

Open Hardware PowerPC Laptop

Linux Day 2018
27 Oct 2018

LugBZ - Free University of Bolzano (IT)

A welder wearing a mask and gloves is welding a metal frame. The image is overlaid with a semi-transparent blue filter. The text 'The project' is centered in white with a black outline.

The project

Our goals



Create a GNU/Linux **PowerPC Notebook**

Open Source Hardware, sharing knowledge

Promote **alternative** [open source] operating systems and software

Diversity. Reduce computing monopolies

Make people use **free software**

Technical specifications



CPU **NXP T2080** 64 bit, 1,8 Ghz, 4 cores (8 threads), 128 bits
AltiVec instructions, energy saving modes

Graphic card in **MXM 3** format (upgradable)

USB2 and USB3 ports

SATA 3 ports

RAM DDR3L 64bits (upgradable)

HD/SSD 2.5" (upgradable)

Standard laptop chassis, 15,6" display

Who we are



Power Progress Community. Italian non profit association

- We push forward **Free Software and Hardware.**
- We like diversisty and indie-pendent architectures aiming **freedom of choice**

Members of a project focused on **Collaboration**; Positive and Human relations between members.

Mass purchase of technology

In detail

- **Core Team** (currently around 40 people)
- Work teams: **software, hardware, chassis, communications**
- Monthly: chat (**IRC**) , Live: **Slak**

What we are **not**



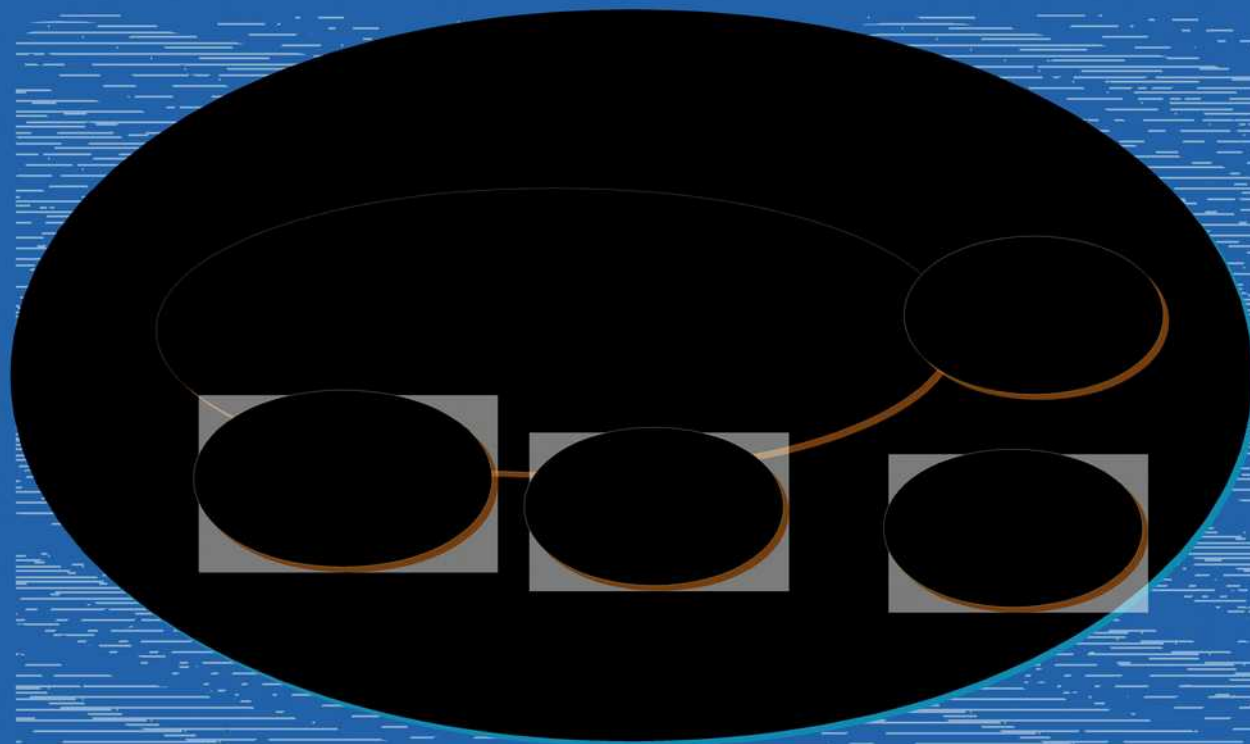
Not a company

Not selling products

Not interested by profits

Not interested by competition

Power Progress Community projects



Power Progress Community

<https://www.powerprogress.org/>

Yocto meta layer

<https://gitlab.com/oshw-powerpc-notebook/meta-progress>

Open Laptop Chassis

<http://open-laptop-chassis.powerprogress.org/>

Revivo con Scratch

Debian PowerPC 64 packages

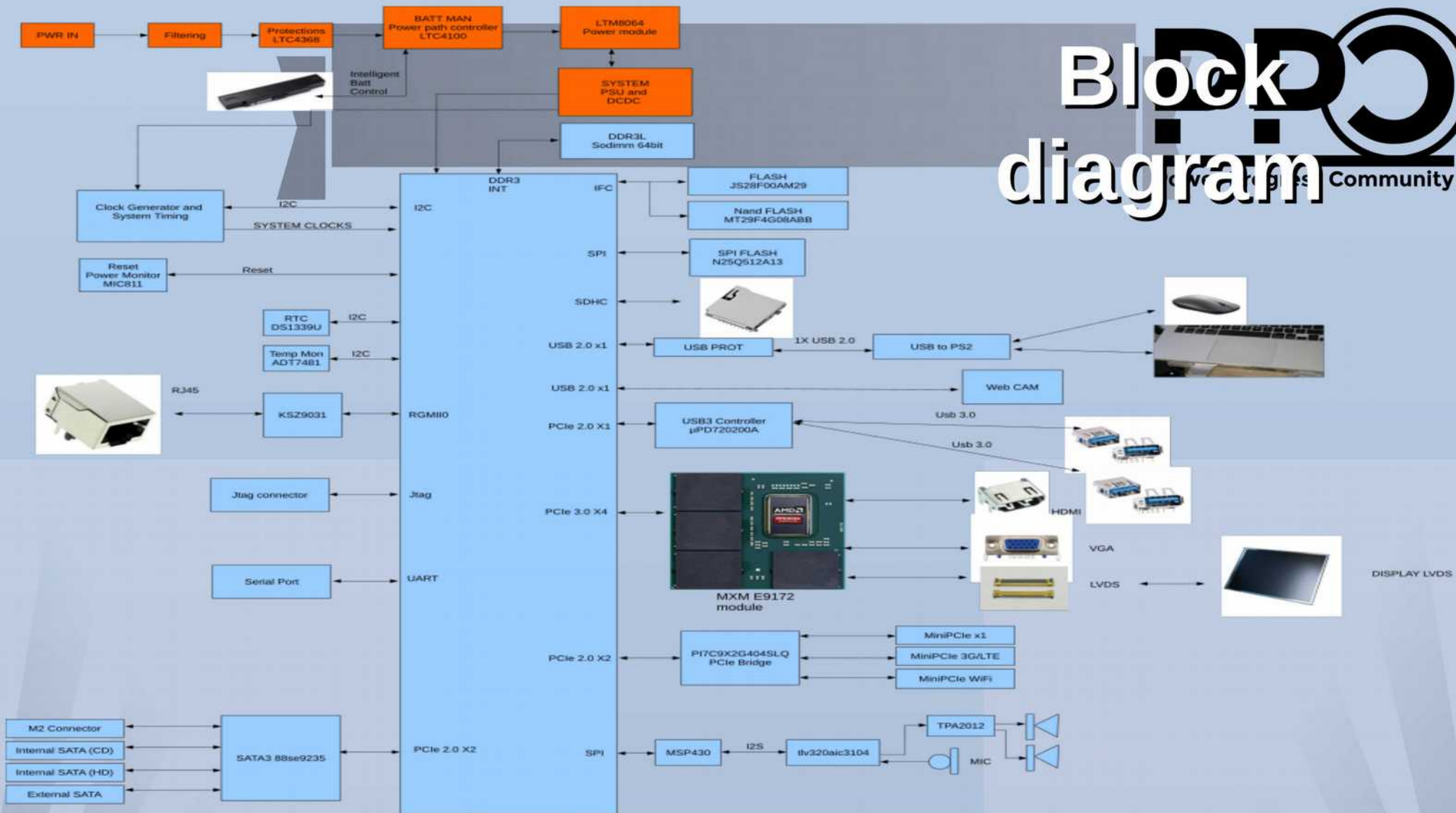
<http://repo.powerprogress.org/>

The current yearly membership fee due is € 30 (€ 10 for students)

Brief history

Block diagram

overclocking Community



COMMUNITY

FAQ

Why Open Source Hardware ?

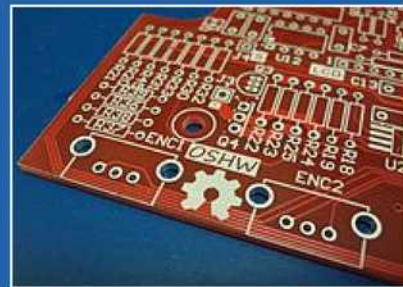
Everyone can study, modify, build, **distribute** or even **sell** either the project or hardware based on it.

- Some parts could be non Open Source Hardware like some components under **NDA**.

Open Source Hardware Certification

<https://www.oshwa.org>

- TAPR Open Hardware License vs CERN Hardware License



Under study

Under study

Why PowerPC?



More **recent** architecture, innovative and upgraded

Energy **efficient** interesting for a laptop

PowerPC architecture is **used in all domains** printers, automotive, planes, medical imagery, phone equipments, space vehicles... It is evolutive.

The architecture forces us to use **free software** because almost nobody writes proprietary code for PowerPC

Who is supporting PowerPC arch?



Founded in 2013, the OpenPower foundation has 340 members. With a hundreds of projects, it's a technical opened community, an open ecosystem...

Platinum Members



Gold Members



What PowerPC computers are there?

- AmigaOne **x5000**: NXP P-series
- AmigaOne **Tabor**: NXTP T-series
- Raptor **Talos II**: Power9 Workstation
- Raptor **Blackbird**: Power9 microATX
- IBM Power9 servers, SBC in defense and aerospace...





Donation Campaign

Donation Campaign



Contract a company to design and build our hardware which is **ACube Systems Srl**

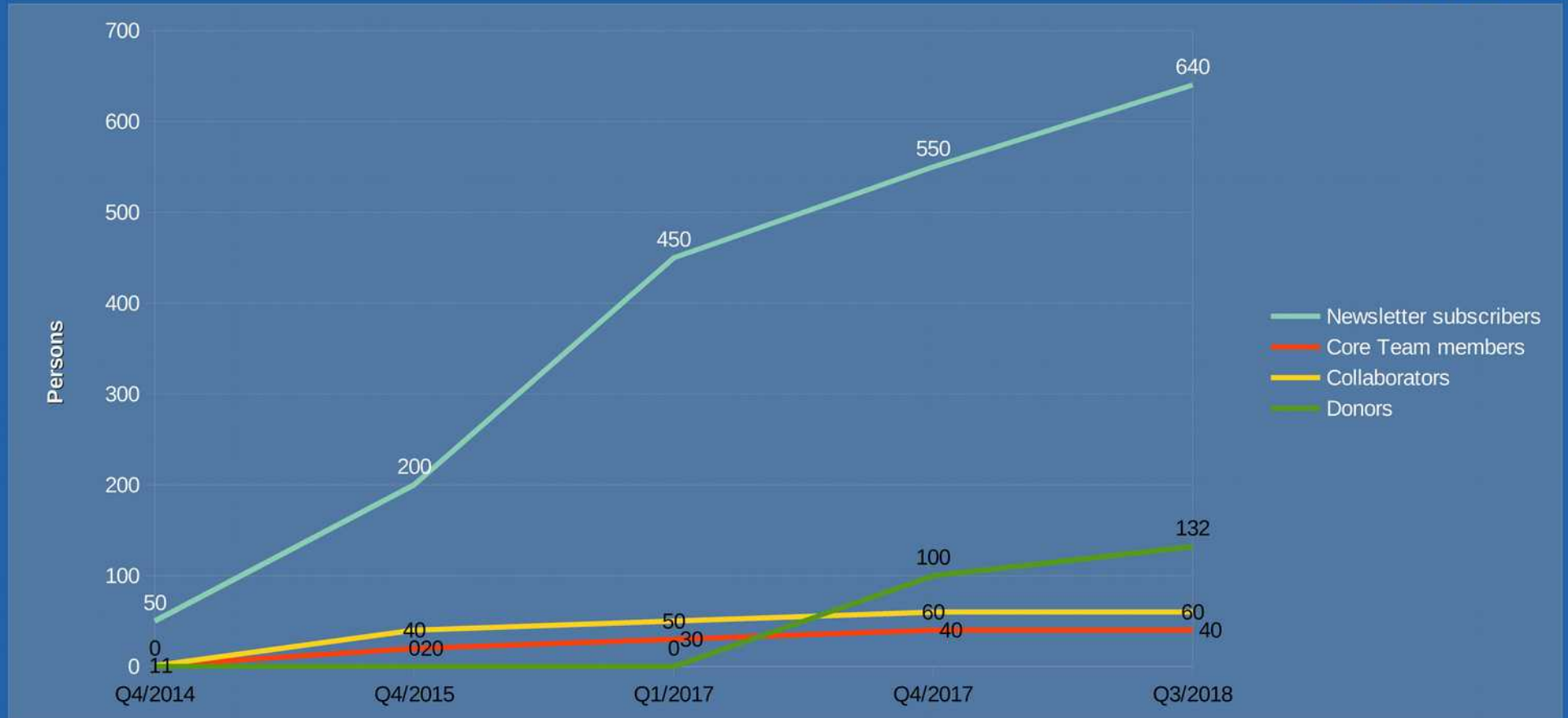
Self hosted donation campaign platform. Commercial crowdfunding platforms **cannot be used**:

- they support a product **production**
- they require a functional **prototype**
- **we cannot sell** products to fund the project

Donation campaign status

1. ~~Component selection, architecture analysing and electronic scheme design~~ [~~12.600 euros~~]
2. PCB (Printed Circuit Board), gerber file of the electronic scheme [11.950 euros]
3. Production of 5 prototypes [8.800 euros]
4. Hardware tests [14.400 euros]
5. Pre/Certification CE [12.500 euros]

Project evolution



What if it goes wrong?

There will be a survey between all donators to **decide how to use funds**, with the only requirement to be coherent with the mission of the association.

Donations are free and non refundable (**Italian law**)

The chicken or the egg?

What to build first: the motherboard or the case?

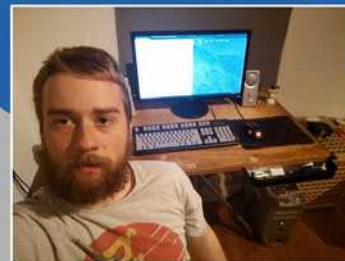
- **Plan A** : buy 250 “barebone” cases at an acceptable price.
 - Minimum production in Italy with contained costs : 250 motherboards
 - Use an x86 laptop without motherboard and CPU, with maybe an MXM card.
- **Plan B** : donation campaign to build a case from scratch
- **Plan Y** : DIY case, give 3D files and tell which company can do the printing



Activities



Labs



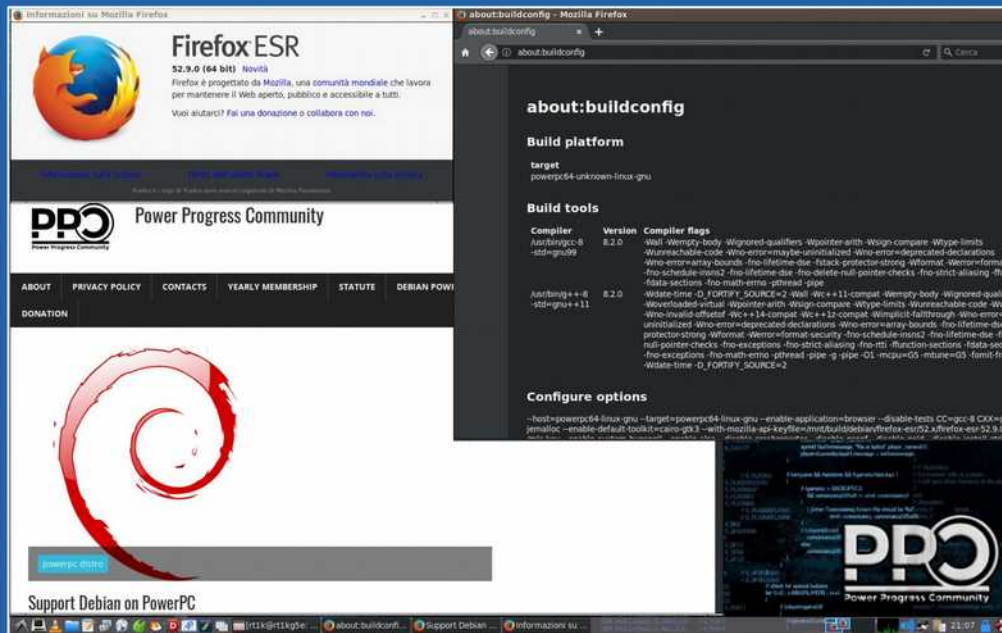
Support for Debian PPC64



Porting software to PPC64
Firefox, mplayer, Linux
Kernel, mesa...

Built using a Power8 server

Debian repository available



<http://repo.powerprogress.org/>

3 devkit NXP T2080 RDB



- 1 devkit in Milan on loan from Freescale/NXP
- 1 devkit of OpenSuse in Czech Republic
- 1 devkit of Bill Toner (of the hardware team) in USA
- We are working with NXP SDK which is based on Yocto and uboot
- **Objective:** Booting an ATI video card

Custom Linux PPC64 distro

Yocto 2.4 Rocko in a **Power8**
server

QT5 ecosystem

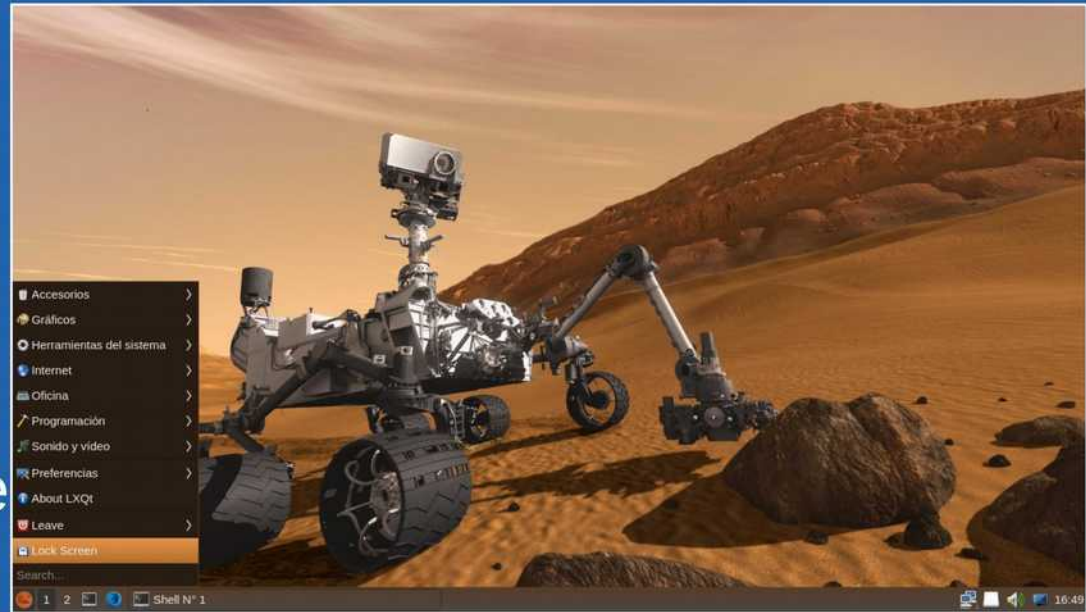
LXQT Desktop and a small
number of apps

Custom **branding** (splash
screen, sddm and lxqt)

Porting and **patching** software

Runs on **Power Mac G5**

Binaries are **not publicly**
available yet



<https://gitlab.com/oshw-powerpc-notebook/meta-progress>

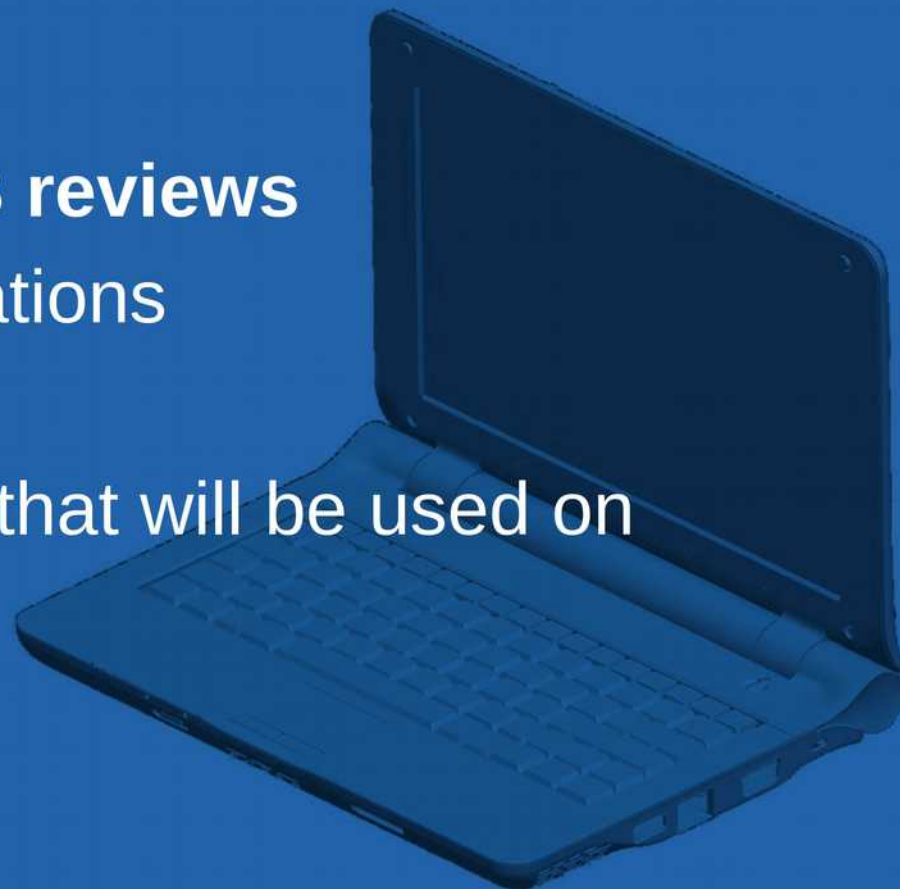
...and more activities

Electronic schemes and **PCB reviews**

Meetings with **legal** organizations

3D case **modelling**

Tests of some **components** that will be used on the motherboard



How to help?

- Translations : websites, social networks and software
- Spreading the project : publish information on blogs, forums, socials, handle users, organise advertising campaigns.
- Creation : multimedia designer to advertise (video, animations, images, articles, etc...).
- Purchase groups : create groups attracting foundations, universities, companies...
- ...any ideas ?

Where to find us



- Website in 9 languages <http://powerpc-notebook.org/>
- Facebook <https://www.facebook.com/powerpcnotebook/>
- Twitter <https://twitter.com/powerpcnotebook>
- Forum <http://forum.powerpc-notebook.org>
- Survey for potential members <http://survey.powerpc-notebook.org/>
- Newsletter
<http://powerpc-notebook.org/subscribe-powerpc-notebook-newsletter/>
- Wiki <http://wiki.powerpc-notebook.org>
- Power Progress Community website <http://powerprogress.org/>

Thank You!