How the EU can make our electronics last

WEBINAR

Neil Mather
The Restart Project

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ECOS

Thomas Opsomer
iFixit Europe

27 February 2020
TODAY ON THE AGENDA

- Big picture – discarded laptops and the mountains of e-waste
- Repairer’s perspective – why do computers fail?
- Unfixable by design – what makes laptops so hard to repair?
- Can the EU fix it? How ecodesign can make it happen
- Q&A
BIG PICTURE
DISCARDED LAPTOPS AND THE MOUNTAINS OF E-WASTE

Ernestas Oldyrevas
Programme Manager, ECOS
TIME FOR A QUIZ!
The problem of short-lived laptops

- **28 million** laptops are sold in the EU every year
- Average lifetime of a laptop today is estimated at **less than 5 years**
- Extending lifetime of our **devices** is a key strategy to spread the share of their impacts over a longer time period
The problem of short-lived laptops

- E-waste is the **fastest growing waste stream** in the world

  - In 2016, 44.8 million tonnes of e-waste were generated globally, equivalent to **4,500 Eiffel towers**
  
  - **Only 17%** of this is formally collected today – 32% in the EU
  
  - If no action is taken, the amount will more than double by **2050** – to 120 million tonnes annually, equivalent to **12,000 Eiffel towers**
The growing consumption of electronics **heavily weighs on the climate**

- **52%** of climate impact of a laptop comes from resource extraction, manufacturing and end-of-life treatment.

- Extending the lifetime of a laptop computer by one single year would result in 1.6 Mt of CO2 being saved, equivalent to taking **870,000 cars off the roads** – twice the total fleet of Luxembourg.
The problem of short-lived laptops

- Short-lived computers **cost consumers too**

- **84%** of EU citizens think the EU should act to extend the lifetime of products

- More than **50% of consumers in the EU** have environmental impact in mind when shopping

- **However**, good intentions continue to be side-tracked by little to no information on laptop durability and repairability being provided at the point of sale & the poor economics of repair

77% of EU citizens would rather repair their goods than buy new ones.

ecostandard.org
New report to be launched today

- Identifies five main reasons behind premature obsolescence of laptop computers
- Puts forward policy recommendations to address them
REPAIRER’S PERSPECTIVE

WHY DO COMPUTERS FAIL?

Neil Mather
Tech and Data Lead, The Restart Project
Laptops in community repair

restart
therestartproject.org

30,000 RECORDS OF REPAIR
We've published our first combined set of open repair data.
FIND OUT MORE

openrepair.org

ecostandard.org
Laptops in community repair

Most commonly seen device at Restart Parties

14% of all devices

40% are 6 years or older

People want to keep laptops running for longer
The problems we see

Top 4 faults we see (= 50% of all faults)

- Performance (18%)
- Power/battery (13%)
- Integrated screen (10%)
- Internal storage (9%)
- Other

Success rates

<table>
<thead>
<tr>
<th>Type of fault</th>
<th>Success rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>73%</td>
</tr>
<tr>
<td>Power/battery</td>
<td>36%</td>
</tr>
<tr>
<td>Integrated screen</td>
<td>33%</td>
</tr>
<tr>
<td>Internal storage</td>
<td>74%</td>
</tr>
</tbody>
</table>

(Average success across all fault types = 54%)

Barriers to repair

- Available and affordable spare parts,
- standard connectors,
- access to repair information
- and easier disassembly - would keep our fix rates up and keep more laptops lasting longer.
Open repair data

Get involved!

Join in with our data work at:

therestartproject.org/repairdata

Download/share open data on repair:

openrepair.org/open-data

Join us for open data day - March 7th
UNFIXABLE BY DESIGN
WHAT MAKES LAPTOPS SO HARD TO REPAIR?

Thomas Opsomer
Repair Policy Engineer, iFixit
iPhone 5 Repair
Sixth iteration of Apple iPhone, announced on September 12, 2012. Repair of this device is similar to the previous models, requiring screwdrivers and prying tools. Available in GH4 (CDMA), 16, 32, and 64 GB. Also for iPhone.

Featured Guides

iPhone 5 Screen Protector Replacement
Installing iFixit's Epic Screen Protector on the front and back of the iPhone 5

25 Replacement Guides

- Audio Control and Power Button Cable
- Battery
- Display Assembly
- Earpiece Speaker
- Front-Facing Camera and Sensor Cable
- Front Panel
- Front Panel Clips
- Home Button
- Home Button Ribbon Cable
- Interconnect Cables
- LCD Shield Plate
- Lightning Connector and Headphone Jack

Step 1 — Display Assembly

- If your display glass is cracked, keep further breakage contained and prevent bodily harm during your repair by taping the glass.
- Lay overlapping strips of clear packing tape over the iPhone's display until the whole face is covered.
- This will keep glass shards contained and provide structural integrity when prying and lifting the display.
- Wear safety glasses to protect your eyes from any glass shaken free during the repair.

ecostandard.org
Paid for by tools and spare parts sales
Laptop Repairability Scores

Our engineers disassembled and analyzed each device, awarding a repairability score between zero and ten. Ten is the easiest to repair.

https://www.ifixit.com/laptop-repairability
### Laptop repairability scores

<table>
<thead>
<tr>
<th>Laptop Model</th>
<th>Score</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Microsoft</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Surface Laptop 3</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **15”** 2019                          | 5     | - The firmly glued-down battery will be very difficult to service when it inevitably goes kaput.  
- Torx Plus screws call for relatively rare drivers, but our standard Torx drivers worked in a pinch.  
+ The opening procedure is straightforward, with a clever design that represents a dramatic improvement over its predecessors. |
| **MacBook**                           |       |                                                                      |
| **Pro 13” Two Thunderbolt Ports**    |       |                                                                      |
| **2019**                              | 2     | - Proprietary pentalobe screws continue to be hostile to repair.  
- The battery assembly is still very solidly glued into the case, complicating replacement of a consumable.  
- Soldered-down RAM limits upgradability and longevity. |
| **HP**                                |       |                                                                      |
| **EliteBook 840 G6**                  |       |                                                                      |
| **2019**                              | 10    | - The RAM, SSD, and battery are easily accessible and removable.  
- All moving parts, including keyboard, trackpad, and pointing stick are modular and can be independently replaced.  
- The display can be quickly and independently replaced without any unnecessary disassembly. |

[https://www.ifixit.com/laptop-repairability](https://www.ifixit.com/laptop-repairability)
Laptop repairability scores

- We have to pull out the big guns, knife now, to cut off the rest of the pelt. Layered underneath we find a metal shield, the meat in our Surface sandwich.

- With more adhesive and plastic bits holding the shield from beneath, we fire up the iOpener and get back to popping.

- Now that we've got a clear look at the plastic, it seems these aren't reusable clips at all, but weak ultrasonic spot welds that we've been busting through. This is definitely not going back together without a roll of duct tape.

https://www.ifixit.com/laptop-repairability
Laptop repairability scores

Someone really did not want the battery in the MacBook Pro to come out of the upper case.

We tried valiantly with our iFixit 6 Inch Metal Ruler to free the battery from its aluminum confines, but to no avail. Rather than risk puncturing a lithium-polymer battery cell, we left the power source in place.

To complicate matters further, the TrackPad cable lies underneath the battery. Attempting to pry the battery off the upper case could easily sever the fragile cable, which would be bad.

https://www.ifixit.com/laptop-repairability
Laptop repairability scores

- Proprietary pentalobe screws prevent you from gaining access to anything inside.

- The top case assembly, which includes the keyboard, battery, and speakers, is glued together—making all those components impractical to replace separately.

- The Touch ID sensor doubles as the power switch, and is paired with the T2 chip on the logic board. Fixing a broken power switch may require help from Apple, or a new logic board.

- The display assembly is completely fused, and there’s no glass protecting it. If anything ever fails inside the display, you will need to replace the entire extremely expensive assembly.

- The lithium-polymer battery is glued rather than screwed into the case, which increases the chances that it’ll break during disassembly. The battery also covers the trackpad cable, which tremendously increases the chance that the user will shear the cable in the battery removal process.

- The headphone jack, while modular, can only be accessed by removing the heat sink, fan, display, and motherboard.

- The RAM is surface-mount soldered to the logic board, so no upgrade is possible. It will forever have 8 GB of RAM.

https://www.ifixit.com/laptop-repairability
CAN THE EU FIX IT?
HOW ECODESIGN CAN MAKE IT HAPPEN

Ernestas Oldyrevas
Programme Manager, ECOS
Why do we bin them too early?

Obstacles to more durable computers

- Lack of repair & upgrade possibilities
- Software & firmware constraints
- Lack of possibilities to refurbish & reuse
- Fashion trends
- Deficient robustness
Ecodesign & Energy Label: a toolbox for the future

Ecodesign

Pushes wasteful products off the market

Energy Labelling

Pulls consumers towards better products
### The recommendations to tackle longevity obstacles can be summarised as follows:

<table>
<thead>
<tr>
<th>Ecodesign minimum requirements on:</th>
<th>Ecodesign information requirements on:</th>
<th>Information on the EU energy label on:</th>
</tr>
</thead>
<tbody>
<tr>
<td>ruggedness</td>
<td>repair manuals</td>
<td>repairability score of the product</td>
</tr>
<tr>
<td>replaceability and upgradeability of priority parts (including by using non-OEM spare parts)</td>
<td>information on impacts of software updates ahead of their installation</td>
<td>durability information (incorporating software support, expected battery life, and casing upgradeability)</td>
</tr>
<tr>
<td>pricing, availability and delivery time of spare parts</td>
<td>optimal user configuration</td>
<td>information on the free warranty repair period offered</td>
</tr>
<tr>
<td>battery durability and optimisation</td>
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<tr>
<td>introduction of a common charger</td>
<td></td>
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<tr>
<td>software and firmware update availability</td>
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<tr>
<td>tools for optimised user configuration, data deletion and reset</td>
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</table>
How real are the benefits?

- If implemented, new ecodesign and energy labelling requirements have the potential to
  - double laptop lifetimes, from 5 to 10 years.
  - This would save 5 million tonnes of CO2 equivalent by 2030
  - ... equivalent to taking nearly 3 million cars of the road, or the entire fleet of Denmark
New EU leadership - new opportunities?

A new Circular Economy Action Plan

- Transition to a Circular Economy
- Preservation of Europe's natural capital
- Sustainable transport
- Achieving climate neutrality
- Clean, reliable and affordable energy
- Financing the transition

- Biodiversity Strategy for 2030
- Strategy on the sustainable use of chemicals
- Clean Air and Water Action Plan
- Farm to Fork Strategy
- Vision for inclusive rural areas
- Africa Europe agenda
- CAP reform proposal
- European Investment Bank as European Climate Bank
- Sustainable Europe Investment Plan
- Green Financing Strategy
- Mainstreaming climate transition and sustainability in the MFF
- Just Transition Instrument, including the Just Transition Fund
- Mainstreaming the Just Transition in the MFF

Leave no one behind (Just Transition)

- Just Transition Instrument, including the Just Transition Fund
- Mainstreaming the Just Transition in the MFF

Farm to Fork

- The transformation of agriculture and rural areas

Towards a modernised and simplified CAP

- Farm to Fork Strategy
- Vision for inclusive rural areas
- Africa Europe agenda
- CAP reform proposal

Clean, reliable and affordable energy

- Review Energy Legislation
- European Framework for gas
- Review Energy Taxation directive

European Green Deal

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OVER TO YOU!
Q & A
The report is now available
Thank you!

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