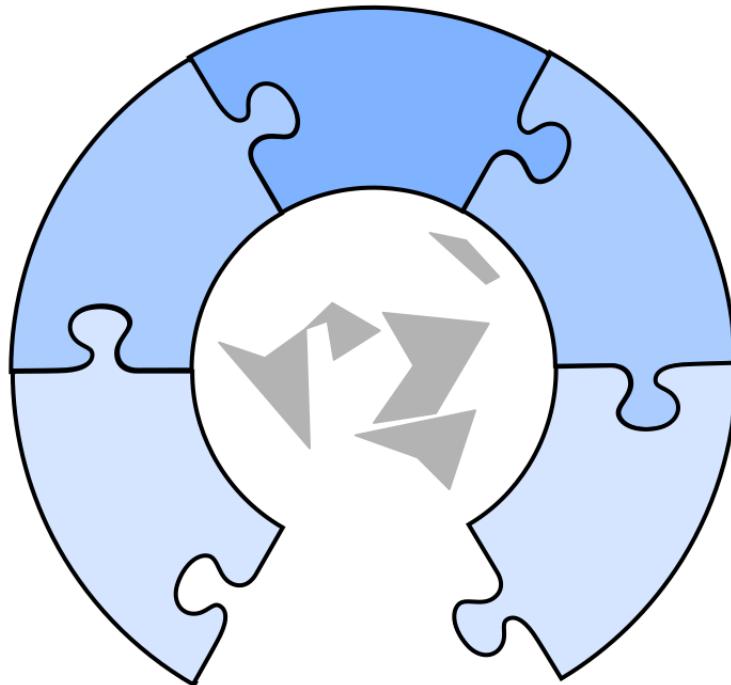


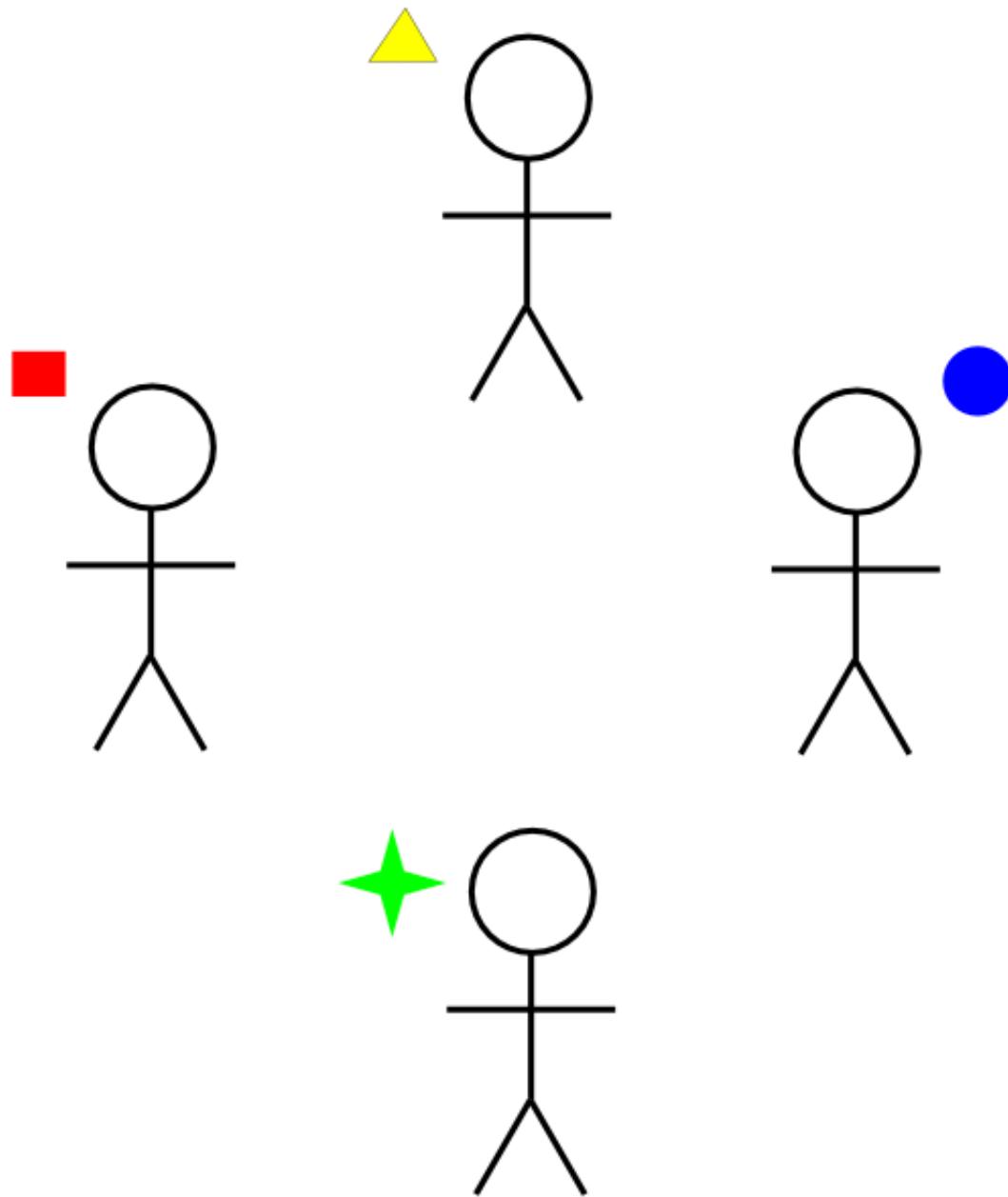
Nosotros compartimos

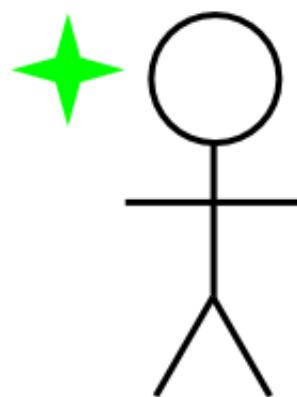
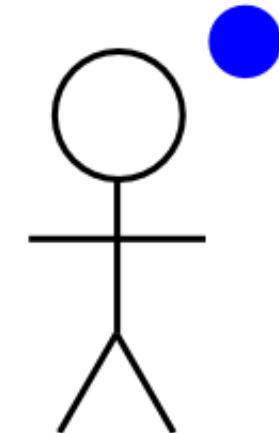
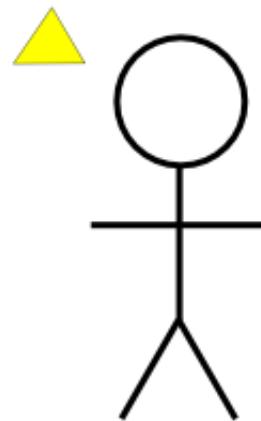
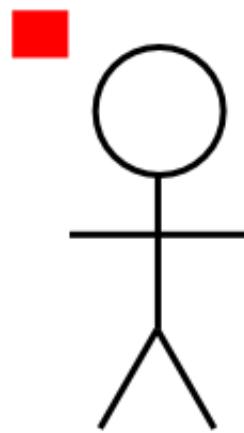


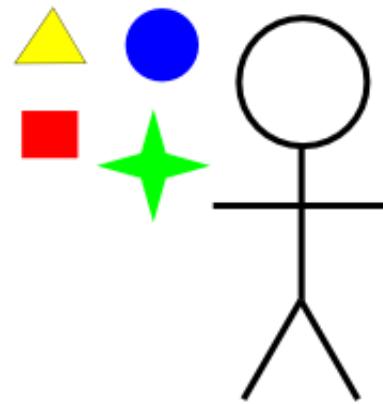
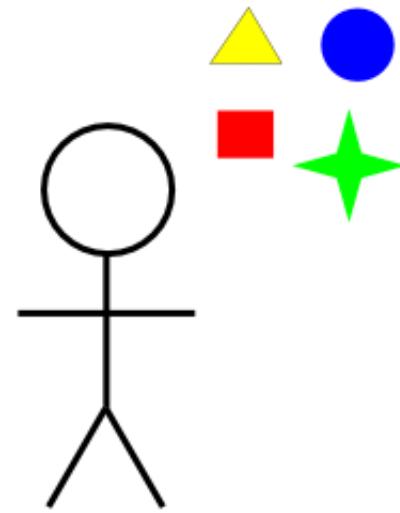
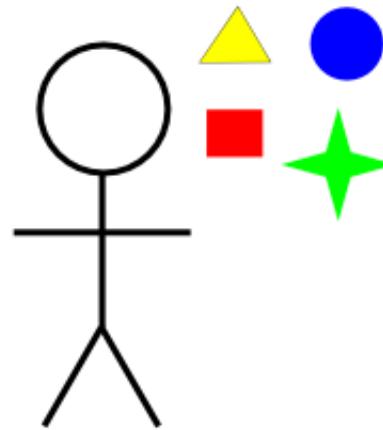
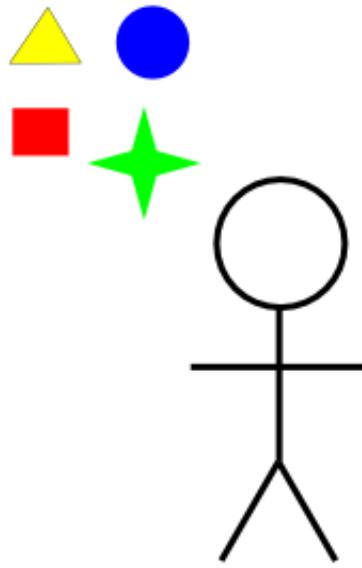
Juan González Gómez (Obijuan)

<https://github.com/Obijuan>

Compartir es importante

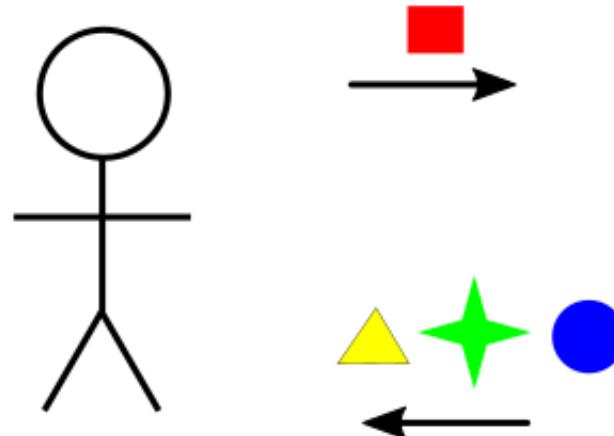






Balance siempre positivo

Das

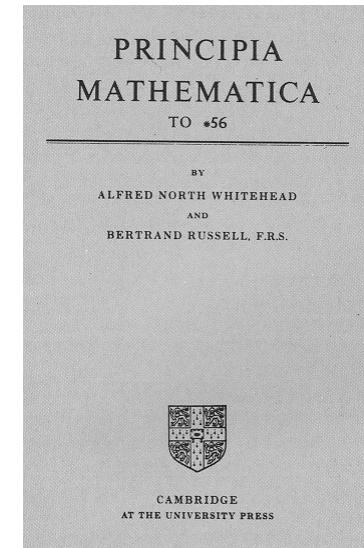


Recibes

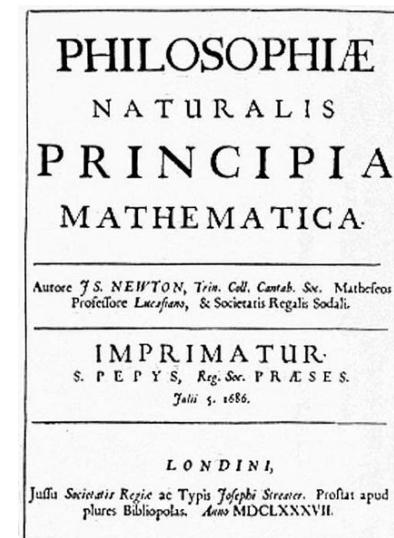
**En las comunidades recibes
siempre más de lo que das**

¡Es el Modelo de la ciencia!

- **Funciona.** Se crea conocimiento nuevo
- Está asentado. Se lleva probando muchos siglos
- **Comunidad científica:** comunidad global de investigadores
- Comunidad no jerárquica
- Todos pueden aportar
- Derecho a crítica, a reproducir o rebatir experimentos
- Obligación de citar trabajos previos
- Obligación de **Publicar.**



Conocimiento abierto y para todos



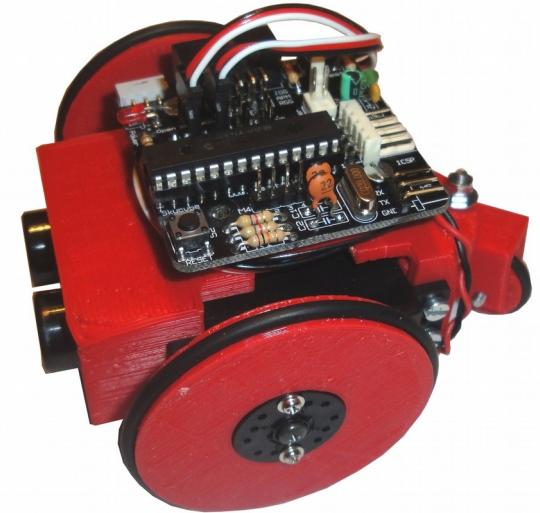
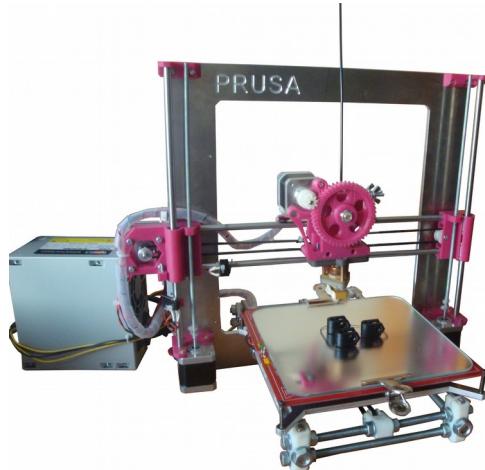
TECNOLOGÍA



- Aplica los conocimientos
- Construcción de “aparatos”

El conocimiento se oculta

Un maker es lo contrario

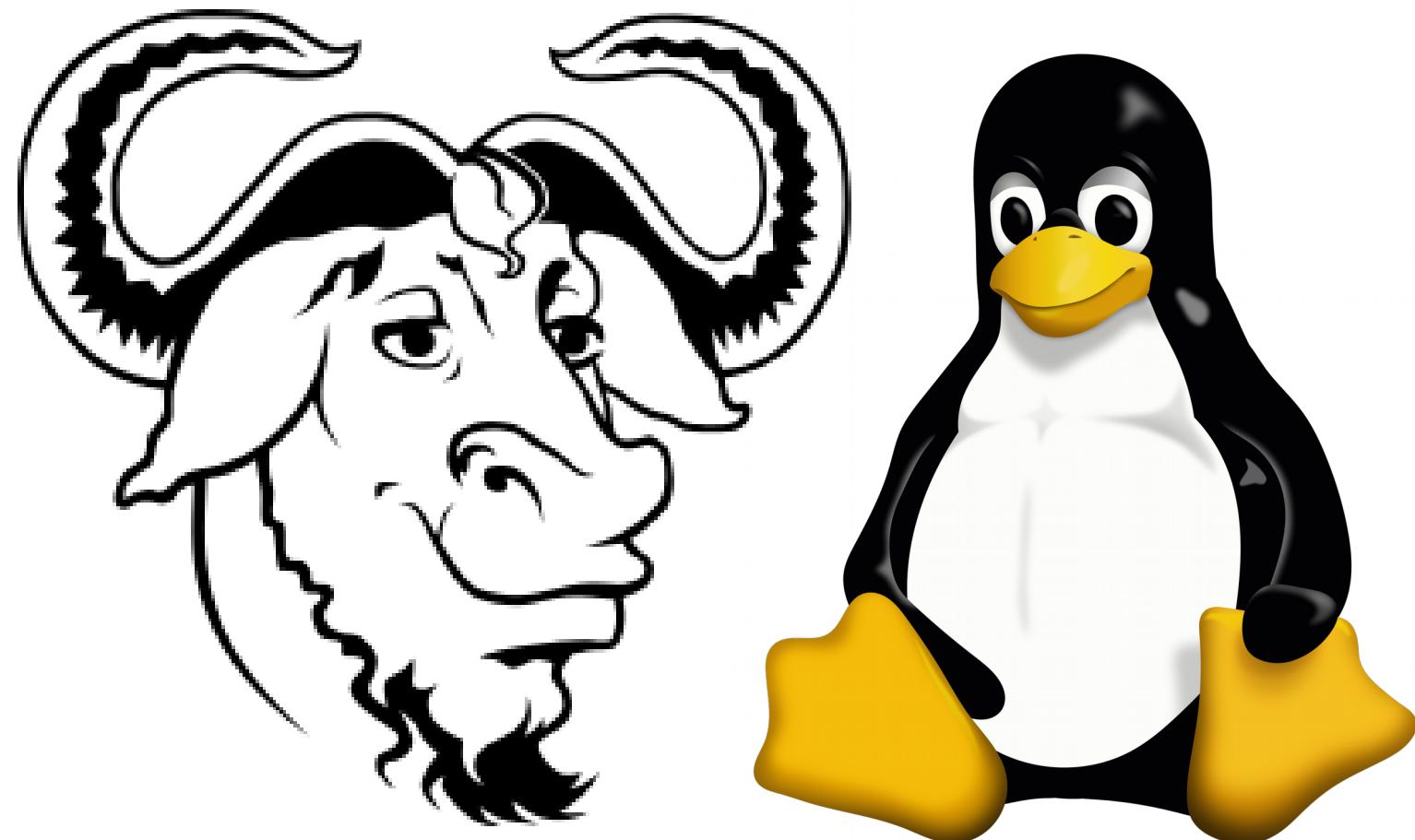


- Necesitamos ver las tripas
- Para aprender
- Para comprender
- Para crear cosas nuevas a partir de ellas
- No nos queremos limitar a comprar y usar

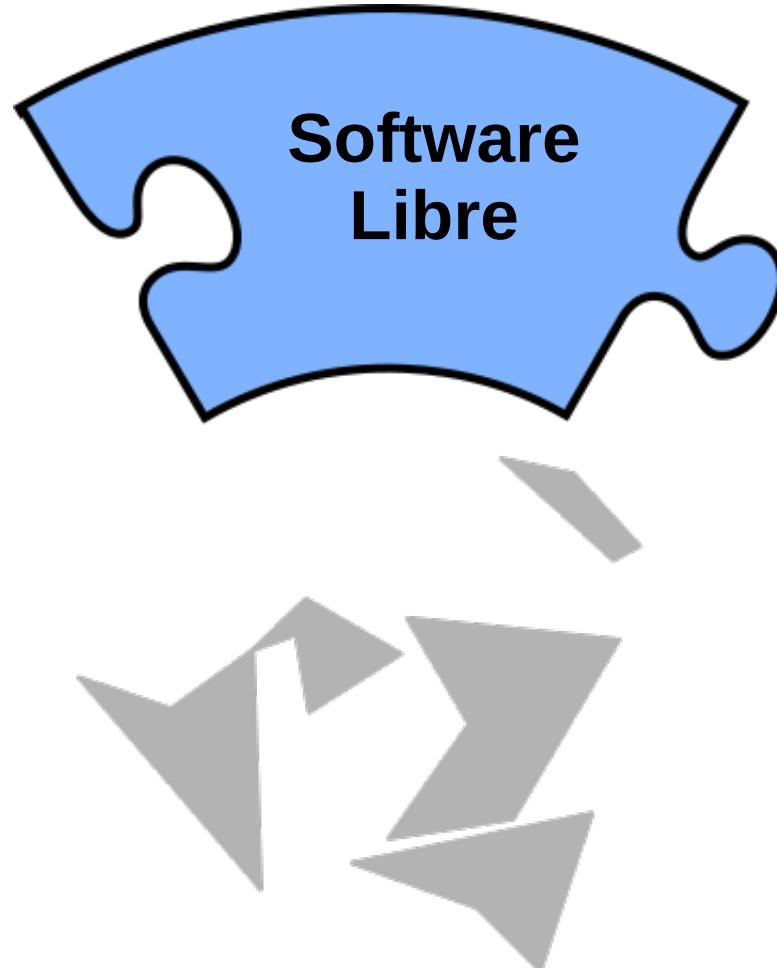
Frustración



Software Libre (1985)



Patrimonio tecnológico de la humanidad



El código...

Builder3D.cpp — ~/develop/FreeCAD/src/Base — Atom

```
Builder3D.cpp
73     * points in one set.
74     * @see endPoints()
75     * @param pointSize the point size in pixel the points are showed.
76     * @param color_r red part of the point color (0.0 - 1.0).
77     * @param color_g green part of the point color (0.0 - 1.0).
78     * @param color_b blue part of the point color (0.0 - 1.0).
79 */
80 void Builder3D::startPoints(short pointSize, float color_r, float color_g, float
81     color_b)
82 {
83     bStartEndOpen = true;
84     result << "Separator { ";
85     result << "Material { ";
86     result << "diffuseColor " << color_r << " " << color_g << " " << color_b ;
87     result << " } ";
88     result << "MaterialBinding { value PER_PART } ";
89     result << "DrawStyle { pointSize " << pointSize << " } ";
90     result << "Coordinate3 { ";
91     result << "point [ ";
92
93     // insert a point in an point set
94     void Builder3D::addPoint(float x, float y, float z)
95     {
96         result << x << " " << y << " " << z << ",";
97     }
98
99     // add a vector to a point set
100    void Builder3D::addPoint(const Vector3f &vec)
101    {
102        addPoint(vec.x, vec.y, vec.z);
103    }
104 /**
105     * Ends the point set operations and write the resulting inventor string.
106     * @see startPoints()
107     */
108 void Builder3D::endPoints(void)
109 {
110     result << " ] ";
111     result << " } ";
112     result << " PointSet { } ";
113     result << " } ";
114     bStartEndOpen = false;
```

Builder3D.cpp 0 0 0 1:1

LF UTF-8 C++ master 2 updates

Bibliotecas de conocimiento tecnológico

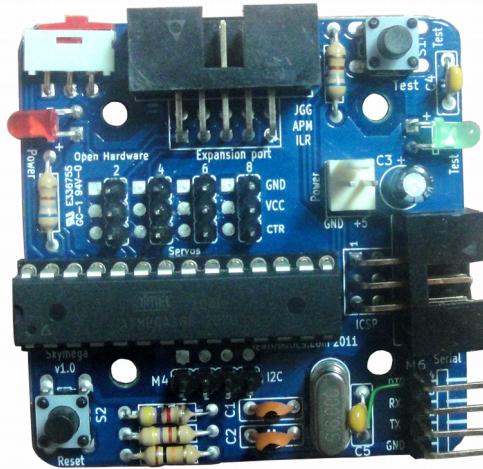


El modelo del software libre funciona

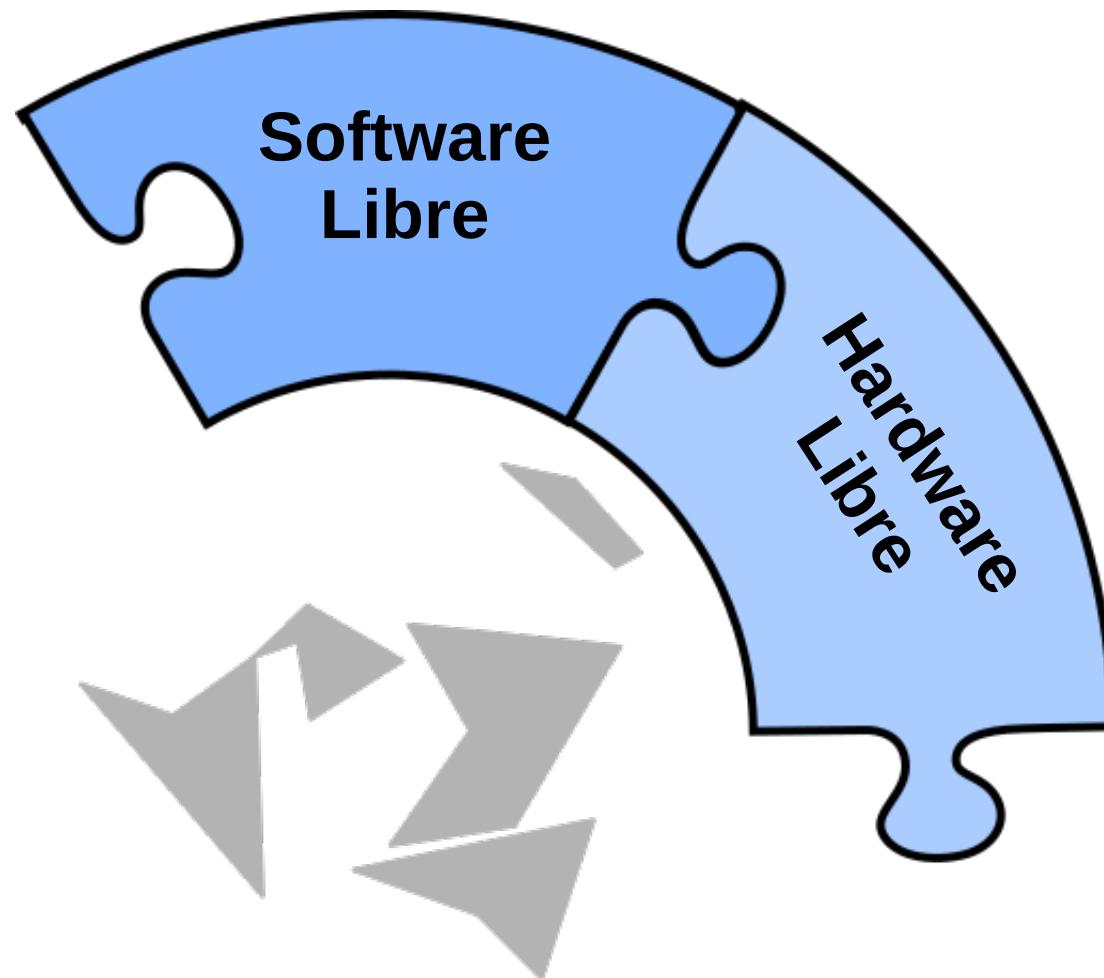


WIKIPEDIA
La enciclopedia libre

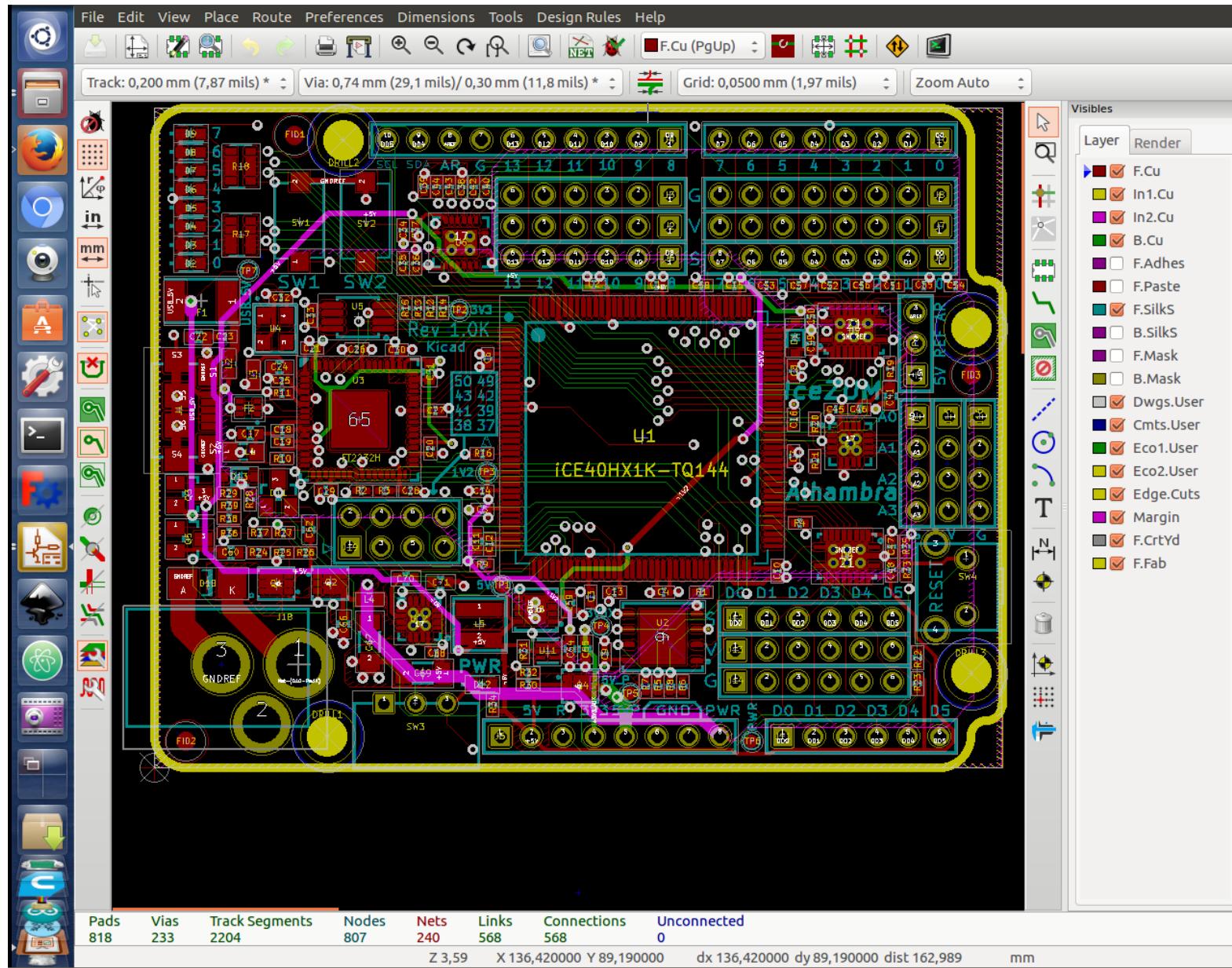
Hardware libre



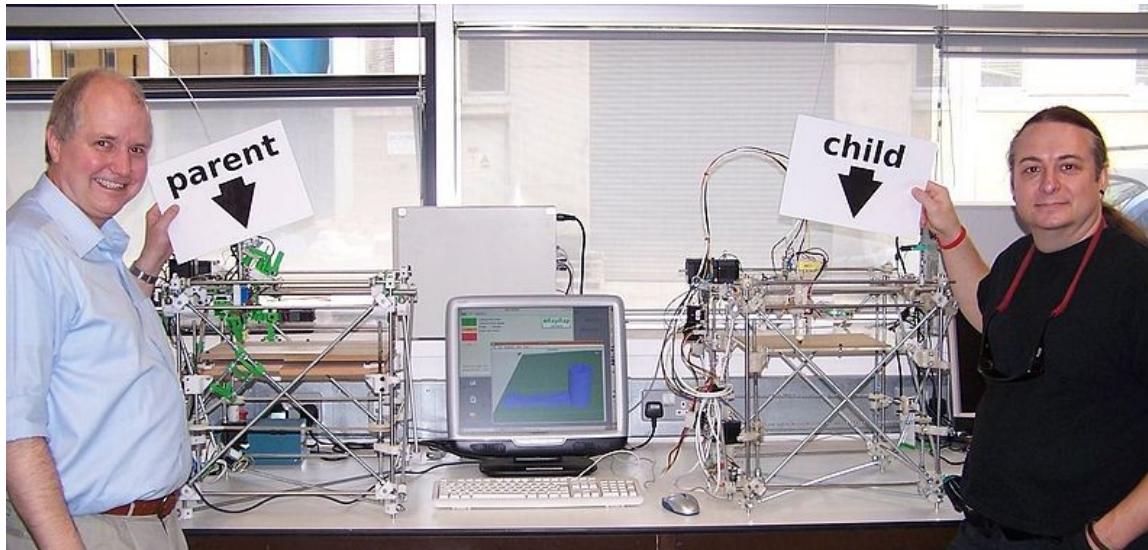
Hardware libre



Los planos...



Reprap: Impresoras 3D Libres



Construir una máquina auto-replicante

- **2005:** Idea original: **Adrian Bowyer** (Universidad de Bath, UK)
- **Feb/2008:** Darwin, el primer prototipo, imprime una pieza
- **Mayo/2008:** Primera auto-replicación

Motivación: La industria nunca desarrollará una máquina auto-replicante porque no sería rentable

Orígenes



Con Adrian Bowyer

Taller de Reprap en MADRID

FEBRERO 2009 - MEDIALAB PRADO



Orígenes (II)



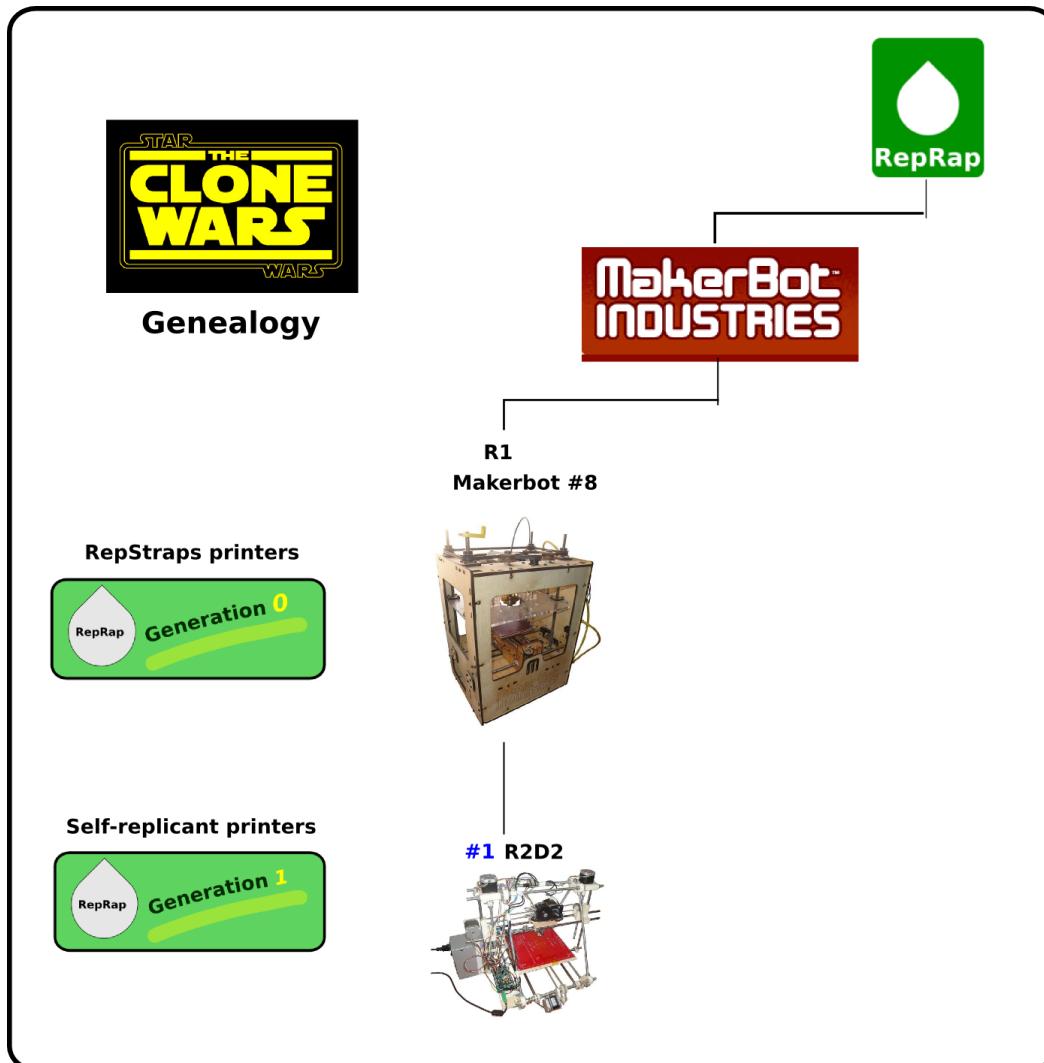
Con Zach Smith, fundador de Makerbot



Makerbot número 8 en el mundo!

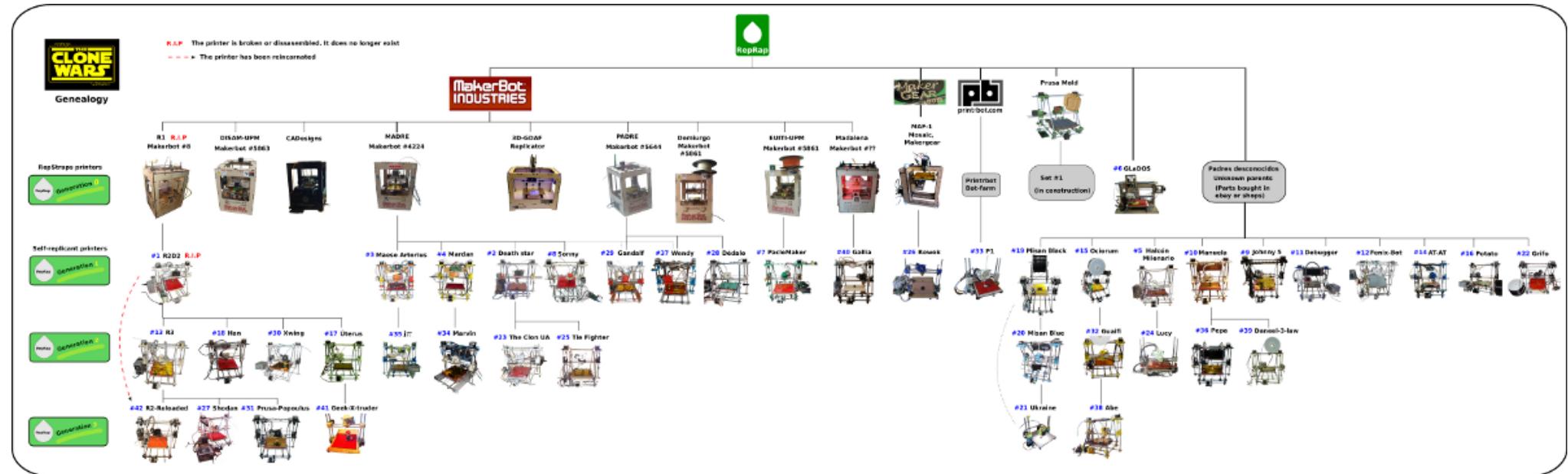


Clone wars: Dic/2011



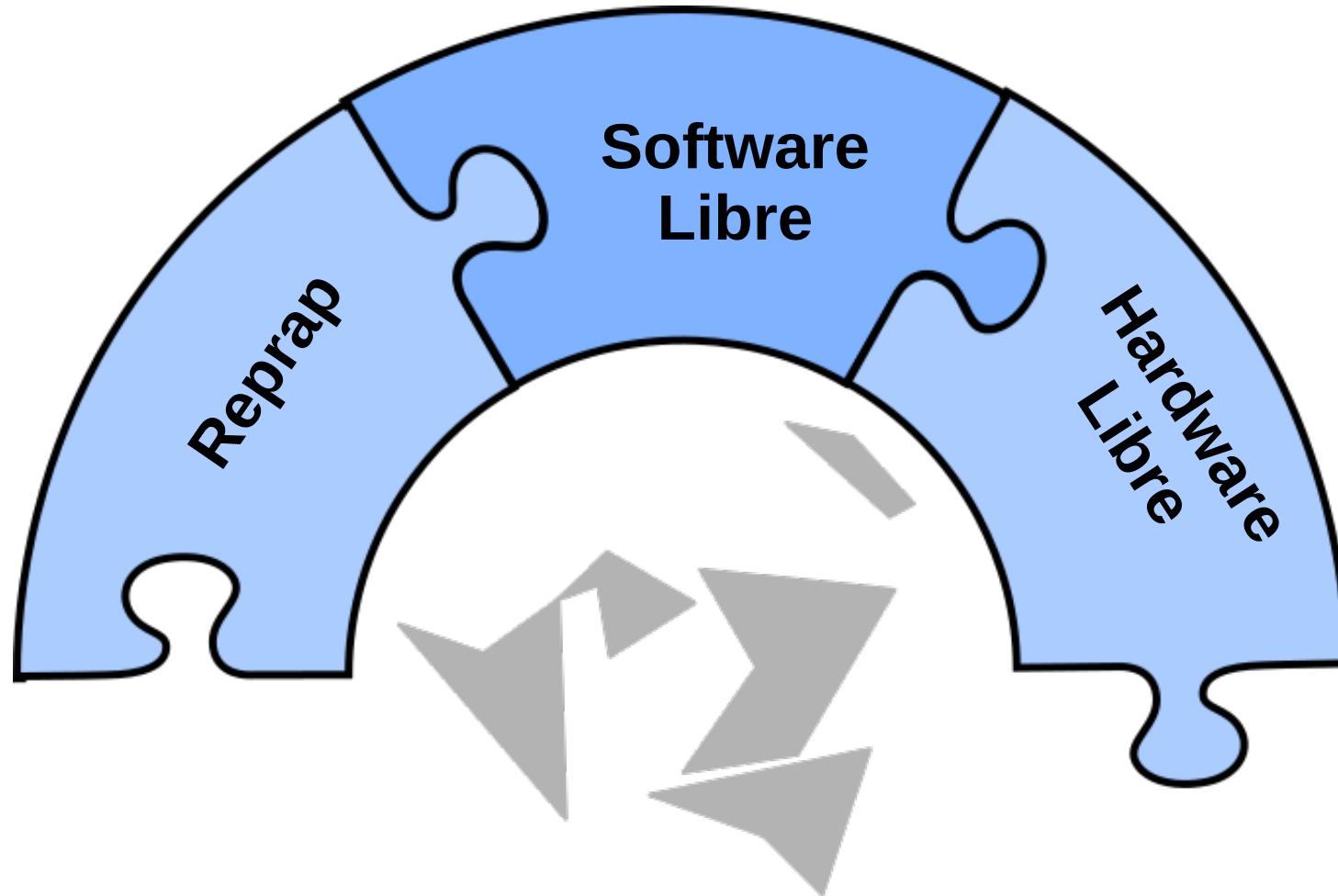
Clones: 1

Clone wars: Agosto/2012

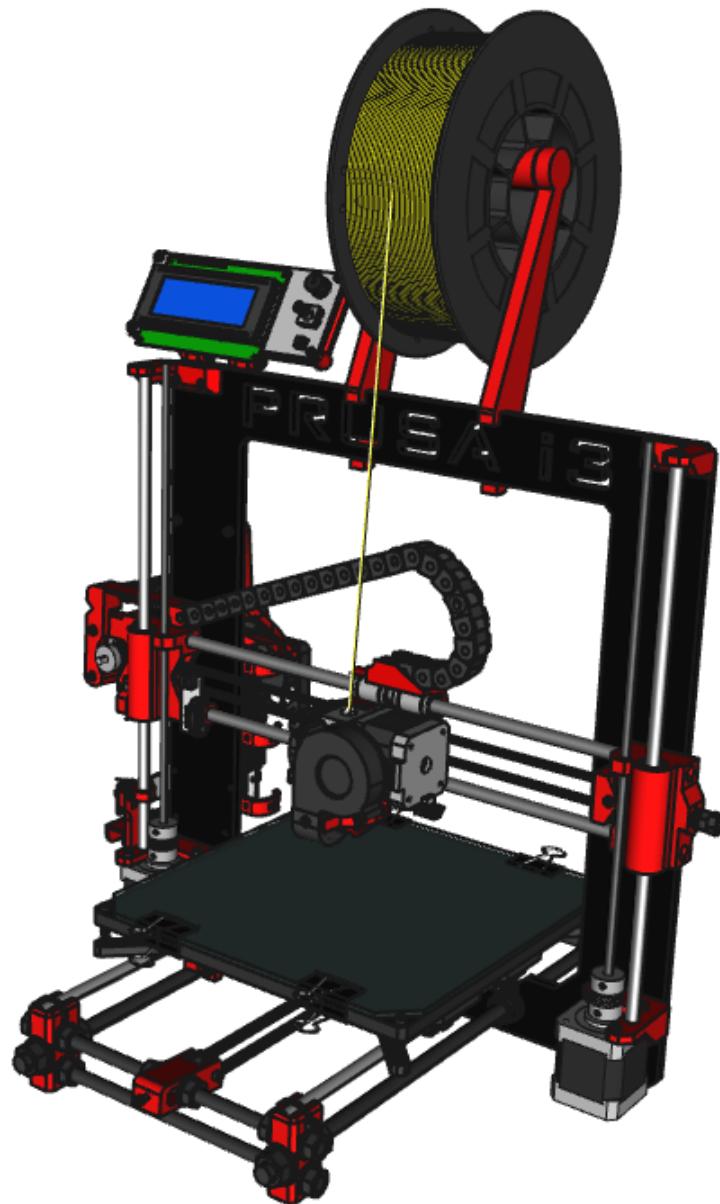


- Clones: 42
 - Crecimiento exponencial

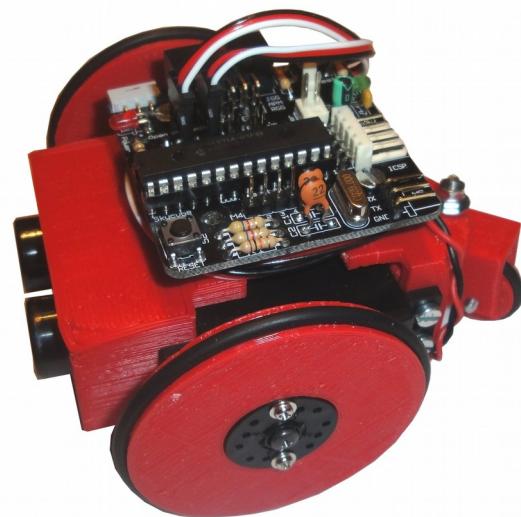
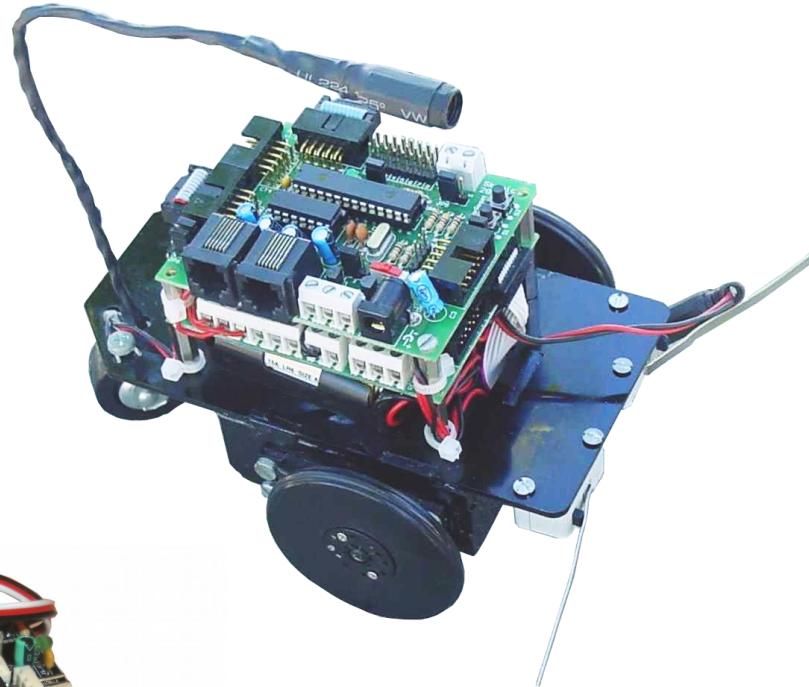
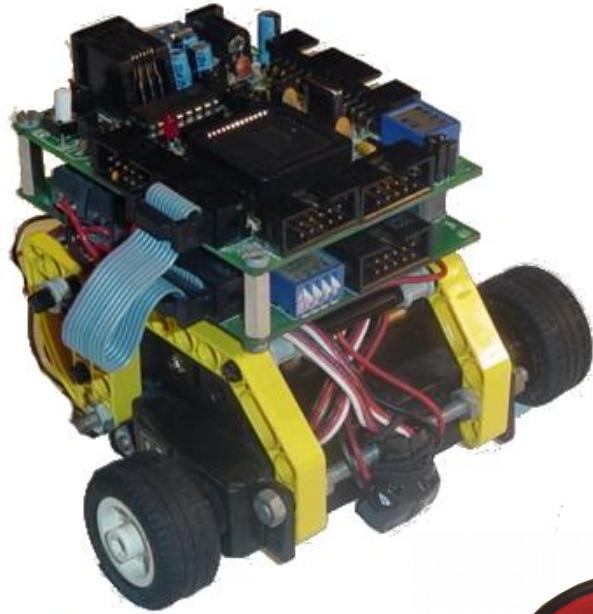
Impresoras 3D libres



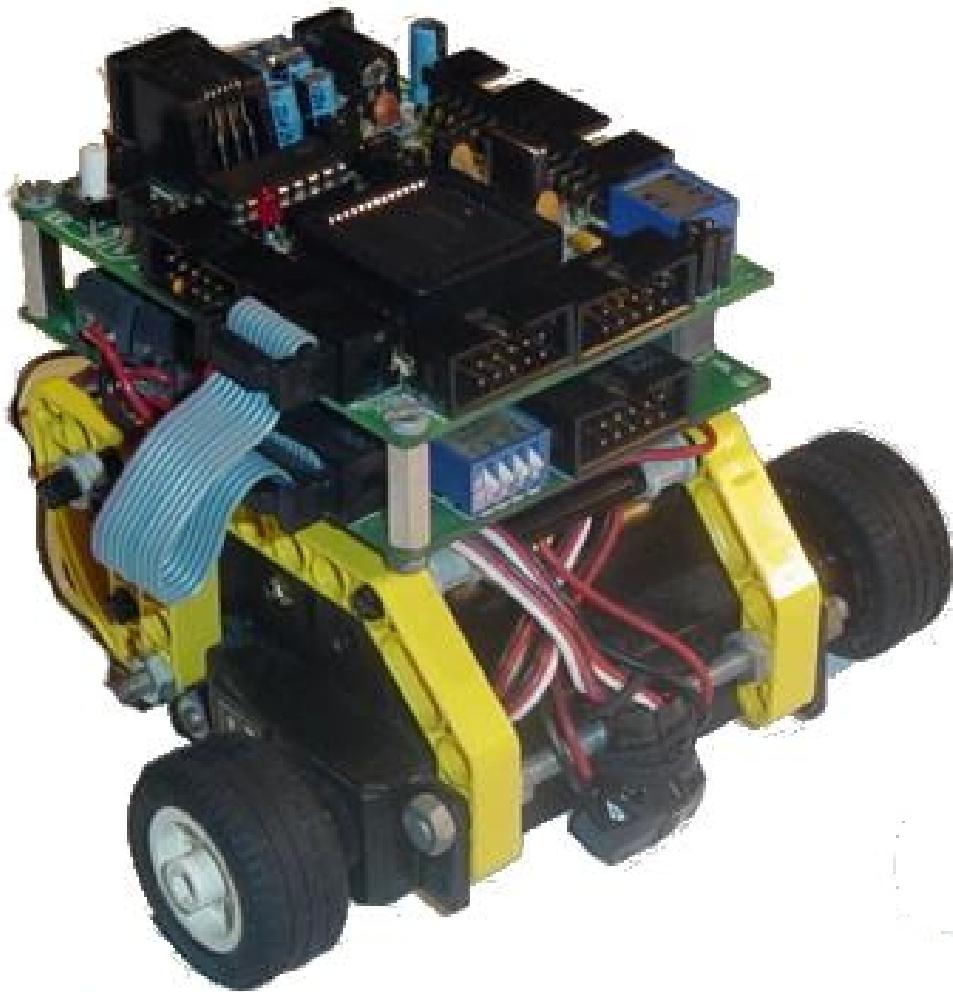
Los planos...



Robots educativos libres



Tritt: Primer Mini-robot (1996)

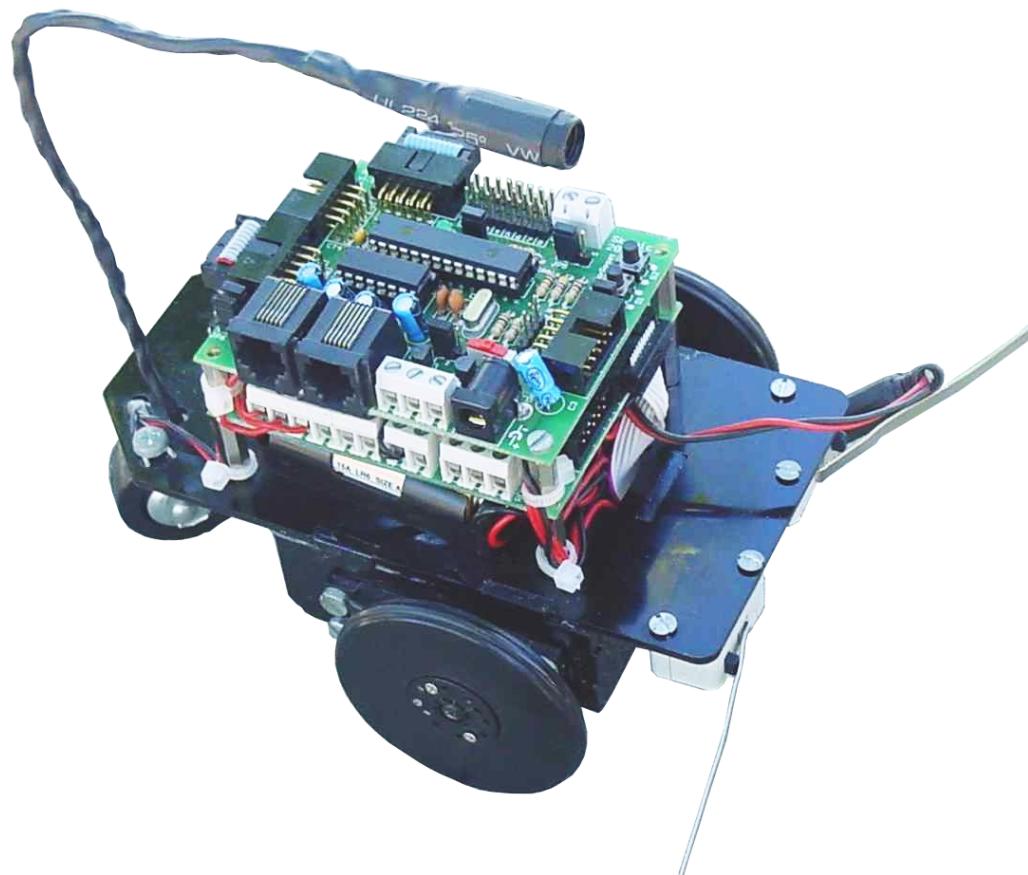


- Derivado del Rug Warrior (MIT)
- Piezas de Lego
- Servos Trucados
- Micro 6811 de Motorola
- Libre

Problemas:

- Difícil de replicar
- No se podían construir grandes tiradas
- Ruedas

Skybot (2005)

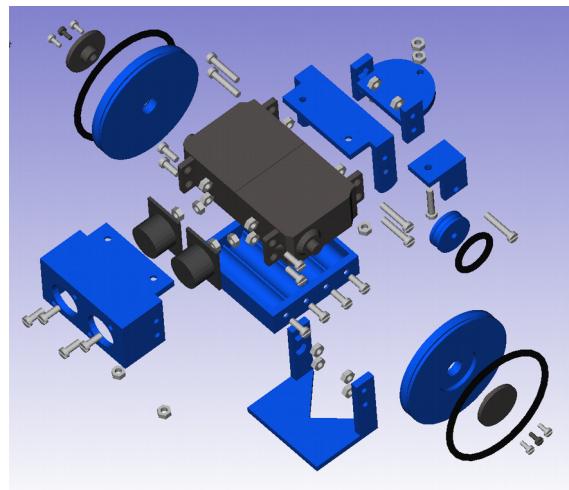
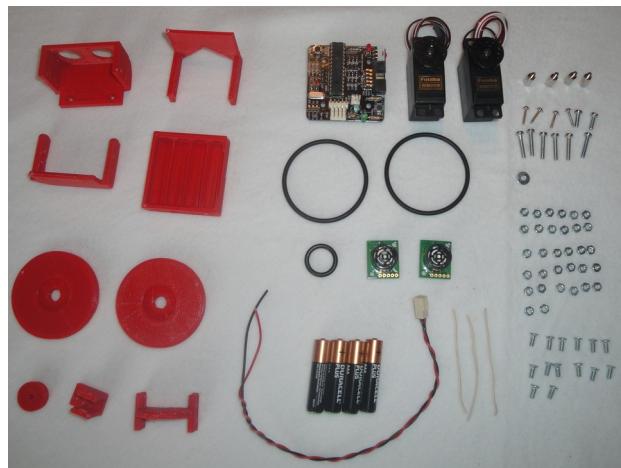
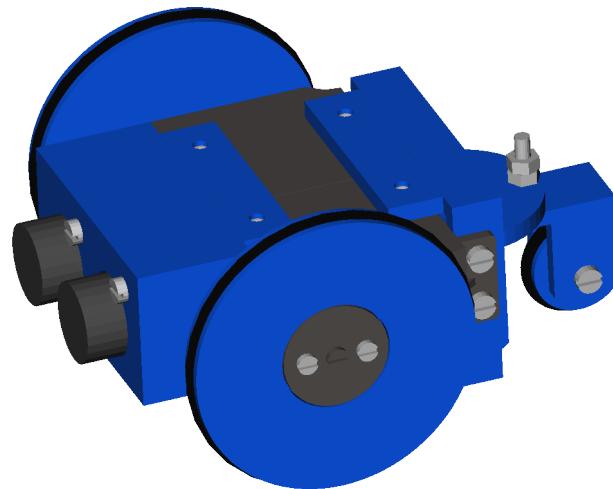
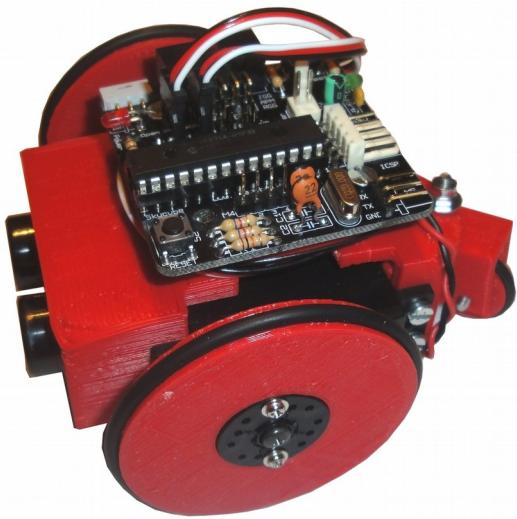


- Robot libre
- Piezas cortadas por láser
- Ruedas mecanizadas
- Tarjeta Skypic: Micro PIC16F876A

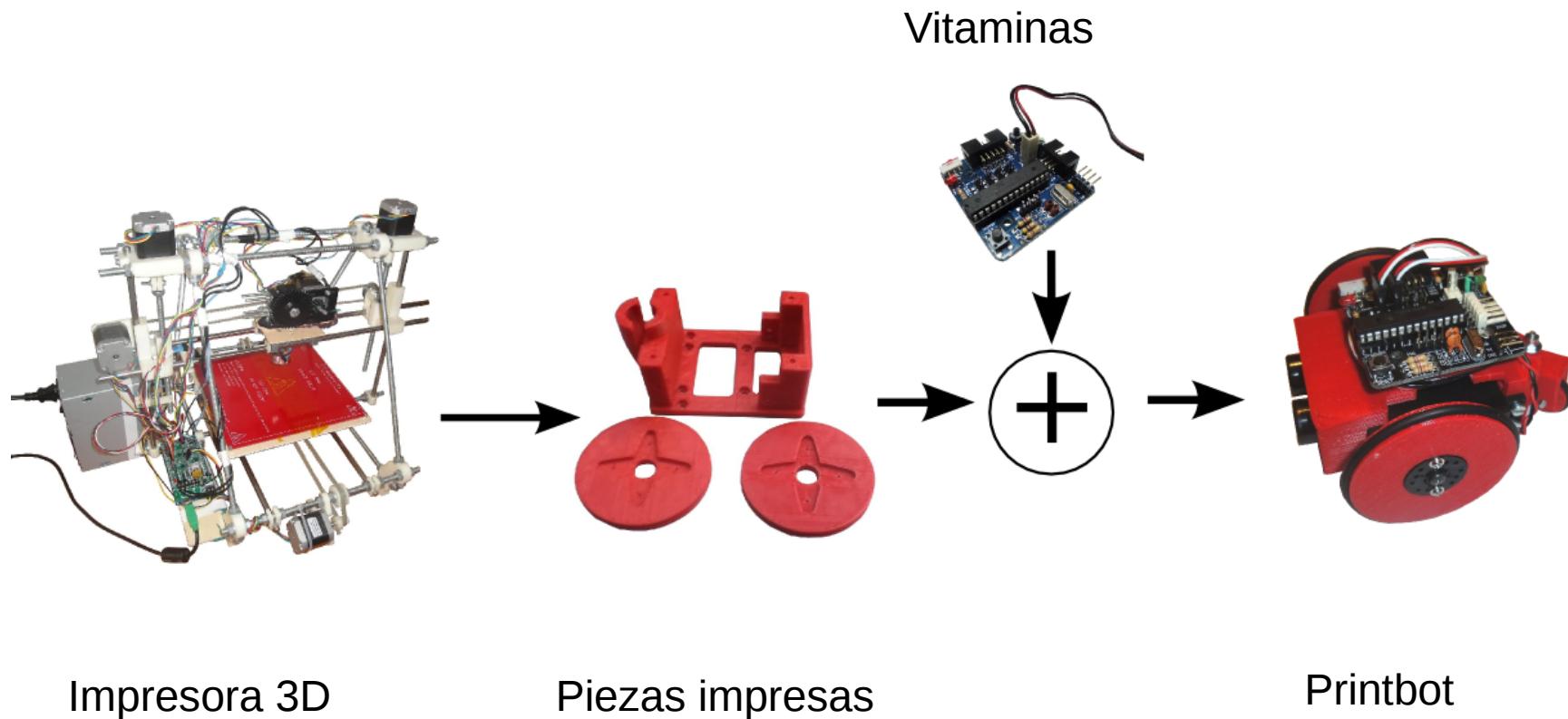
Problemas:

- ¡No evoluciona!
- ¡No hay comunidad!

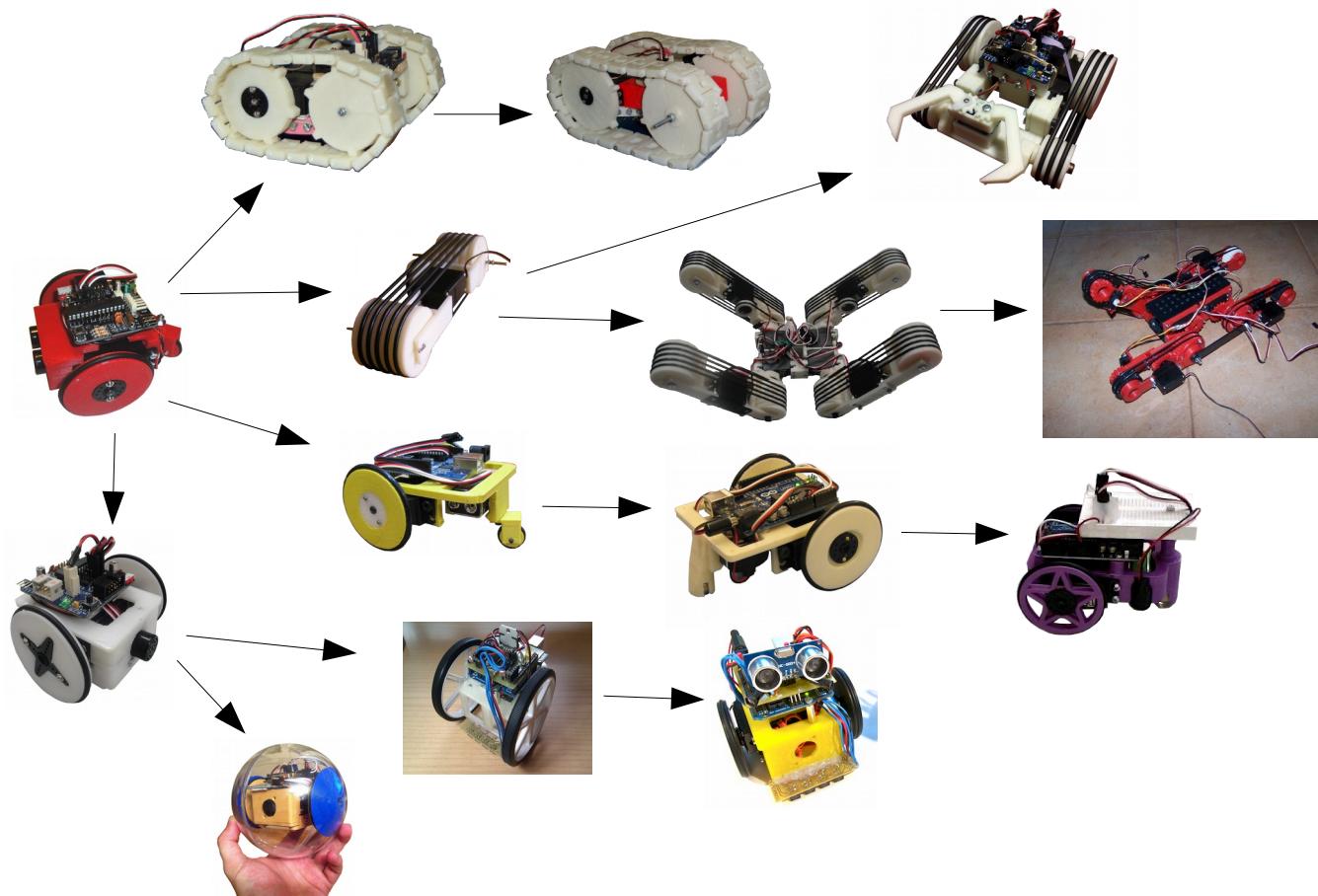
Miniskybot (2011)

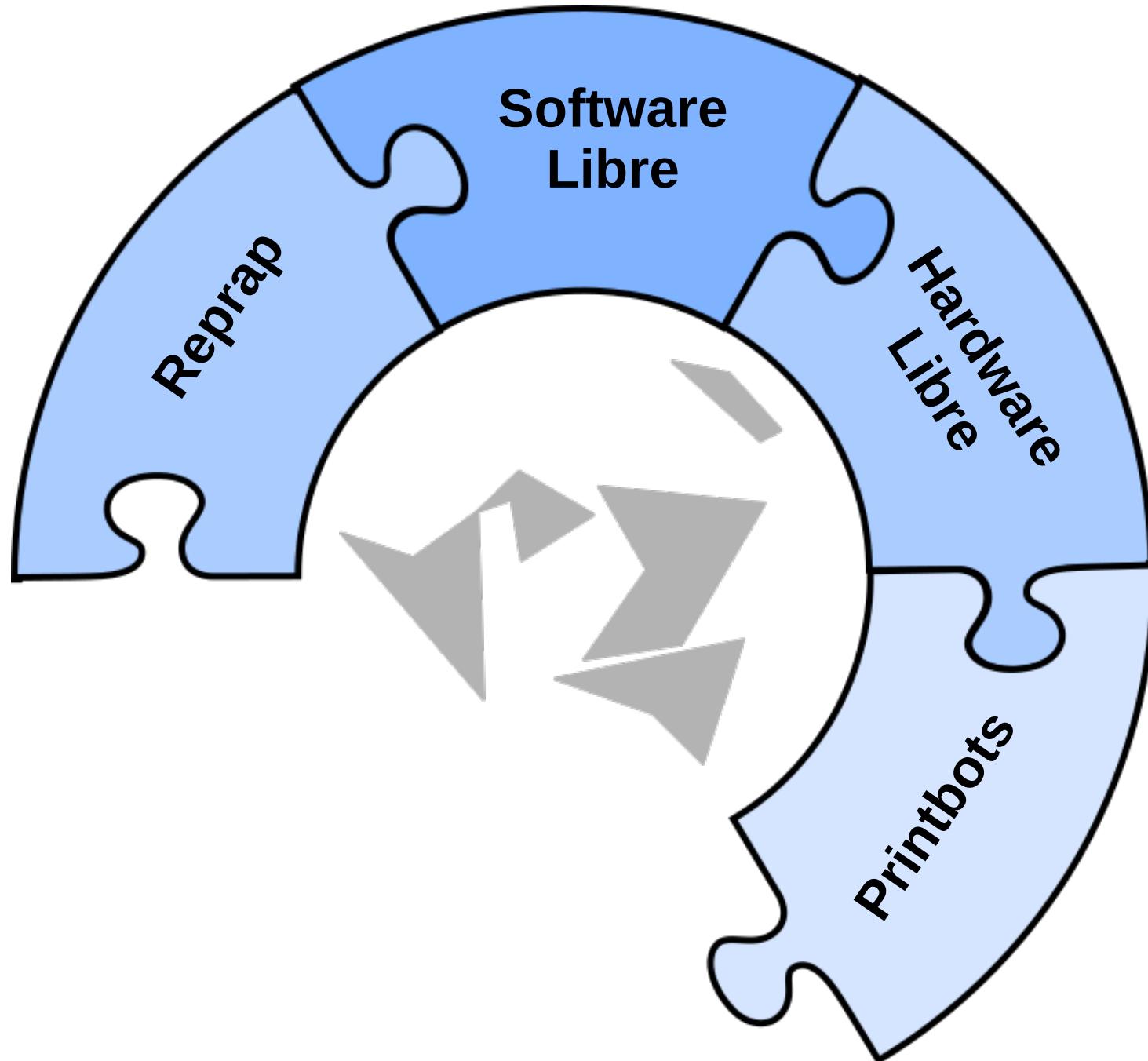


Printbots

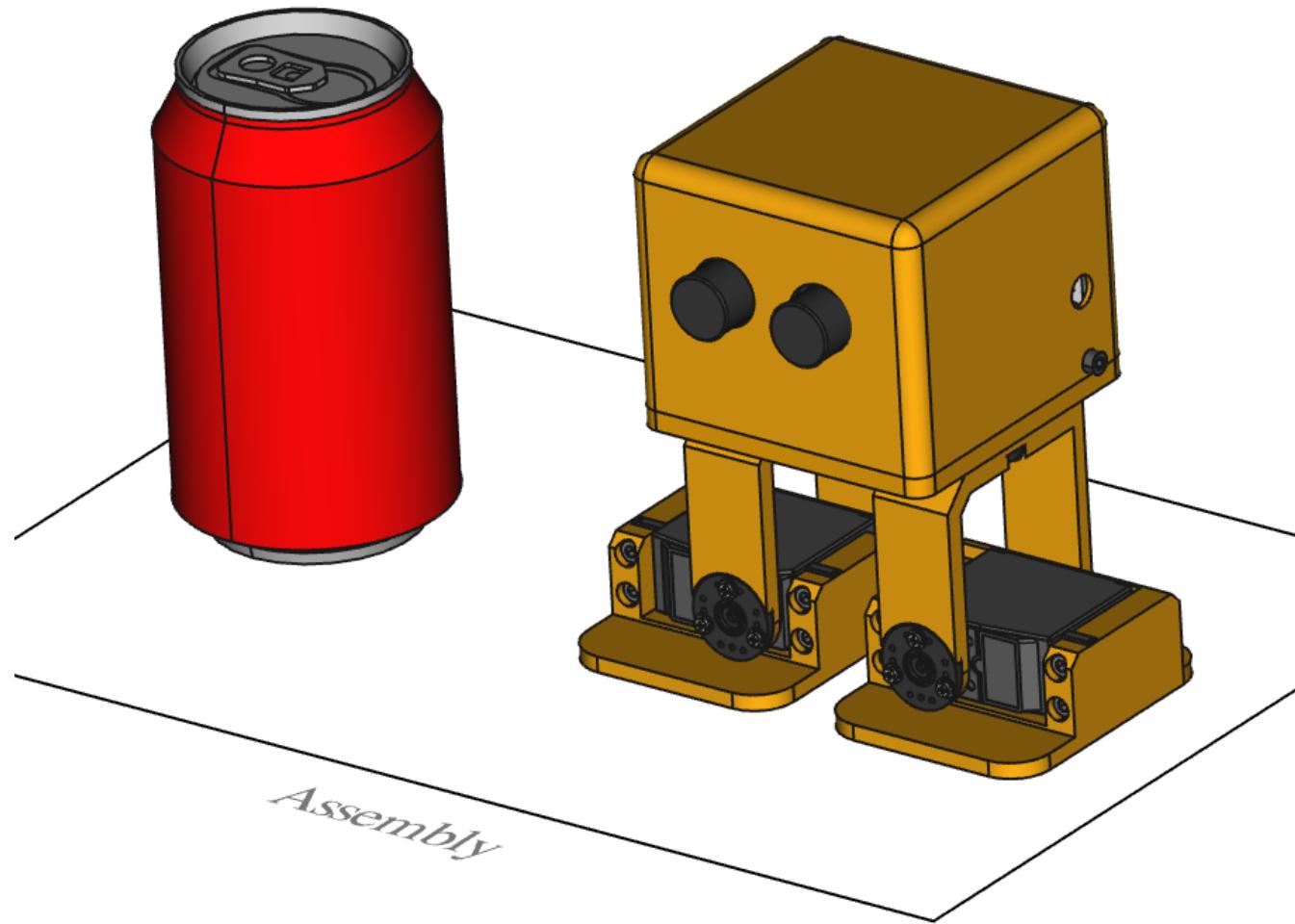


Evolución y diversificación

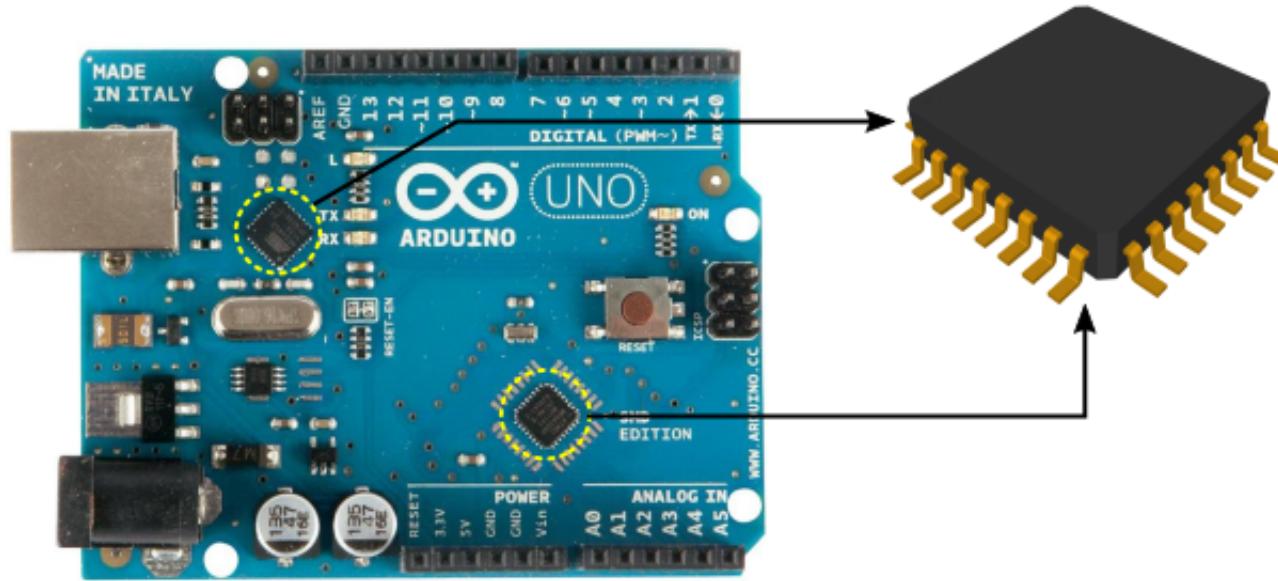




Planos...



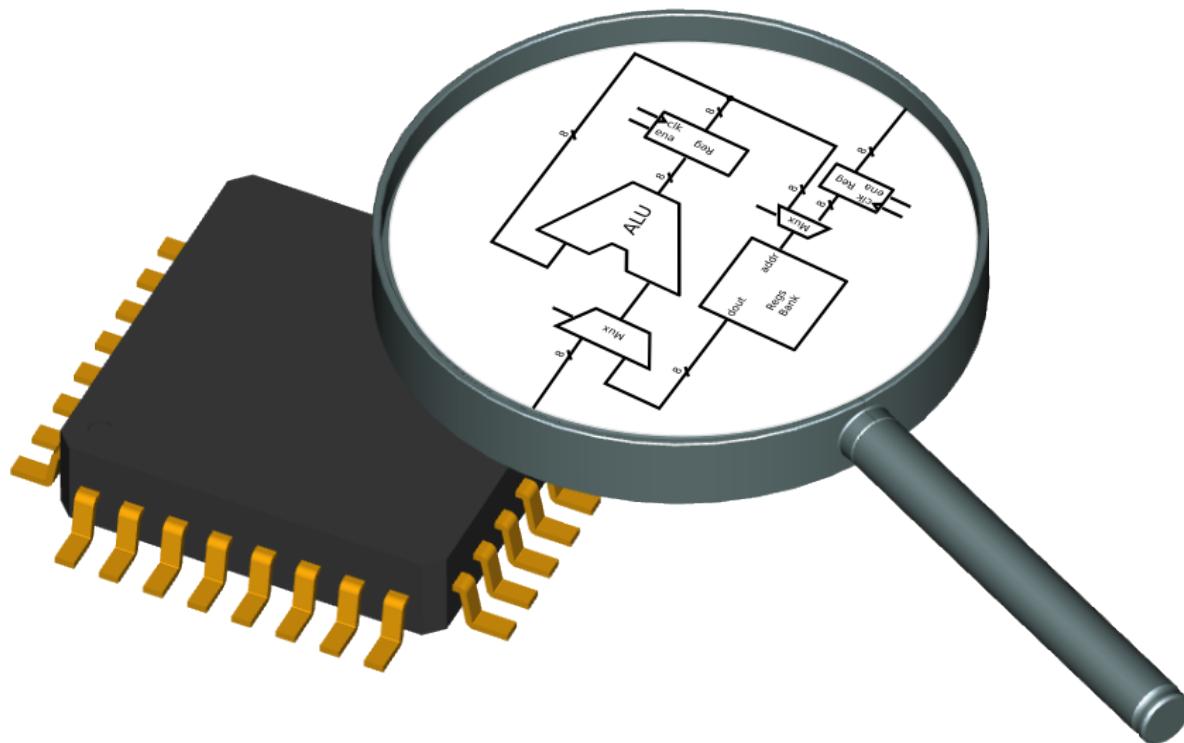
Chips: la última frontera



- El gran invento del siglo XX
- Están por todos lados
- Muy baratos
- Los compramos y los usamos

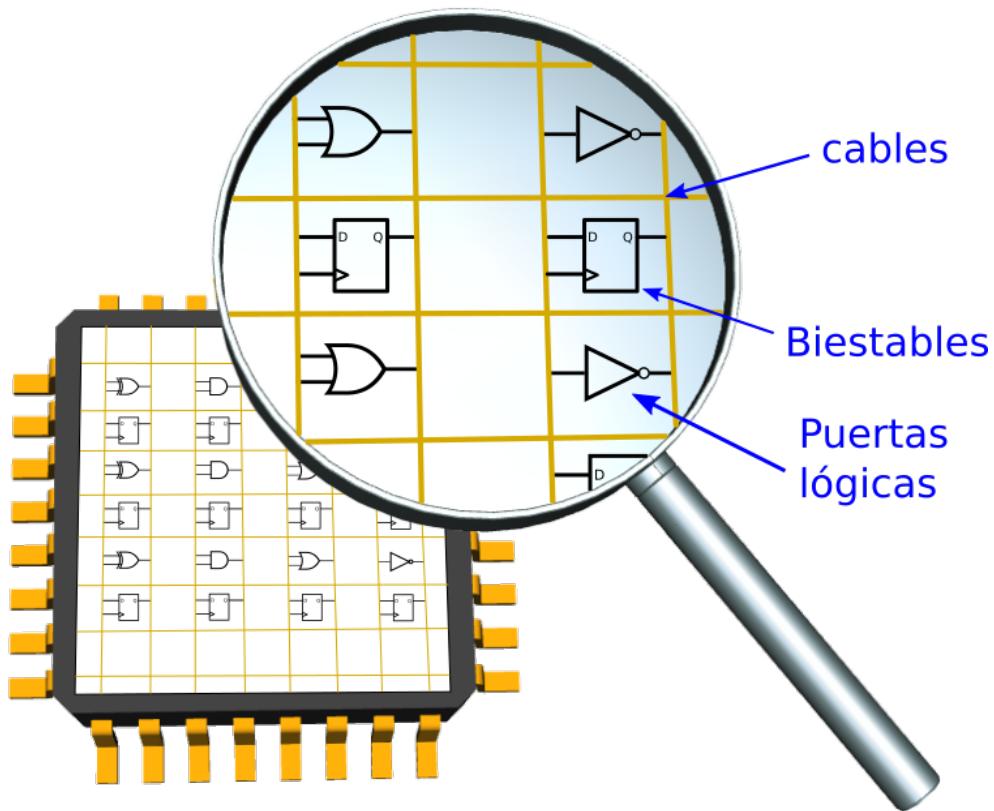
- Son **cajas negras**
- No los podemos estudiar
- No los podemos modificar
- No los podemos compartir

Electrónica digital



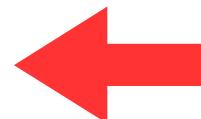
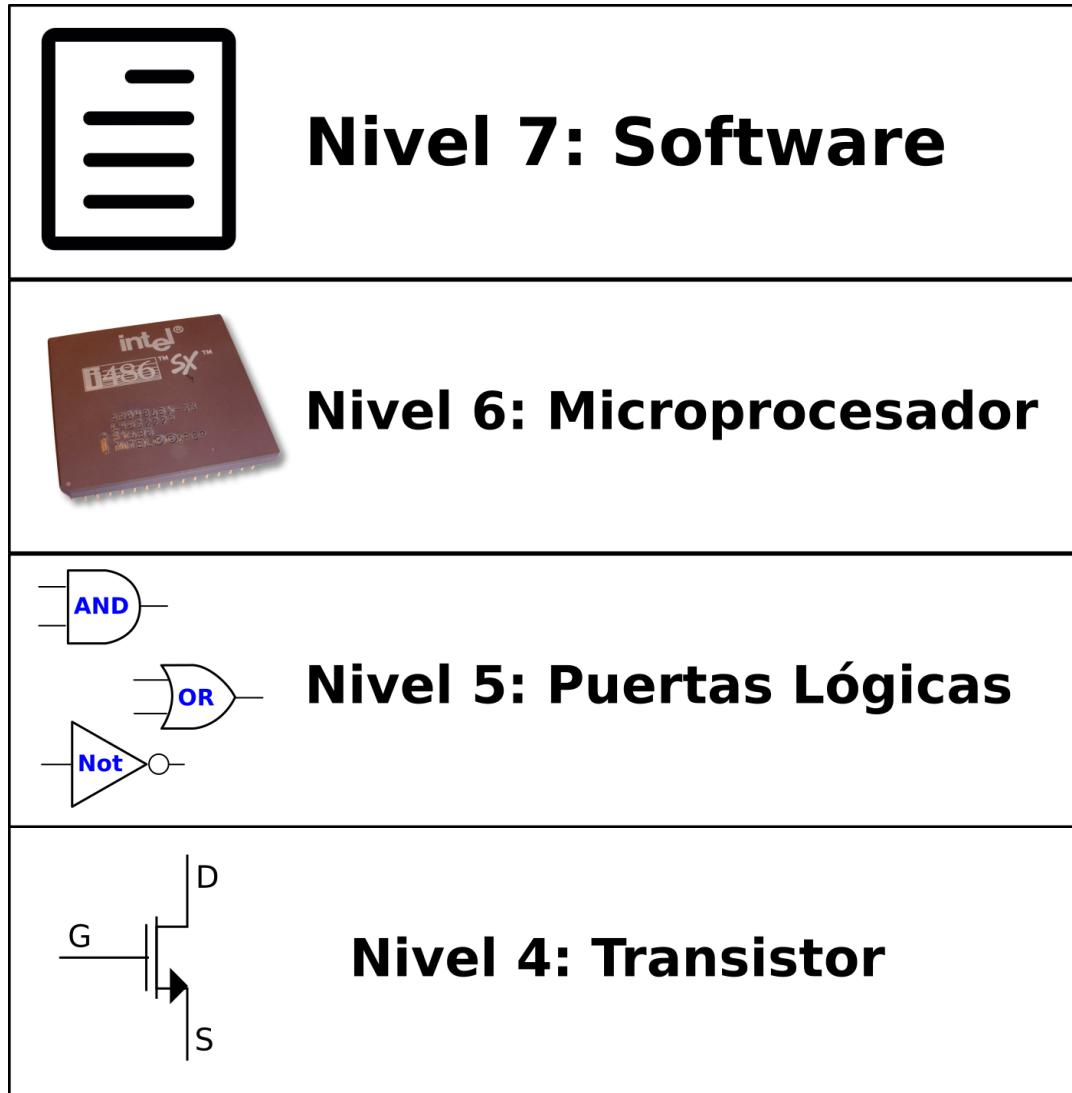
- Nivel de electrónica digital
- Información: Sólo 1s y 0s (Bits)
- Función: **Manipular, almacenar y transportar bits**

Tecnología FPGA

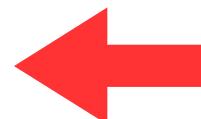


FPGA: Chip “en blanco” que contiene una matriz con los 3 componentes básicos: puertas lógicas, biestables y cables

Bajando de nivel

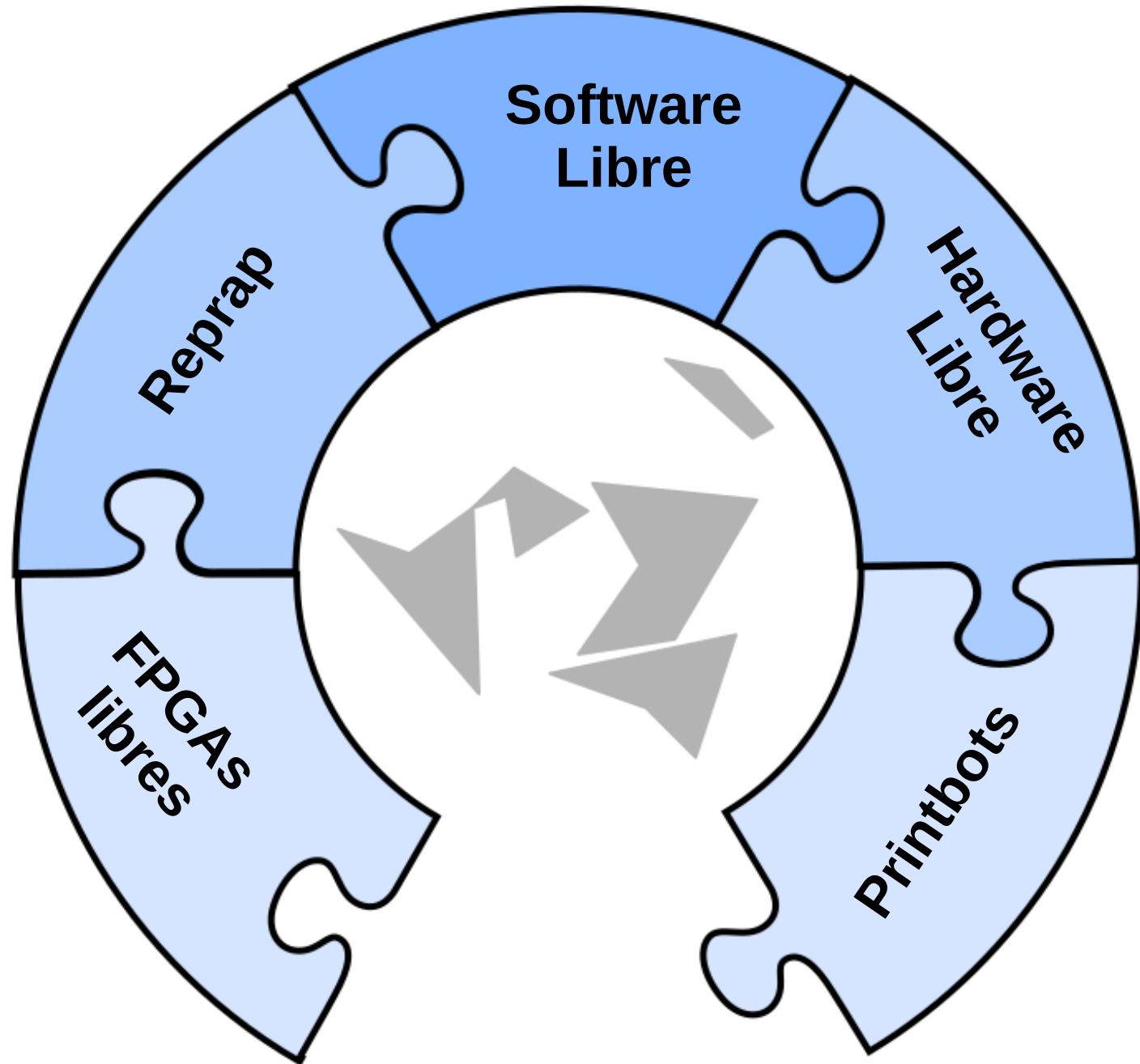


Arduino

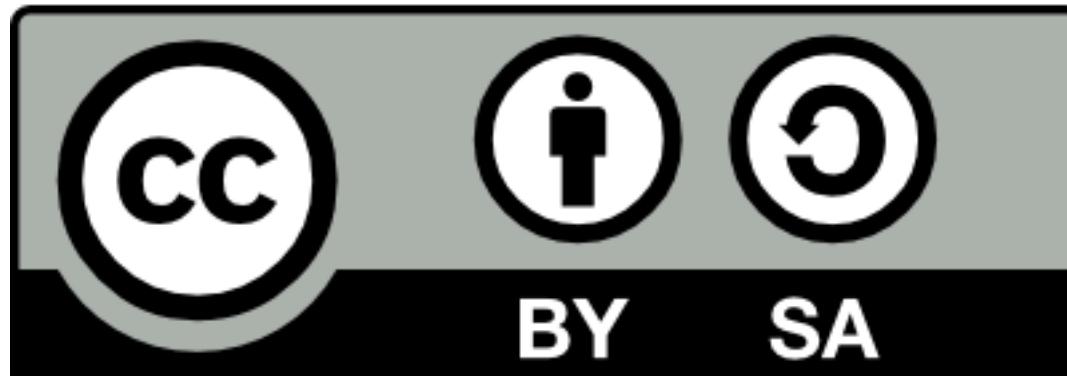
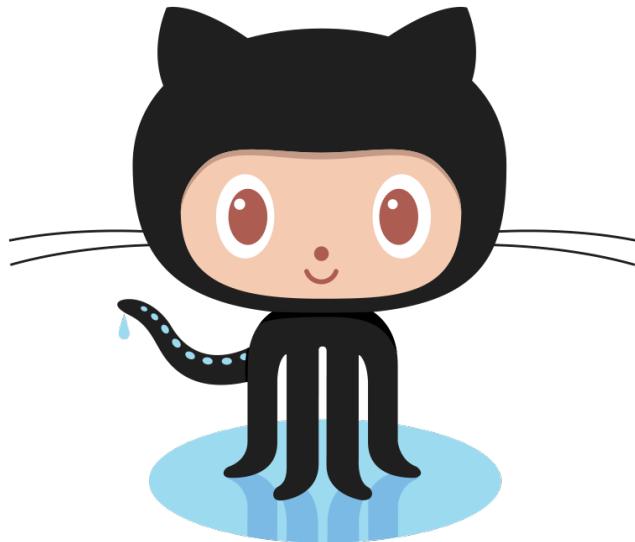


FPGAs

Patrimonio tecnológico humanidad



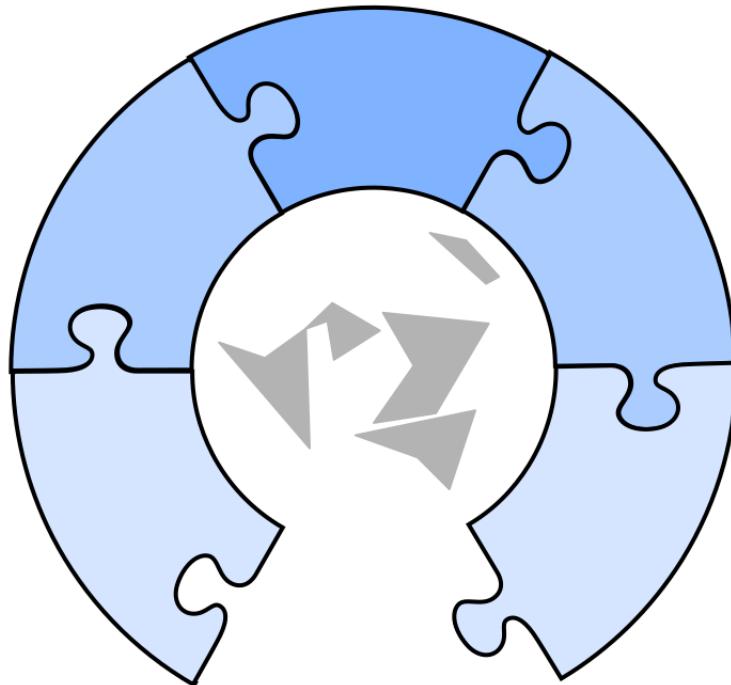
¡Comparte con la comunidad!



¡Que el software libre os acompañe!



Nosotros compartimos



Juan González Gómez (Obijuan)

<https://github.com/Obijuan>