Design Like You Give a Damn

Daniel Wiens
iFixit
How to be a mechanic

Figure it out

Printed repair manuals

Trade school
How to be a mechanic in 2013

let me Google™ that for you

replace honda accord ignition switch

Google Search  I'm Feeling Lucky

Step 2: Click the Search button
Repair 2.0
Learn from the world
Green design is all about product longevity.
Which includes modularity.
The ability to replace.
## 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.

<table>
<thead>
<tr>
<th>Tablet</th>
<th>Rating</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dell XPS 10</td>
<td>9</td>
<td>Easy to open. Easy to remove battery. Color-coded screws and labeled cables inside. LCD is fused to the glass.</td>
</tr>
<tr>
<td>Amazon Kindle Fire</td>
<td>8</td>
<td>Device is easy to open. No proprietary fasteners. Simple design with standard Phillips screws. Glass panel is fused to frame.</td>
</tr>
<tr>
<td>Dell Streak</td>
<td>8</td>
<td>Device is easy to open. Battery is easy to replace. LCD is fused to the glass.</td>
</tr>
<tr>
<td>Motorola Xoom</td>
<td>8</td>
<td>No proprietary fasteners. LCD and front glass are not fused. 57 screws means a long disassembly time.</td>
</tr>
<tr>
<td>Samsung Galaxy Tab 2 7.0</td>
<td>8</td>
<td>Modular design and easy to remove components. Front glass is not fused to the LCD. Heat gun is needed to replace the LCD.</td>
</tr>
<tr>
<td>Device</td>
<td>Ease of Replacement</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Google Nexus 7</td>
<td>7</td>
<td>Device is easy to open. No proprietary fasteners. Battery is easy to replace. LCD does not separate from front glass.</td>
</tr>
<tr>
<td>Apple iPad 1</td>
<td>6</td>
<td>Front panel is held in place with clips. LCD is not fused to the display glass. Battery is difficult to remove and replace.</td>
</tr>
<tr>
<td>Barnes &amp; Noble Nook Tablet</td>
<td>6</td>
<td>LCD is not fused to front panel assembly. Excessive adhesive and adhesive strips. Battery replacement requires removing motherboard.</td>
</tr>
<tr>
<td>Google Nexus 10</td>
<td>6</td>
<td>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.</td>
</tr>
<tr>
<td>Amazon Kindle Fire HD 8.9&quot;</td>
<td>5</td>
<td>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.</td>
</tr>
<tr>
<td>Microsoft Surface RT</td>
<td>4</td>
<td>Once the device is opened, the battery is easily replaced. Difficult to open device. LCD is fused to the front glass.</td>
</tr>
<tr>
<td>Apple iPad 2</td>
<td>2</td>
<td>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.</td>
</tr>
<tr>
<td>Apple iPad 3</td>
<td>2</td>
<td>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.</td>
</tr>
<tr>
<td>Apple iPad 4</td>
<td>2</td>
<td>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.</td>
</tr>
<tr>
<td>Apple iPad Mini</td>
<td>2</td>
<td>LCD and glass are not fused together. Excessive amounts of adhesive holds everything in place. Hidden screws complicate disassembly.</td>
</tr>
<tr>
<td>Microsoft Surface Pro</td>
<td>1</td>
<td>Battery is not soldered to the motherboard. Tons of adhesive holds everything in place. Opening the device risks shaving the display cables.</td>
</tr>
</tbody>
</table>
Chumby One
Chumby One
iPod Nano

Nano, Nano, Nano, Fat Nano, Nano.
Banana
Example: Life cycle of a coffee maker

- Coffee beans
- Paper
- Polystyrene
- Aluminium
- Steel
- Glass

Transport & processing
Filters
Injection molding
Extrusion
Press forming
Blowing

Water
Electricity

USE
Assembly & transport
Packaging

Package disposal
Coffee disposal
Filter disposal
Device disposal
Millions of people use iFixit to fix their own things

mayer
Master Techs
106,835 Reputation
5,168 Solutions
80 Guides
Member Since 01.04.10
In 2005 the US buried electronics containing:

- 77 million pounds of lead (965 semi trucks full)
- 183 thousand pounds of mercury
- 1.3 million pounds of arsenic
If ingested, that much arsenic would kill 7.6 billion people.
oManual is a simple, open XML-based standard for semantic, multimedia-rich procedural manuals.

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.
WE HOLD THESE TRUTHS TO BE SELF-EVIDENT

SELF-REPAIR MANIFESTO:

REPAIR IS BETTER THAN RECYCLING.
Making our things last longer is both more efficient and more cost-effective than mining them for raw materials.

REPAIR SAVES THE PLANET.
Earth has limited resources and we can’t run a linear manufacturing process forever. The best way to be efficient is to reuse what we already have!

REPAIR SAVES YOU MONEY.
Fixing things is often free, and usually cheaper than replacing them. Doing the repair yourself saves serious dough.

REPAIR TEACHES ENGINEERING.
The best way to find out how something works is to take it apart!

IF YOU CAN’T FIX IT, YOU DON’T OWN IT.
Repair connects people and devices, creating bonds that transcend consumption. Self-repair is sustainable.

REPAIR CONNECTS YOU WITH YOUR THINGS ○ REPAIR EMPOWERS AND EMBOLDENS INDIVIDUALS ○ REPAIR TRANSFORMS CONSUMERS INTO CONTRIBUTORS ○ REPAIR INSPIRES PRIDE IN OWNERSHIP ○ REPAIR INJECTS SOUL AND MAKES THINGS UNIQUE ○ REPAIR IS INDEPENDENCE ○ REPAIR REQUIRES CREATIVITY ○ REPAIR IS GREEN ○ REPAIR IS JOYFUL ○ REPAIR IS NECESSARY FOR UNDERSTANDING OUR THINGS ○ REPAIR SAVES MONEY AND RESOURCES

WE HAVE THE RIGHT:

TO OPEN AND REPAIR OUR THINGS WITHOUT VOIDING THE WARRANTY ○ TO DEVICES THAT CAN BE OPENED TO ERROR CODES AND WIRING DIAGRAMS ○ TO TROUBLESHOOTING INSTRUCTIONS AND FLOWCHARTS ○ TO REPAIR DOCUMENTATION FOR EVERYTHING ○ TO CHOOSE OUR OWN REPAIR TECHNICIAN ○ TO REMOVE ‘DO NOT REMOVE’ STICKERS ○ TO REPAIR THINGS IN THE PRIVACY OF OUR OWN HOMES ○ TO REPLACE ANY AND ALL CONSUMABLES OURSELVES ○ TO HARDWARE THAT DOESN’T REQUIRE PROPRIETARY TOOLS TO REPAIR ○ TO AVAILABLE, REASONABLY PRICED SERVICE PARTS

Inspired by Mister Jilop’s Maker’s Bill of Rights and Platform 21’s Repair Manifesto

JOIN THE REPAIR REVOLUTION AT IFIXIT.COM
White House Backs the Right to Unlock Your Phone—Will Congress?

KYLE WIENS | MAR 5 2013, 2:55 PM ET

The next step for advocates of phone unlocking is legislation that will give people who open up their devices -- with or without carrier permission -- legal protection.
This petition has been responded to by the White House. See the response below.

WE PETITION THE OBAMA ADMINISTRATION TO:

Make Unlocking Cell Phones Legal.

The Librarian of Congress decided in October 2012 that unlocking of cell phones would be removed from the exceptions to the DMCA.

As of January 26, consumers will no longer be able unlock their phones for use on a different network without carrier permission, even after their contract has expired.

Consumers will be forced to pay exorbitant roaming fees to make calls while traveling abroad. It reduces consumer choice, and decreases the resale value of devices that consumers have paid for in full.

The Librarian noted that carriers are offering more unlocked phones at present, but the great majority of phones sold are still locked.

We ask that the White House ask the Librarian of Congress to rescind this decision, and failing that, champion a bill that makes unlocking permanently legal.

Created: Jan 24, 2013
Issues: Civil Rights and Liberties, Consumer Protections, Technology and Telecommunications

TOTAL SIGNATURES

114,322
OFFICIAL WHITE HOUSE RESPONSE TO
Make Unlocking Cell Phones Legal.

It's Time to Legalize Cell Phone Unlocking

By R. David Edelman

Thank you for sharing your views on cell phone unlocking with us through your petition on our We the People platform. Last week the White House brought together experts from across government who work on telecommunications, technology, and copyright policy, and we’re pleased to offer our response.

The White House agrees with the 114,000+ of you who believe that consumers should be able to unlock their cell phones without risking criminal or other penalties. In fact, we believe the same principle should also apply to tablets, which are increasingly similar to smart phones. And if you have paid for your mobile device, and aren’t bound by a service agreement or other obligation, you should be able to use it on another network. It’s common sense, crucial for protecting consumer choice, and important for ensuring we continue to have the vibrant, competitive wireless market that delivers innovative products and solid service to meet consumers’ needs.

This is particularly important for secondhand or other mobile devices that you might buy or receive as a gift, and want to activate on the wireless network that meets your needs -- even if it isn’t the one on which the device was first activated. All consumers deserve that flexibility.

The White House’s position detailed in this response builds on some critical thinking done by the President’s chief advisory Agency on these matters: the Department of Commerce’s National Telecommunications and Information Administration (NTIA). For more context and information on the technical aspects of the issue, you can review the NTIA’s letter to the Library of Congress’ Register of Copyrights (.pdf), voicing strong support for maintaining the previous exception to the Digital Millennium Copyright Act (DMCA) for cell phone carrier unlocking.

Contrary to the NTIA’s recommendation, the Librarian of Congress ruled that phones purchased after January of this year would no longer be exempted from the DMCA. The law gives the Librarian the authority to establish or eliminate exceptions -- and we respect that process. But it is also worth noting the statement the Library of Congress released today on the broader public policy concerns of the issue. Clearly the White House and Library of Congress agree that the DMCA exception process is a rigid and imperfect fit for this telecommunications issue, and we want to ensure this particular
Ring of Bitcoins: Why Your Digital Wallet Belongs on Your Finger

Forget the Cellphone Fight — We Should Be Allowed to Unlock Everything We Own

I Tried to Make the Intelligence Behind the Iraq War Less Bogus

The Development Journey of Lux Mansion, From Kyoto to Canada

3 Things Samsung Needs to Overtake Apple
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.
It hasn’t always been that way. Copyright laws were originally designed to protect creativity and promote innovation. But now, they are doing exactly the opposite: They’re being used to keep independent shops from fixing new cars. They’re making it almost impossible for farmers to maintain their equipment. And, as we’ve seen in the past few weeks, they’re preventing regular people from unlocking their own cellphones.

This isn’t an issue that only affects the digerati; farmers are bearing the brunt as well. Kerry Adams, a family farmer in Santa Maria, California, recently bought two transplanter machines for north of $100,000 apiece. They broke down soon afterward, and he had to fly a factory technician out to fix them.

Because manufacturers have copyrighted the service manuals, local mechanics can’t fix modern equipment. And today’s equipment — packed with sensors and electronics — is too complex to repair without them. That’s a problem for farmers, who can’t afford to pay the dealer’s high maintenance fees for fickle equipment.

Adams gave up on getting his transplanters fixed; it was just too expensive to keep flying technicians out to his farm. Now, the two transplanters sit idle, and he can’t use them to support his farm and his family.

God may have made a farmer, but copyright law doesn’t let him make a living.
Dear Mr Hicks,

Toshiba copyright Repair Manuals.

We understand that you are the owner and editor of a website that is found at http://tim.id.au and that your ABN is [redacted].

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Should you not comply with our request we may decide to take whatever steps are available to us to protect our proprietary information and seek to recover our costs in taking such action from you without further notice.

Yours faithfully

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John Ryan
Company Secretary
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• Contribute hardware: kyle@ifixit.com
Right to Repair Coalition

• Unlocking and jailbreaking devices
• Copyright of service documentation
• Lack of parts
• Difficult / impossible to repair and recycle designs