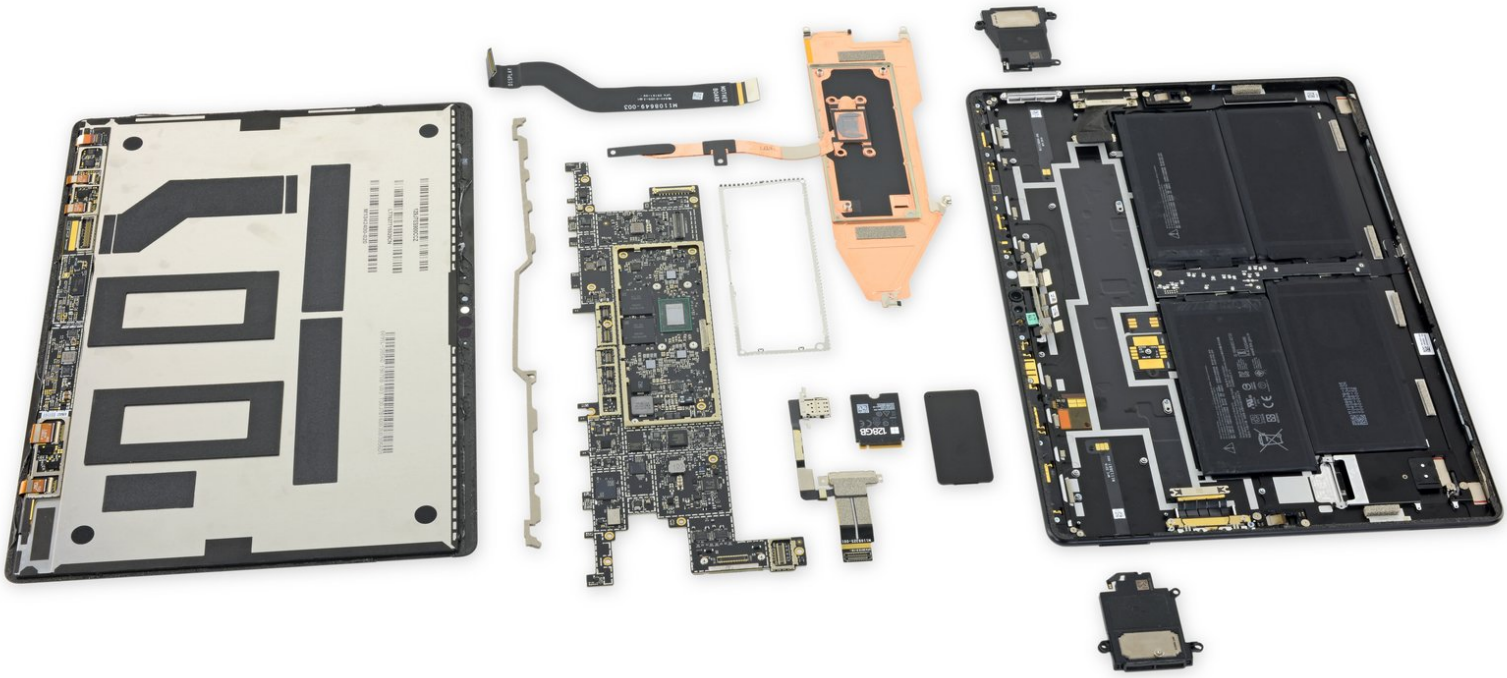
Microsoft Surface Pro X Teardown

Teardown showing how Microsoft's thinnest device is also its most repairable, with smartly reinvented display adhesive and a user-accessible SSD.

Written By: Taylor Dixon



INTRODUCTION

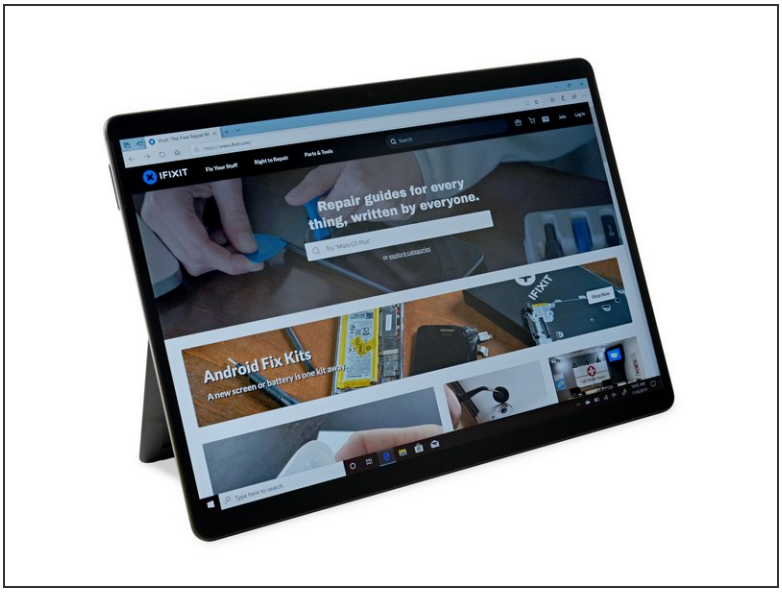
Less than a month after dropping the new Surface Pro 7, Microsoft is back with the even-newer Surface Pro X—a fresh design with hints of improved repairability. On any other Surface teardown, we'd be braced for some serious pain—but since ripping into the Surface Laptop 3, we're cautiously optimistic here. Bring on the era of repairable tablets, Microsoft—we're ready. Let's see what you've got.

For more teardowns, behind-the-scenes content, and the latest-and-greatest repair news, check out our YouTube channel—and be sure to follow us on Instagram, Twitter, or Facebook, and subscribe to our newsletter.

TOOLS:

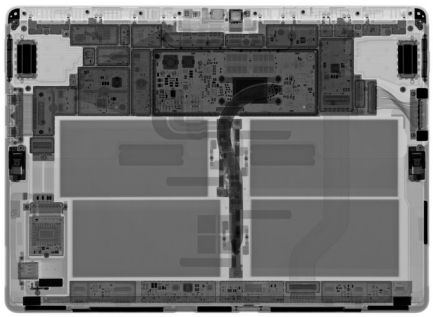
- T3 Torx Screwdriver (1)
- T6 Torx Screwdriver (1)
- iMac Opening Tool (1)
- Heavy-Duty Suction Cups (Pair) (1)
- SIM Card Eject Tool (1)
- Tweezers (1)

Step 1 — Microsoft Surface Pro X Teardown



- Apart from that sweet kickstand, we're not sure what to expect here—and that's a good thing. Our teardown unit boasts the following specs:
  - 13" PixelSense display with 2880 × 1920 resolution (267 ppi)
  - Microsoft SQ1 3.0 GHz ARM processor (based on Qualcomm's Snapdragon 8cx) with a Microsoft SQ1 Adreno 685 GPU
  - 8 GB of LPDDR4X RAM (16 GB optional)
  - *Removable* 128 GB solid state drive (256 GB or 512 GB optional)
  - 5 MP and Windows Hello front-facing cameras, and one 10 MP rear-facing camera
  - Two USB-C ports and one Surface Connect port (headphone jacks are apparently not professional)
  - Wi-Fi 5 802.11ac, Bluetooth 5.0, Gigabit LTE

Step 2



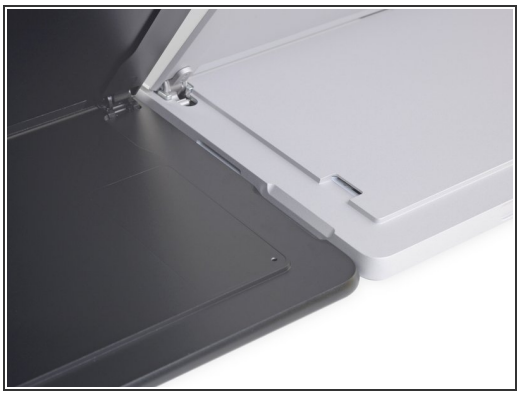
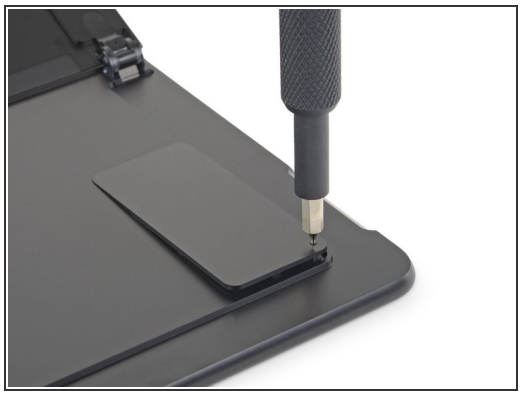
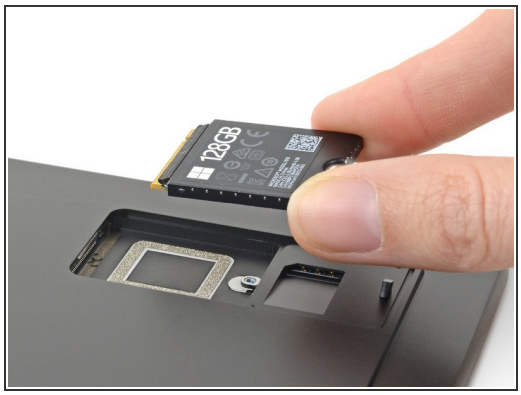
- Unlike the fairly-iterative Surface Pro 7 released last month, the Pro X is a complete redesign—the first in many years. And it comes with a new model number: **1876**.

  What a great year, 1876. Feels like just yesterday we were tearing down Alexander Graham Bell's new "telephone."

- If you need a teardown TL;DR, here's an X-ray overview from Creative Electron showing everything on our agenda.

- Compared to the Pro 7, we note the Pro X's rounded corners, narrower profile, and reductified port selection.
  - If you're in the market for a thin professional Windows tablet, wave goodbye to the USB-A port, MicroSD card slot, and headphone jack. USB-C is the future, it seems.

Step 3

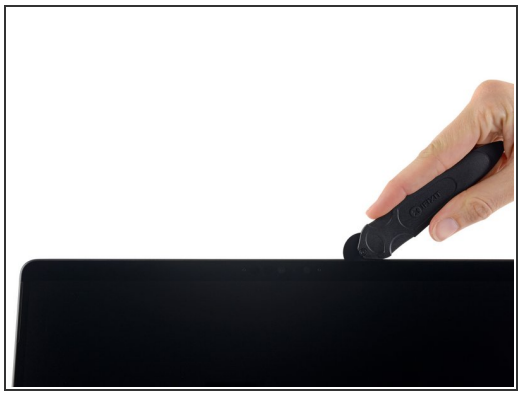
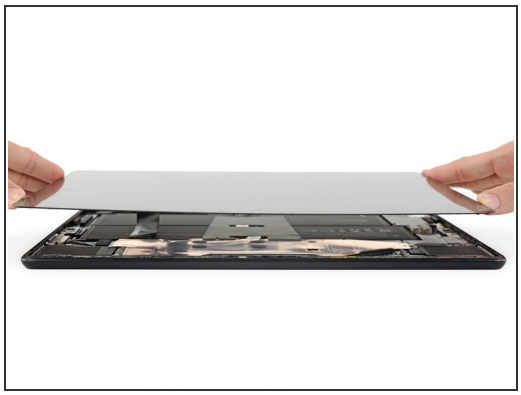




- With the kickstands raised, we can see that the Pro X gets a sleeker hinge—likely shaving off precious thickness.

  And if you look closely, you'll find the faint outline of what can only be described as a secret trap door in the Pro X. Lucky for us, it's not guarded by a three-headed dog.

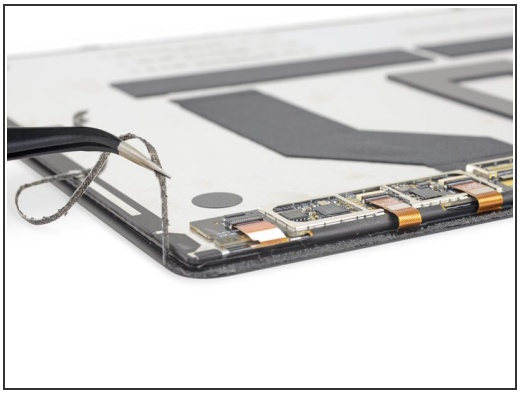
- We poke the (magnetically secured!) trap door with our SIM eject bit, and...
  - *Voilà!* Underneath, an SSD (held down by a T3 screw) and a SIM slot!
  - And hey, this SSD looks super familiar. A quick comparison with the 256 GB drive we pulled from the Surface Laptop 3 confirms both devices are using the same drive. Standardization is great for repairs!
- As an experiment, we try powering on the Pro X *sans*-SSD, and... no sign of life. We wouldn't expect it to boot up—but it's *so* dead, we sort of suspect the SSD acts as a battery kill switch like we found in the Laptop 3.
- Unlike the Laptop 3 with its hidden screws, we don't find any fasteners lurking under this kickstand. Alas, this probably won't be a magical opening experience. We arm our iOpeners and brace ourselves for heavy adhesives...

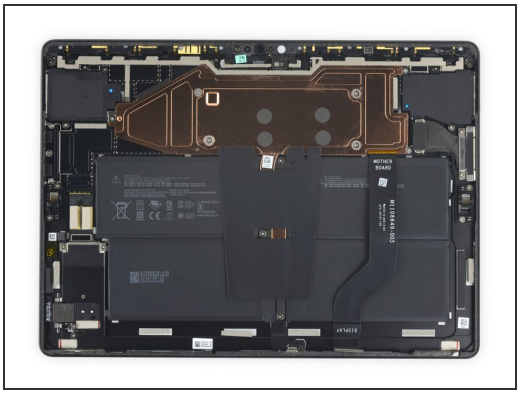
Step 4

- But first—a little suction (maybe more than a little) to try and lift the display near the speaker grille.
  - Look ma, no heat! Perhaps our iOpeners can take the day off—we're able to cut right in, iMac-style.
- No goopy tendrils hold this display down—it comes off clean!
- This friendly, cuttable foam adhesive is truly an improvement over previous Surface Pro devices—and pretty much *all other tablets* with glued-down screens. High heat, furious cutting and prying, glue-covered tools, and (frequently) accidentally cracked screens are "features" we will happily kiss goodbye.
- Not pictured: the teardown team performing a celebratory dance around the photo table. We never thought we'd get into a Surface Pro this easily.

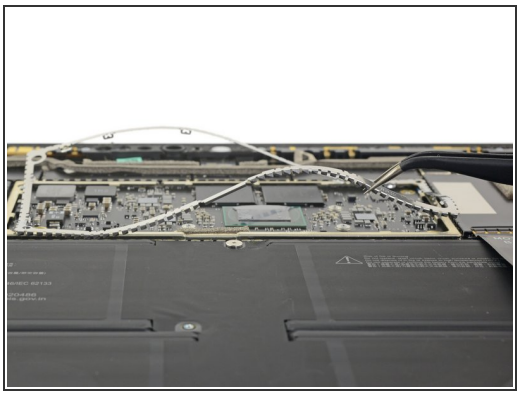
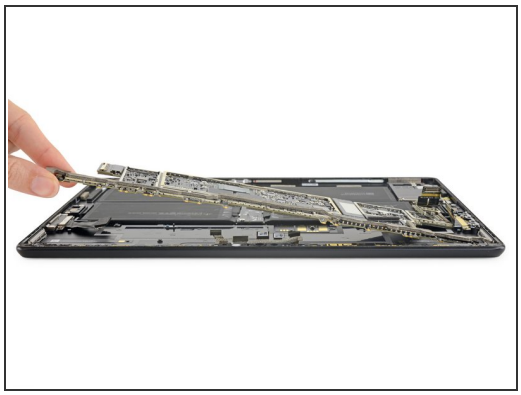
Step 5





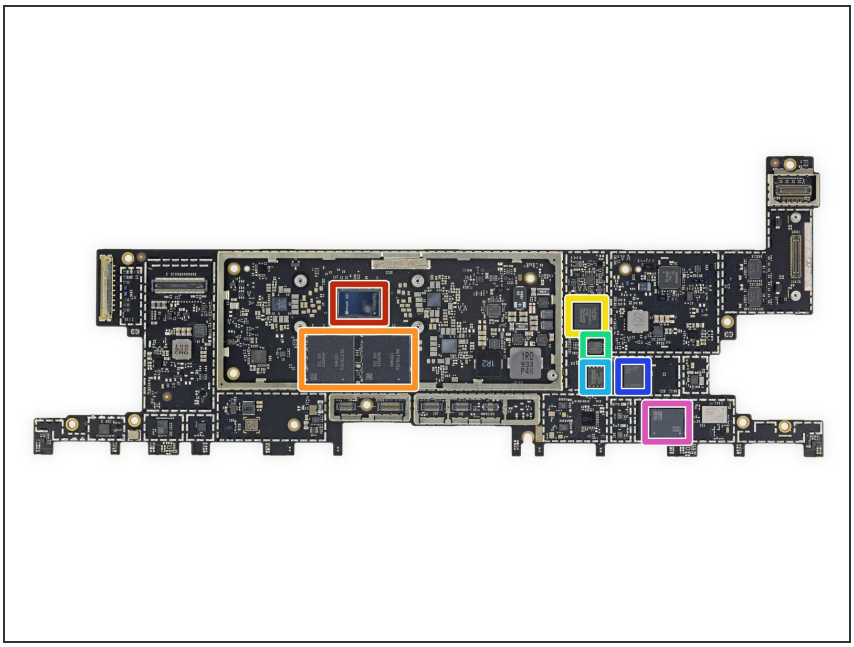
- While relatively painless, this opening procedure is not without hurdles—we see a few flex cables along the bottom of the display, dangerously close to the path of our cutting tools.
- That said, it gets even painless-er when we start removing the adhesive. It peels off like magic—no mess! This is the kind of change we've been pleading for. If you *must* glue together a super thin, space-constrained device, this is how you should do it. (But don't do it on a desktop, okay? Because that's just lame.)
- Our excitement is real, but let's pause to peruse these display chips. We've got:
  - Microsoft X904163 and X904169 display drivers
  - Winbond Q16FWUXB2 1921-681C DR80006
  - Analogix ANX2684 1920 C975AA
  - SiW SW50014A 8266631T 1844
  - SiW SW5077 J004370V 1920

Step 6

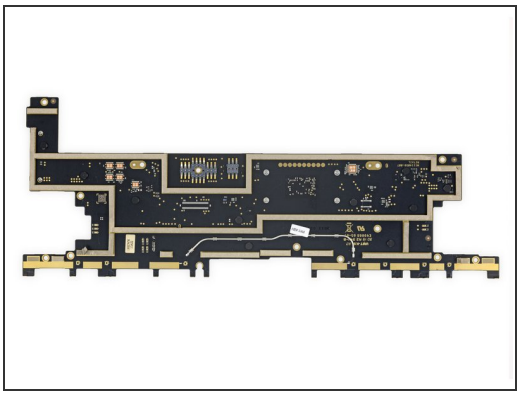
- We came armed with our entire Pro Tech Toolkit, but only need a single Torx bit to twirl away the heat sink screws.
  - Here's one thing we're glad Microsoft *didn't* change: All the screws so far are just Torx. That was the previous Surface Pro's sole positive repairability point, and it's good to see it return.
  - Supporting the heat sink is an interesting bit of ~~abstract art~~ intermediate frame-age. We briefly pause to contemplate its meaning before pulling it away from the board.
- With the heat sink and quite a few shields and screws out of the way, the motherboard slides out. Time for some silicon sleuthing!

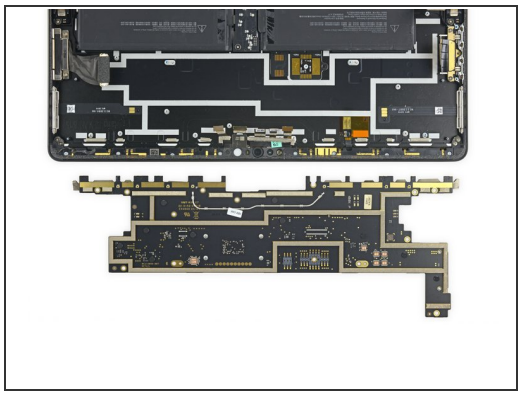
Step 7

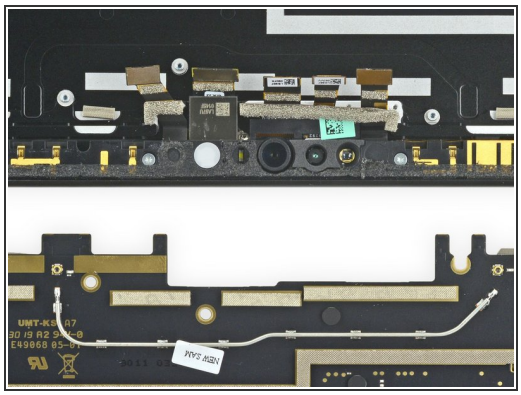


- Here's what we dug up:
  - Microsoft SQ1 3.0 GHz ARM processor
  - Samsung K3UH5H50AMJGCL 4 GB LPDDR4X RAM x2, for 8 GB total
  - NXP LPC54S00TJ EV180 microcontroller
  - Macronix MX25U1635E serial NOR flash memory
  - Winbond 26Q256JW 256 Mb serial flash memory
  - Qualcomm SDR8150 RF transceiver and modem
  - Qorvo 78052 14CEM RF Fusion MHB

Step 8

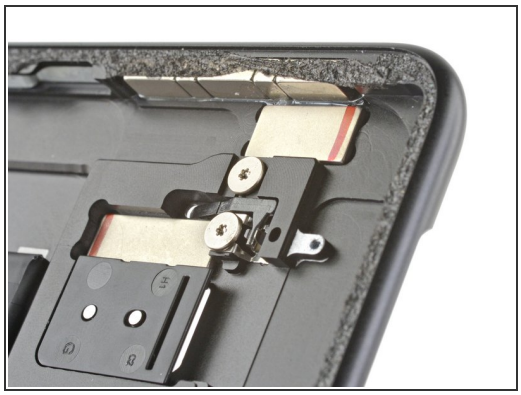
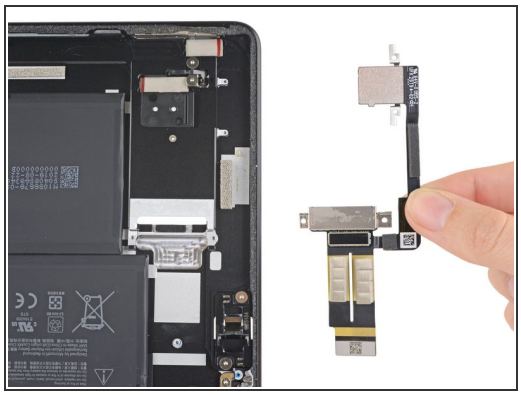






- The back side of board is devoid of interesting silicon, but we can't help but notice the strange silver jumper wire clinging to it. Hey wait a minute, this thing actually looks kinda familiar.
- What's it for? You're welcome to inspect where it's routed and try to guess!
  - We think it may be a shielded diversity antenna of some kind, with a grounded exterior to insulate RF to and from the interior signal lead. The accompanying sticker *NEW SAM* could be labelling the wire as a Surface Antenna Mount.
  - That said, NEW SAM could be anything: *Super Activity Monitor; Silver Aerobic Master; Slippery Agile Meerkat; Solidified Aerodynamic Meter* ... The possibilities are endless. Leave your NEW SAM guesses in the comments below.

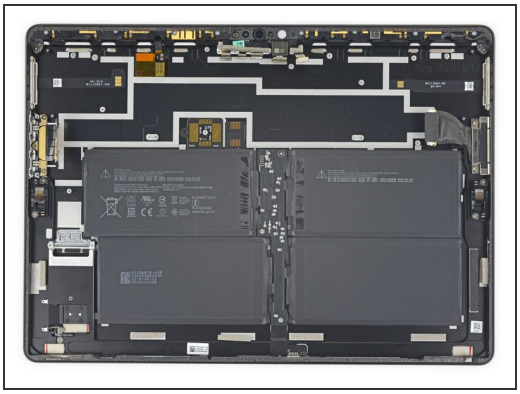
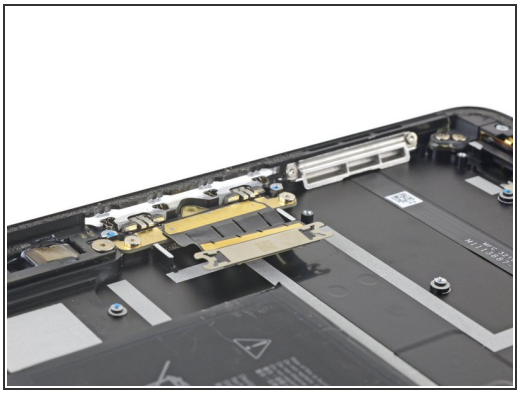
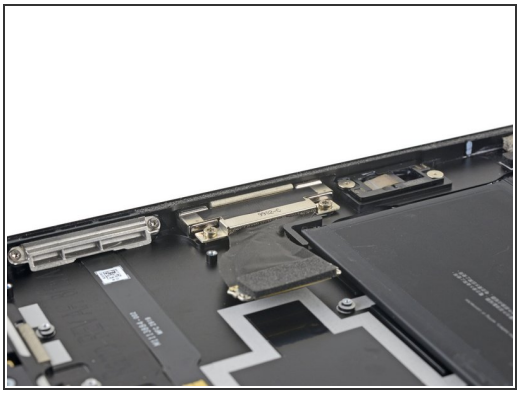
Step 9

- We're used to seeing some fancy mechanics driving the kickstand hinge in these Surface Pros, but this time we're treated to *even more* fancy mechanics.
  - The SSD cover sits on one side of a tiny see-saw, waiting for a friendly SIM eject tool or paperclip to come along and sit on the other side. When that happens, the see-saw pushes the SSD cover away from the case, and *bam*! Just like that you can upgrade your storage.
- When we're done at the world's smallest playground, we move over to the SSD interface and SIM reader, which come out as one module.

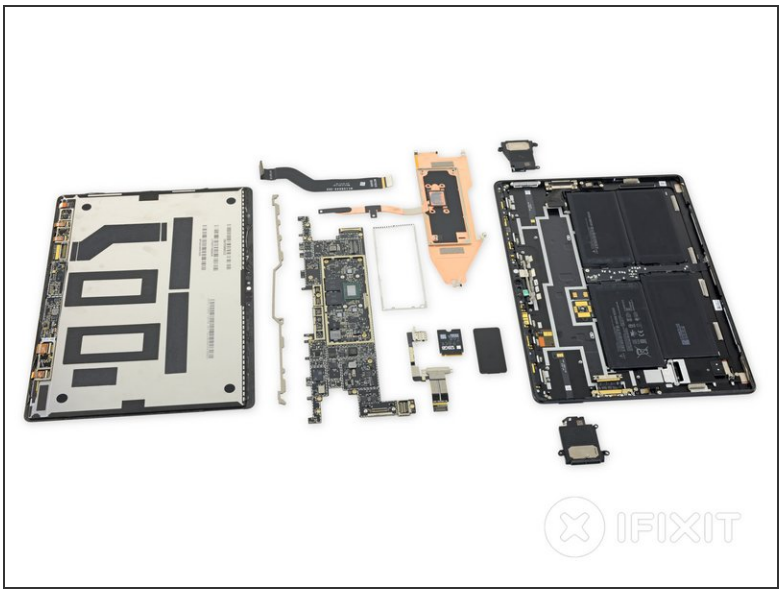
We're intrigued by how much space this module takes up, and all the more impressed that Microsoft carved out the necessary real estate to include such a repair-friendly feature in a tablet as thin and light as the Pro X.

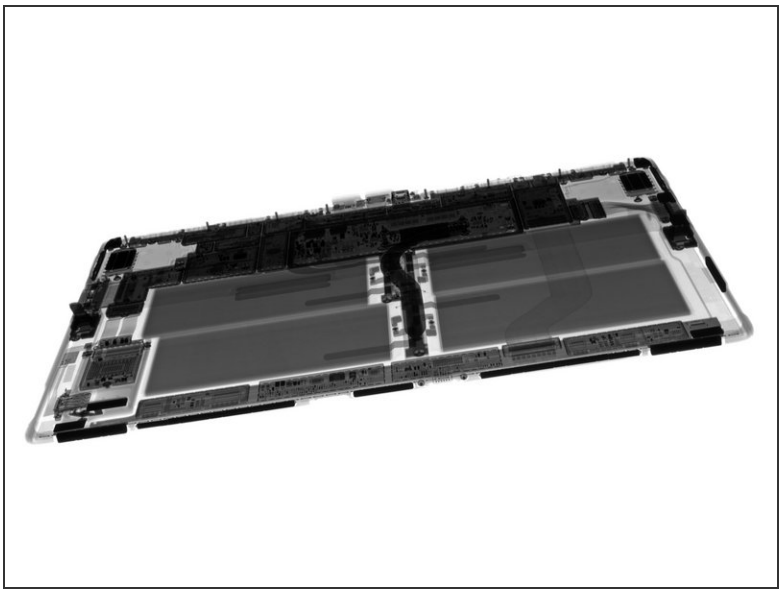
Step 10

- Step right up and get yer battery specs! We spent long enough wrestling with the last uberglued Microsoft battery to know better than to mess with this one. We opt to leave it be.
  - This quad-cell, 38.2 Wh battery is unsurprisingly smaller than the 45 Wh battery in the Surface Pro 6, and just slightly bigger than the 12.9" iPad Pro's 36.5 Wh twin-cell.
- What's left? Modular USB ports, flanked by the kickstand hinge mechanism and the case buttons. And at the far end lies the Surface Connect port—also modular.
  - You may be surprised to read the word *modular* so much in a Surface Pro teardown. So are we! We've done some deep breathing and pinched ourselves multiple times, but this does *appear* to be reality.
  - If only they could inno-vent some way to secure that battery in a more repair-friendly way. Maybe next time?

Step 11





- *Ta-da!* That's all for now, folks. Here are all the little bits of this Surface.
- It would seem that Microsoft has placed at least one foot on the repairability train—between this Pro X and the Laptop 3, we can hardly believe all the repair-focused changes they've made!
- The SSD is truly user-replaceable, requiring only a SIM eject pin and a T3 driver—no need to remove the screen. That’s awesome to see in such a slim form factor. As a bonus, it’s the same SSD as in the Laptop 3, meaning more standardization and better support from third parties.
- In a first for tablets, the display is held down with friendly foam adhesive that doesn’t require heat or solvents to remove. We still don’t like adhesive, but this is a fair compromise on a tablet.
- What does all that mean? Time to give this thing a score.

Step 12 — Final Thoughts

- Microsoft's Surface Pro X earns a **6 out of 10** on our repairability scale (10 is the easiest to repair):
  - The user-removable SSD makes for easy upgrades and data security that doesn't require device destruction.
  - To the extent that screws are used, they are all standard Torx fasteners.
  - Many components are modular and can be replaced independently.
  - (Almost) all repairs require display removal, with an improved procedure that needs no heat, but necessitates careful prying.
  - The battery is firmly glued in place, with its connector pinned under the motherboard—requiring near-total disassembly for service.