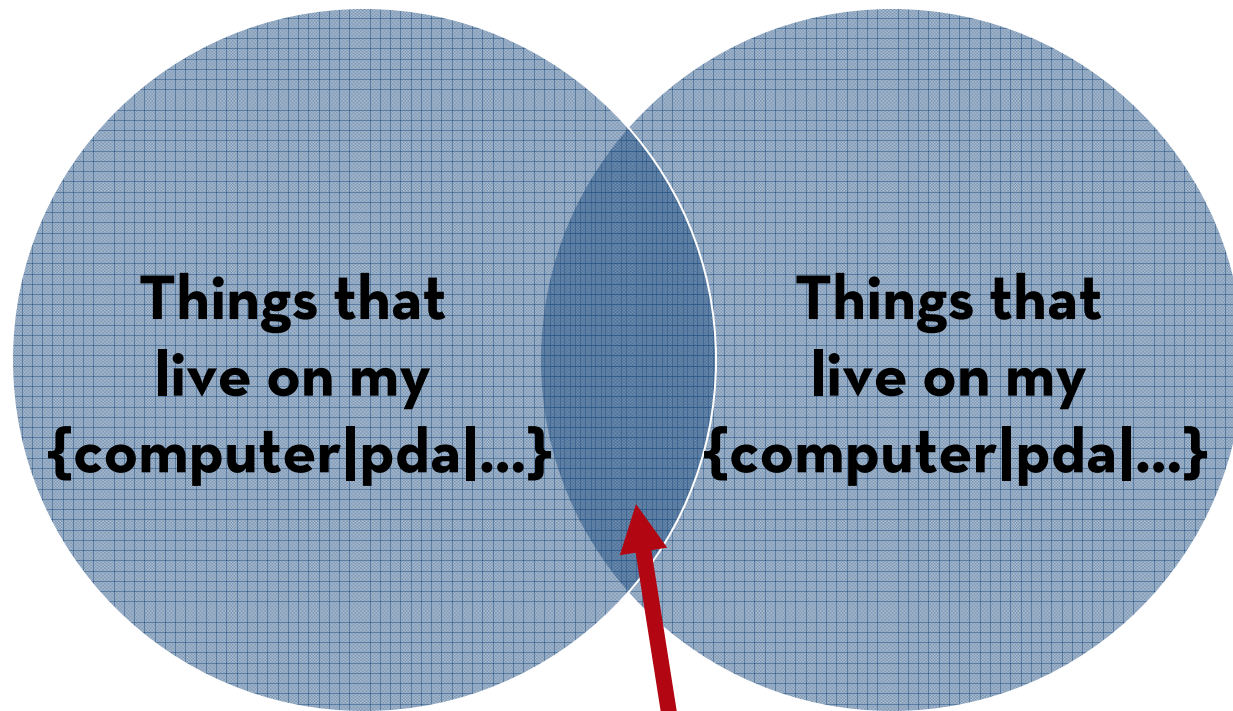
Three Realms



..with some examples

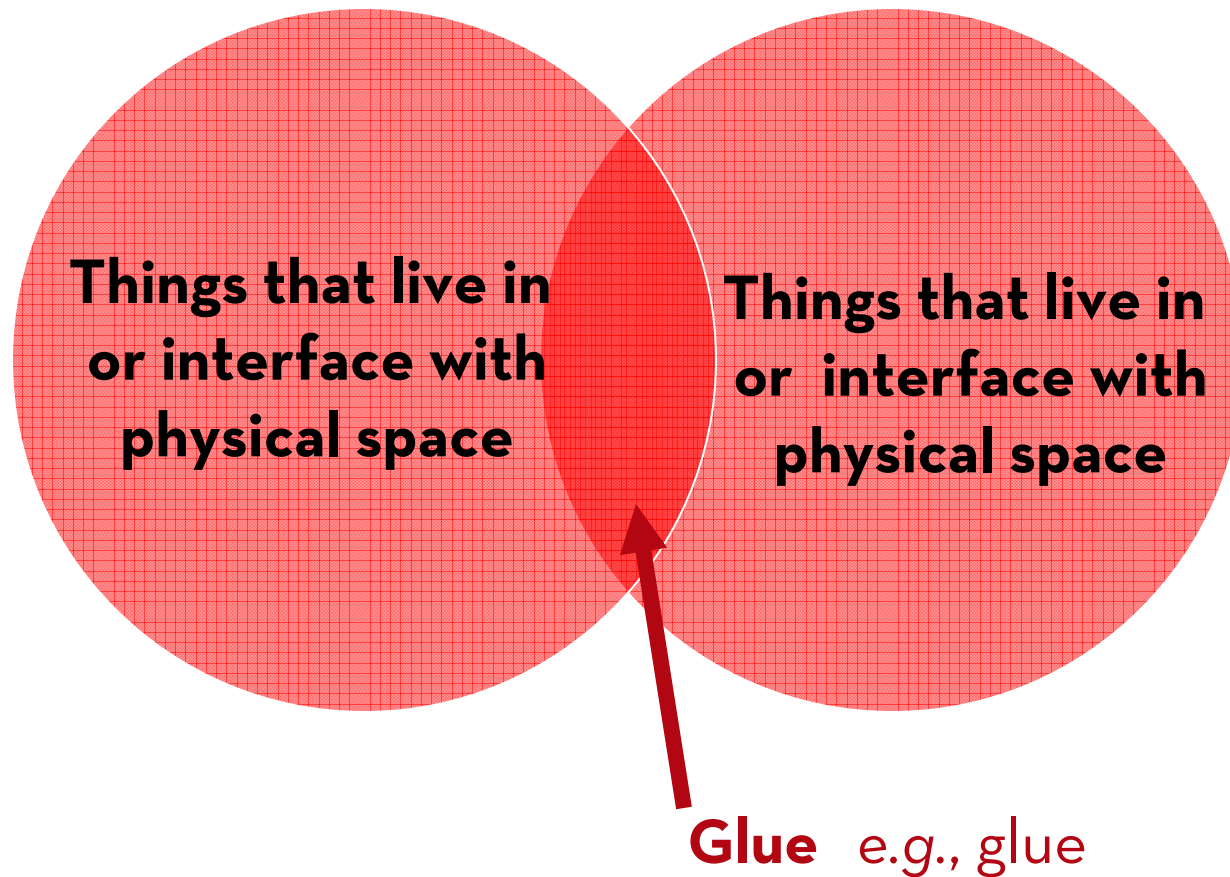


Connecting similar pieces...

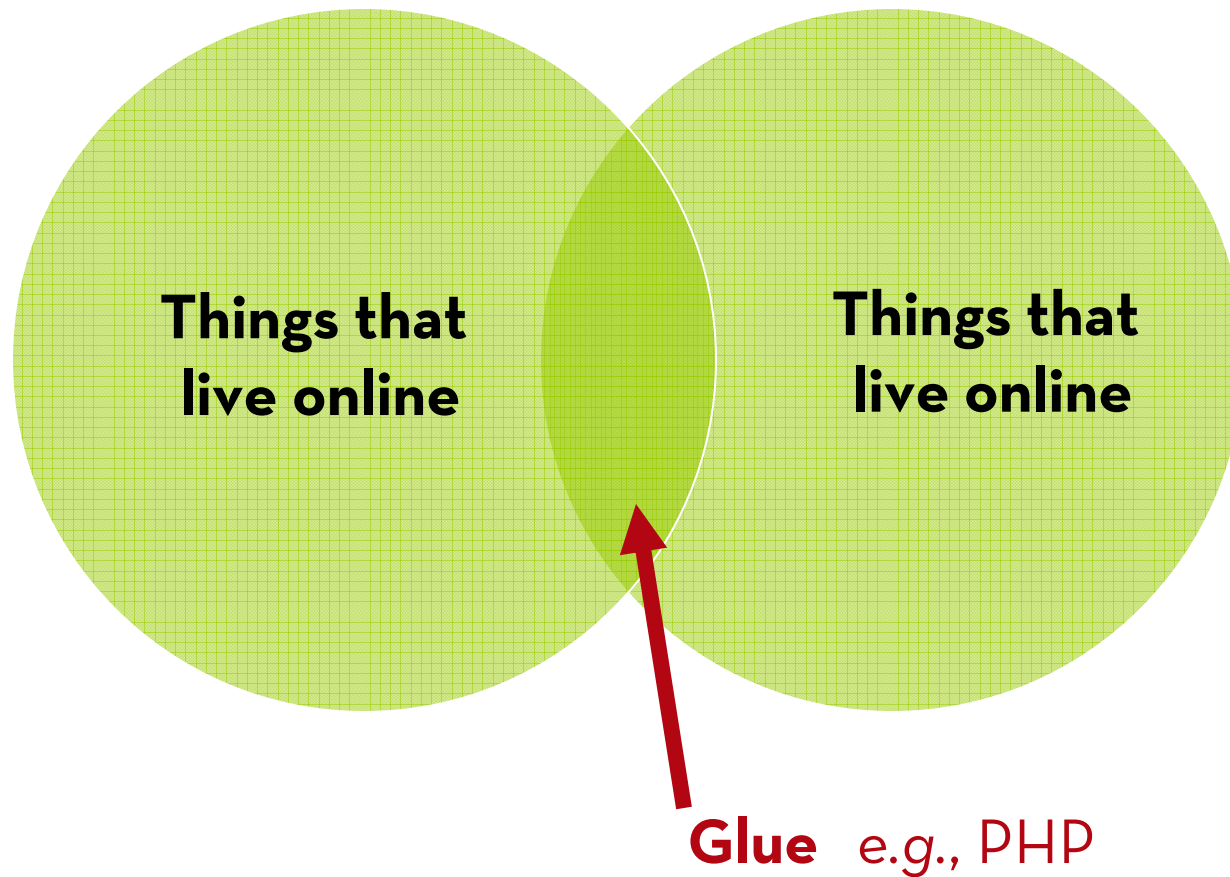


Glue e.g., shell scripts

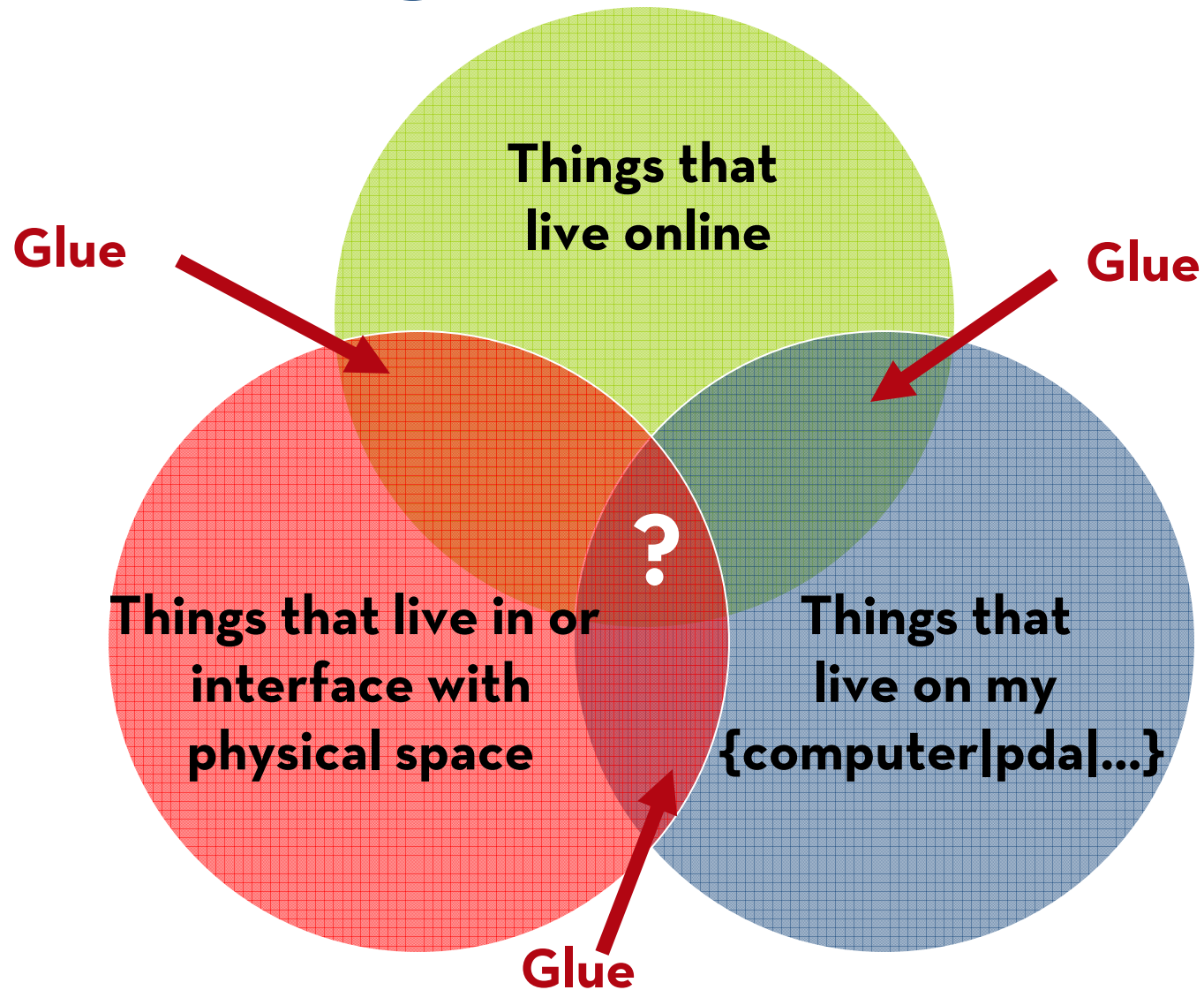
Connecting similar pieces...



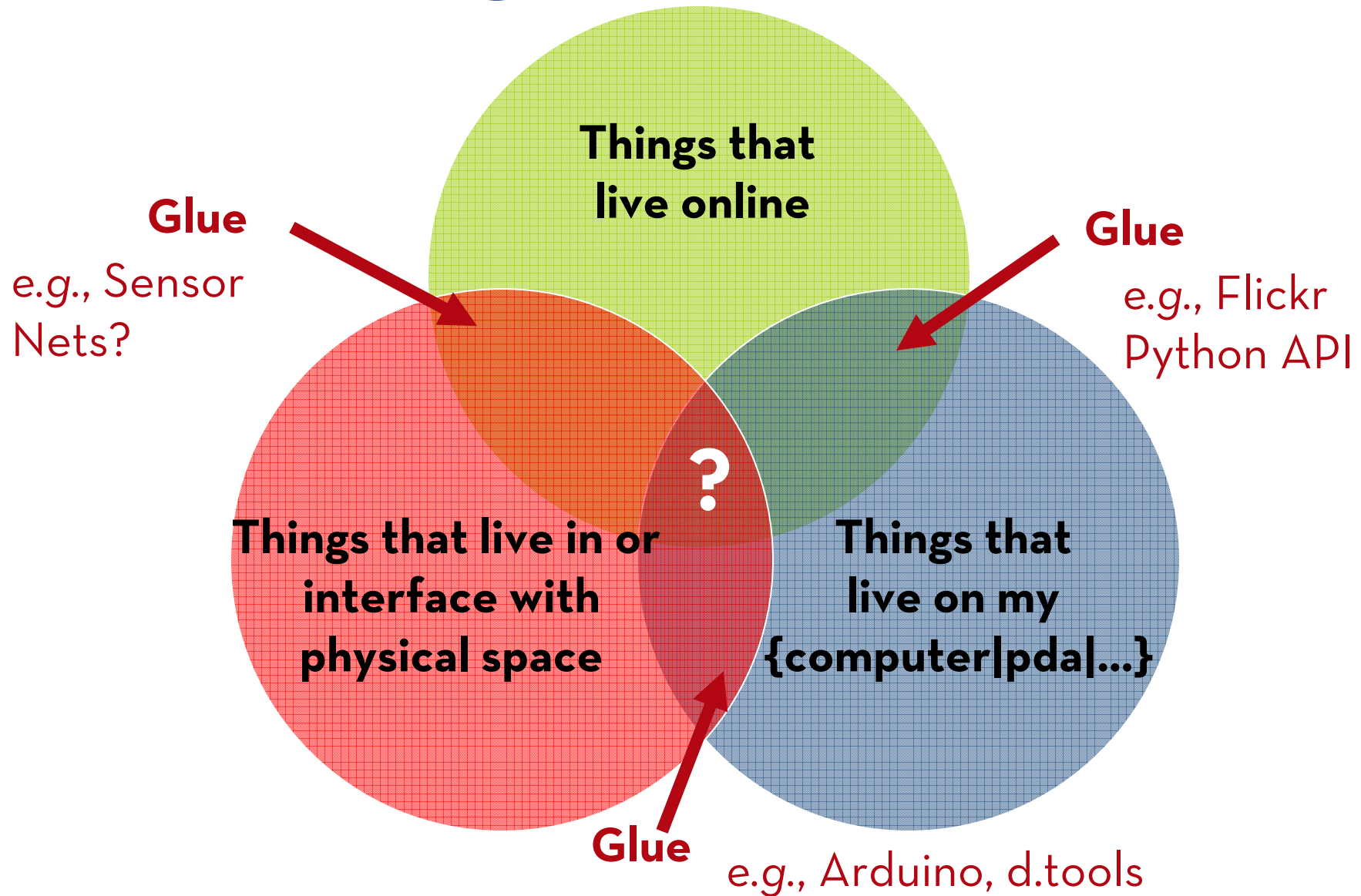
Connecting similar pieces...



Connecting different pieces



Connecting different pieces

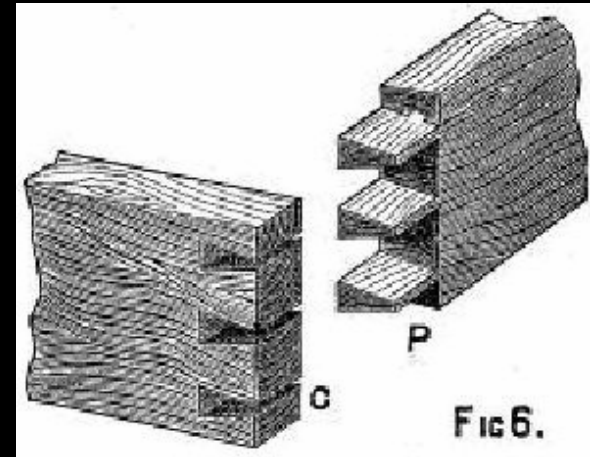


Two kinds of Glue



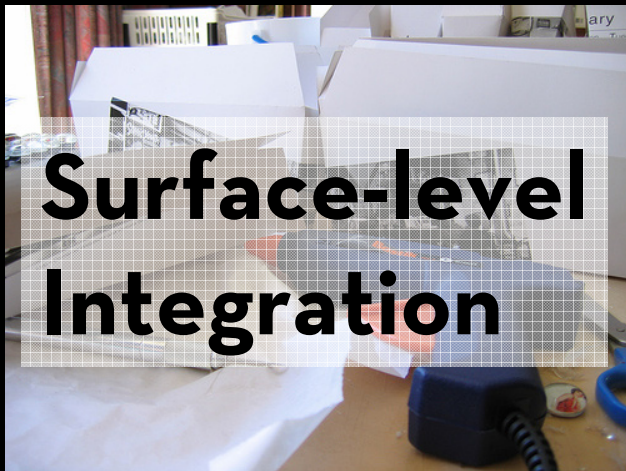
Hot glue

VS.



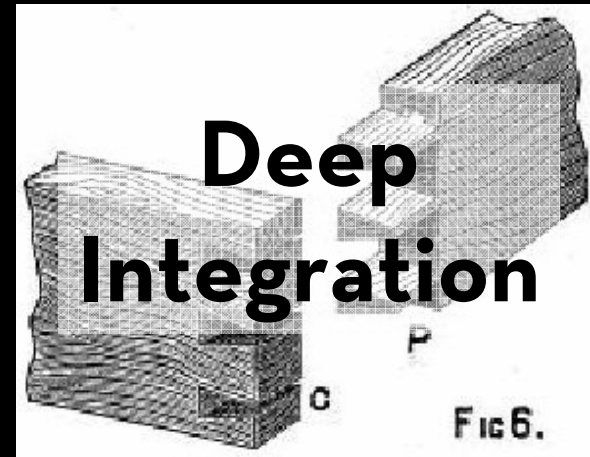
Dovetail joint

Two kinds of Adhesives/Connectives



Hot glue

VS.



Dovetail joint

Two kinds of Adhesives/Connectives

Screen scraping

Screen poking

V.S.

API calls

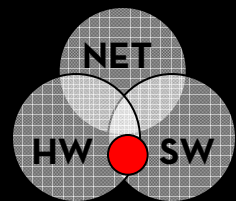
Tailored hardware

Useful Mash-Up Tools

Screen poking in Software

```
import java.awt.Robot;  
public class RobotExp {  
    public static void main(String[] args) {  
        Robot robot = new Robot();  
        robot.keyPress(KeyEvent.VK_UP);  
        robot.keyPress(KeyEvent.VK_SPACE);  
    }  
}
```

Java Robots



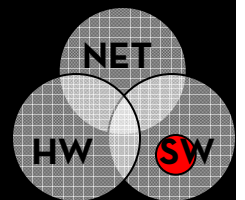
Screen poking in Software

```
; Run Notepad
Run ("notepad.exe")

; Wait for the Notepad become
activeWinWaitActive("Untitled -Notepad")

; Now that Notepad is active type some text
Send("Hello from Notepad.{ENTER}1 2 3 4 5 ")
Sleep(500)
```

Autolt



Scriptable Software

Adobe/Macromedia:

- Flash JavaScript Extensions
to *generate* Flash files
- Illustrator, Photoshop, Acrobat Plug-ins

Google SketchUp Ruby API

Browsers: Chickenfoot, Greasemonkey

AppleScript

Communication Protocols

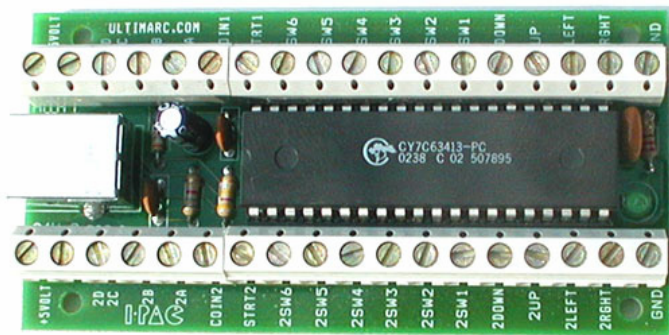
Serial Port communication

(USB-Serial chips) - lots of libraries

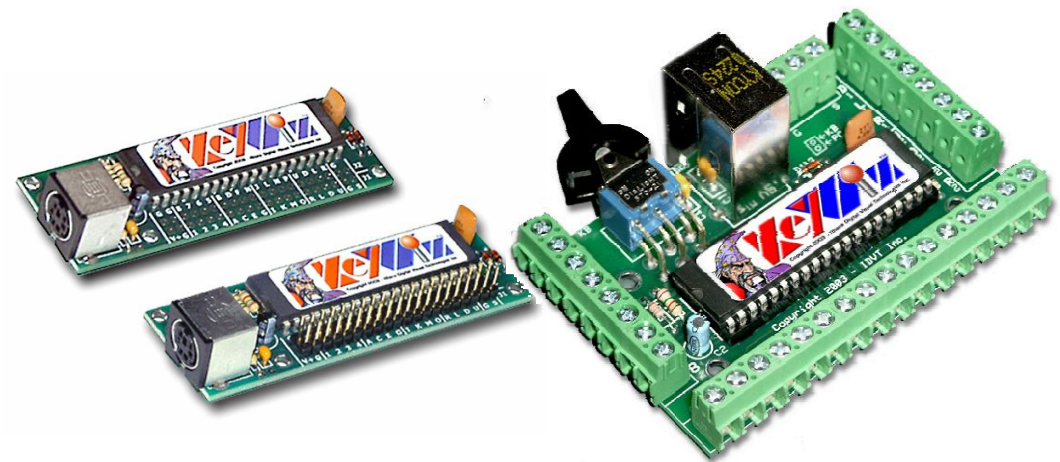
XML-RPC, JSON, ... - lots of libraries

Screen poking in Hardware

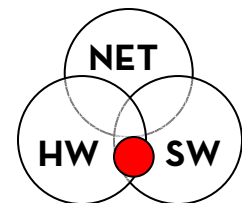
Arcade Control Interfaces



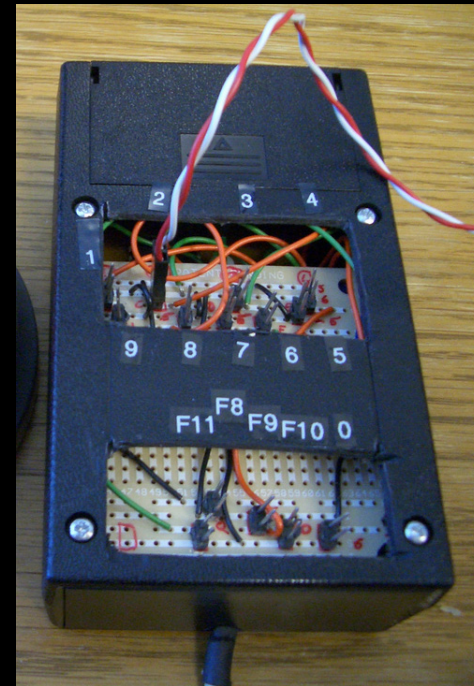
Ultimarc I-PAC VE, \$35



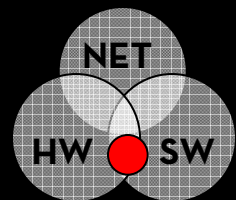
GGG KeyWiz, \$20-35



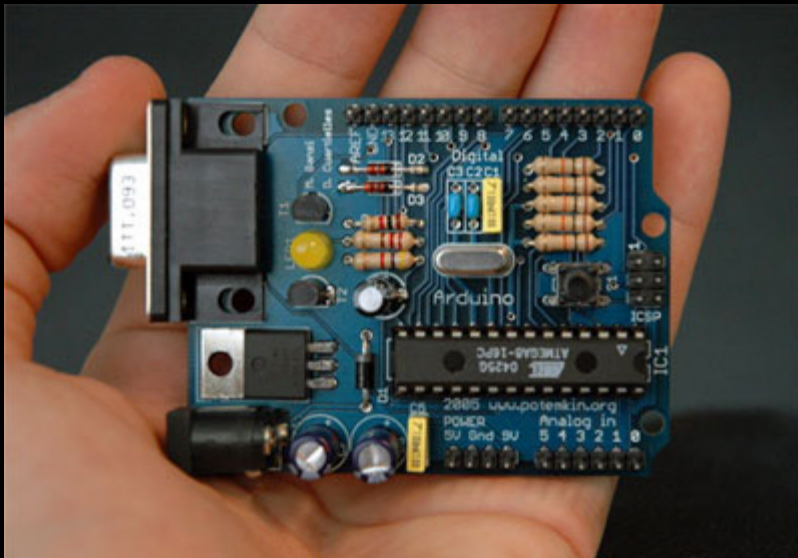
Screen poking in Hardware



Hacked Keyboard



Arduino



\$30

```
Arduino - 0003 Alpha

led_blink

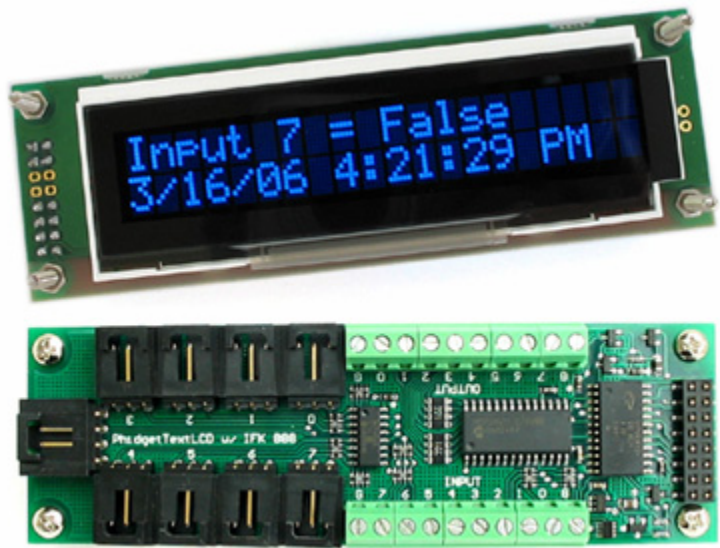
/* Blinking LED
 * -----
 *
 * turns on and off a light emitting diode(LED) connected to a digital
 * pin, in intervals of 2 seconds. Ideally we use pin 13 on the Arduino
 * board because it has a resistor attached to it, needing only an LED
 *
 * Created 1 June 2005
 * copyleft 2005 DojoDave <http://www.0j0.org>
 * http://arduino.berlios.de
 *
 * based on an original by H. Barragan for the Wiring i/o board
 */

int ledPin = 13;           // LED connected to digital pin 13

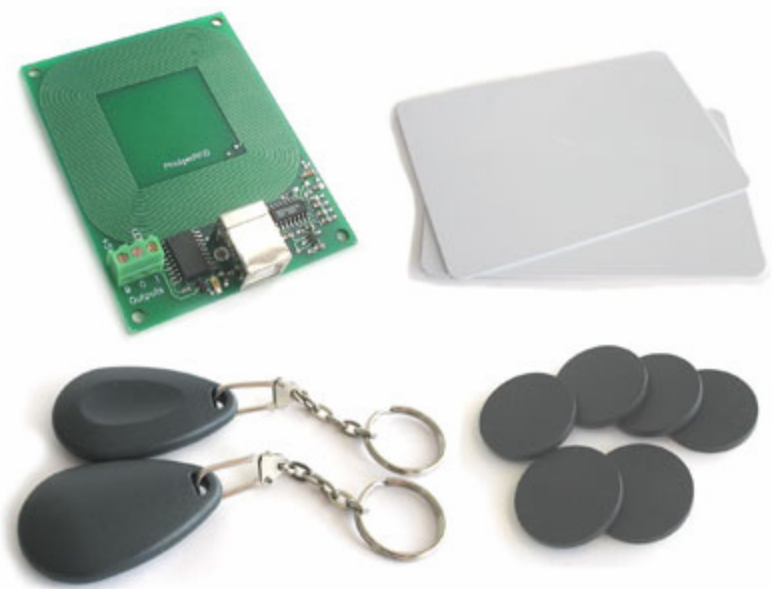
void setup()
{
  pinMode(ledPin, OUTPUT); // sets the digital pin as output
}

void loop()
{
  digitalWrite(ledPin, HIGH); // sets the LED on
  delay(1000);                // waits for a second
  digitalWrite(ledPin, LOW);  // sets the LED off
  delay(1000);                // waits for a second
}
```

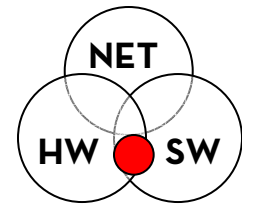
Phidgets



\$100



\$80





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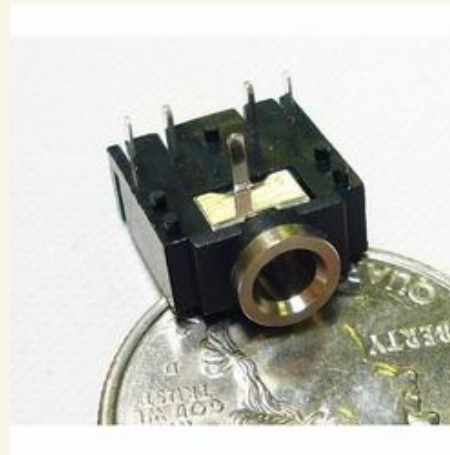
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September 22, 2006

Happy happy, joy joy!

We love [Precisionweb](#). The server migration went off without so much as a sniffle. Last month SFE hit a record 130gig of data downloads. That's what we get for hosting so many pictures and datasheets! We are now happily housed on our very own BlueQuartz rack server with 2gig RAM, ~300gig of HD, and 200gig of bandwidth a month.

A few small components have been listed as well!



[3.5mm Audio Jack](#)



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Welcome to the mashup-tools wiki!

The goal of this wiki is to be a guide to the different tools and tips that ubicomp developers use when building technology mash-ups. Our definition of a mashup may differ from yours,

- [ScreenPoking](#) tools generate mouse and keyboard events to control PC applications through other means (mechanical, electronic, or through software). These are INPUT ONLY.
- [ScreenScraping](#) tools
- Electronics:
 - [Hardware to PC interfaces](#) reading sensors on your PC, controlling actuators from your PC
 - [Simple Microcontrollers](#) embedded control of sensors and actuators; mostly with roll-your-own PC connectivity.
- [Transducers](#) that change one type of input/output into another
 - [Game console to PC adapters](#) let you turn game console controllers such as the DDR Dance Pad into PC game controllers.
 - [Game Controller to Keyboard and Mouse Transducer](#) turn game controller events into to key+mouse events
 - Optoisolators
- [Automation Software](#)
 - [GUI Automation](#) remote control for your local apps
 - [Web Browser Automation](#) script your web browsing and change web pages client-side
- [ScriptingLanguages](#) make it easy to control and sequence local apps
- [APIs and Data Formats](#) that help to data exchange between local and remote services
- [Some Specific Solutions](#) - some particular kinds of glue ware that work well
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- [ScreenScraping](#) tools

<http://mashup-tools.pbwiki.com>
password: design

- [GUI Automation](#) remote control for your local apps
- [Web Browser Automation](#) script your web browsing and change web pages client-side
- [ScriptingLanguages](#) make it easy to control and sequence local apps
- [APIs and Data Formats](#) that help to data exchange between local and remote services
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