IFIXIT

Let’s Fix the World

I’m from the internet and I’m here to help.

DID YOU?
TURN IT OFF AND ON AGAIN?
memegenerator.net

iFixit's mission is to enable everyone to repair every thing they own.

Make repair easy.

We are an online community of people sharing repair know-how.

iFixit makes it:

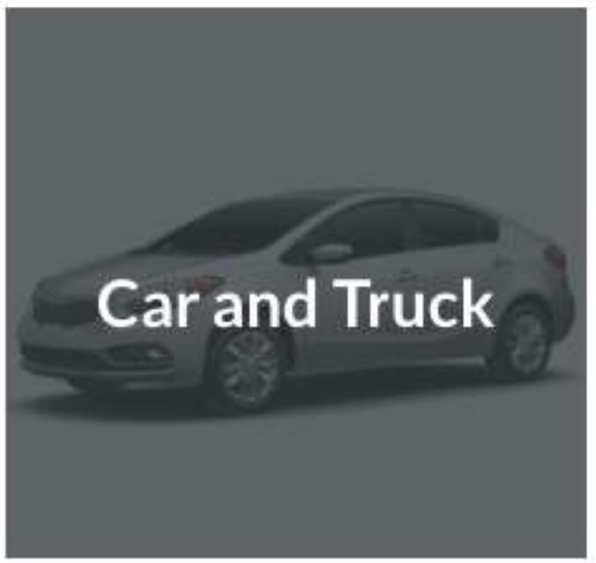
Easy for anyone to share repair knowledge

Simple for people to fix their devices

Repair Guides

Learn More | Create a Guide

What do you need to fix?



Barista
READY
STEAM
Starbucks

Step 2

Edit

- Remove the six Phillips screws securing the chrome rear panel to the Barista.
- Once the chrome panel is gone, you get a pretty comprehensive look at what makes the Barista boil. Major components include:
  - A reciprocating pump.
  - A pressure release valve
  - A boiler (with an internal heating coil).
  - A steam valve which, as you guessed it, allows steam into the steam wand for making frothy milk.
  - A bird's nest of wiring supplying power to everything.
- Remove all the Phillips screws holding the AC power cord and distribution block to the frame.

What's in your cell phone?

Of the over 30 metals in your cell phone, half of those metals have functional recycling rates under 50%—meaning the properties that made the metal desirable in the first place cannot be retained, and the metal cannot be reused.

>50% >25%–50% <25%

1 H																	2 He
3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
55 Cs	56 Ba	* -	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	** -	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Uub	113 Uut	114 Uug	115 Uup	116 Uuh	117 Uus	118 Uuo

*Lanthanides	57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
**Actinides	89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr

Every patch is a memory,
every tear has a tale.
These are the stories we wear.
WORN
WEAR

IF IT'S BROKE, FIX IT!
WORN WEAR
• REPAIRS •
patagonia
Glossier.
DUNKIN' DONUTS
All Gifts & Souv
ttle Chinatown

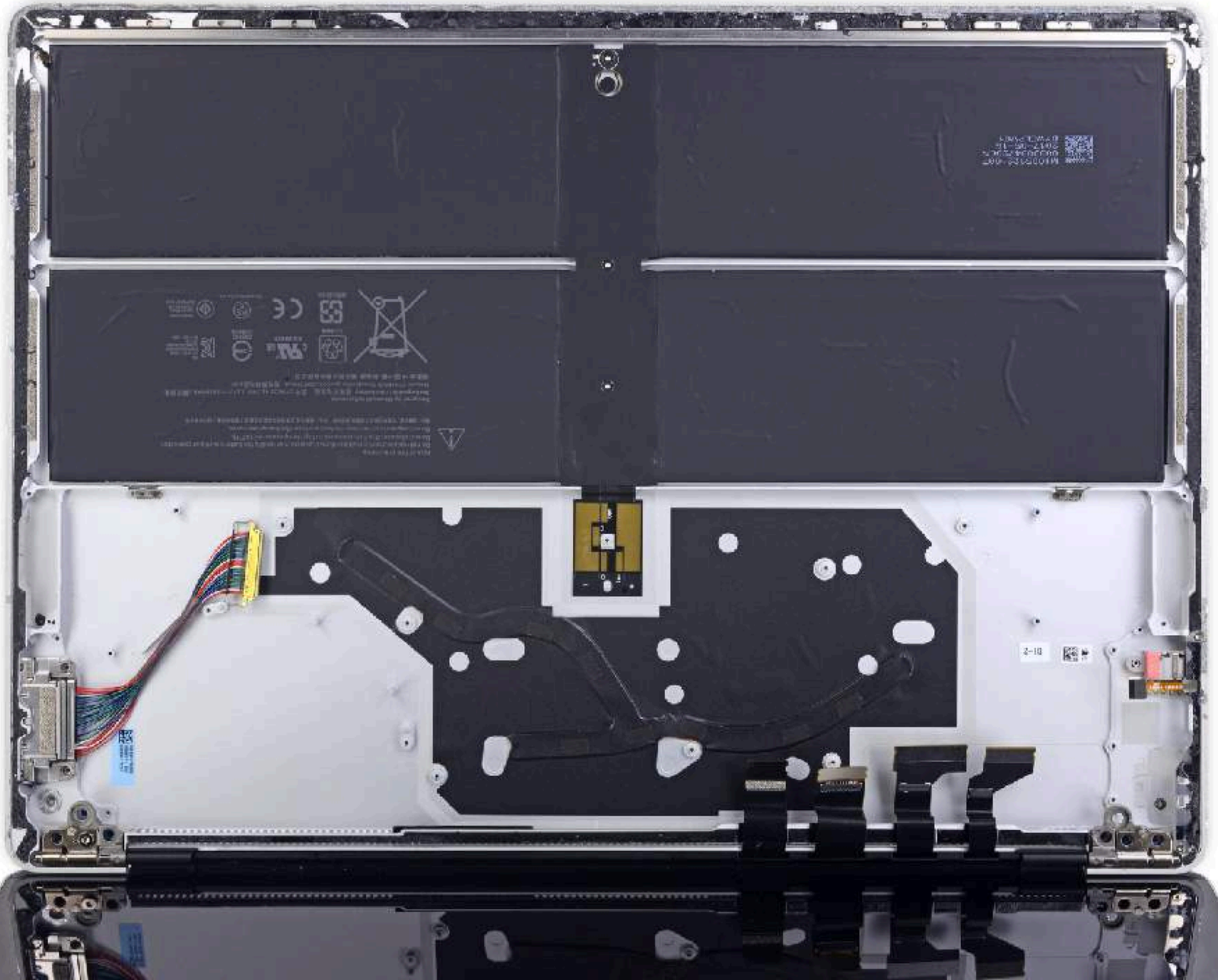
100m people / year

Microsoft
Surface Laptop

TEARDOWN

Del
Backspace
Enter
IFIXIT

iFIXIT
iOpener



Final Thoughts

- This laptop is not meant to be opened or repaired; you can't get inside without inflicting a lot of damage.
- The CPU, RAM, and onboard storage are soldered to the motherboard, making upgrades a no-go.
- The headphone jack, while modular, can only be accessed by removing the heat sink, fan, display, and motherboard.
- The battery is difficult and dangerous to replace, giving the device a limited lifespan.

“Good Design is Long-Lasting. Good Design is Environmentally Friendly.”

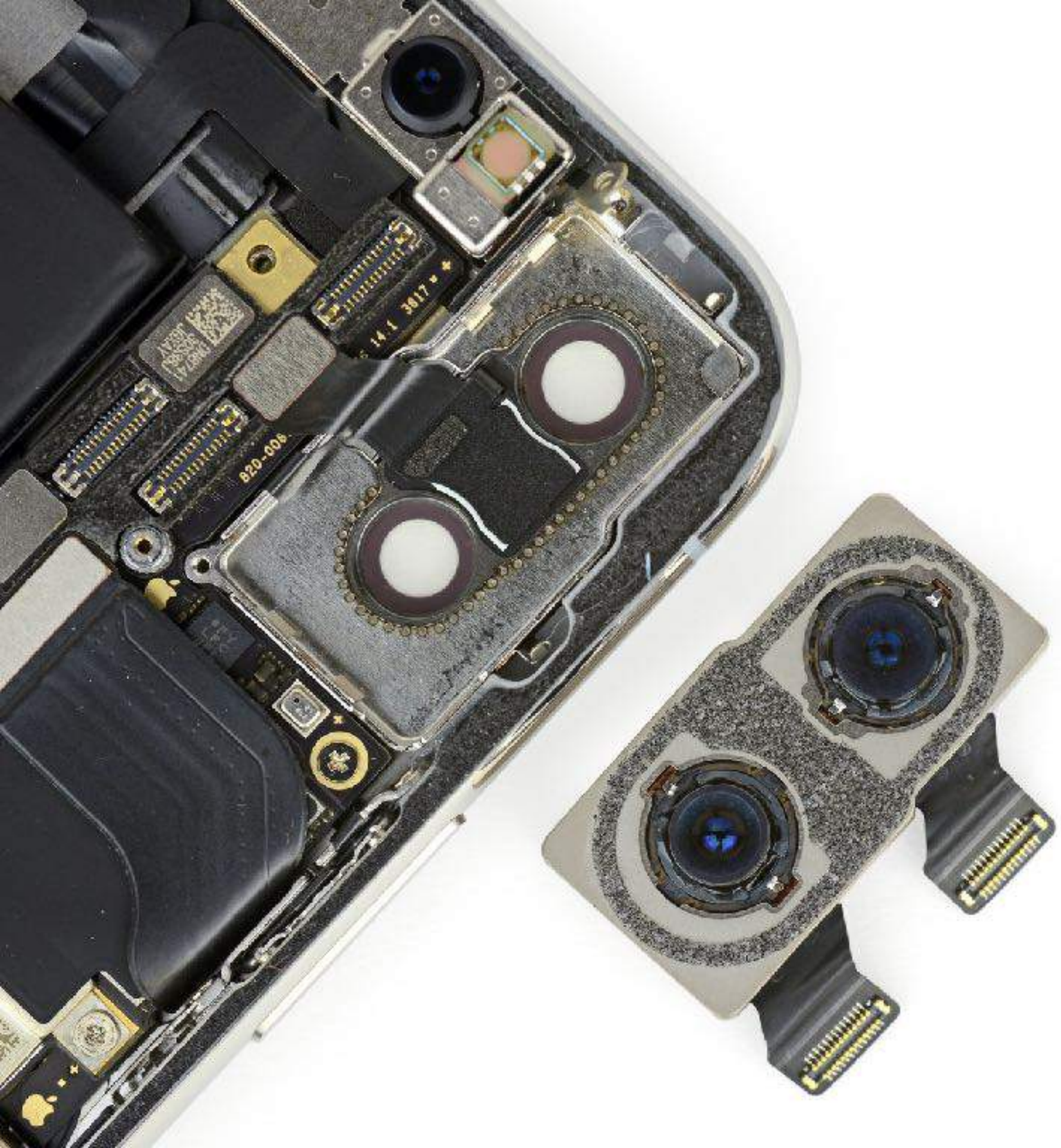
—DIETER RAMS

iPhone X

TEARDOWN

iPhone

Li-ion Battery
WARNING
Authorized Service Provider Only
Potential for fire or burning. Do not disassemble, puncture, crush, heat, or burn.
Li-ion
TAPTIC ENGINE


820-006

Li-ion Battery
3.81V⎓10.35Whr
APN: 616-00351
WARNING
Authorized Service
Provider Only
Potential for fire or
burning. Do not
disassemble, puncture,
crush, heat, or burn.

Li-ion
TAPTIC ENGINE

Li-ion Battery
3.81V ⎓ 10.35Whr
APN: 616-00351
WARNING
Authorized Service Provider Only
Potential for fire or burning. Do not disassemble, puncture, crush, heat, or burn.
Li-ion
MH45584
TAPTIC ENGINE

iPhone
IFIXIT

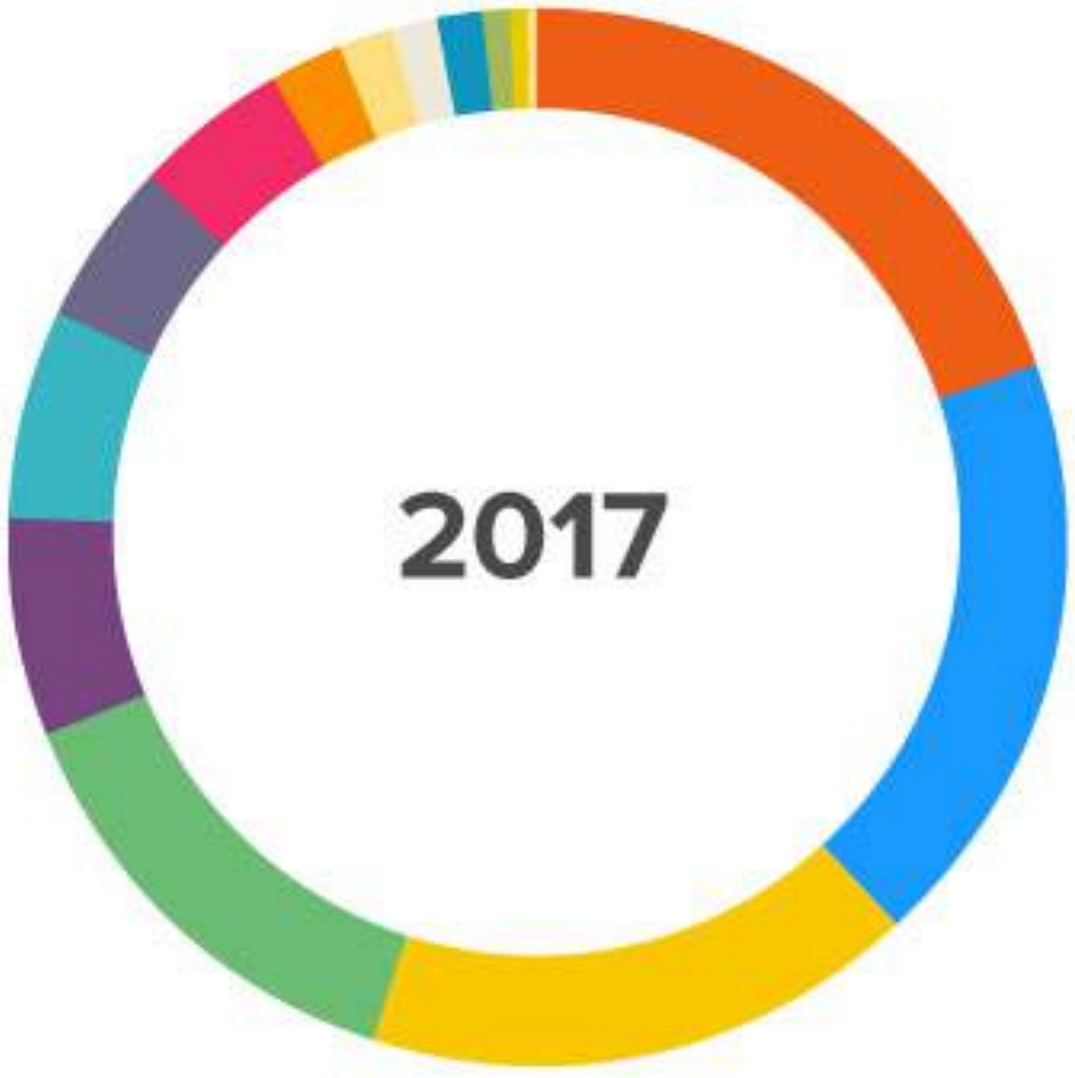
IFIXIT

Final Thoughts

- Display and battery repairs remain a priority in the iPhone's design.
- A cracked display can be replaced without removing the biometric Face ID hardware.
- Liberal use of screws is preferable to glue—but you'll have to bring your Apple-specific drivers (Pentalobe and tri-point) in addition to a standard Phillips.
- Waterproofing measures complicate some repairs, but make difficult water damage repairs less likely.
- Fussy cables tie unrelated components together into complex assemblies—expensive and troublesome to replace.
- Glass on front and back doubles the likelihood of drop damage—and if the back glass breaks, you'll be removing *every* component and replacing the entire chassis.

Repairability Score

Repairability 6 out of 10
(10 is easiest to repair)

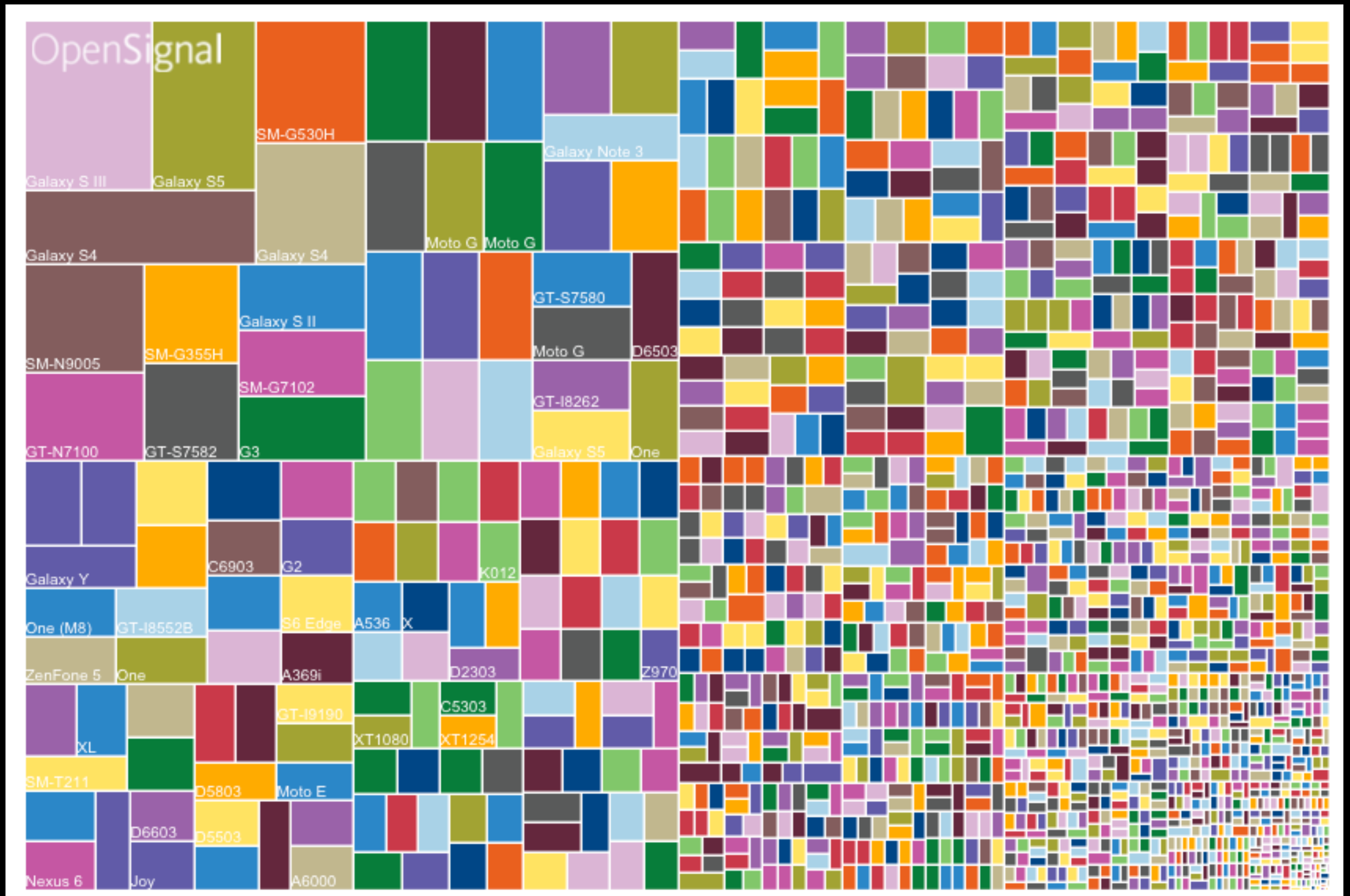


iPhone 7	19.74%
iPhone 6S	18.58%
iPhone 6	16.77%
iPhone 7 Plus	13.83%
iPhone 6S Plus	6.77%
iPhone 5S	6.43%
iPhone SE	4.91%
iPhone 6 Plus	4.77%
iPhone 8 Plus	2.18%
iPhone 8	1.68%
iPhone 5	1.51%
iPhone 5C	1.19%
iPhone X	0.93%
iPhone 4S	0.58%
iPhone 4	0.14%

Localytics

Source: Localytics November 2017

Android Fragmentation



E-waste is the Toxic Legacy of our Digital Age
Our waste electronics are polluting drinking water and harming ecosystems around the world. It's time to fix the problem.

Throwaway Culture

Right to Repair is a Growing Movement

88% of Voters

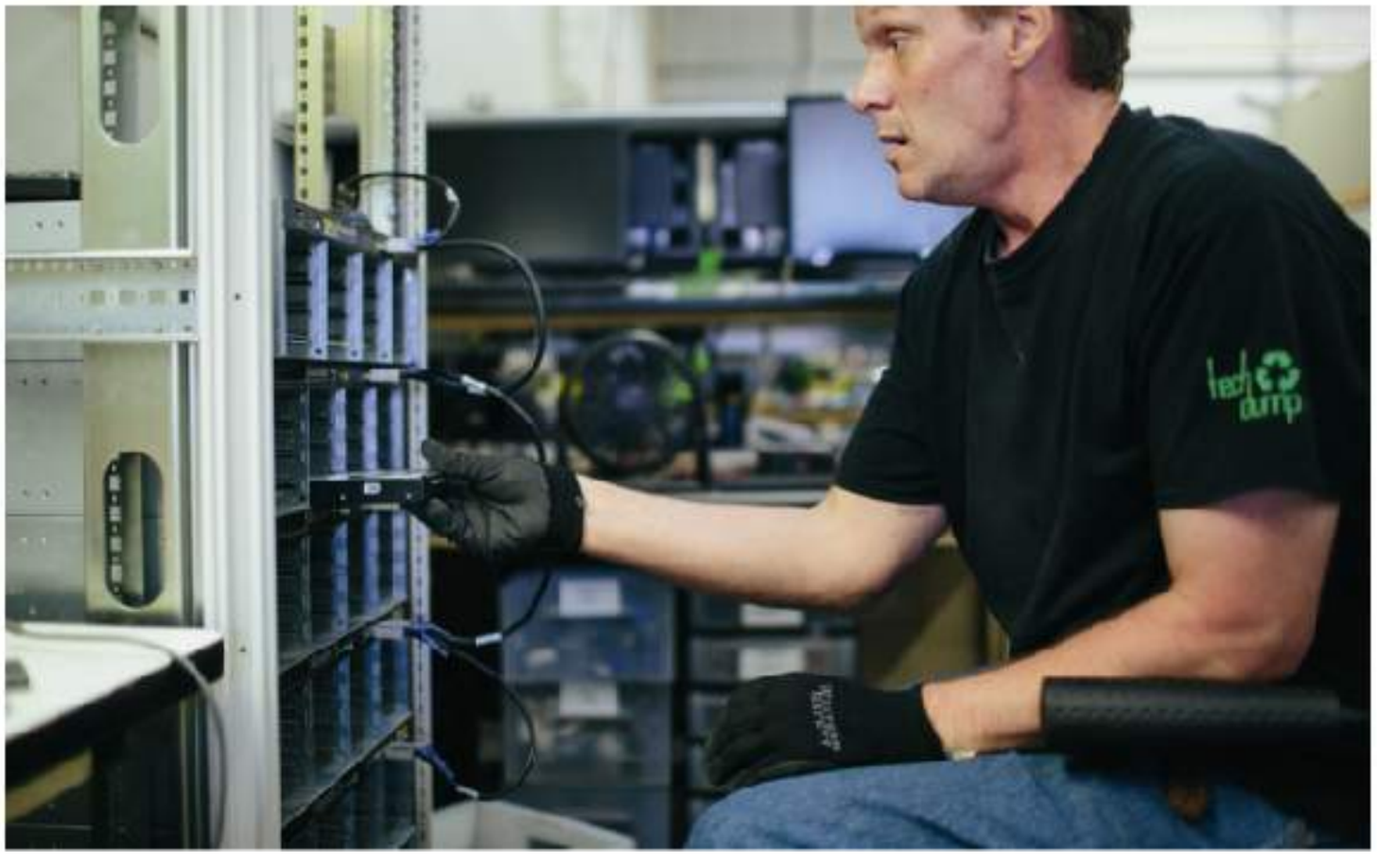
in Massachusetts overrode the car companies and passed the automobile owners' Right to Repair law in November, 2012.

114,322 Americans

signed a petition to legalize cell phone unlocking. The White House supports cell phone unlocking—but your voice is still needed to convince Congress.

Minnesota's 'right to repair' bill would upend tech giants' monopoly on fixing your stuff

Friday, February 3, 2017 by Taylor Danz in News



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CR Consumer Reports

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Right-to-Repair Laws Could Make It Easier to Get a Phone or Laptop Fixed

Similar legislation helped car owners, ensuring that local shops and consumers could make repairs

By Nicholas Deleon
March 29, 2018

Progress

- US auto right to repair in 2012
- US DMCA Reform
  - Phones in 2012
  - Tractors in 2015
  - General repair exemption pending in 2018
- Cell Phone Unlocking signed into law
- Exemptions for cell phones, tablets, medical devices, land based motor vehicles (tractors)
- EPEAT, UL, and IEEE environmental electronics standards

2018 State Legislation

California	New Jersey
Hawaii	New York
Illinois	North Carolina
Iowa	Oklahoma
Kansas	Tennessee
Massachusetts	Vermont
Minnesota	Virginia
Missouri	Washington
Nebraska	Wyoming
New Hampshire	

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Greenpeace lauds Apple renewable energy efforts, decries 'right to repair' stance

By Mikey Campbell
Monday, October 16, 2017, 10:08 pm PT (01:08 am ET)

Greenpeace on Monday released its latest "Guide to Greener Electronics" report for 2017, analyzing what steps, if any, 17 of the world's top consumer electronics companies are taking to reduce their impact on the environment. This year, Greenpeace awarded Apple a passable B-grade, touting renewable energy and climate change initiatives, while at the same time lambasting the company over its opposition to "right to repair" legislation.

Tammie Jo Shults, who calmly landed Southwest Flight 1380, broke barriers as a fighter pilot

Attention women: Your choice of blood pressure medicine may affect your risk of pancreatic...

East Bay fault is 'tect
bomb,' more da
Andreas, new st

BUSINESS | LA TIMES

Those stickers warning that repairs will void your warranty are nonsense, FTC says

LA Times | By WASHINGTON POST
APR 11, 2018 | 8:45 AM

MOTHERBOARD

VICE

RIGHT TO REPAIR

Apple Sued an Independent iPhone Repair Shop Owner and Lost

Apple said an unauthorized repair shop owner in Norway violated its trademark by using aftermarket iPhone parts, but a court decided in favor of the shop owner.

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TECH

Apple Fined as Customers Win a Right-to-Repair Fight

An Australian court ruled the company couldn't cease consumer guarantees because a third party serviced an iPhone or iPad

You are under arrest for circumventing a technological measure that controls access to this tire. It looks like you'll be needing a new car.
Police
@gapingvoid

repair.org

WHAT IS GOING ON?
GUESS WHAT I CAUGHT THIS FARM BOY DOING?
I CAUGHT HIM UNDER A SHADE TREE REPAIRING HIS OWN TRACTOR!
FRIDAY @ 2016

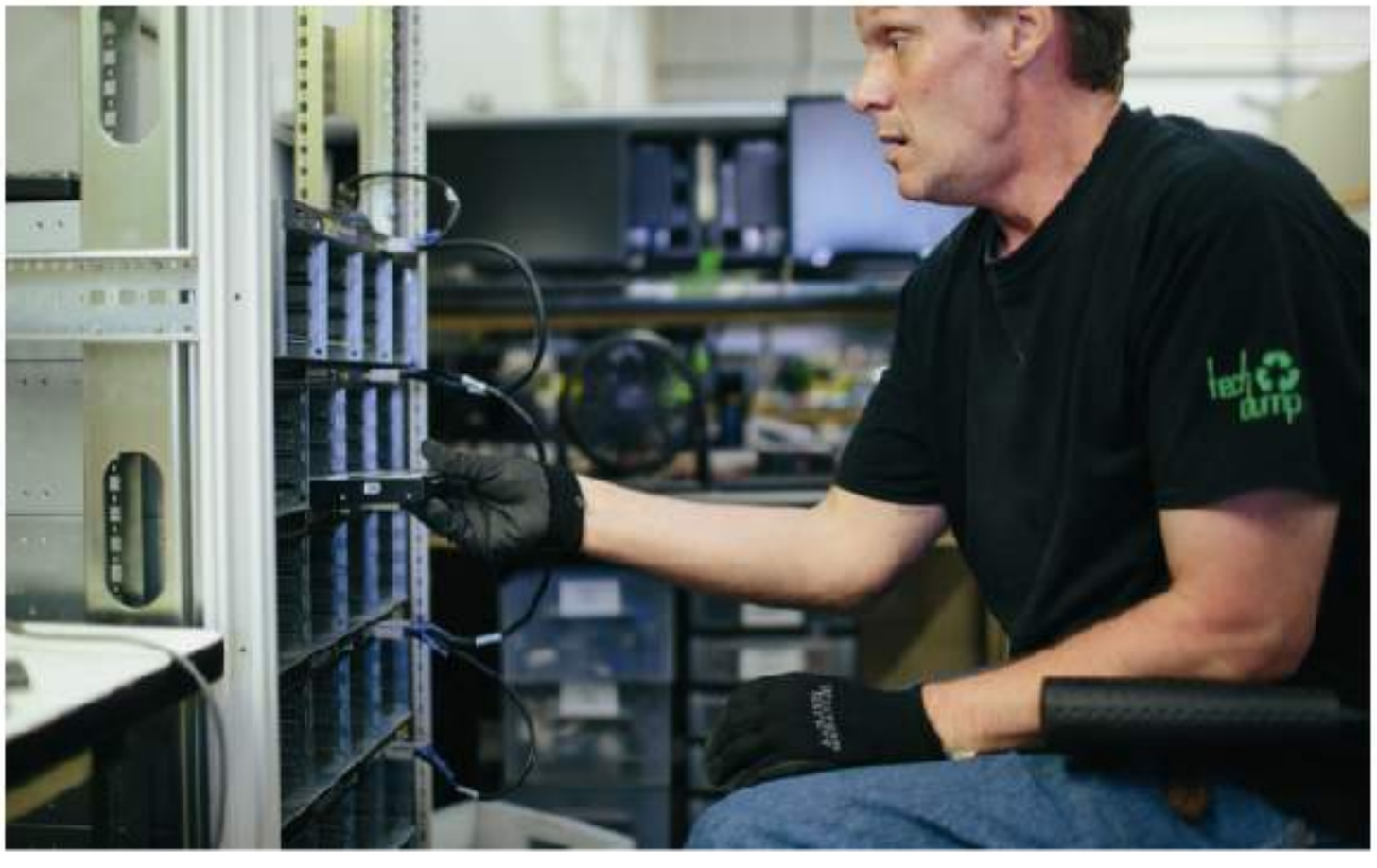
True Crime

E-waste recycler Eric Lundgren loses appeal on computer restore disks, must serve 15-month prison term

By Tom Jackman April 24 Email the author

Minnesota's 'right to repair' bill would upend tech giants' monopoly on fixing your stuff

Friday, February 3, 2017 by Taylor Danz in News



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It’s Time to Restore Our Right to Repair

- Service Documentation
- Tools
- Diagnostics
- Firmware
- Service Parts