

# fritzing

Electronics made easy

What's fritzing!?

# Maker Movement

fritzing

Industrial Arts

**Artists**

Chemistry “Magic”

Hands-on Science

Engineering

**Makers**

Musicians

Green Tech

**DIY**

**Tinkerers**

Recycling

Alternative Energy



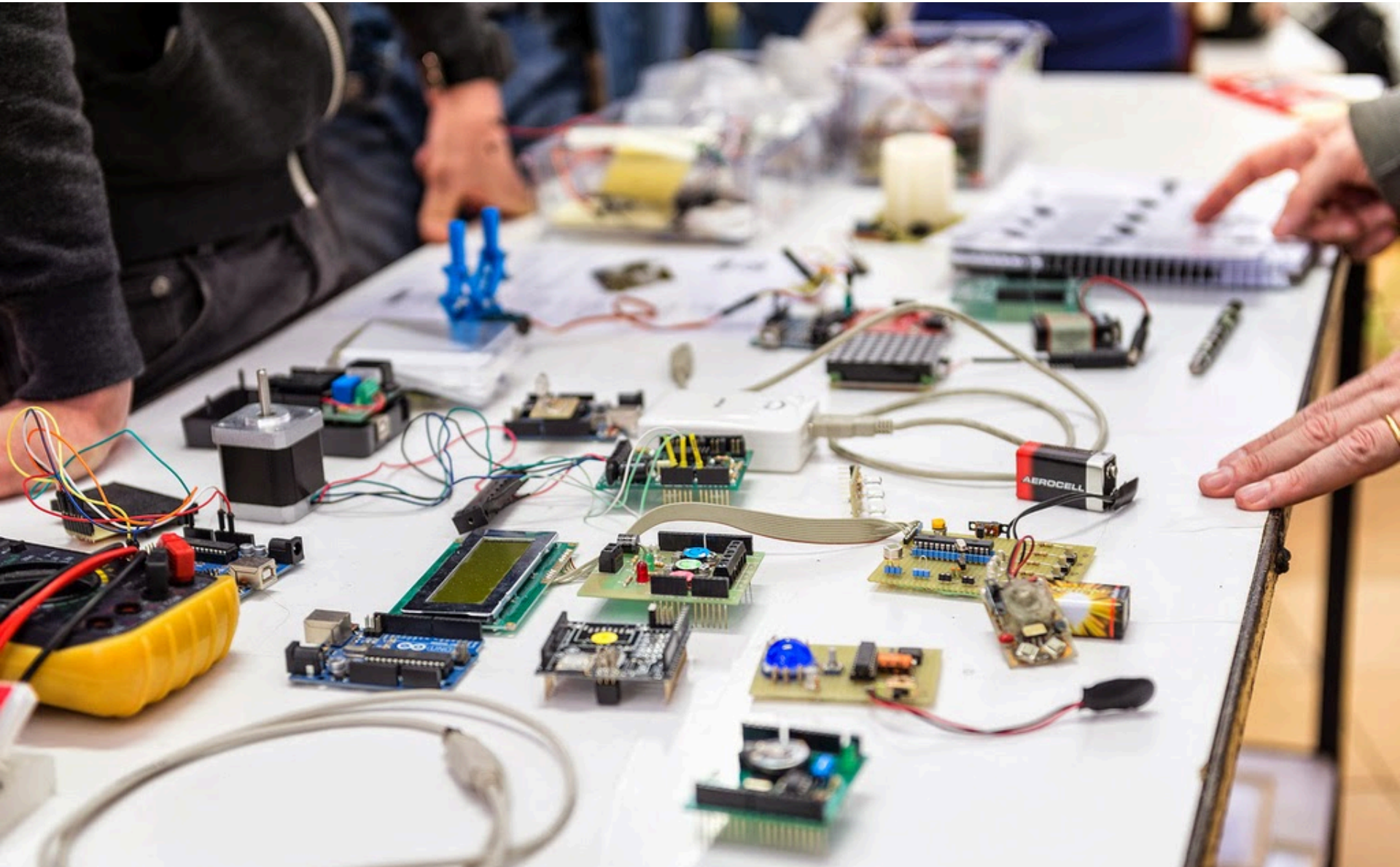
**S.T.E.A.M.**

**Robotics**

Young Makers

Digi-tech

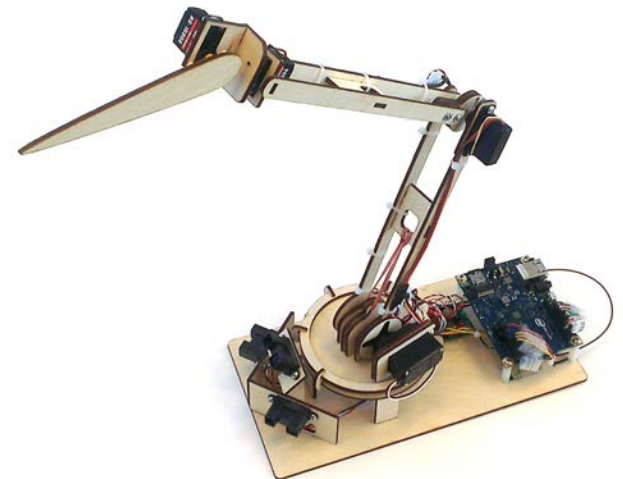
**Crafts**





# Creative Projects

fritzing



## Demystify Electronics

Demystify Electronics  
— & —  
Democratize Innovation

# Offerings

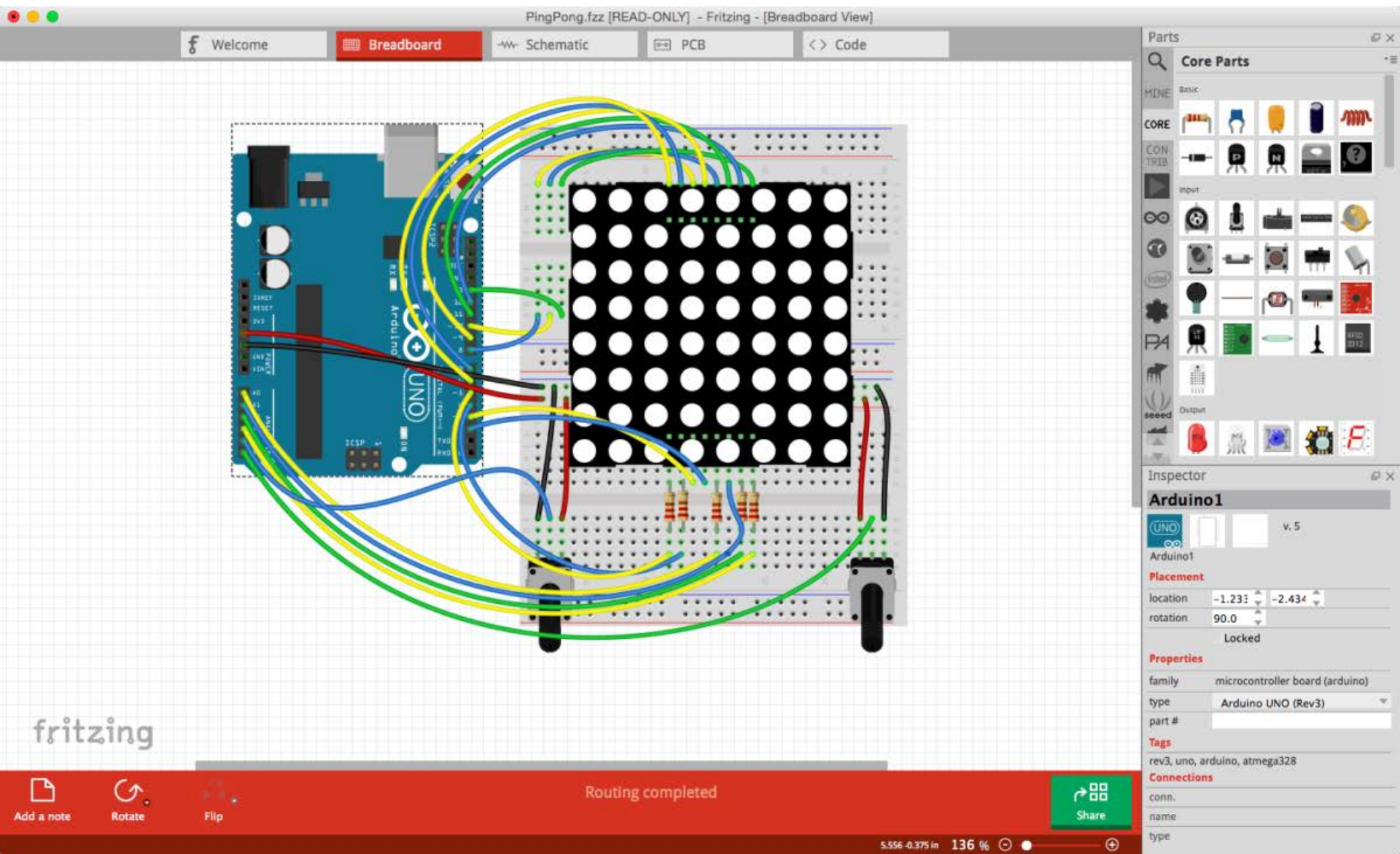
fritzing





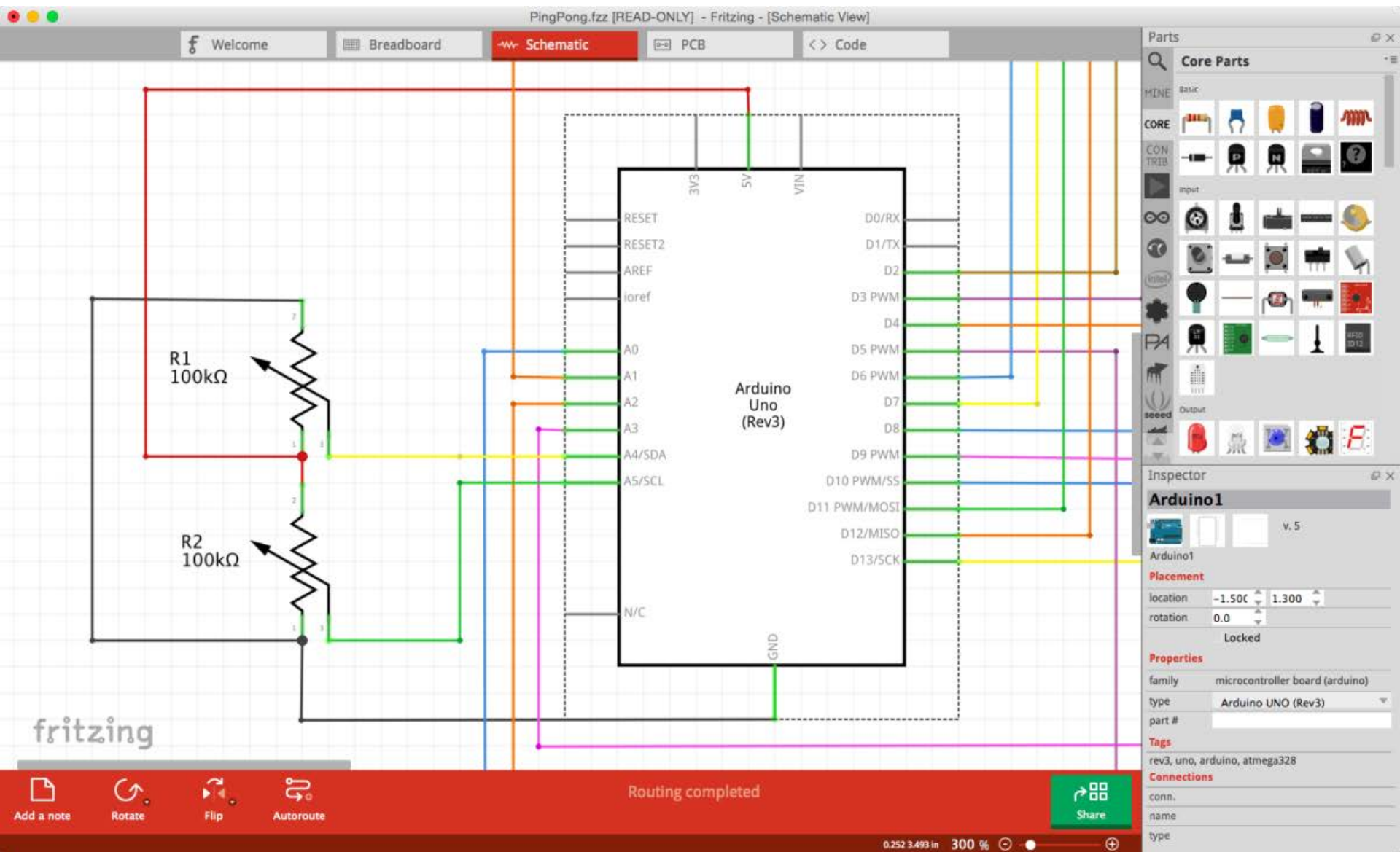
# Fritzing Software

fritzing



# Fritzing Software

fritzing



fritzing





# Fritzing Software

fritzing

The screenshot displays the Fritzing software interface with the 'Code' tab selected. The main window shows the source code for a file named 'PingPong.fzz'. The code is written in C++ and implements a simple game logic. The interface includes a top menu bar with 'Welcome', 'Breadboard', 'Schematic', 'PCB', and 'Code' tabs. On the right side, there are two panels: 'Parts' and 'Inspector'. The 'Parts' panel shows a list of components categorized by 'CORE' and 'CONTRIB'. The 'Inspector' panel shows the properties of the selected component, 'Arduino1', including its placement (top, -2.69, 2.050, 0.0) and properties (microcontroller board (arduino), Arduino UNO (Rev3)). The bottom status bar shows the platform (Arduino), board (Arduino UNO), port (Bluetooth-Incor), and a zoom level of 304%.

```
int gameSpeed; // storing the current game speed

void setup(){
  for (int i=0; i<8; i++){
    pinMode(rowPins[i],OUTPUT);
    pinMode(colPins[i],OUTPUT);
  }
}

void draw(){
  for (int y=0; y<8; y++){
    for (int x=0; x<8; x++){
      // rowwise
      // from left to right, entries are checked
      // if entry equals 1
      if (image[x][y]==1){
        digitalWrite(colPins[x],HIGH); // the column pin is switched on
      } else {
        digitalWrite(colPins[x],LOW); // the column pin is switched off
      }
    }
    digitalWrite(rowPins[y],LOW); // switch the row pin to LOW (because it is the cathod of the LED LOW means ON)
    delayMicroseconds(1000); // stop the program for 1 seconds
    digitalWrite(rowPins[y],HIGH); // switch the row pin to HIGH (what means OFF)
  }
}

void update(){
  switch (gameState) {
    // switching game mode (called state machine)
    case 0:
      // new game
      memcpy(image,blank,sizeof(blank)); // clear screen
      gameSpeed=300; // set the game speed
      ballXPosition=3; // set ball position
      ballYPosition=3; // set ball position
      ballYSpeed=0; // ball should fly straight
      if (random(0,2)>0){ // but randomly left or right
```

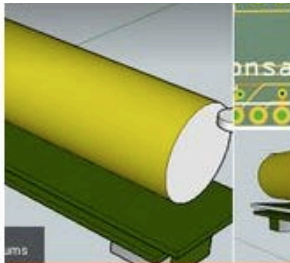
# Community

fritzing



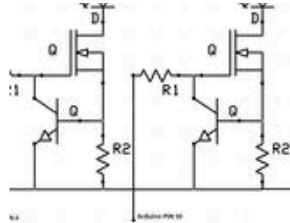
**HAM radio parrot  
repeater**

by pe2kmv



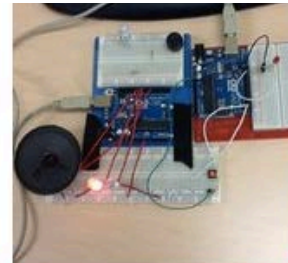
**wixel bonsai  
tracker**

by dauidsingleton



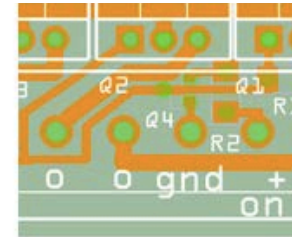
**LED driver**

by PhaseFocus



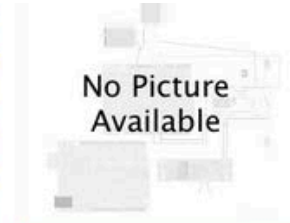
**Police Lights, Siren,  
And Horn**

by MSTRStudent



**audi daytime  
automatic lights**

by tomaskovackl



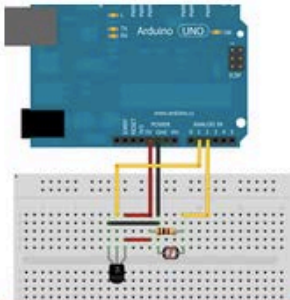
**Sensor Inclinación  
Robot Arduino S4A  
Map**

by robotarduedu



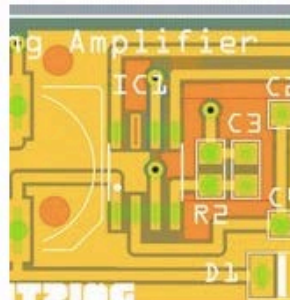
**Touch My Piano**

by ZackFreedman



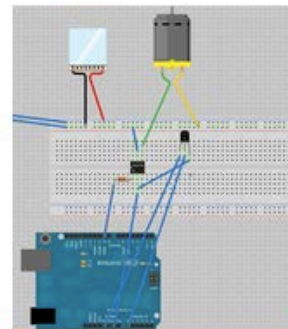
**Arduino  
Senseboard**

by noiseand



**Fritzing Amplifier**

by hdf\_mjf\_de



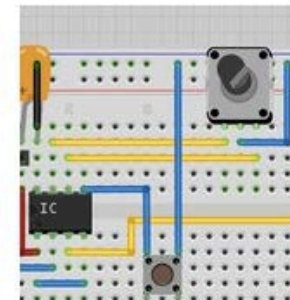
**Cup Cooler**

by mantaspats



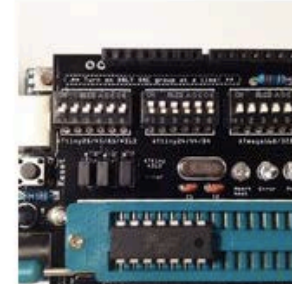
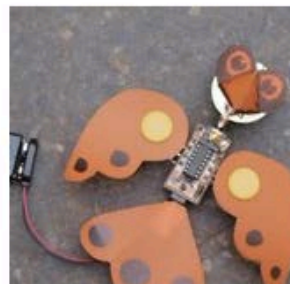
**Arduino com  
servomotor  
robótico e display  
LCD**

by ComoFazerAsColas



**Digipot**

by Germo

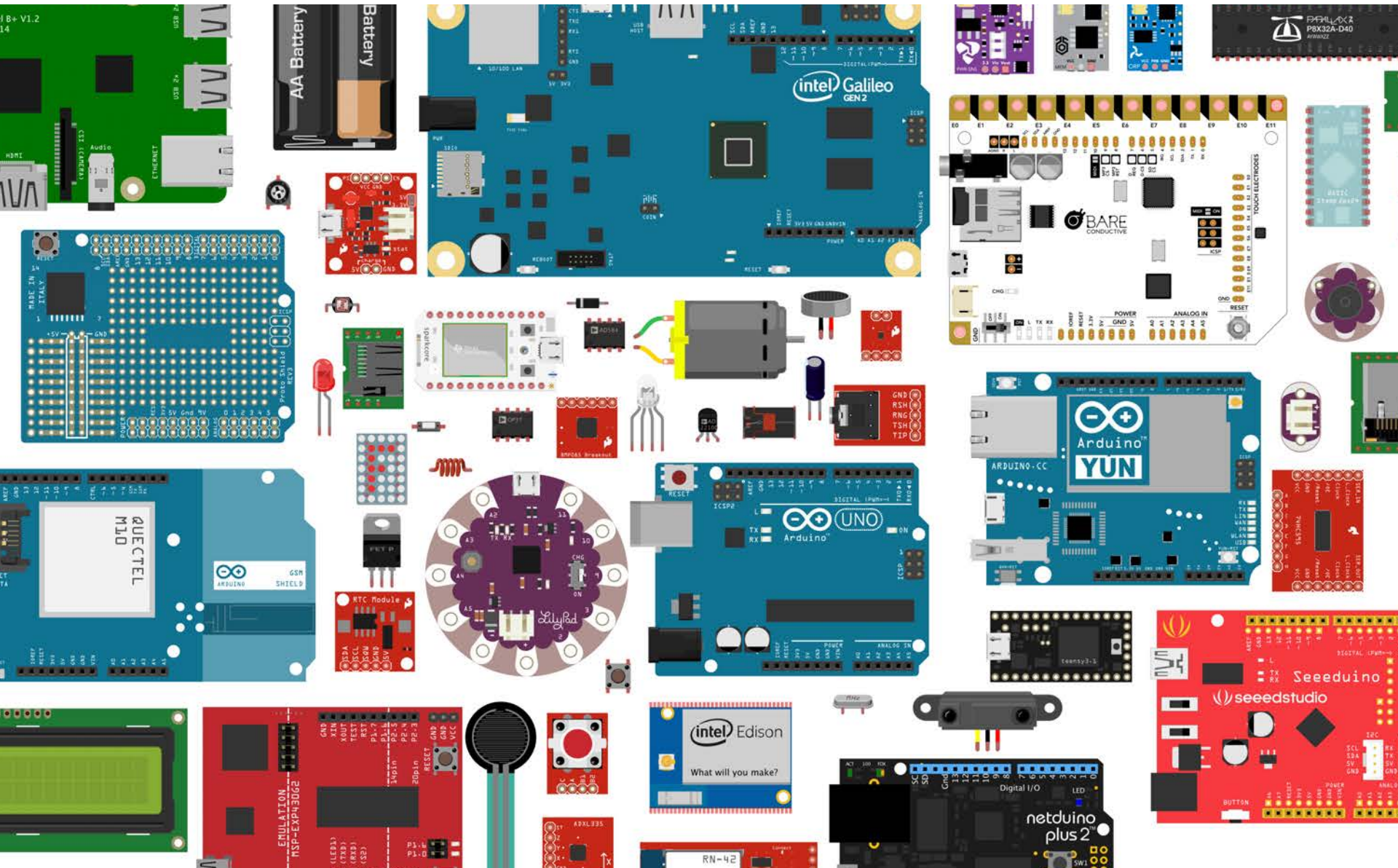


**Teleduino**

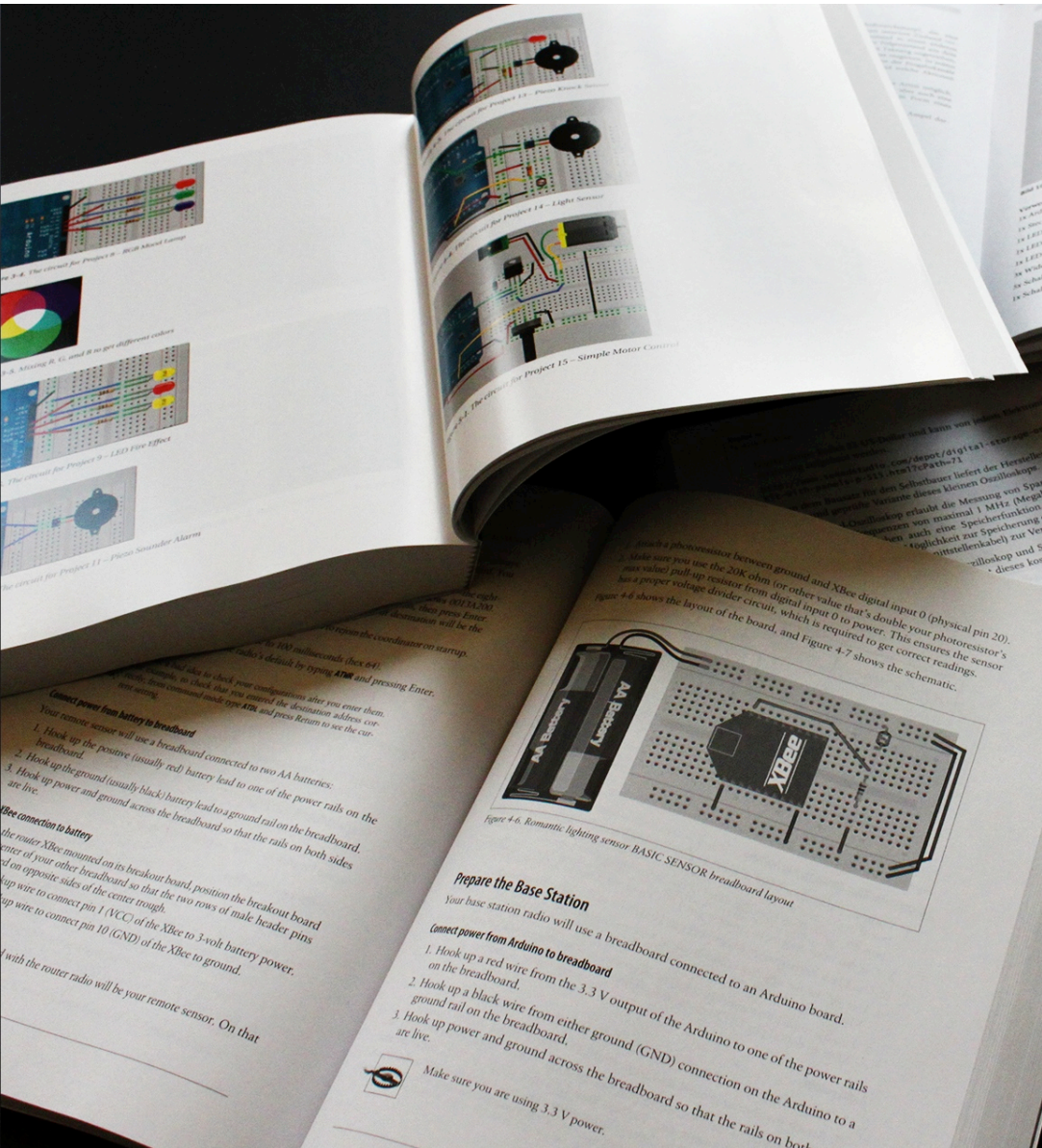


# Parts Library

fritzing







SHOP

LEARN

FORUM

DATA

START A PROJECT

EDU BLOG

RESOURCES

TUTORIALS

CLASSES

CALENDAR

HOME / TUTORIALS / MBED STARTER KIT EXPERIMENT GUIDE

## mbed Starter Kit Experiment Guide

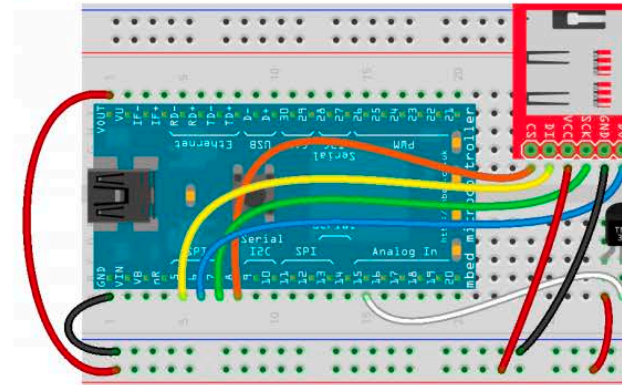
CONTRIBUTORS: SHAWNHYMEL

Connect the LPC1768 to the micro SD card breakout board and TMP36 temperature sensor. Insert a battery into the breakout board.

Polarized Components  
⚠

Pay special attention to the component's markings indicating how to place it on the breadboard. Polarized components can only be connected to a circuit in one direction. Polarized components are highlighted with a yellow warning triangle in the table below.

### Fritzing Diagram



### Hookup Table

Place the LPC1768 in a breadboard with pin **VOUT** in position **i1** and pin **20** in position **b20**.

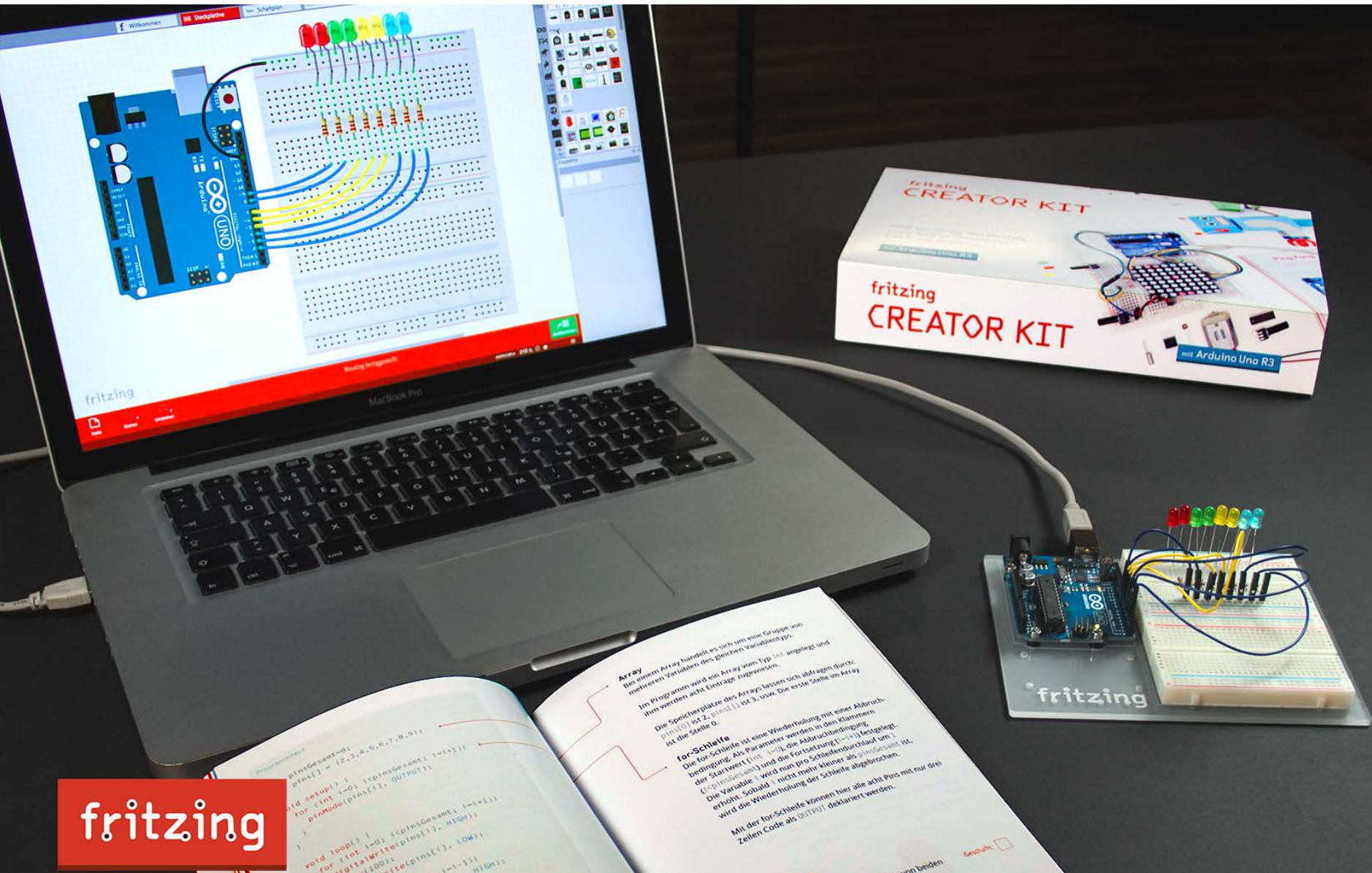
Connect the rest of the components as follows:

Component	Breadboard				
MicroSD Transflash Breakout*	g24 (CS)	g25 (DI)	g26 (VCC)	g27 (SCK)	g28 (MISO)
Temperature Sensor - TMP36	c28 (V+)	c29 (SIGNAL)	c30 (GND)		
Jumper Wire	j1	(+)			



# Beginner's Kit

fritzing









# Workshops

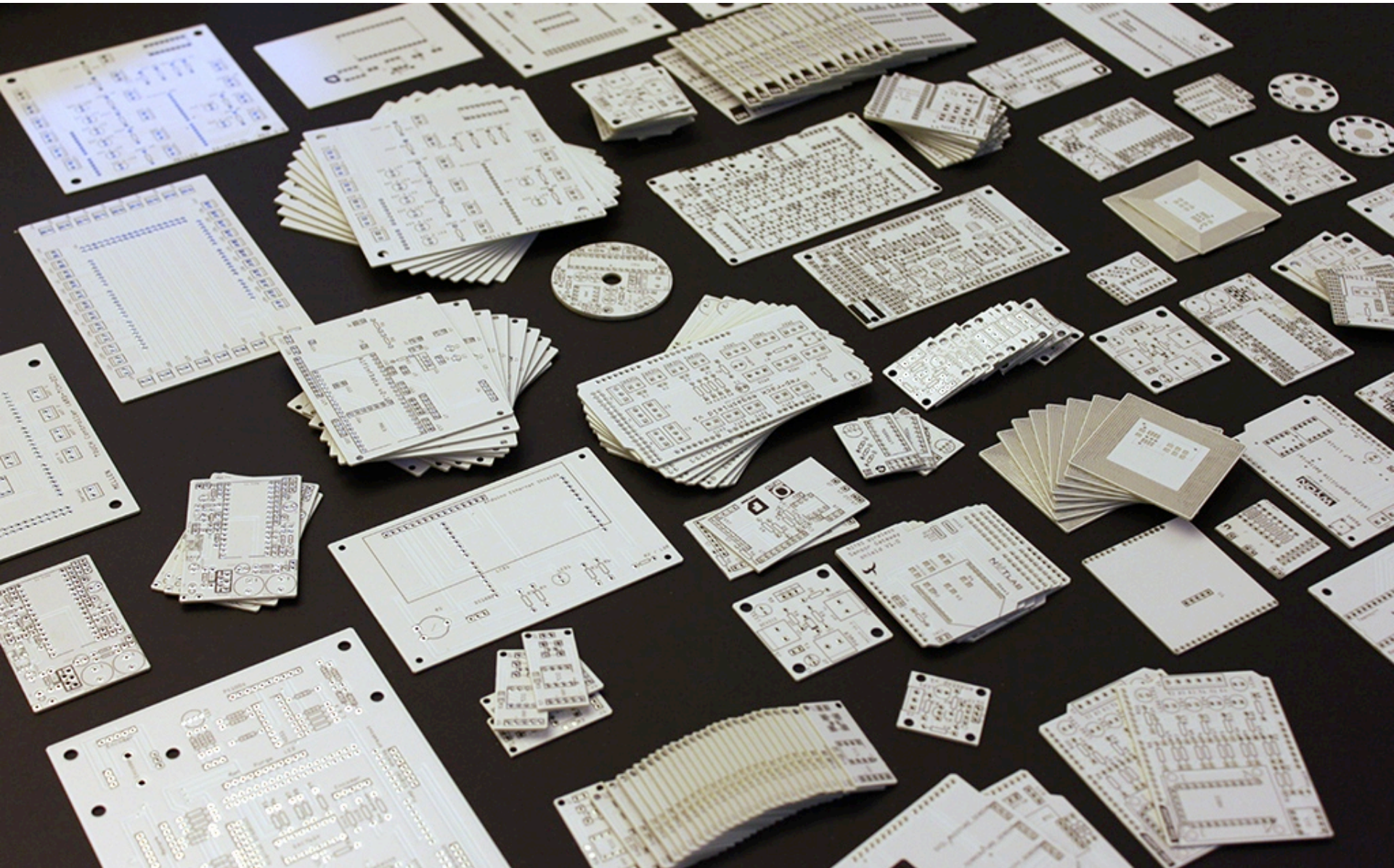
fritzing





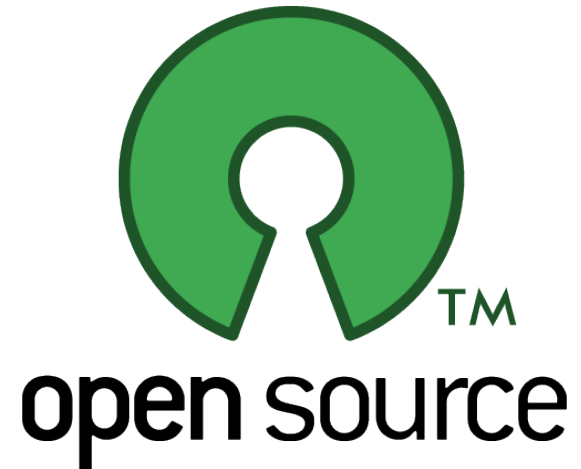
# Fabrication Service

fritzing



# Open-source for product

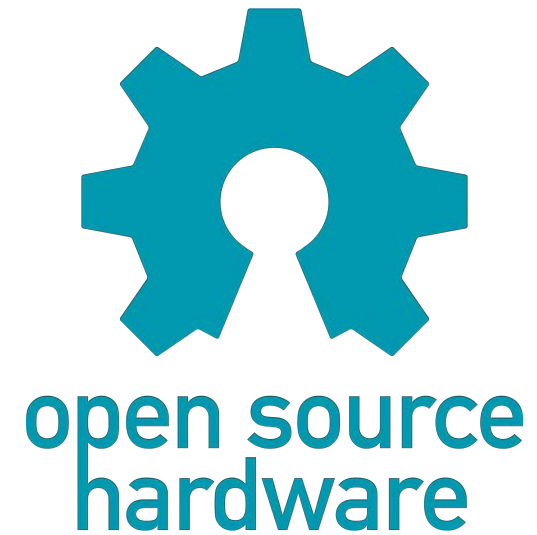
fritzing





# Open-source for content

fritzing



**How did it develop?**

- ▶ FH Potsdam, Interaction Design Lab
- ▶ Funded 2007-2010 by MWFK Brandenburg
- ▶ Team of 5: 2.5 Designers + 2.5 Engineers
- ▶ Doing it for ourselves, with lots of enthusiasm

# Idealistic Goals

fritzing

Co-Working

Free

DIY

Research

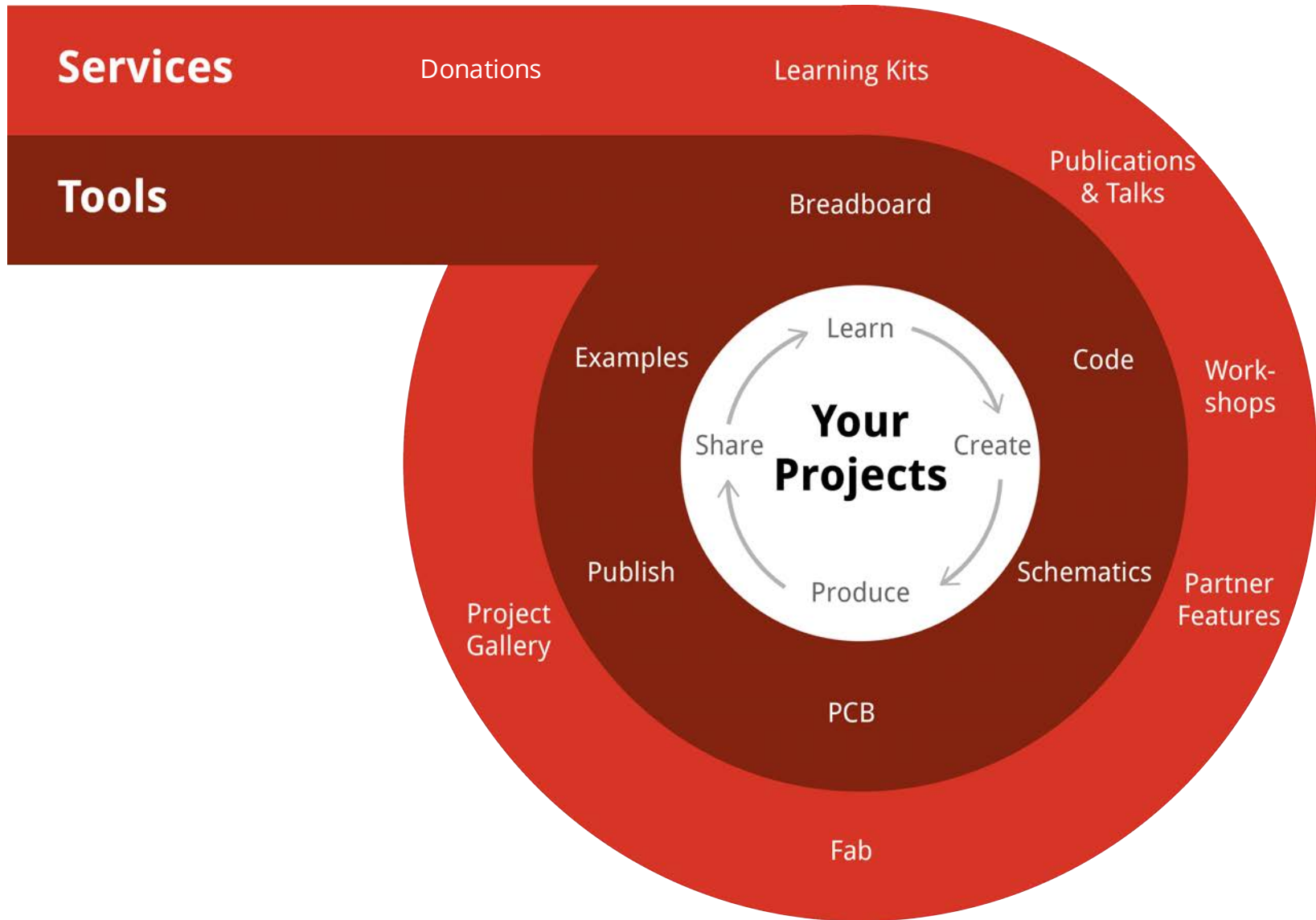
Open-Source

Prototyping

Community

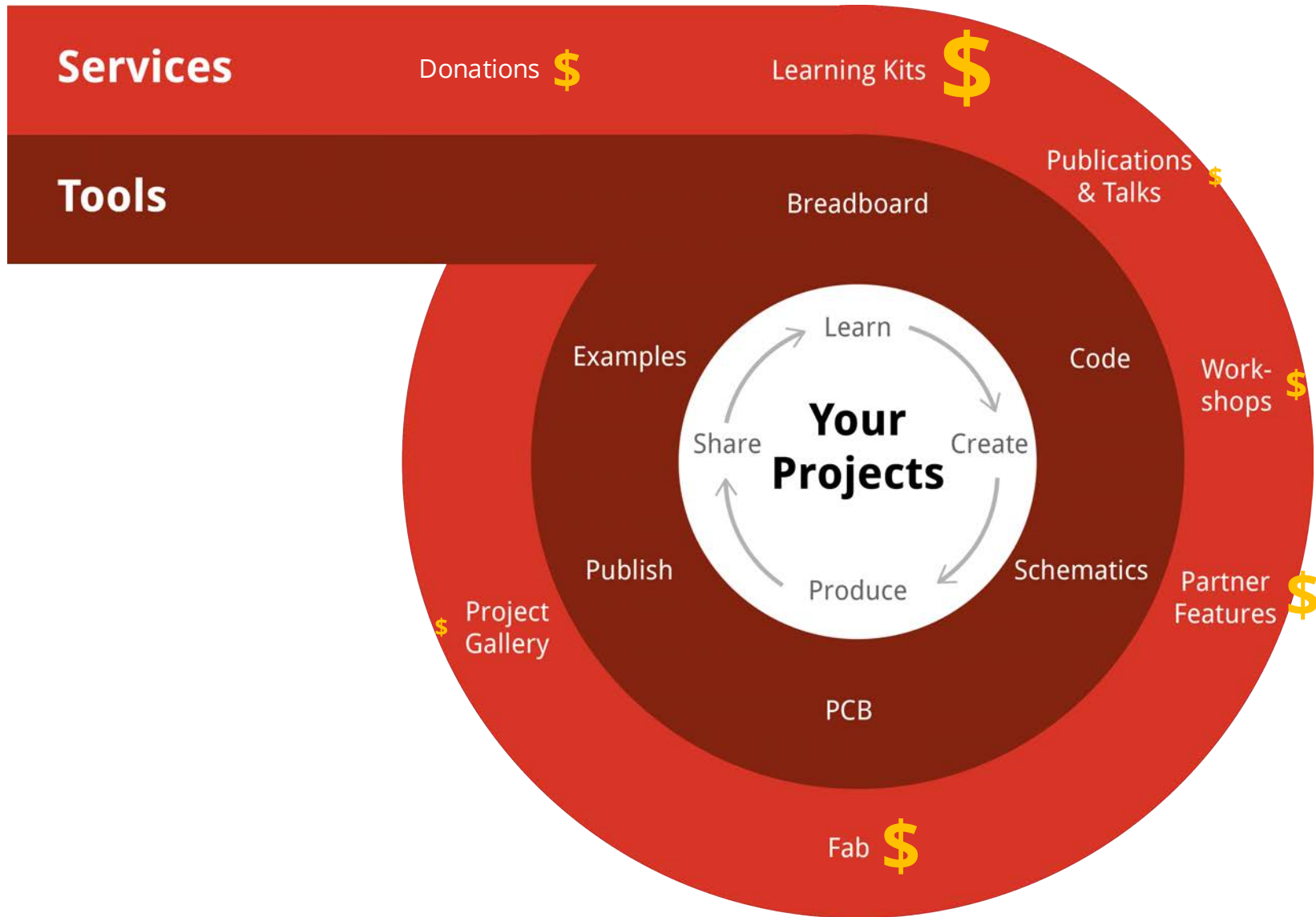
# Ecosystem Idea

fritzing



# Open-Source Economics

fritzing





- ▶ Big Vision + Big Investment
- ▶ Crystal-clear Business Model
- ▶ Rapid Growth
- ▶ Intense Marketing
- ▶ Corporate Partnerships
- ▶ Professionalisation

**Empowering education**

## ▶ Practical

- ▶ Basic electronic & programming skills

## ▶ Tactical

- ▶ You can do this yourself
- ▶ You don't need much besides dedication
- ▶ You can always find help
- ▶ Sharing is the key to self-educated learning

- ▶ „Learning materials“ are not sufficient
- ▶ Don't call it „learning“ or „education“
- ▶ Don't structure it too much
- ▶ Not skill-oriented, but results/project-oriented
- ▶ Provide a context that connects to people's life

- ▶ Give people a powerful tool, and they will learn
- ▶ Provide a broad range of examples
- ▶ Do not constrain, nor enforce a specific approach
- ▶ A „starter kit“ with everything to get going

- ▶ Let people create something, anything really
- ▶ Encourage free-style learning
- ▶ Provide inspirations and provocations
- ▶ Offer practical, project/results-oriented tutorials
- ▶ Allow rapid iterations
- ▶ Let people re-invent the wheel

# Community as breeding ground

- ▶ A tool quickly gathers a community of practice
- ▶ Sharing of examples is the best source of motivation and inspiration
- ▶ Promote copying from others

# fritzing

Way to go!