



WEEE Open: electronics, sustainability and open source

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Politecnico di Torino

Objectives

- Reduce the amount of electronic waste thrown away despite being still usable (that is, recover old computers)
- Learning “hands-on”, not on books
- Sharing the acquired knowledge with society
- Donating repaired computers and other devices to no-profit organizations, schools, public institutions and so on

Due to time and money constraints Politecnico can't recover all the waste it produces. We want to bring the quantity of electronic waste that it discards as close as possible to 0 tons per year.

The recovery of electronic waste

Most of electronic waste (65% in Italy¹) produced in the western world isn't correctly disposed: it ends up in illegal landfills in the poorest areas of the planet.

To reduce the quantity of waste, reuse is a possible solution.

¹Source: Presa Diretta, 6-2-2017

What have we done until now

- Two years of activity
- Currently 35 members
- Set up a lab with lots of cool tools and stuff
- Repaired around 50 computers, around 10 monitors, lots of keyboards and mice
- Erased exactly 100 hard drives
- Wrote some some useful software and released as open source²
- Participated to lots of events where we repaired more electronic devices (Restart Party, Linux Day, and so on)

²<https://github.com/WEEE-Open>

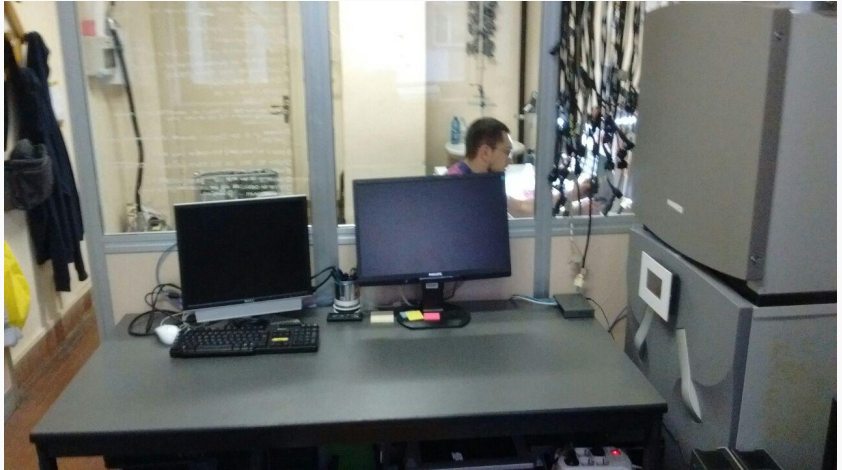
weee

We repair **Waste of Electric
and Electronic Equipment.**

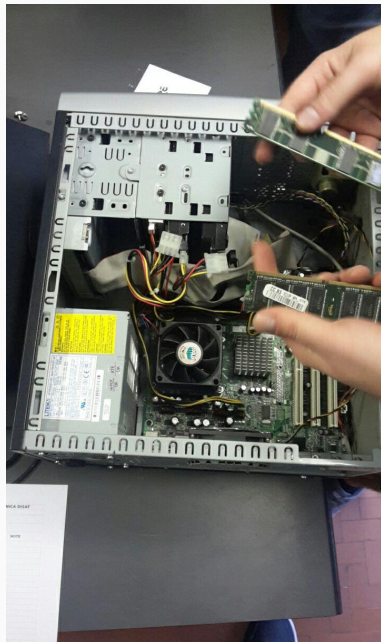
open

The use
of **free/open source software** is
an important part of our project.

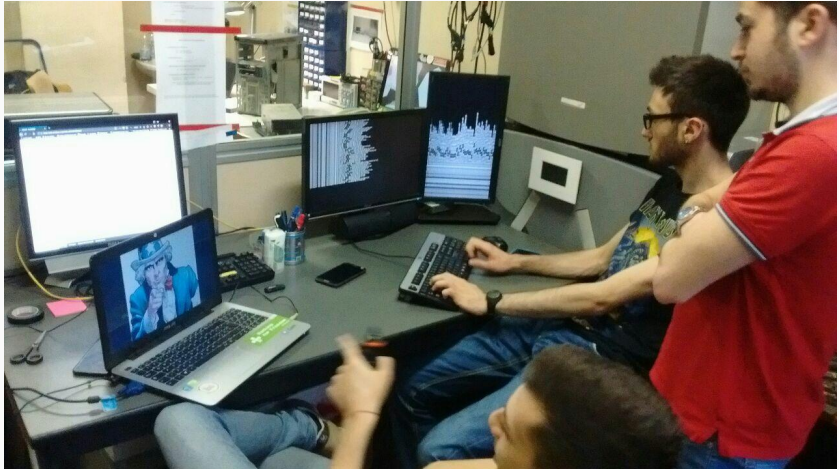
The lab



Repairs in progress



People working on software



Repair with passion ;)



Now onto practical stuff!

Main components of a computer

Main components of a computer:

- Power supply
- CPU
- RAM
- Motherboard
- Graphics card
- Hard disk

How they fail and how to repair them?

Power supply

Power supply

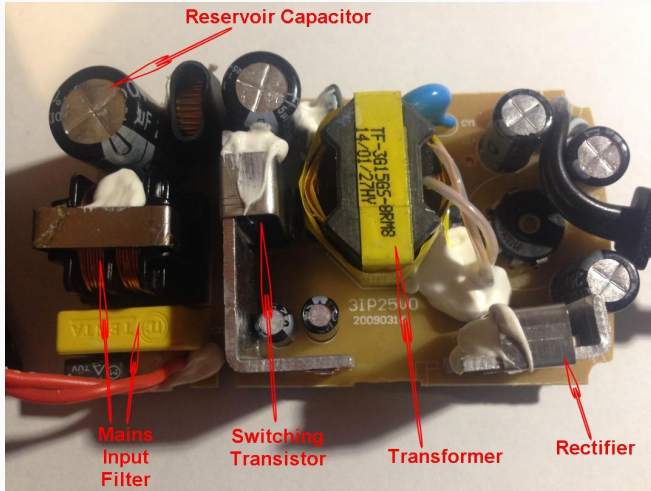


Image source: <https://wiki.restarters.net/>,
released under CC-BY-SA 3.0 by user Pleriche

Power supply (again)

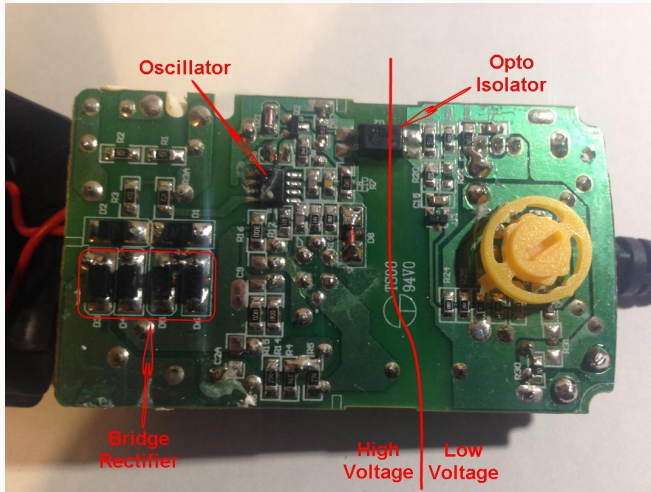


Image source: <https://wiki.restarters.net/>,
released under CC-BY-SA 3.0 by user Pleriche

CPU

RAM

Motherboard

Graphics card

Hard disk

Software we made


Turbofresa

Git repo: <https://github.com/weee-open/turbofresa>

Tarallo

Some details (in italian): <http://weeeopen.polito.it/blog/l-inventario-opportuno-progetto-e-realizzazione-di-un-software-gestionale.html>

Git repo: <https://github.com/weee-open/tarallo>

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7 results, showing 10 (page 1 of 1).

[Polito](#) >  > [ZonaBlu](#)**87****Codes**CIB OS license code 

OS license version XP

FeaturesArrival batch 

Brand HP

Form factor
(motherboard) ATX

Model Compaq d530 CMT (DG062A)

Notes Sostituire un condensatore esploso su mobo, poi pronto

Owner Area IT

“Useful” statistics: count integrated GPUs by brand

```
SELECT ValueText AS Brand, COUNT(*) AS Quantity  
FROM ItemFeature  
WHERE Feature='integrated-graphics-brand'  
GROUP BY ValueText  
ORDER BY Quantity DESC
```


“Useful” statistics: count integrated GPUs by brand

Brand	Quantity
Intel	61
ATI	16
SiS	4
S3	2
Trident	1

Useful statistics: count RAM sticks by size

```
SELECT
  CONCAT(CAST(CAST(Value/(1024*1024) AS INT)
    AS CHAR), ' MiB') AS Capacity, COUNT(*) as Quantity
FROM ItemFeature
WHERE Feature='capacity-byte'
AND Code IN (
  SELECT Code
  FROM ItemFeature
  WHERE Feature='type'
  AND ValueEnum='ram')
GROUP BY Value
ORDER BY CAST(Value/(1024*1024) AS INT) DESC
```

Useful statistics: count RAM sticks by size

Capacity	Quantity
4096 MiB	9
2048 MiB	26
1024 MiB	41
512 MiB	79
256 MiB	75
128 MiB	29
64 MiB	28
32 MiB	6
16 MiB	1
8 MiB	2
4 MiB	4

Telegram bot

(and weelab)

Git repo: <https://github.com/weee-open/weeelab>

Git repo: <https://github.com/weee-open/weeelab-telegram-bot>

/inlab

There are 2 students in lab right now:

- Emanuele Guido
- Mattia Todero

/top all

Top User List!

- 1) [767:49] Federico Bassignana
- 2) [673:54] Ludovico Pavesi
- 3) [321:04] Emanuele Guido
- 4) [238:18] Mattia Todero
- 5) [164:00] Stefano Mendola

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Server stuff



The end

Bonus: our temporary lab





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facebook.com/WEEEOpenPolito