# BINNED BEFORE ITS TIME

## How the EU can make our electronics last

**WEBINAR**


**Neil Mather**
The Restart Project

**Ernestas Oldyrevas**
ECOS

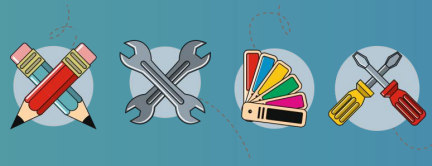
**Thomas Opsomer**
iFixit Europe


ECOS

27 February 2020

ecostandard.org

# ECOS - European Environmental Citizens' Organisation for Standardisation

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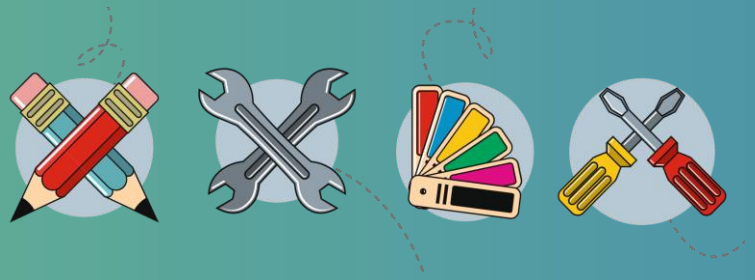
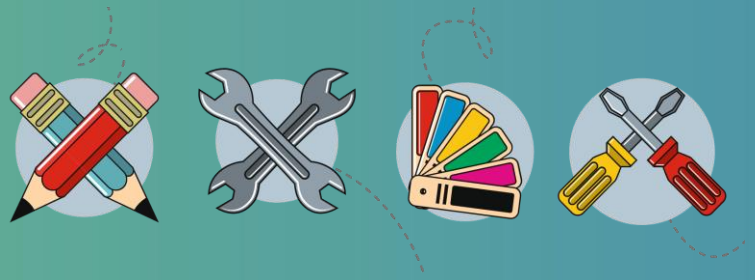
TODAY ON THE

# 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

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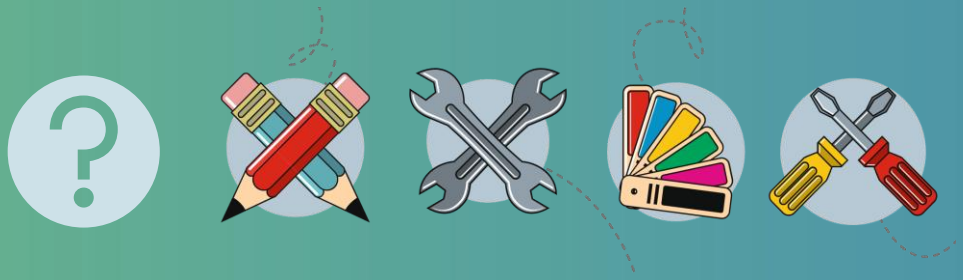

# TIME FOR
# A QUIZ!

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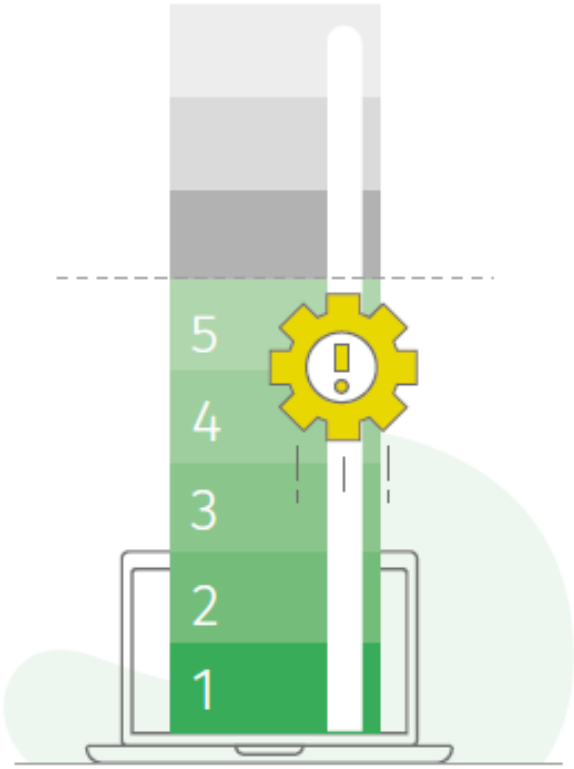
# The problem of short-lived laptops

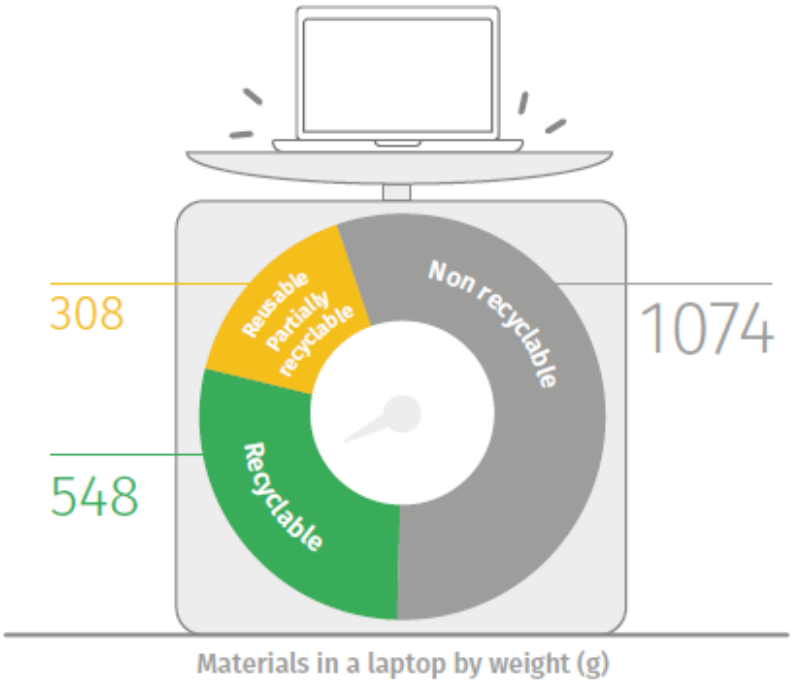



Typical lifetime
of a laptop (years)

- **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

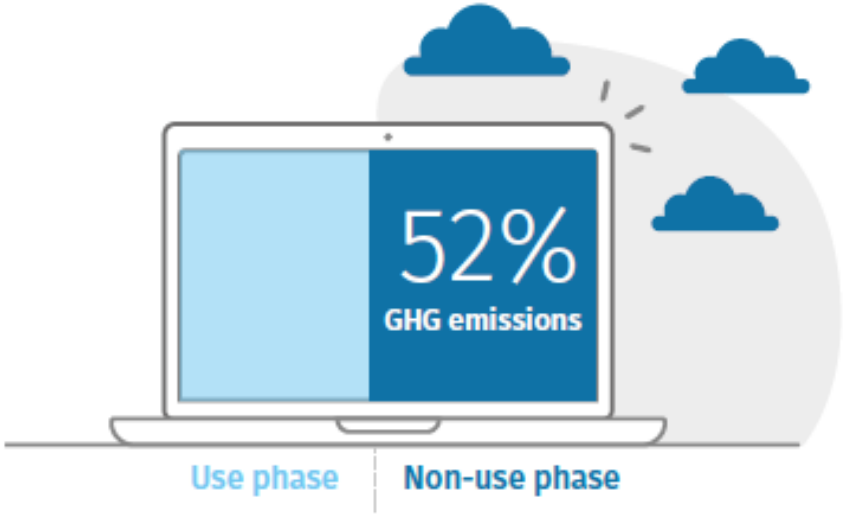


Materials in a laptop by weight (g)

- 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 problem of short-lived laptops

- The growing consumption of electronics **heavily weighs on the climate**



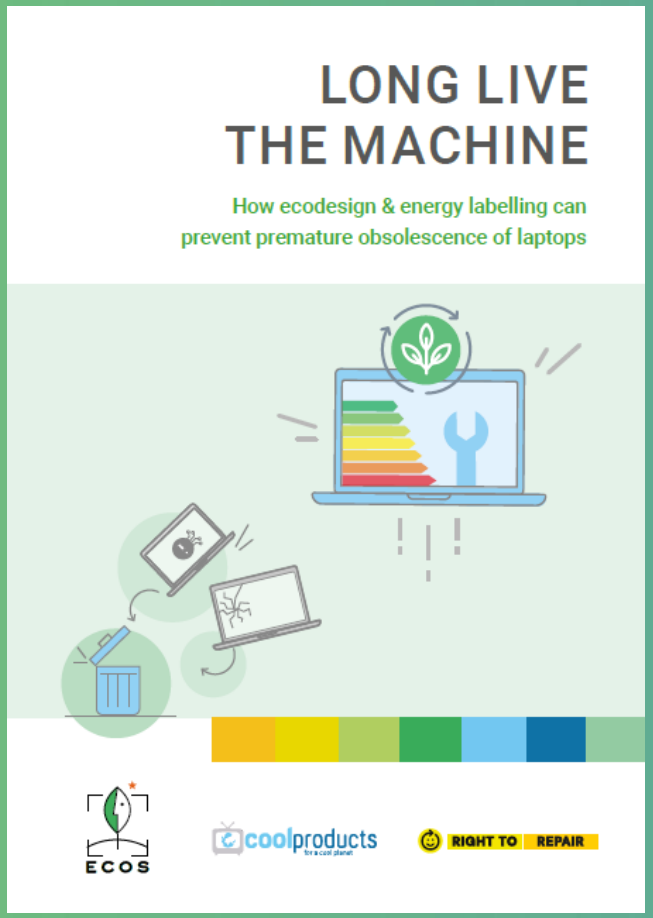

- **52%** of climate impact of a laptop comes from resource extraction, manufacturing and end-of-life treatment
- Extending the lifetime of a laptop computer **by one single year** would result in 1.6 Mt of CO2 being saved, equivalent to taking **870.000 cars off the roads** – twice the total fleet of Luxembourg

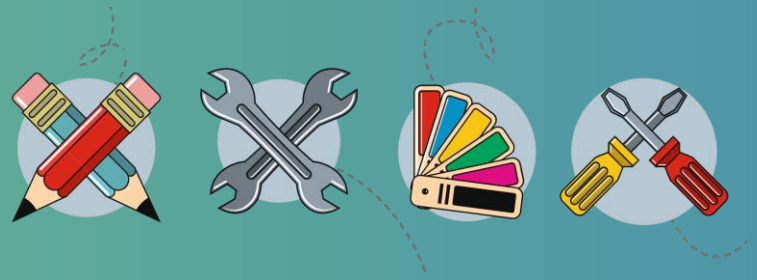
# The problem of short-lived laptops

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

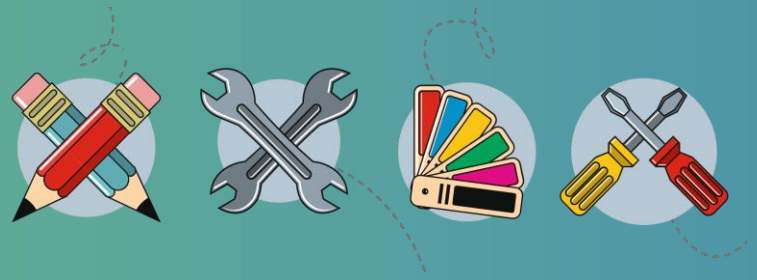

- **84%** of EU citizens think the EU should act to extend the lifetime of products
- More than **50% of consumers in the EU** have environmental impact in mind when shopping
- **However**, good intentions continue to be side-tracked by little to no information on laptop durability and repairability being provided at the point of sale & the poor economics of repair

# 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

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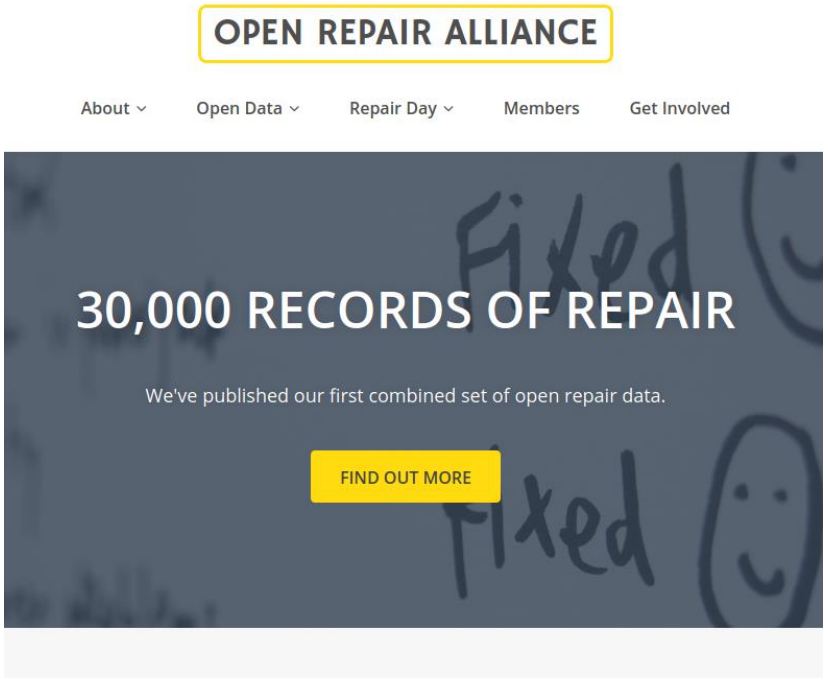
# Laptops in community repair

restart

therestartproject.org




OPEN REPAIR ALLIANCE

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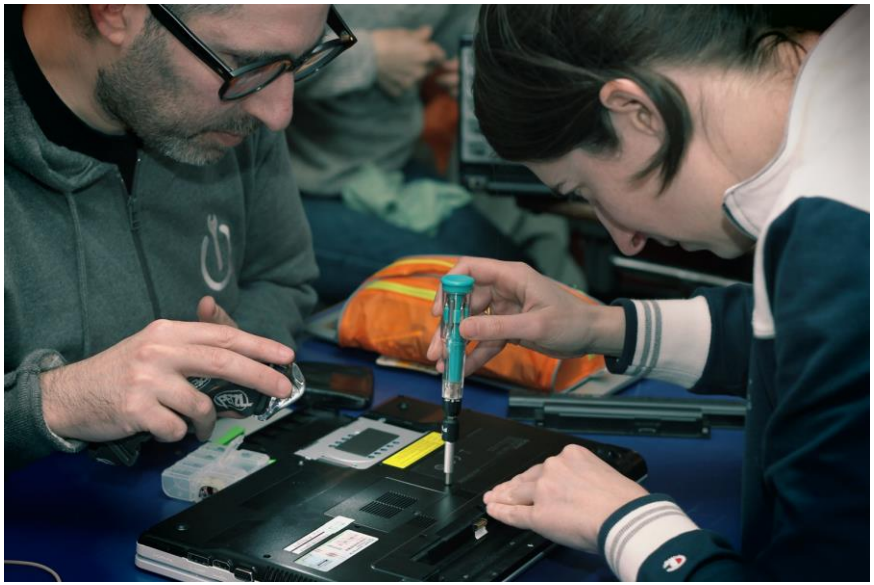
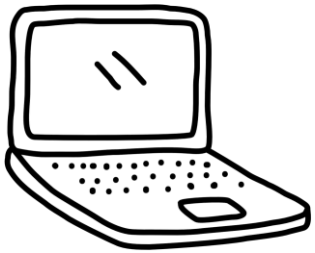
# Laptops in community repair





**Most commonly seen device** at Restart Parties

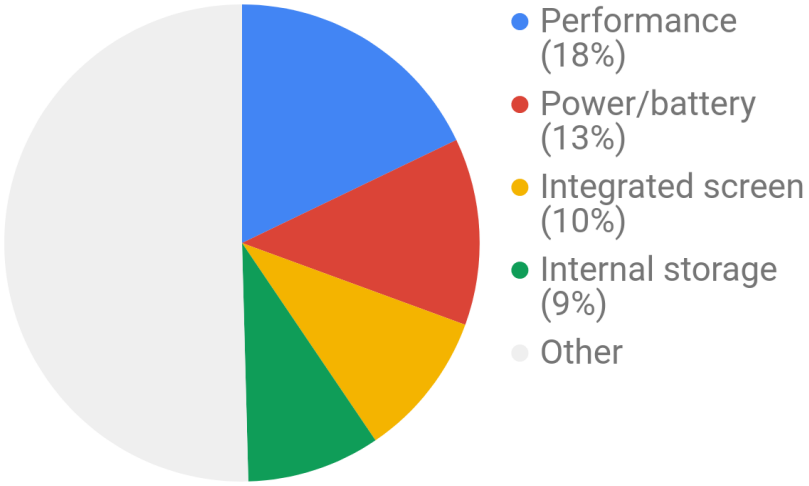
**14%** of all devices

**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)




## Success rates

| Type of fault | Success rate |
|---|---|
| Performance | 73% |
| Power/battery | 36% |
| Integrated screen | 33% |
| Internal storage | 74% |

(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!

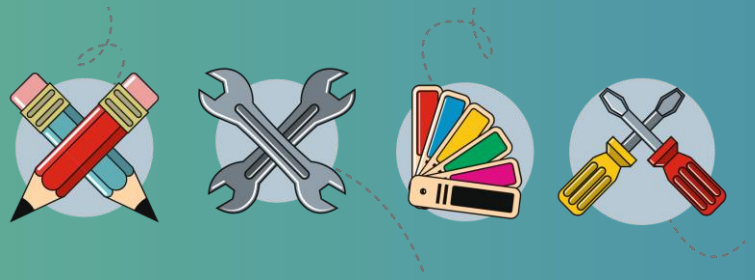
Join in with our data work at:

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

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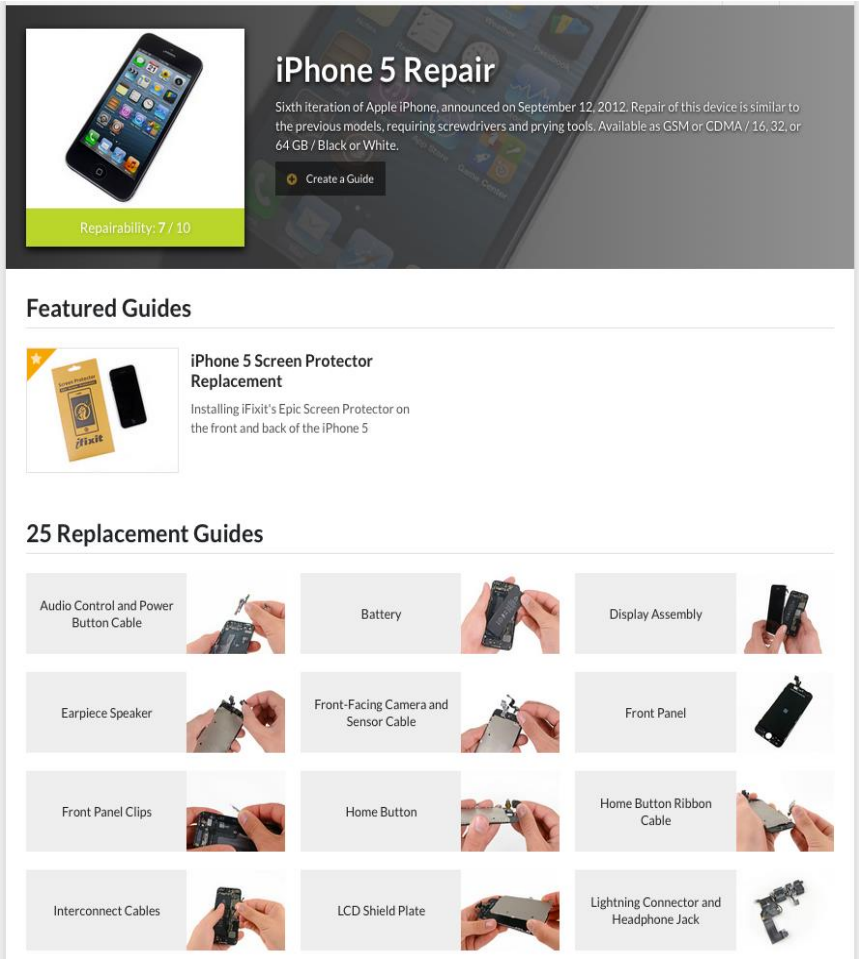
# iFixit: free online repair manuals




Step 1 — Display Assembly Edit 7

- 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.

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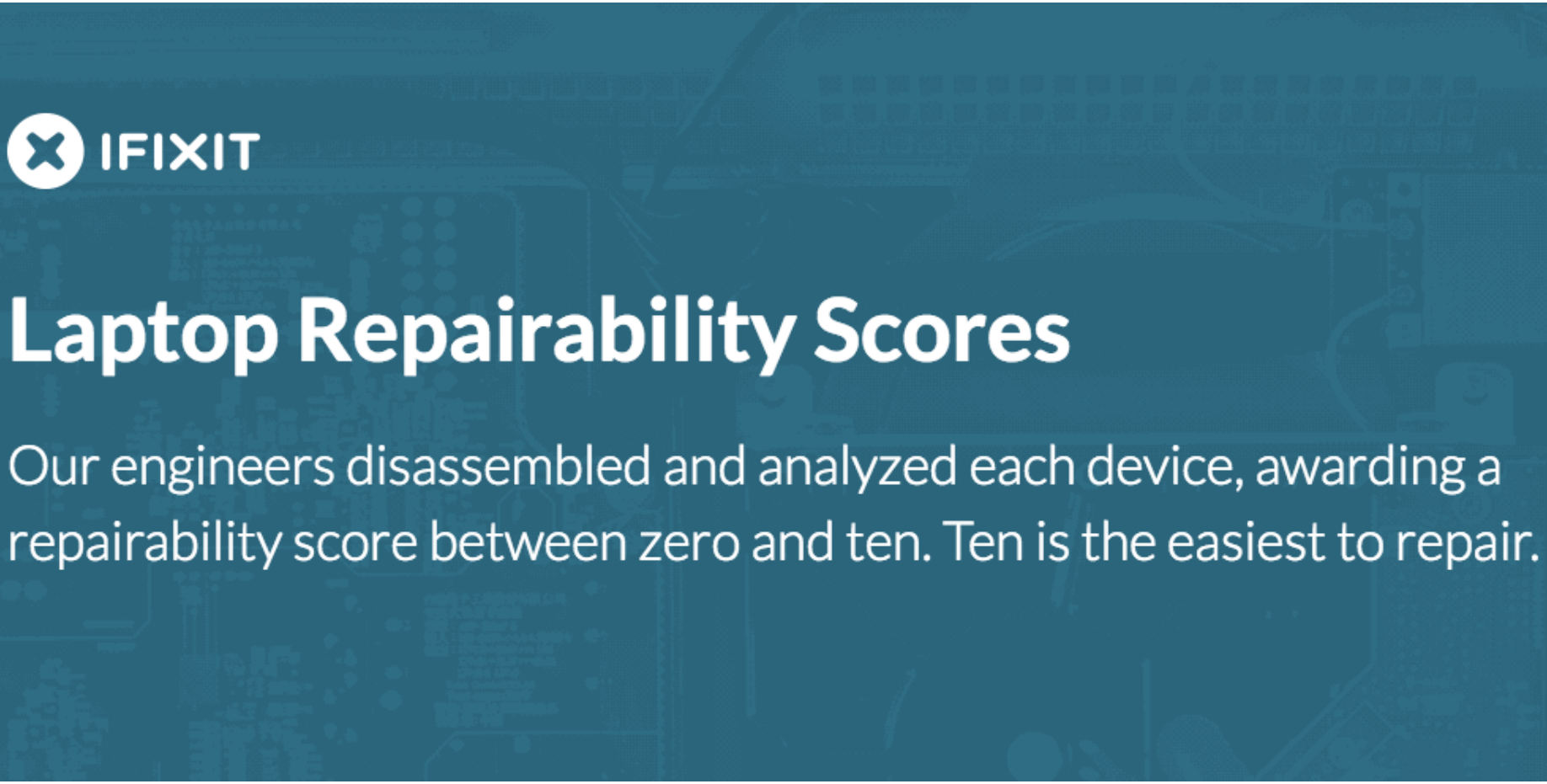
# Paid for by tools and spare parts sales

# Laptop repairability scores




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

# Laptop repairability scores

Microsoft
**Surface Laptop 3 15"**
2019

- 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.

5

MacBook
**Pro 13" Two Thunderbolt Ports 2019**
2019

- 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.

2

HP
**EliteBook 840 G6**
2019

+ 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.

10

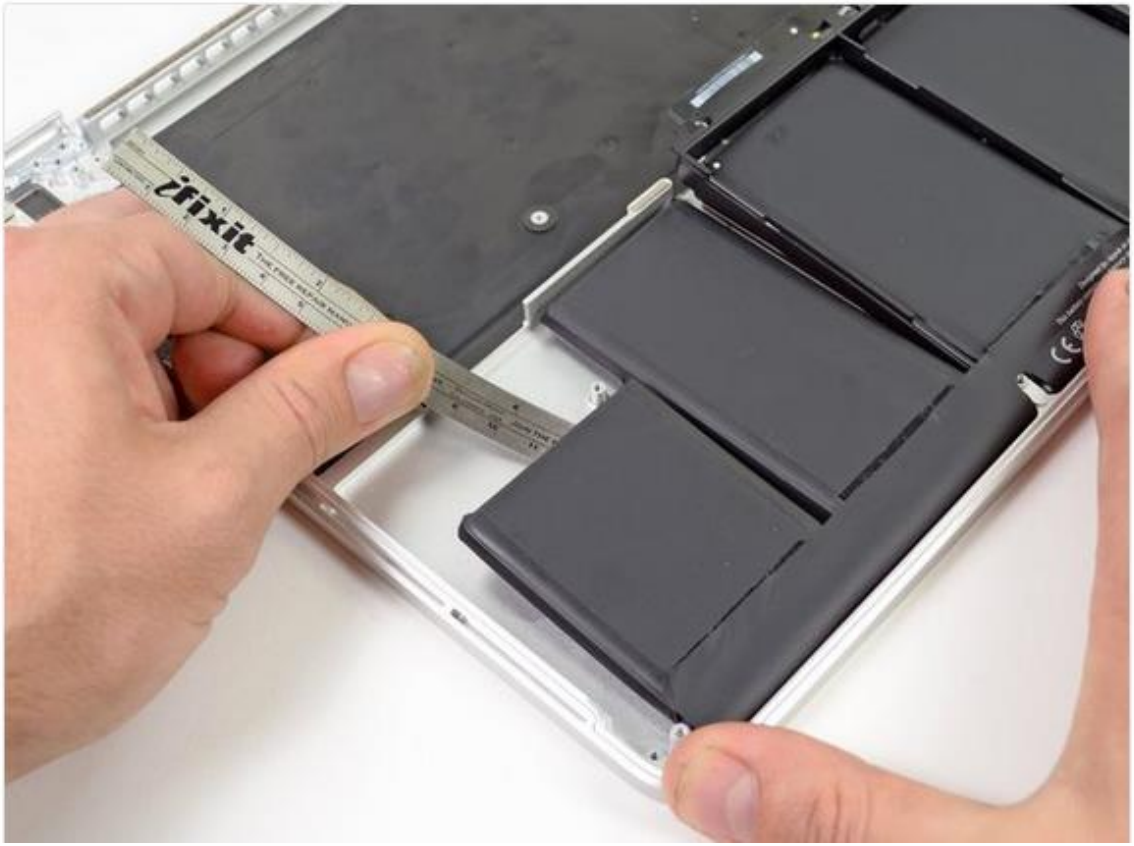
https://www.ifixit.com/laptop-repairability

# 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

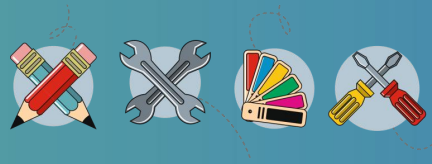
# Laptop repairability scores




- 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.

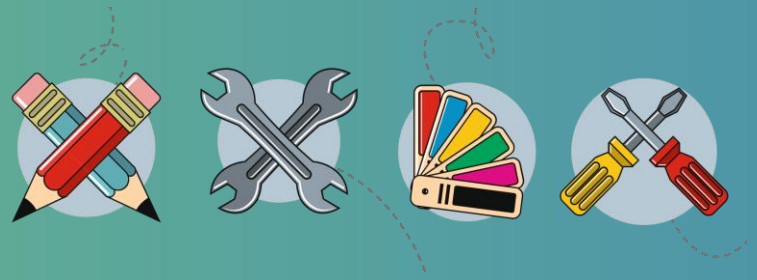
- The display assembly is completely fused, and there's no glass protecting it. If anything ever fails inside the display, you will need to replace the entire extremely expensive assembly.

- 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

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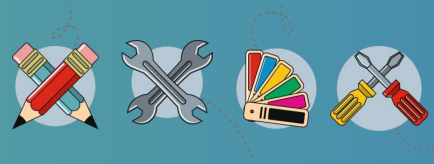
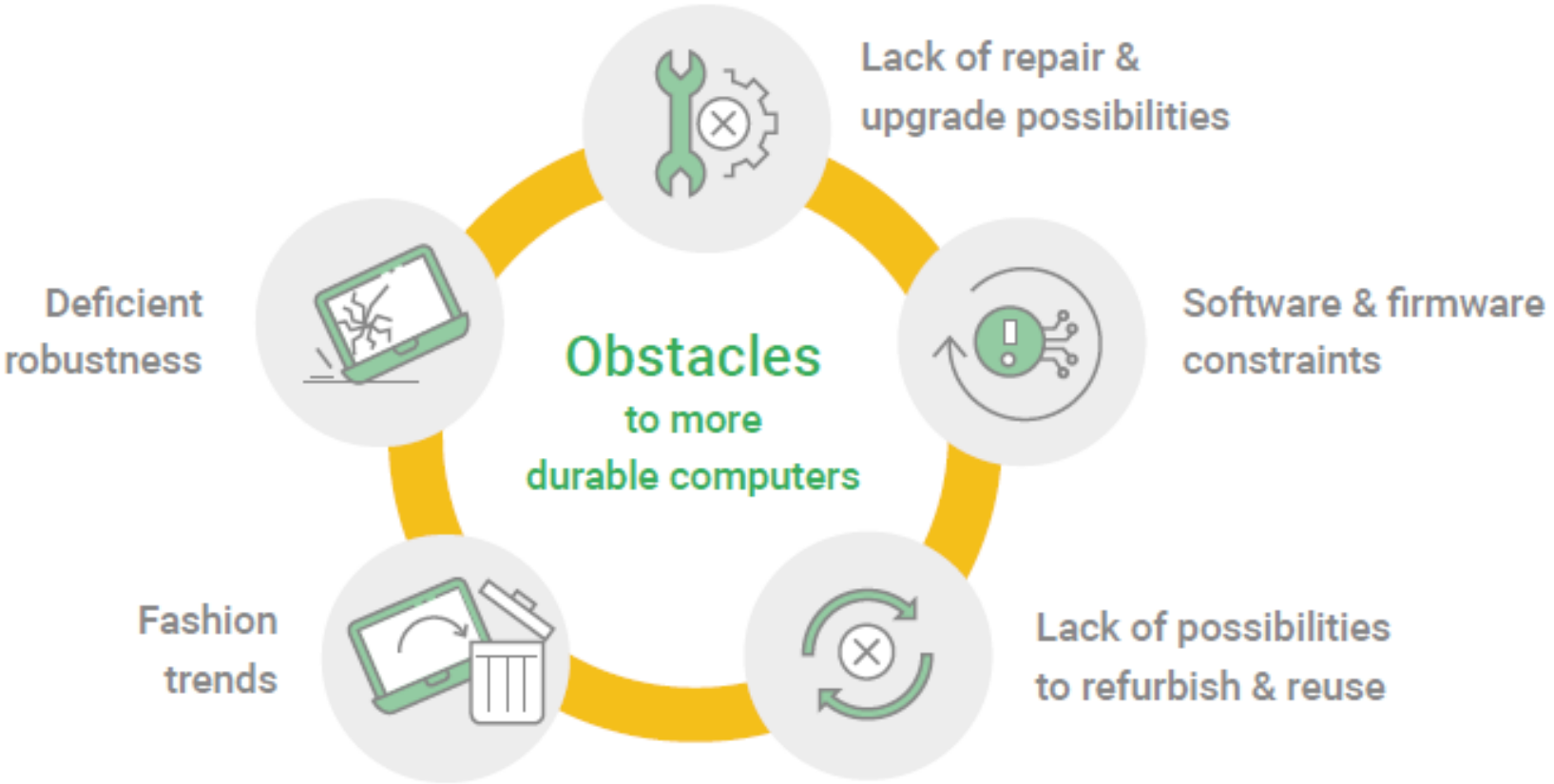
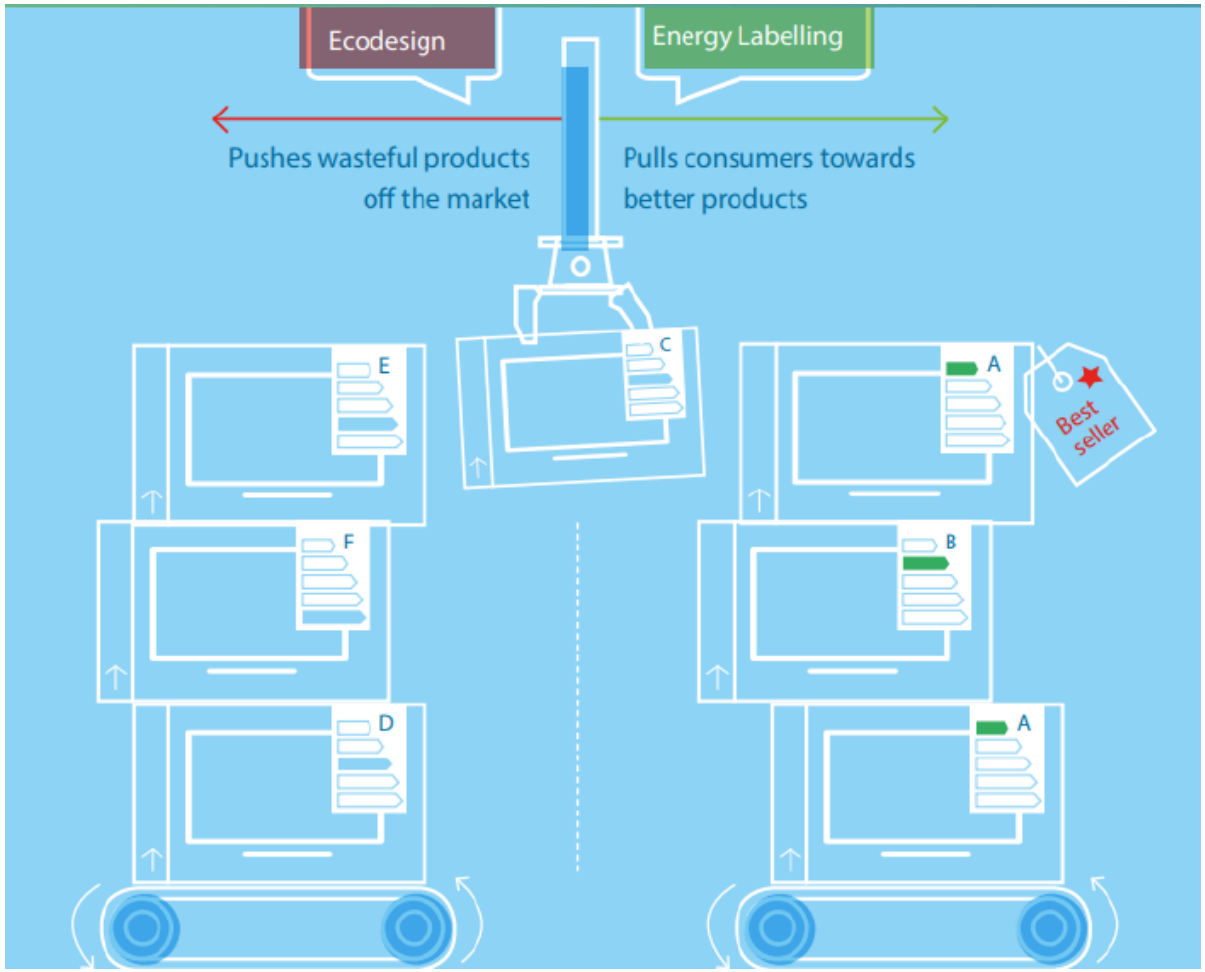
# Why do we bin them too early?

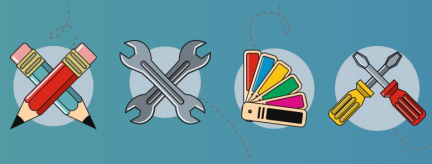




# Ecodesign & Energy Label: a toolbox for the future



# What is the needed policy response?



**The recommendations to tackle longevity obstacles can be summarised as follows:**

### Ecodesign minimum requirements on:

- ruggedness
- replaceability and upgradeability of priority parts (including by using non-OEM spare parts)
- pricing, availability and delivery time of spare parts
- battery durability and optimisation
- introduction of a common charger
- software and firmware update availability
- tools for optimised user configuration, data deletion and reset

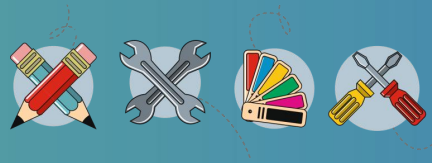
### Ecodesign information requirements on:

- repair manuals
- information on impacts of software updates ahead of their installation
- optimal user configuration

### Information on the EU energy label on:

- repairability score of the product
- durability information (incorporating software support, expected battery life, and casing upgradeability)
- information on the free warranty repair period offered

# How real are the benefits?



**reduction of 12,000 tonnes of electronic waste by 2025** through the introduction of a common charger for laptops

**extended battery lifetime** by up to 50% and substantial reduction in users dissatisfied with their laptop battery lifetime

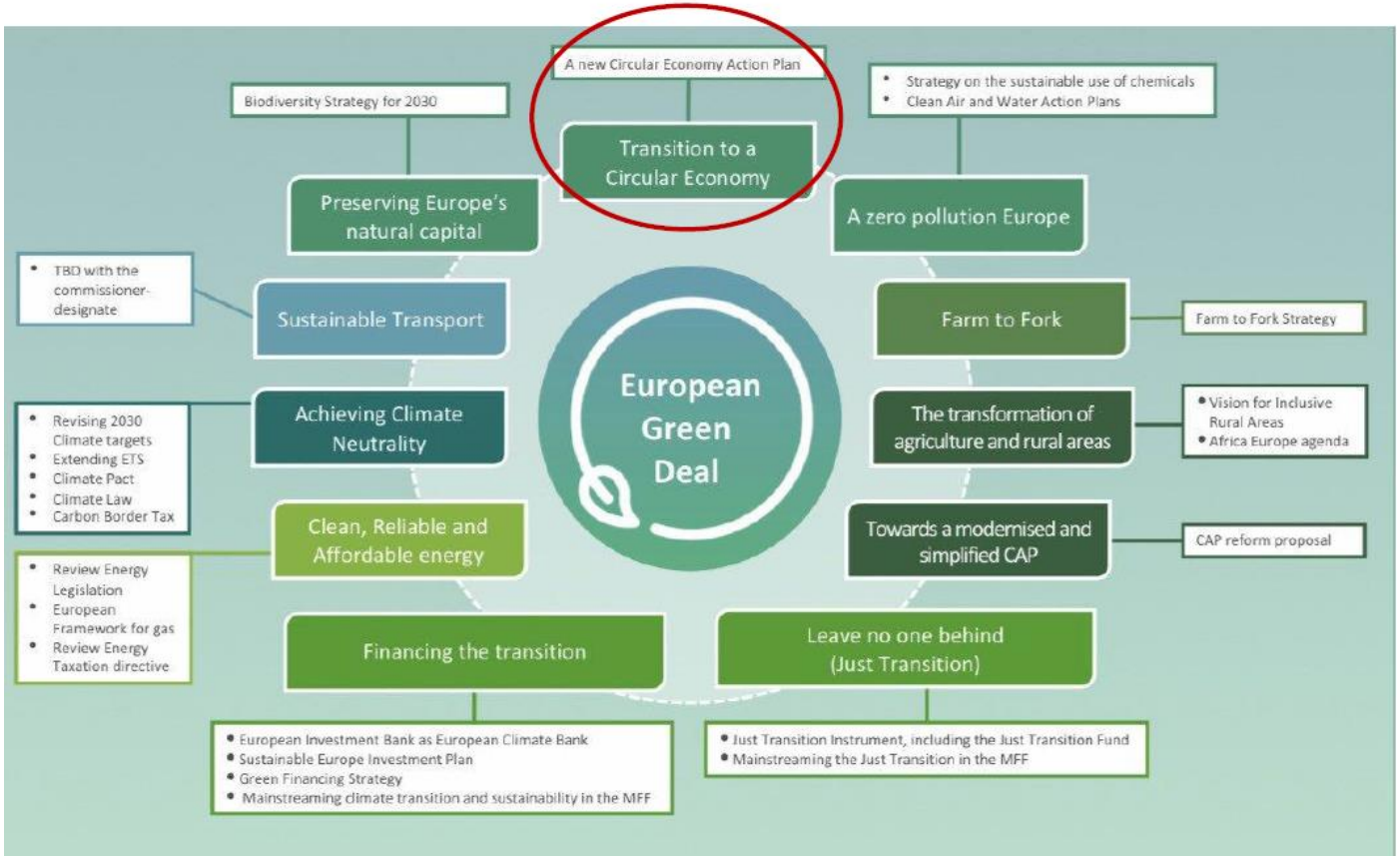
**doubling in the availability of refurbished laptops on the market** after their first useful lifetime

**increased availability of more affordable replacement parts and improved repair information,** resulting in 33% improvement in successful repairs

**considerably reduced repair times** and a corresponding reduction in the cost of repair

- 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?

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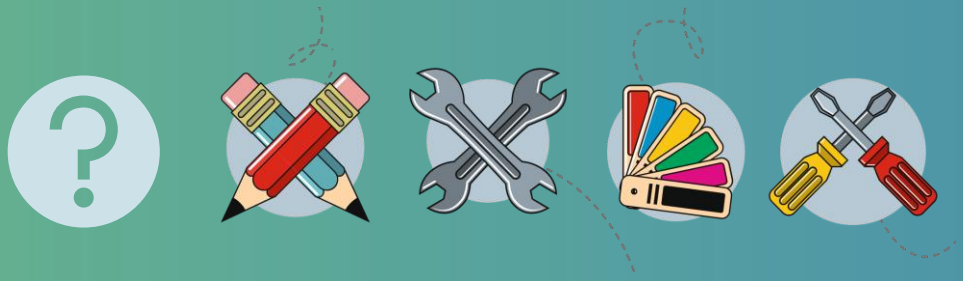

# OVER TO YOU!

# Q & A

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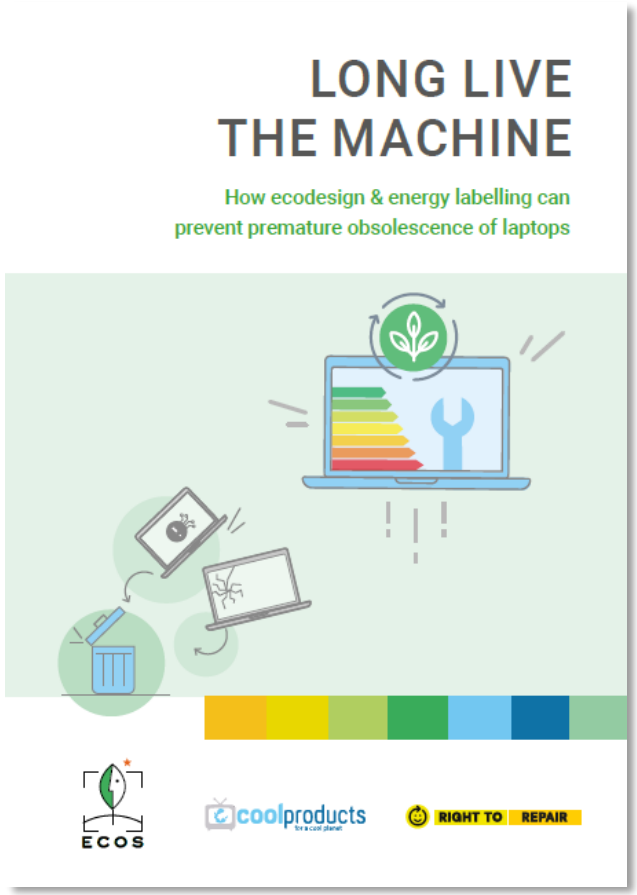
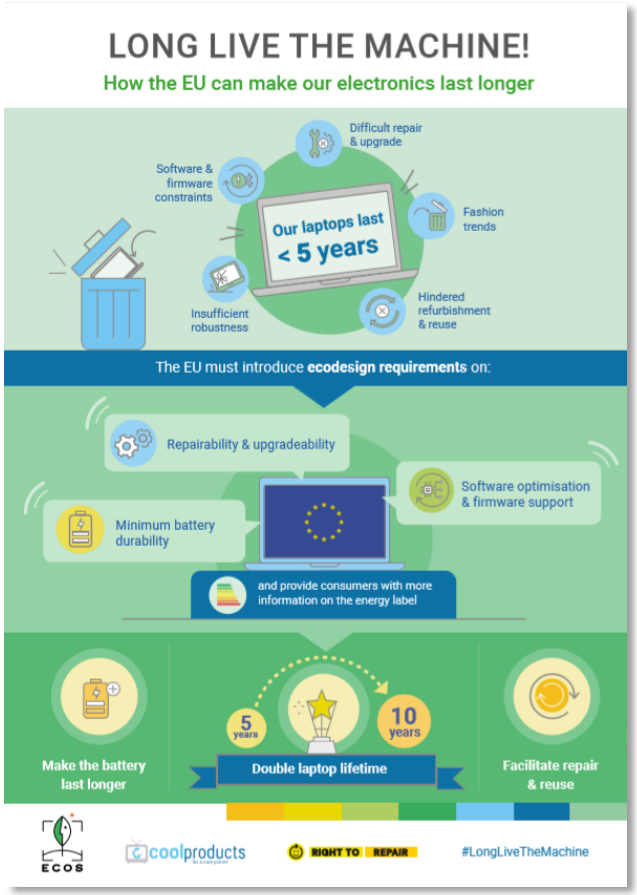
# The report is now available

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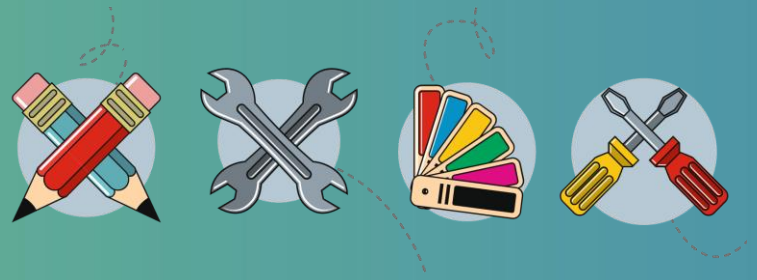
# Thank you!

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