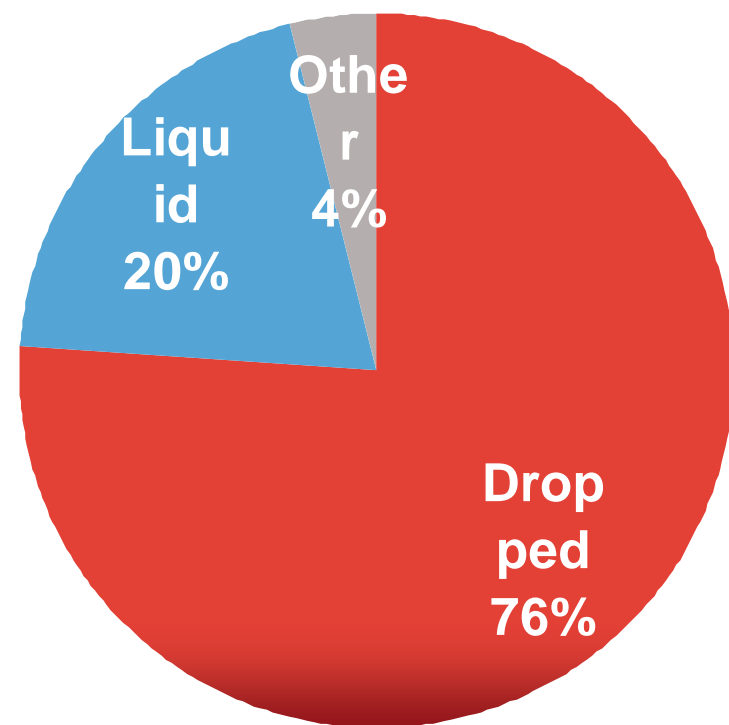




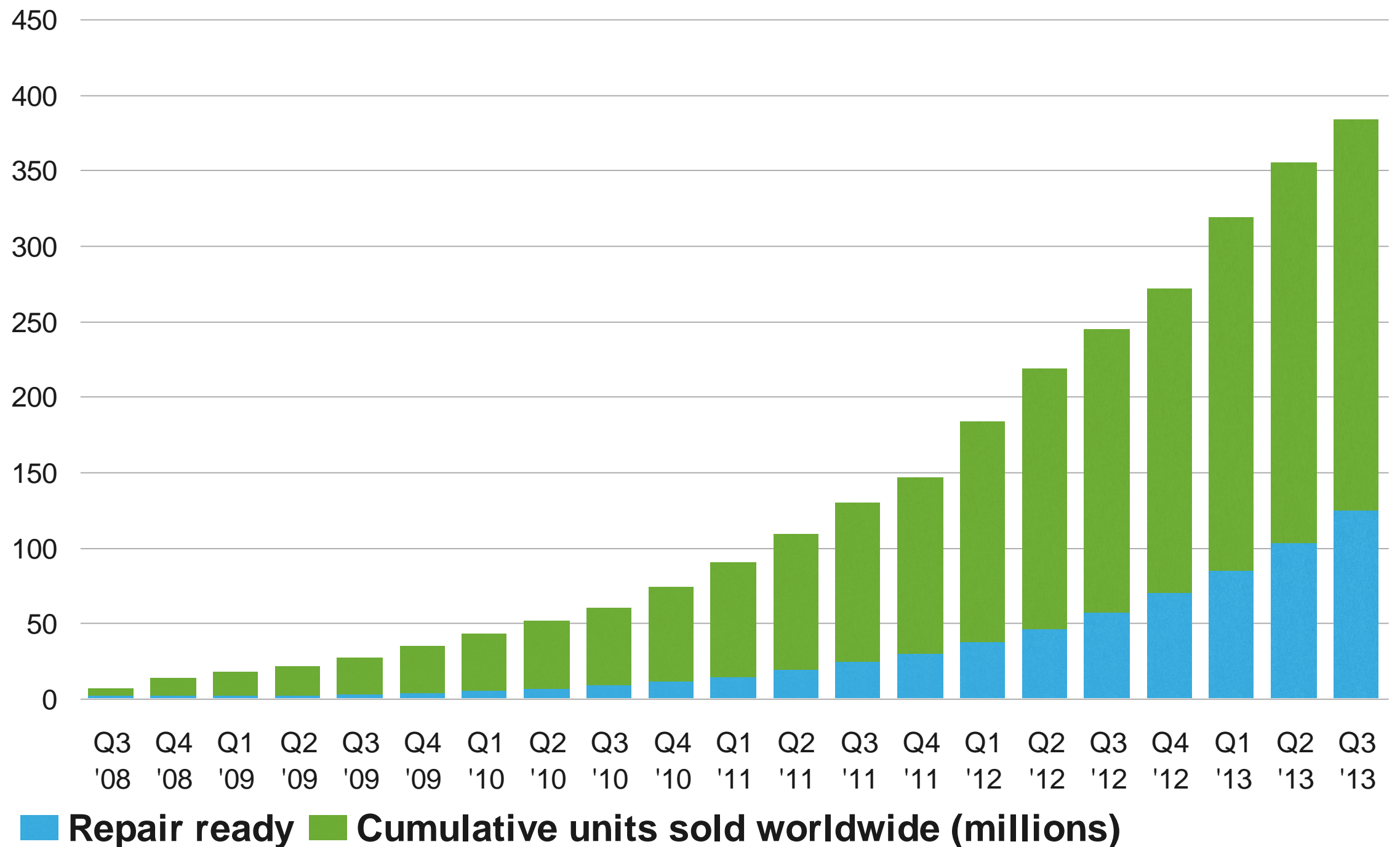
26% of iPhones break within 24 months



10% of people have an accident with their iPhone within 12 months

Many break something other than the glass: button, speaker, vibrator, etc.

Over 100 million iPhones are ready for repair



Repair 1.0



1990

How to be a mech

Figure it out
Printed repair
manuals
Trade school





Repair Manuals

Fix your own hardware with our free service manuals.
Step-by-step photos and instructions make it easy.

[Learn more](#)

Mac Repair



1.8k Guides
118 Devices
4.9k Parts



Featured Guide
Installing iMac Intel 27" EMC 2546
Left Speaker

Game Console Repair



437 Guides
68 Devices
353 Parts



Featured Guide
Replacing PlayStation 3 Slim Fan

Phone Repair



1.7k Guides
393 Devices
162 Parts



Featured Guide
Replacing Motorola V60s Battery

iPhone Repair



138 Guides
7 Devices

Car and Truck Repair



155 Guides
95 Devices

Camera Repair



708 Guides
166 Devices

PC Repair



784 Guides
245 Devices

iPad Repair



159 Guides
16 Devices

iPod Repair



169 Guides
24 Devices

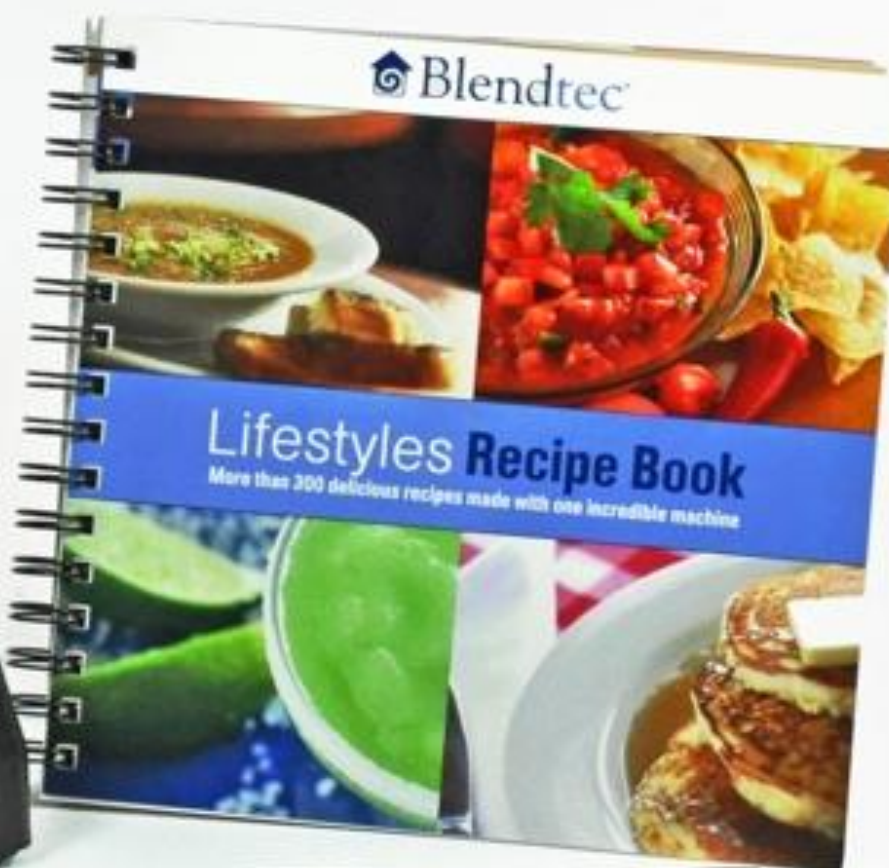
Appliance Repair



101 Guides
51 Devices

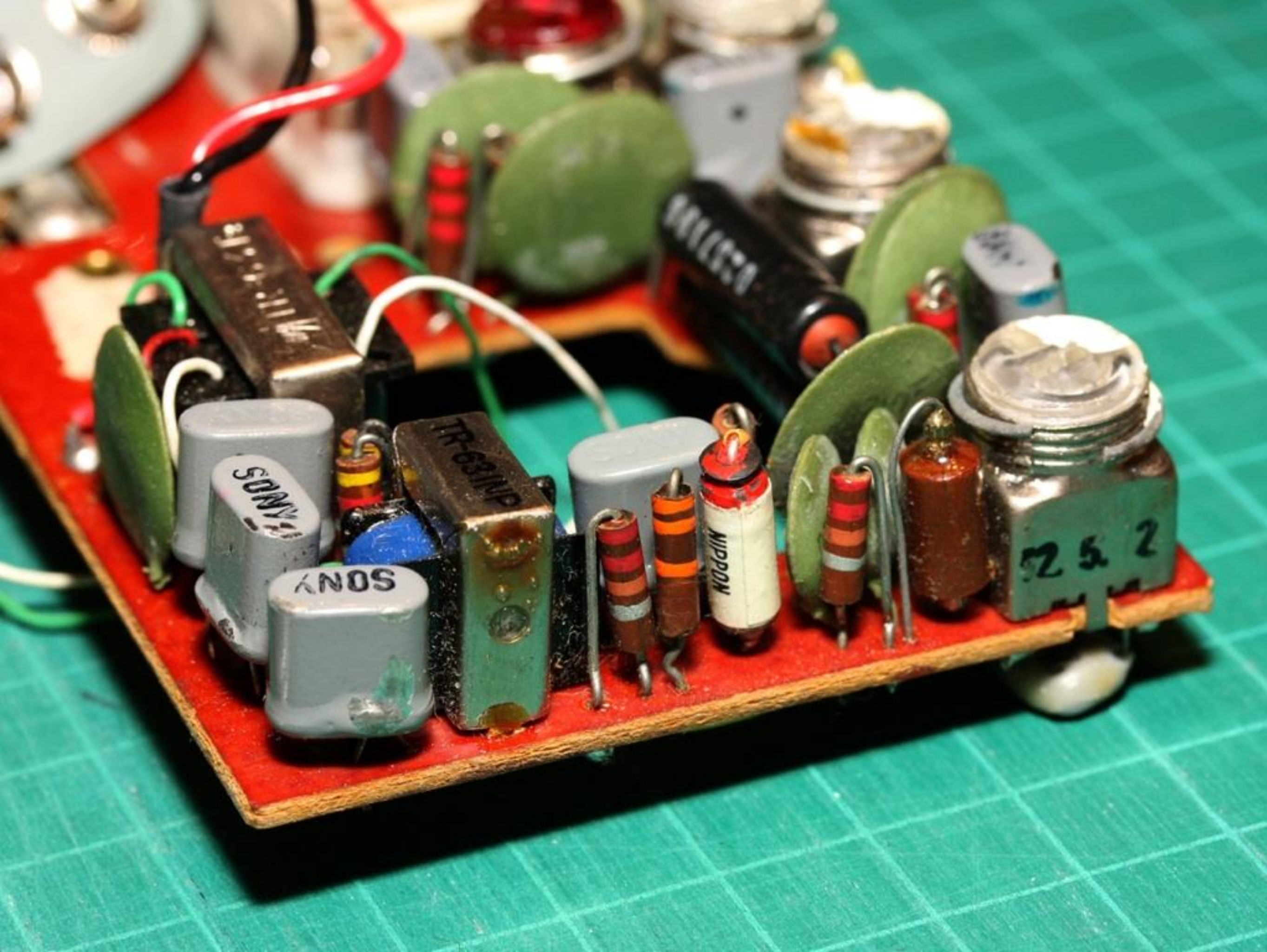
Contribute

Don't see the repair you're looking for? Help us out by [starting it!](#)



















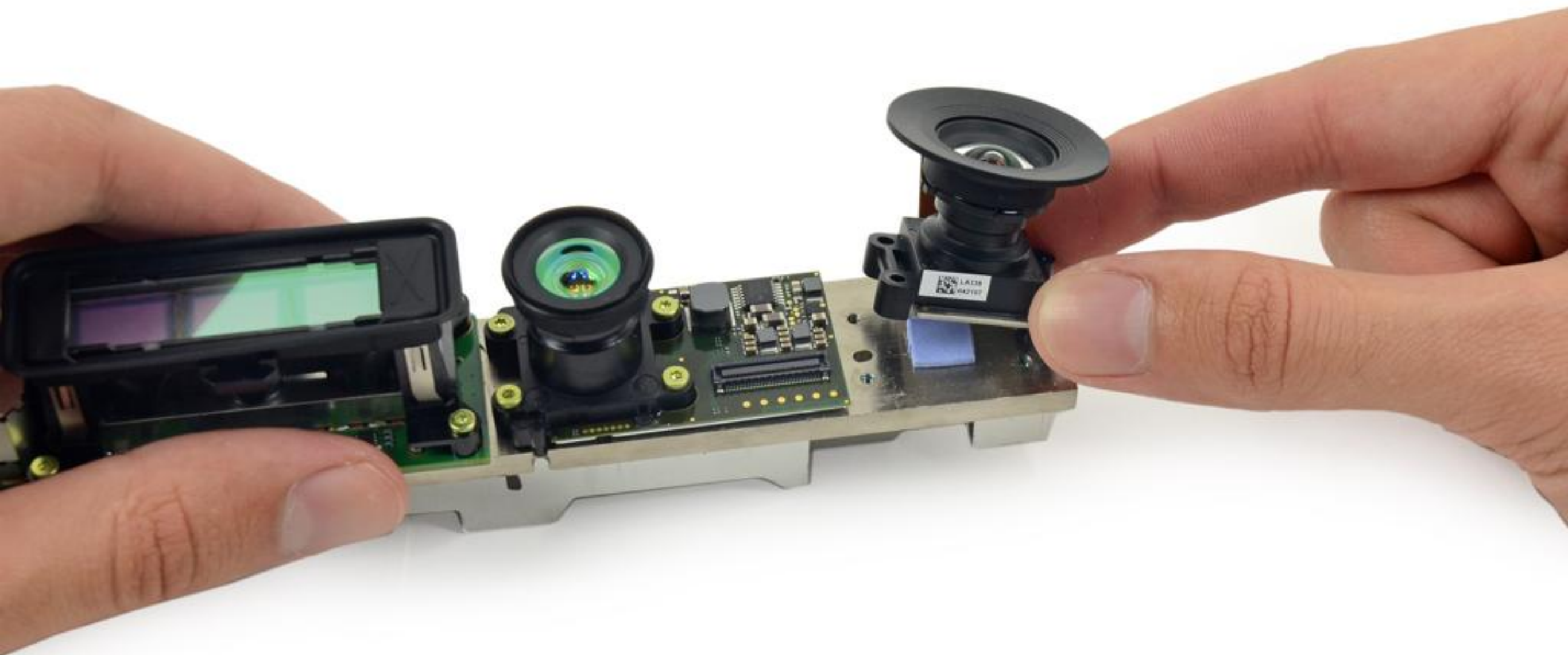


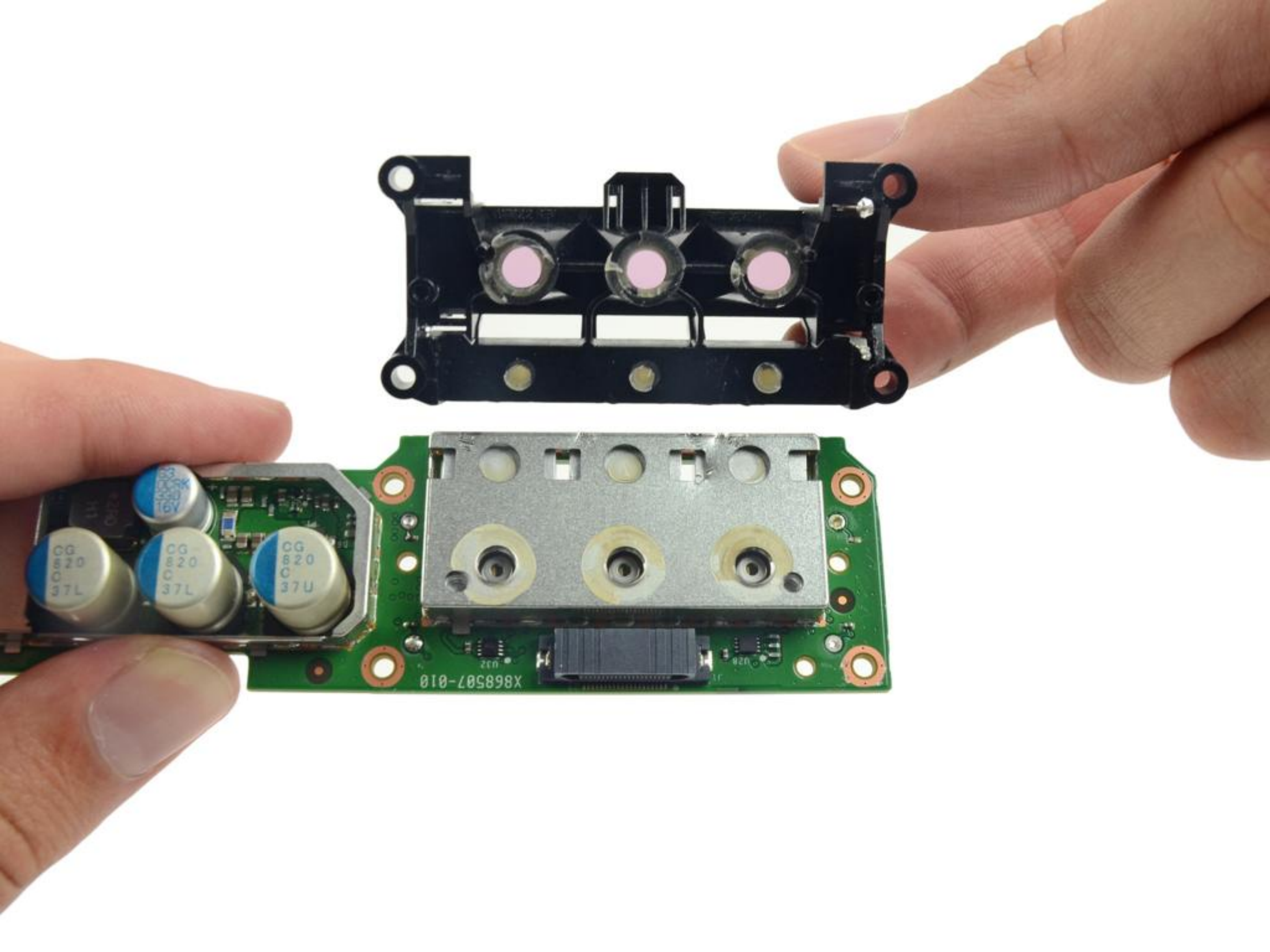
Xbox One Kinect



TEARDOWN







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



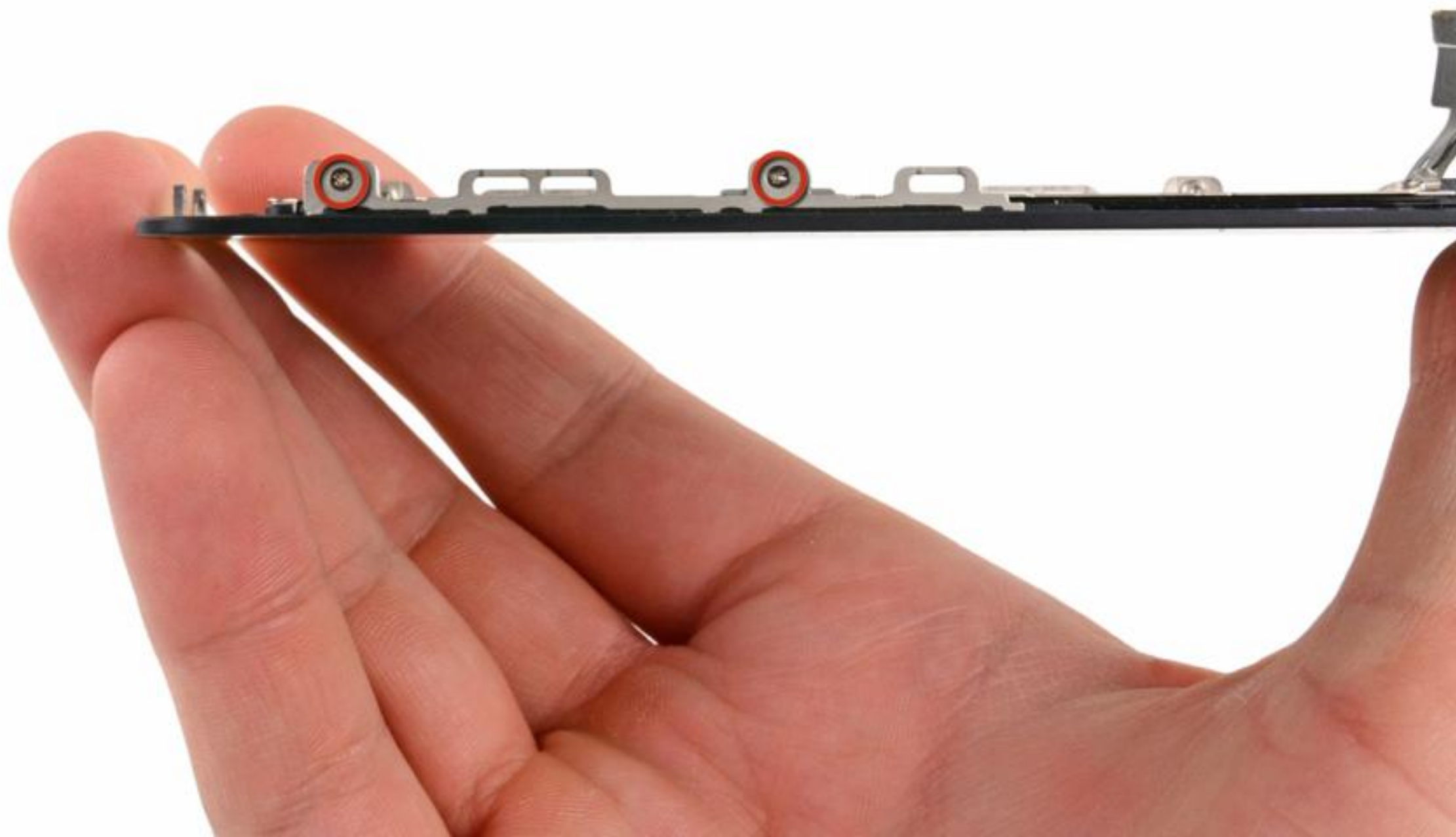
Our manuals are all
Open Source





**“The Repair World’s R&D
Department”**

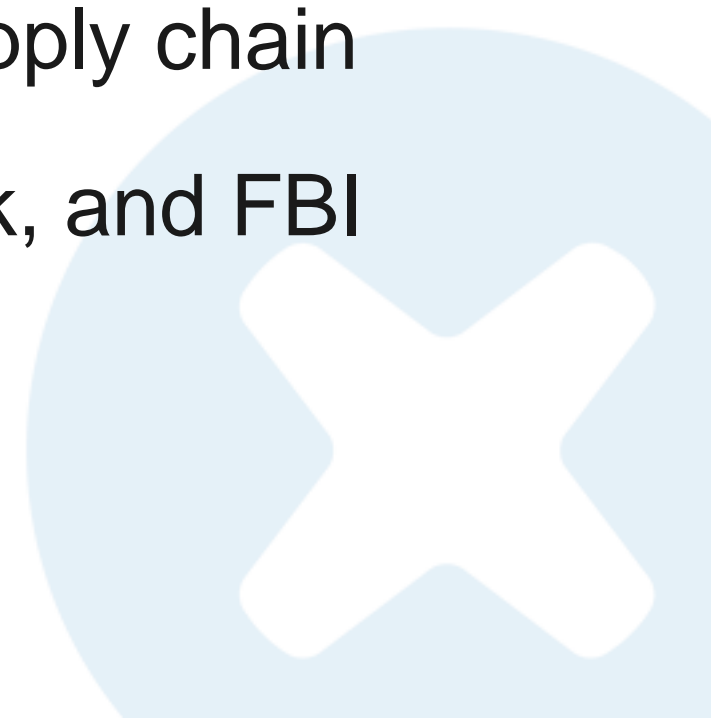






iFixit Has a Real Impact

- 10 years of experience training and supporting thousands of repair businesses
- 3.5 million monthly tech-savvy, affluent visitors
- Technical, business, and supply chain expertise to handle hundreds of thousands of repairs
- Largest volume iPhone parts and tools supply chain
- Tool supplier to Geek Squad, Radio Shack, and FBI
- Battle-tested technician training materials



iFixit Member Survey



Told us that iFixit has enabled them to perform repairs they wouldn't have done otherwise.



say that a successful repair makes you more likely to buy another product from that manufacturer.



Average number of things people have fixed using iFixit.

Pentalobe x2
3.6mm

Antenna clip
2.6mm

Rear facing
Camera

Battery

Micro SIM Tray

Logic Board
Standoff Screws

Cable Cover

Dock
Connector

Logic Board

2.3mm
1.6mm
1.4mm
4.8mm

Logic Board

This part
goes in first



ifixit

Magnetic
Project Mat

Designed in California by iFixit.com

Project:

iPhone 4
GSM Screen
Replacement

STAEDELER correctable
Lumocolor



I travel throughout Africa
and Asia documenting
electronics recyclability
and e-waste disposal
practices.







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.

Tablet Repairability

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

How we rate devices:

A device with a perfect score will be relatively inexpensive to repair because it is easy to disassemble and has a service manual available. Points are docked based on the difficulty of opening the device, the types of fasteners found inside, and the complexity involved in replacing major components. Points are awarded for upgradability, use of non-proprietary tools for servicing, and component modularity.



Dell
XPS 10

- Easy to open. Easy to remove battery.
- Color-coded screws and labeled cables inside.
- LCD is fused to the glass.

9



Amazon
Kindle Fire

- Device is easy to open. No proprietary fasteners.
- Simple design with standard Phillips screws.
- Glass panel is fused to frame.

8



Dell
Streak

- Device is easy to open.
- Battery is easy to replace.
- LCD is fused to the glass.

8



Motorola
Xoom

- No proprietary fasteners.
- LCD and front glass are not fused.
- 57 screws means a long disassembly time.

8



Samsung
Galaxy Tab 2 7.0

- Modular design and easy to remove components.
- Front glass is not fused to the LCD.
- Heat gun is needed to replace the LCD.

8

	Google Nexus 7	<ul style="list-style-type: none"> • Device is easy to open. No proprietary fasteners. • Battery is easy to replace. • LCD does not separate from front glass. 	7
	Apple iPad 1	<ul style="list-style-type: none"> • Front panel is held in place with clips. • LCD is not fused to the display glass. • Battery is difficult to remove and replace. 	6
	Barnes & Noble Nook Tablet	<ul style="list-style-type: none"> • LCD is not fused to front panel assembly. • Excessive adhesive and adhesive strips. • Battery replacement requires removing motherboard. 	6
	Google Nexus 10	<ul style="list-style-type: none"> • Easily removable battery. LCD is not fused to glass. • The opening procedure is a very difficult process. • Several components are attached by both screws and glue. 	6
	Amazon Kindle Fire HD 8.9"	<ul style="list-style-type: none"> • With just a few clips, the device is very easy to open. • Heat gun is needed for fused LCD and front glass. • Battery and cables are adhered to case. 	5
	Microsoft Surface RT	<ul style="list-style-type: none"> • Once the device is opened, the battery is easily replaced. • Difficult to open device. • LCD is fused to the front glass. 	4
	Apple iPad 2	<ul style="list-style-type: none"> • LCD is easy to replace once the front panel is removed. • Battery is difficult to remove and replace. • High chance of cracking the glass during disassembly. 	2
	Apple iPad 3	<ul style="list-style-type: none"> • LCD is easy to remove once the front panel is removed. • Excessive amounts of adhesive holds everything in place. • High chance of cracking the glass during disassembly. 	2
	Apple iPad 4	<ul style="list-style-type: none"> • LCD is easy to remove once the front panel is removed. • Excessive amounts of adhesive holds everything in place. • High chance of cracking the glass during disassembly. 	2
	Apple iPad Mini	<ul style="list-style-type: none"> • LCD and glass are not fused together. • Excessive amounts of adhesive makes any repair difficult. • Hidden screws complicate disassembly. 	2
	Microsoft Surface Pro	<ul style="list-style-type: none"> • Battery is not soldered to the motherboard. • Tons of adhesive holds everything in place. • Opening the device risks shearing the display cables. 	1











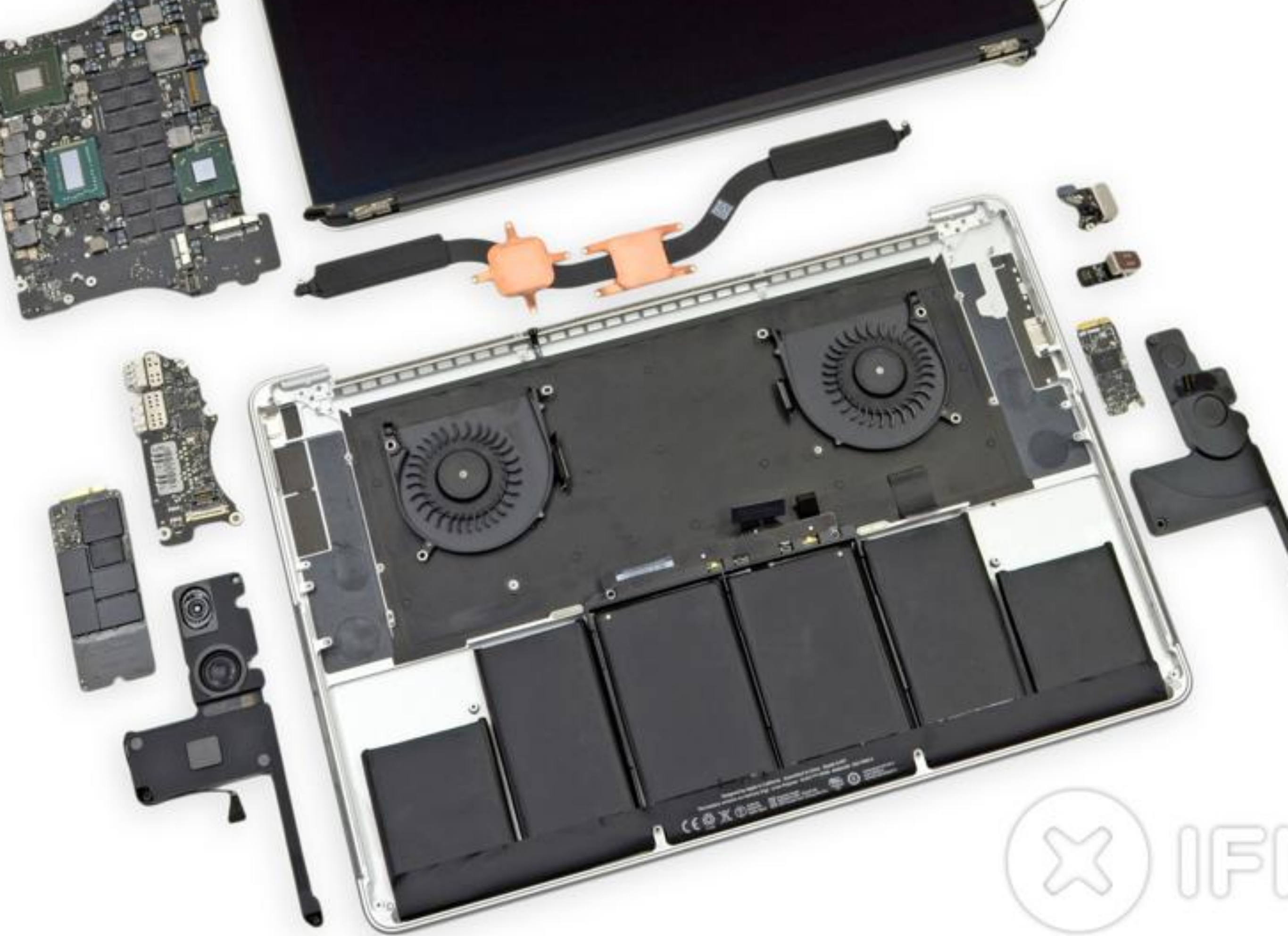
Recycling doesn't recover
sufficient material.

Repair is a cornerstone of
future environmental design.



EPEAT is not encouraging
reusable designs





REPAIRABILITY SCORE:

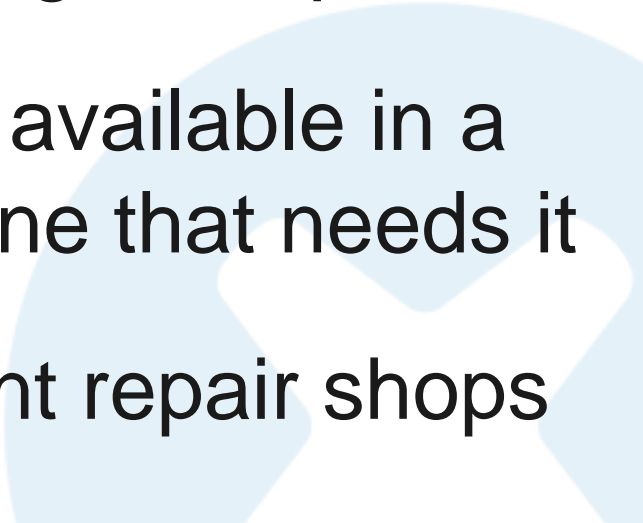


A wide-angle photograph of a large industrial sewing factory. In the foreground, several workers are seated at long tables with industrial sewing machines. They are focused on their work. The background shows rows of similar workstations stretching into the distance, with high ceilings and industrial lighting. The overall scene depicts a busy manufacturing environment.

It's Time for a Repair Jobs Revolution

Repair jobs may be an answer to the global unemployment problem, help bridge the digital divide, and cut down the amount of unnecessary waste.

Need

- Integrate reuse and design for repair into future standards
 - Make consumables (batteries) user replaceable
 - Empower consumers—make it easy for to repair their own products
 - Discourage adhesives and difficult to recycle design components
 - Make service manuals and recycling information available in a standard format, under open licensing, to everyone that needs it
 - Bridge the digital divide by facilitating independent repair shops around the world
- 

IPHONE 4代手机拆机图解大

IPHONE 4 Mobile Phone Terardown Diagram Da

iPhone 4已经陆陆续续送达顾客的手中, ifixit当然也不会落下, 顺利的拿到了一台。与一般人不同的是, 他们拿到iPhone 4的第一件事就是将它拆解, 第一时间让我们看到iPhone 4的零部件究竟有哪些。不可否认, 这比光看外型过瘾多了。

Step 1

在拆解之前, 我们还是先介绍下iPhone 4的基本配置和功能。



玻璃和不锈钢机身, 宽度和厚度分别比iPhone 3GS减少3.5mm和3mm;

除了经典的黑色, 还有白色款可选;

采用Retina显示屏, 像素密度是iPhone 3GS的两倍;

内装iOS 4系统, 支持多任务;

具备两个摄像头, 一个是500万像素的后置摄像头, 另一个是VGA前置摄像头。

和塑料材质的iPhone完全不同。

四周的不锈钢边框不仅起到固定的作用, 还有一个重要的功能: iPhone天线。

Step 3



刚拿到iPhone可发现一件有趣的事, 在iPhone 4背壳上没有标明存储空间。

我们入手的是32GB的iPhone 4, 但实际上它只有29.06GB, 而且有301MB被拿来存放一些“其他”的东西, 用户只剩28.77GB可自由存储。

至于操作系统, iPhone 4内装的是最新发布的iOS 4 build 8A293版本。

我们要拆的iPhone 4型号为A1332。有趣的是, 这个号码比iPad 3G的A1337小。

Step 4



正如iPhone 3G和3GS, 在iPhone 4底部有两枚银色的Phillips #00 螺丝。

但是旋开这两枚螺丝将会拆掉背部外壳, 而不是前面的玻璃。

这样的设计使装回背部外壳时很繁琐, 但也意味着装回前面的玻璃比较有挑战。

Step 5



Step 6



幸运的是, 电池很容易就拆得出来。

这是一块3.7V 1420 mAh 的锂电池, 可提供7小时的3G网络通话时长以及14小时2G网络通话时长。

但是iPhone 4的电池接头与3G和3GS的不同。还好, 电池没有被焊接到主板。



原来是之前我们拆除接头时扭开了四枚螺丝钉, EMI屏蔽罩已经随着那四枚螺丝钉拆走了。



Step 8



IPHONE 4 Mobile Phone Schematic Circuit Diagram (5)

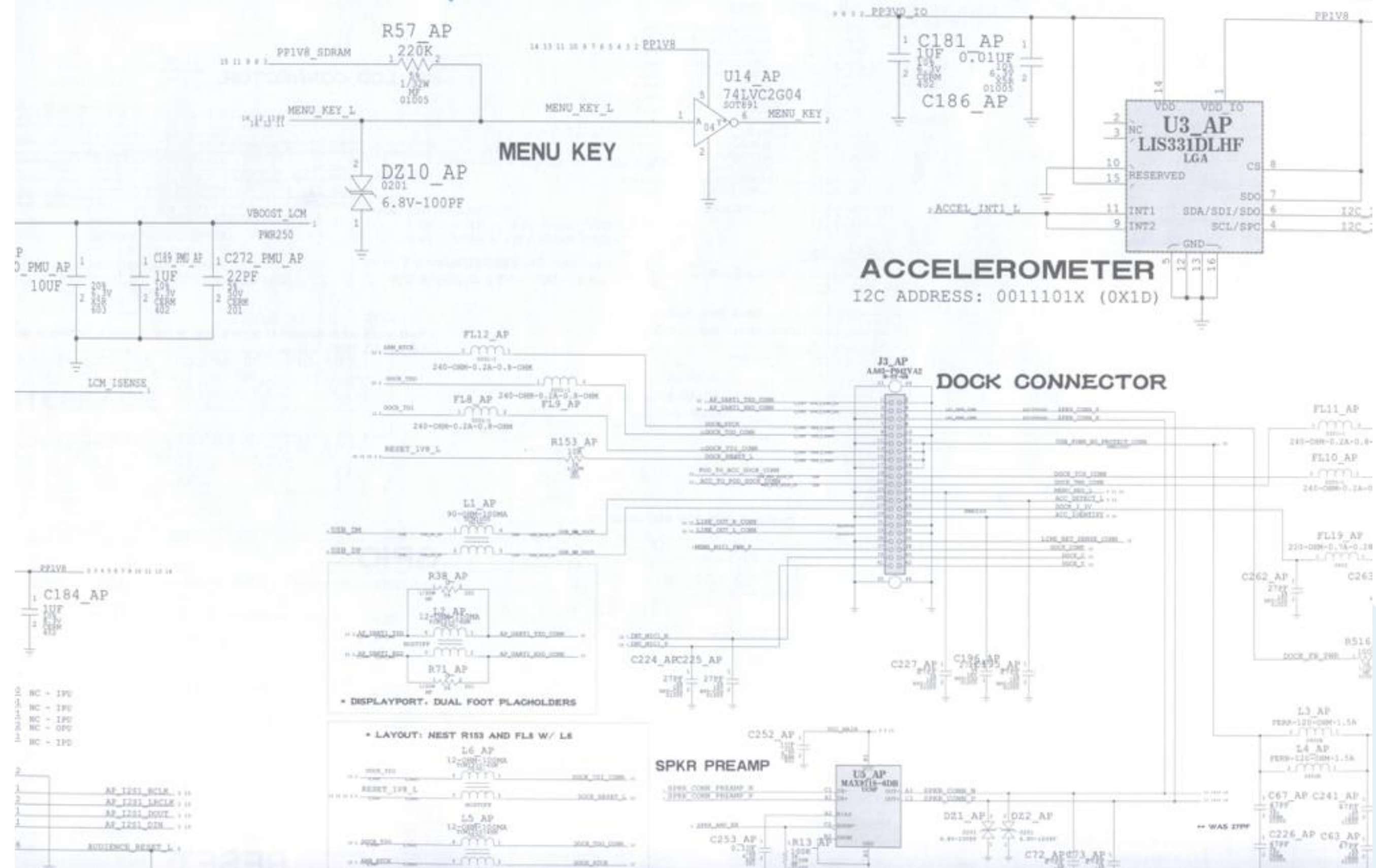
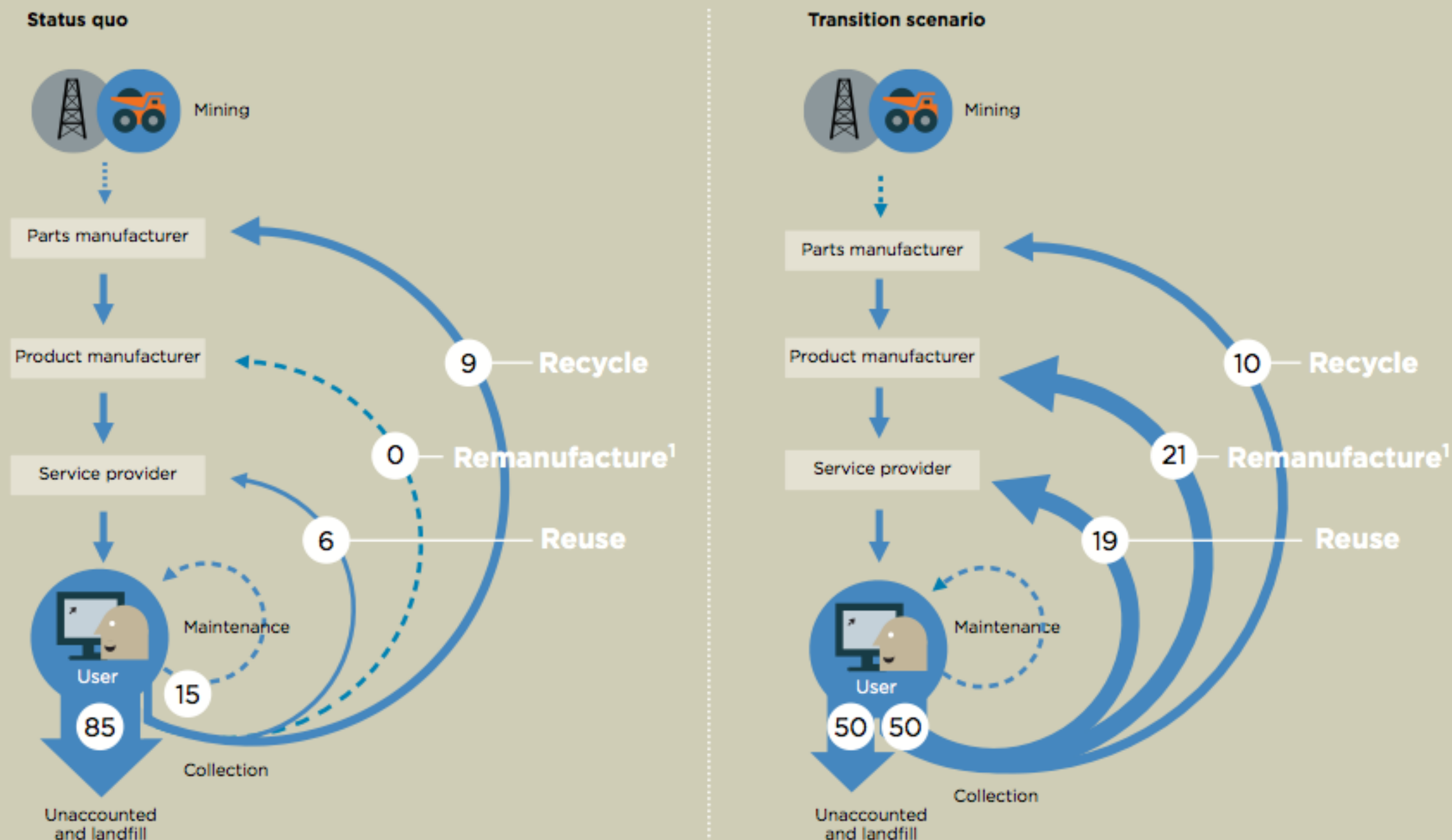


FIGURE 11A
Mobile phones: Reuse and remanufacturing as a viable alternative to recycling

ESTIMATES

End-of-life product flows based on 2010 EU figures
 Percentage of total end-of-life devices



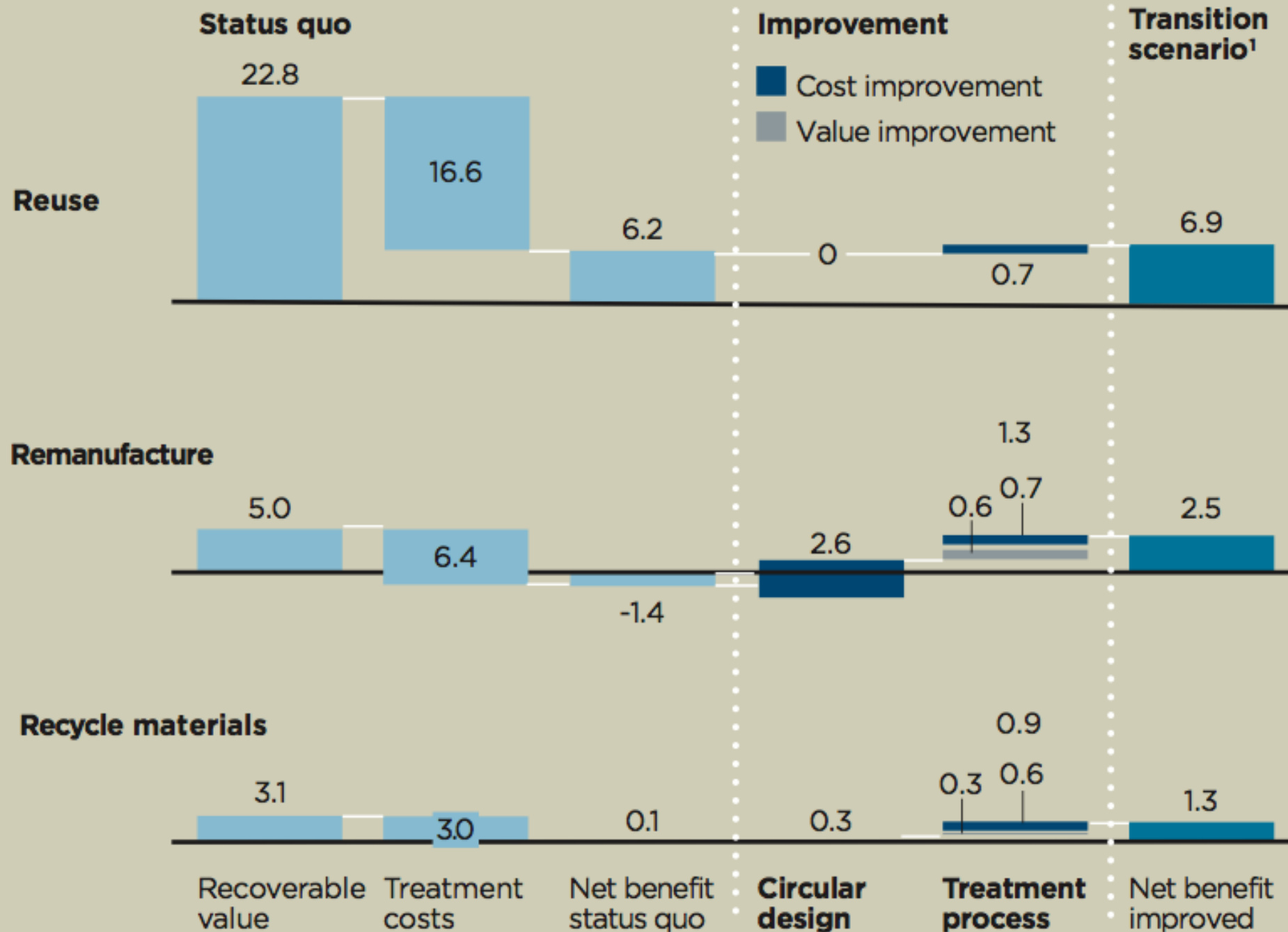
¹ Remanufacturing, here refers to the reuse of certain components and the recycling of residual materials
 SOURCE: Gartner; EPA; Eurostat; UNEP; Ellen MacArthur Foundation circular economy team

FIGURE 11B

Mobile phones: Design changes and investments in reverse infrastructure could greatly improve the circular business case

USD per device

ESTIMATES



¹ Transition scenario: Conservative assumptions on improvements in circular design and the reverse cycle, within today's technical boundaries

SOURCE: Geyer & Doctori Blass (2008); Neto & Bloemhof-Ruwaard (2009); Neira et al. (2006); EPA; Umicore; LME; Metal Bulletin; recellular.com; amazon.com; recyclemobilephones.co.uk; Ellen MacArthur Foundation circular economy team

It's time to fix our economy.

Let's train up an army of mechanics and technicians and make repair local again.



WHY REPAIR?

Repair saves you money. It saves the environment.
And it connects us to our things. Ditch the throwaway
economy. Join the repair revolution.

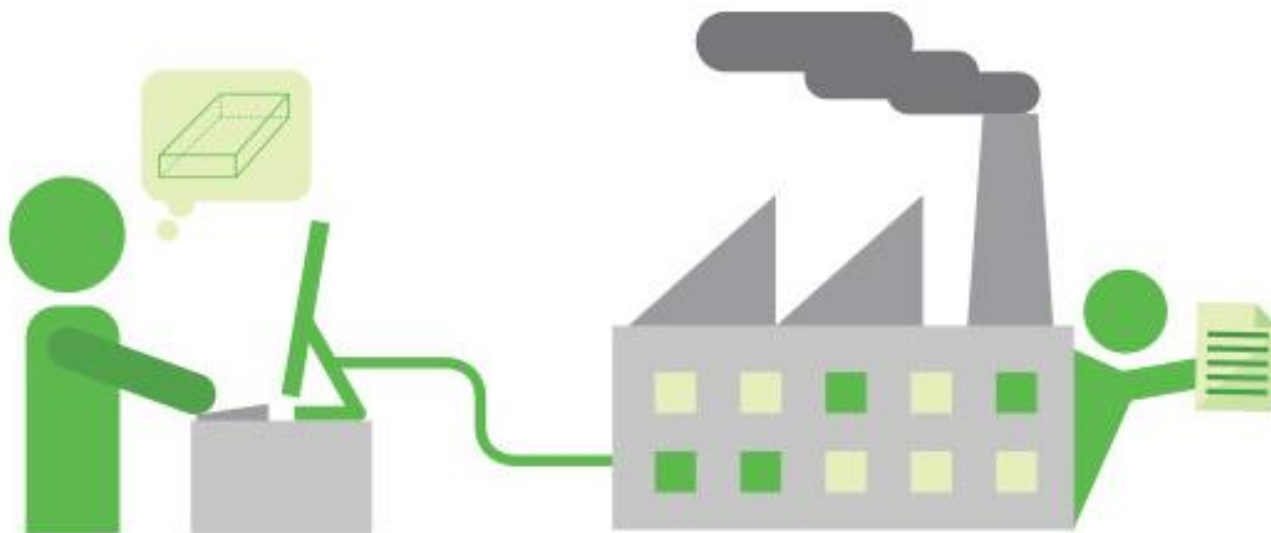
Repair
is Freedom

Repair
creates Jobs

Repair
is Sustainable

Why now?

Repairing electronics requires more knowledge about the product design than ever before

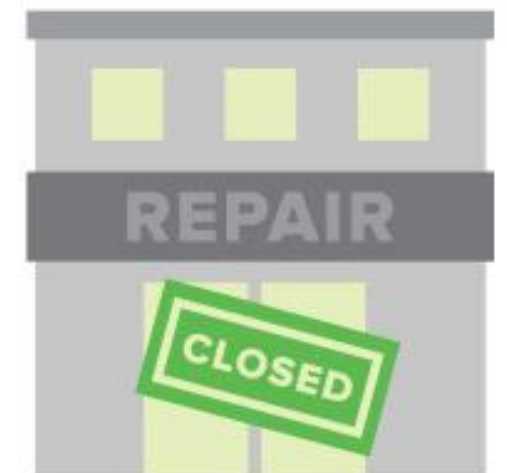


Products are designed in the US and Europe.

They're manufactured by legions of workers in Asia.



Repair shops in Asia thrive on the information shared by those manufacturers.



Repair workers in the US and Europe are struggling because they don't have the information they need.

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.

Independent Repair Creates Millions of Jobs

General maintenance and repair workers	1,289,000
Automotive service technicians and mechanics	723,400
Heating, air conditioning, and refrigeration mechanics and installers	267,800
Diesel service technicians and mechanics	242,200
Telecommunications equipment installers and repairers	194,900
Heavy vehicle and mobile equipment service technicians	179,200
Automotive body and glass repairers	170,900
Aircraft and avionics equipment mechanics and technicians	142,300
Electrical and electronics installers and repairers	141,100
Small engine mechanics	68,800
Home appliance repairers	47,700
Home entertainment equipment installers and repairers	36,800
Total Jobs	3,504,100

Source: US Bureau of Labor Statistics, 2010 census data

For every **1000 tons** of electronics ... *



Landfilling
creates **> 1 job**



Recycling
creates **15 jobs**



Repairing
creates **200 jobs**

* According to the Illinois Department of Commerce and Economic Activity



5 million tons of out-of-use electronics are piling up in America.

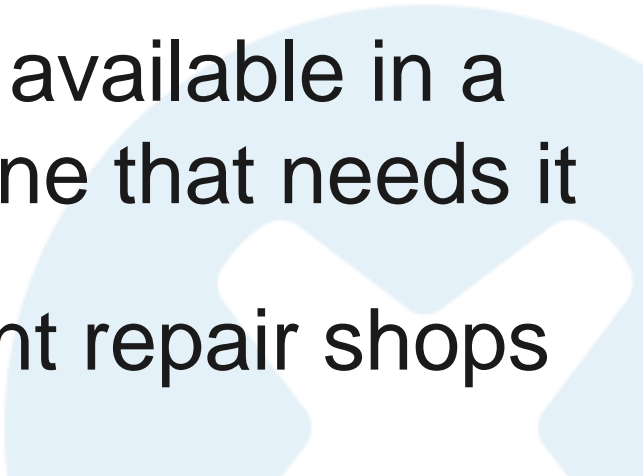


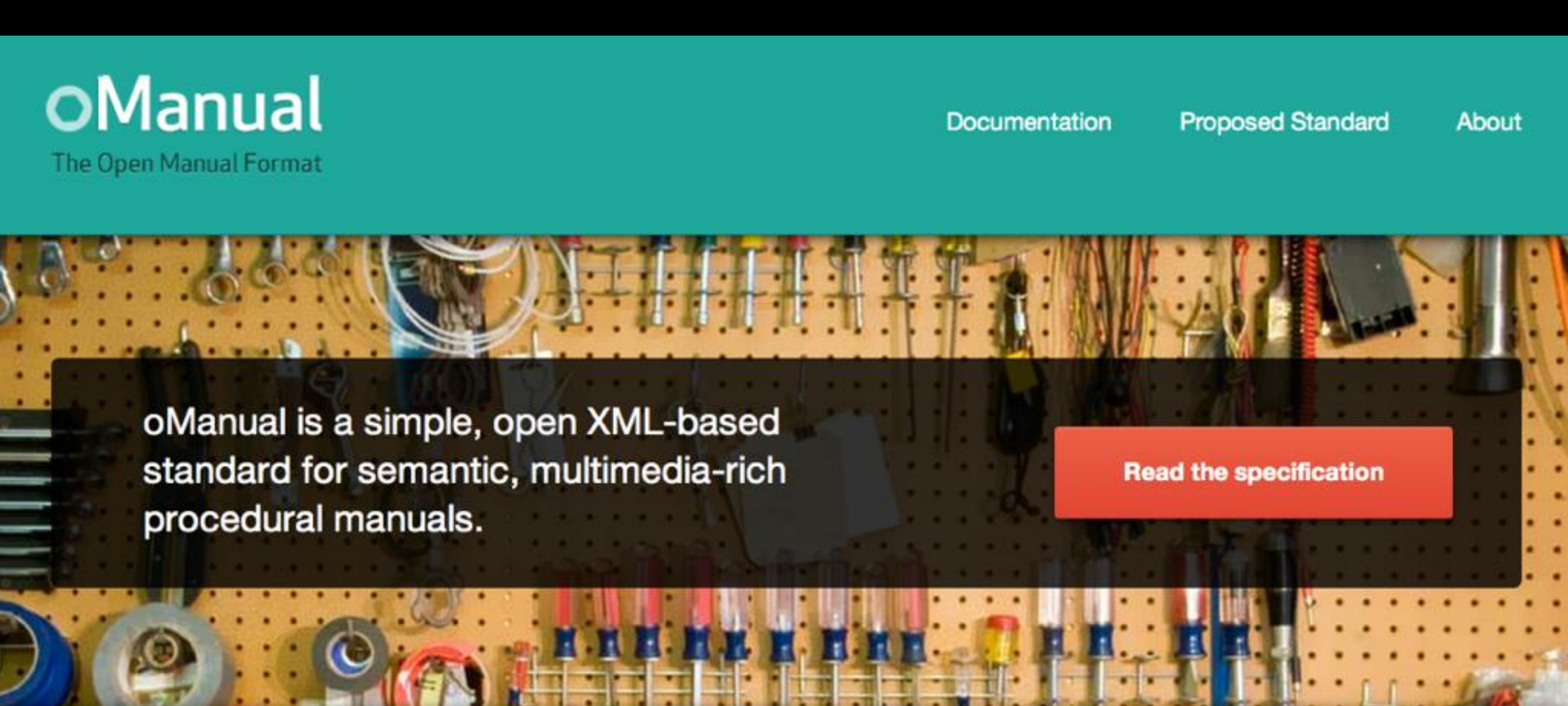
23% of shredded electronics could be easily repaired or refurbished.



250,000 jobs would be created by repairing 23% of our out-of-use electronics.

Challenge

- Integrate reuse and design for repair into future standards
 - Make consumables user replaceable
 - Empower consumers by making it easy to repair their products
 - Discourage adhesives and difficult to recycle design components
 - Make service manuals and recycling information available in a standard format, under open licensing, to everyone that needs it
 - Bridge the digital divide by facilitating independent repair shops around the world
- 



oManual is a simple, open XML-based standard for semantic, multimedia-rich procedural manuals.

[Read the specification](#)

Traditional procedural documents like service manuals don't meet the needs of modern applications. Documents need to incorporate multimedia and understand prerequisite dependencies. The **oManual** file format enables interoperability while allowing complete flexibility of presentation.



