



Open Source Hardware and Boards for Makers

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Open Source Hardware



- **Open-source hardware (OSH)** consists of physical objects of technology designed and offered by the open-design movement
- The term usually means that **information about the hardware is easily available** so that others can make it – coupling it closely to the **maker movement**

<https://ohwr.org>

<https://www.oshwa.org>



open source hardware

Licenses & Business models

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Rather than creating a new license, some open-source hardware projects simply use existing, **free and open-source software licenses** (GPL or other)

The TAPR Open Hardware License

The CERN Open Hardware License (OHL)



Recently, many open source hardware projects were **funded via crowdfunding** on Indiegogo or Kickstarter



Arduino has registered **its name as a trademark**



- **Arduino** is an **open-source hardware and software** company
- **single-board microcontrollers** and microcontroller kits for building digital devices

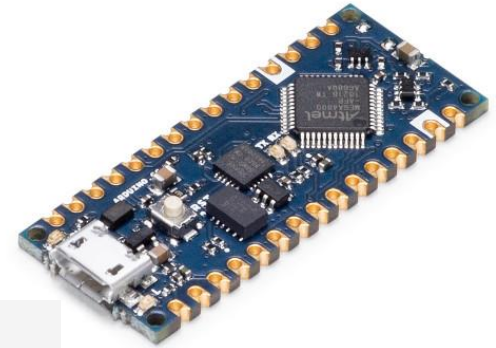
arduino.cc







Arduino updates and future of the platform

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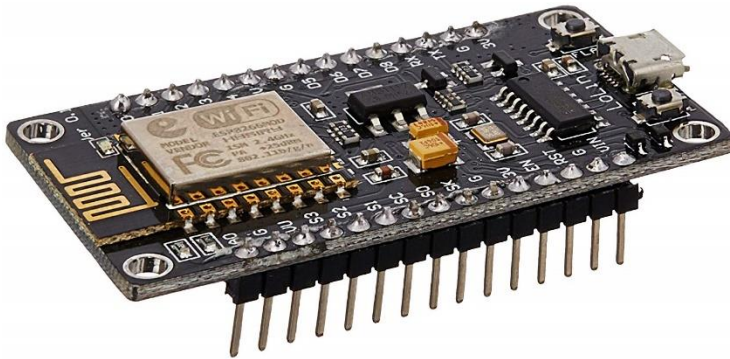
- New and **powerful Boards** for **Students** and for **industrial appliances**
- **Arduino Nano Family** (nano Every, nano33)
- **Arduino MKR Family** (Industrial use, fc and ce certified, FPGA)
- **New Arduino IDE**
[Github.com/arduino/arduino-pro-ide](https://github.com/arduino/arduino-pro-ide)
- **Arduino IOT Cloud**



Boards for Makes – from students to professionals

Board name	OSH	Micro	CPU Family	Memory	I/O pins	DAC / ADC	Plus
Arduino UNO r3		Atmega 328P [16MHz]	AVR 8 bit	32 Kb Flash, 2Kb Sram, 1Kb Eeprom	14 (6 PWM) 6 AI	PWM / 10 Bit	Is an Icon
Node Mcu		ESP8266 [80MHz]	32Bit RISC	4Mb Flash, 32Kb user RAM	16 DI/O, 1AI	PWM / 10Bit	WiFi
Node Mcu (esp32)		ESP32 [160–240MHz]	32-bit LX6	4Mb Flash, 512Kb Sram	„	8Bit / 10Bit	WiFi / Dual Core
Arduino Nano 33 IOT		SAMD21G18A [48Mhz]	32-bit ARM Cortex-M0+	256Kb Flash, 32 Kb Sram		10bit / 12Bit	Hardware Cripto, WiFi, IMU
NUCLEO-F401RE		STM32F411RE T6U [32Mhz]	32-bit ARM Cortex-M4	512Kb Flash, 80Kb Ram	64 I/O pin	12Bit / 12Bit	ST Link embeded, DMA, ultra low power
Blue Pill STM32		STM32F103C8 T6 [72Mhz]	32-bit ARM Cortex-M3	512Kb Flash, 80Kb Ram		PWM / 12Bit	Low cost, low power - Powerful board

Boards for Makes – from students to professionals

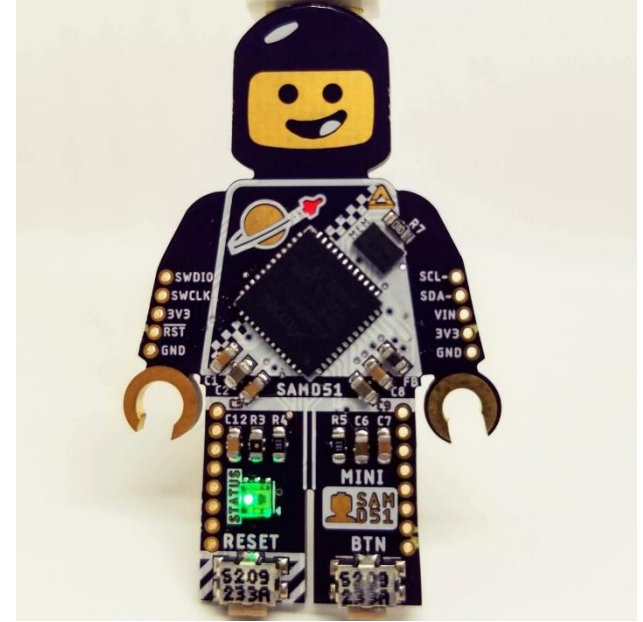


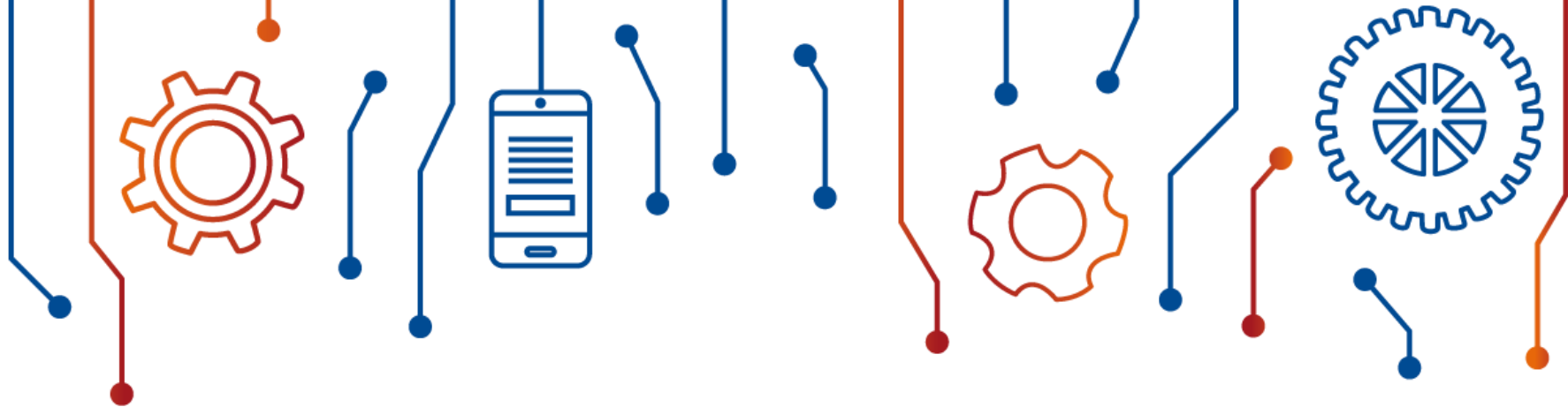
Open Source HW for Fun?? Yes, of course!!!



Minisam.cc – a microprocessor development board in the size and shape of a LEGO® Minifigure

Project FDL – an open source and overpowered nerf blaster for professional players





Thank you!