

**INSIDE:** MICROSOFT'S BIGGEST HITS & MISSES OF 2023

# TECH ADVISOR

MARCH 2023



## SURFACE LAPTOP 5

MICROSOFT'S BEST EVER NOTEBOOK



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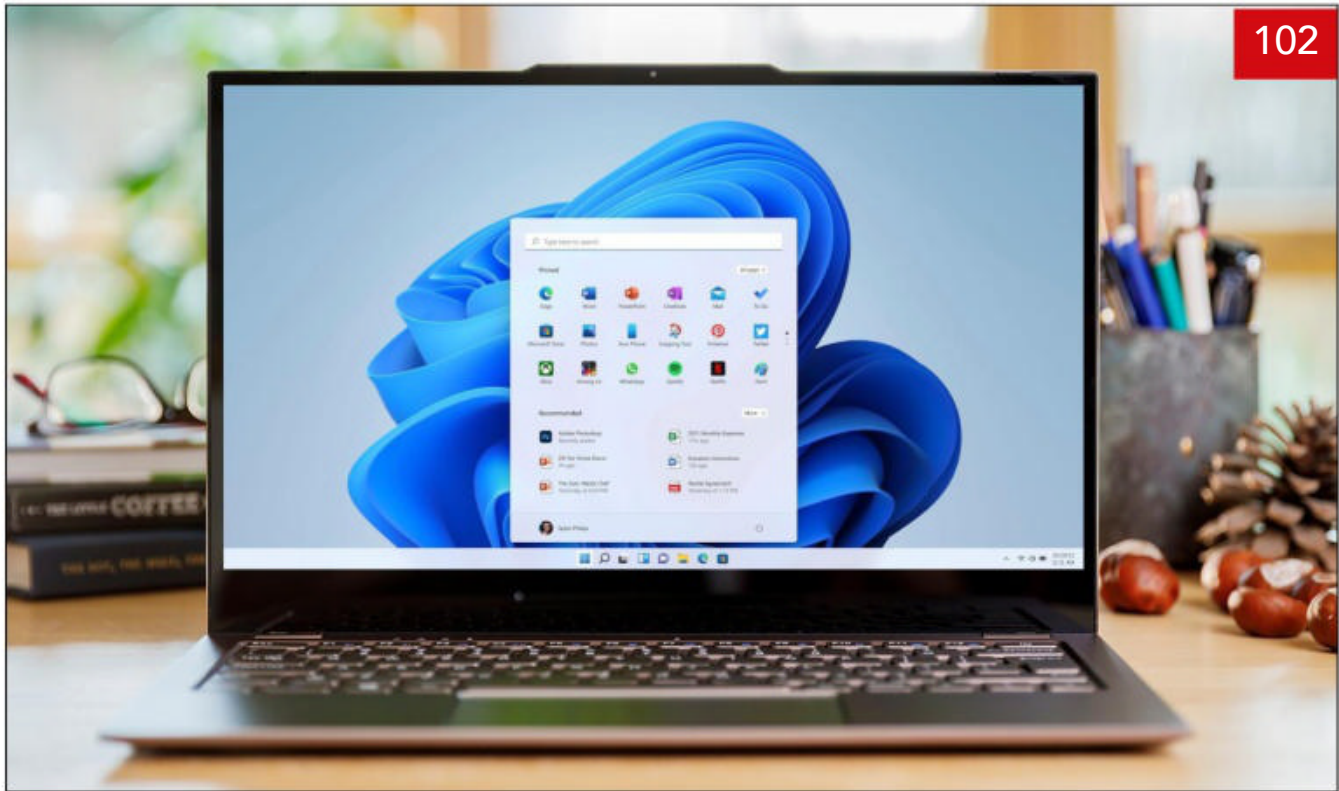


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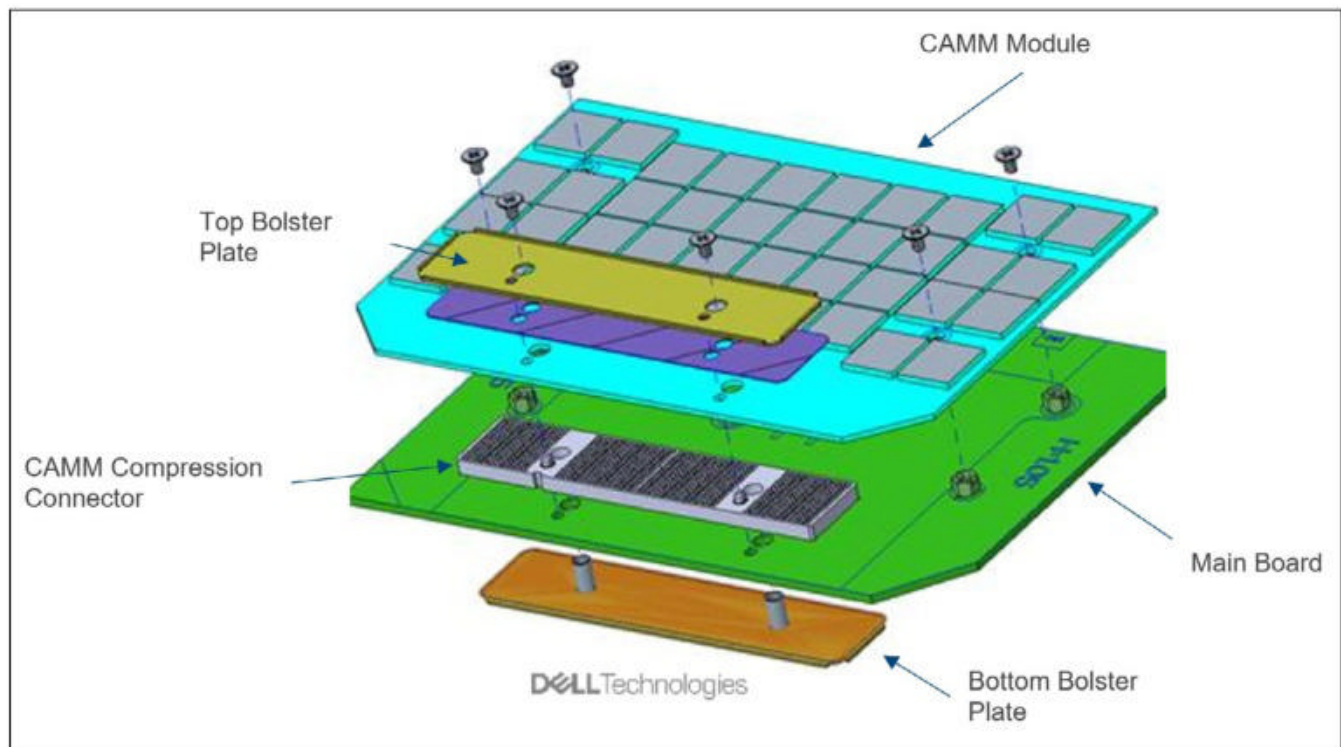
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# CAMM: The future of laptop memory is here

JEDEC has a SO-DIMM replacement in the works. [GORDON UNG](#) reports

**G**oodbye, SO-DIMM: memory overseer JEDEC will formally adopt the 'CAMM Common Spec' as the next RAM module standard for laptops.

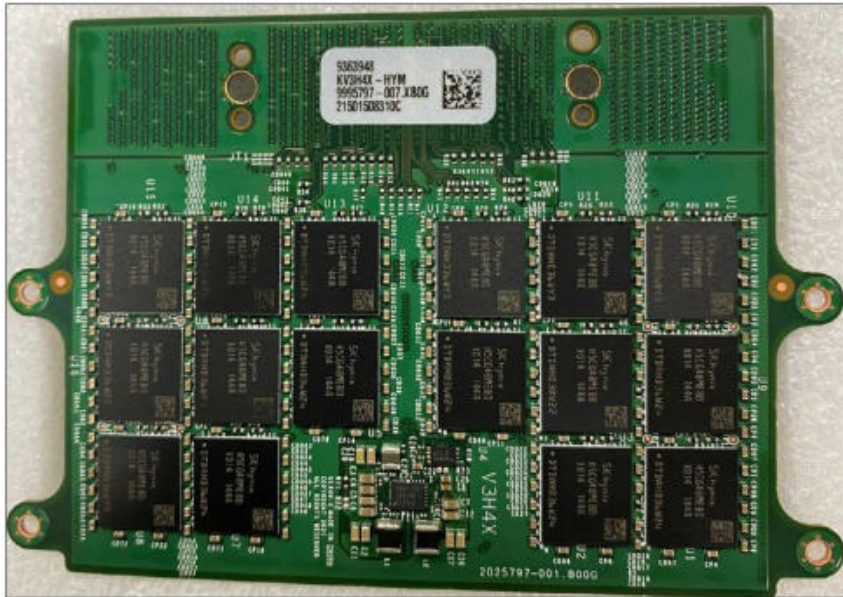
JEDEC, the memory group that officially approves RAM standards, is in the process of hammering out the new specification to replace the basic SO-DIMMs that have been in use for 25 years, according to JEDEC committee

member, and Dell Senior Distinguished Engineer Tom Schnell.

Schnell actually created the original CAMM – or Compression Attached Memory Module – design for Dell last year. JEDEC's CAMM standard will be based on that CAMM design, but is likely to be somewhat different as companies hammer it out.

While the adoption of new hardware standards can be fraught,





JEDEC’s CAMM will be based on, but likely not exactly the same as, Dell’s original CAMM that was implemented in some Dell Precision laptops last year.

with hand-wringing, foot-dragging and all the friction of a negotiation among co-workers over where to get lunch, JEDEC seems to have managed it easily.

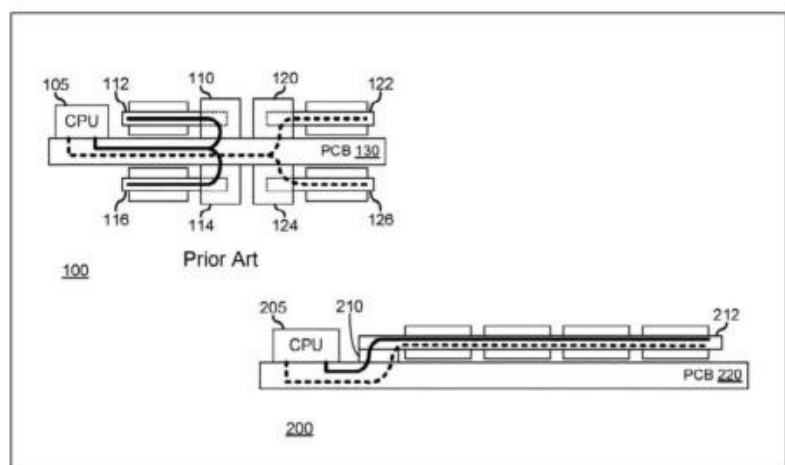
In fact, Schnell said, the acceptance went over well with the companies in the task group voting for it. “We have unanimous approval of the 0.5 spec,” he told our colleagues at PCWorld. Schnell said JEDEC is targeting the second half of the 2023 to finalize the 1.0 spec, with CAMM-based systems out by next year.

Who are the companies that voted for it? Schnell can’t say, as that’s up to each member to

reveal, but group covers the range of suppliers, from SoC, to connectors, to OEMs, and all unanimously voted to adopt the CAMM Common Spec, with no dissenters. There are currently 332 companies listed in JEDEC, from Apple to ZTE, each involved in different aspects of memory in different industries.

For those who haven’t followed it, Dell introduced its CAMM design in April 2022 with the aim of

replacing the decades old SO-DIMM design that has been used in most gaming and workstation laptops up to now. CAMM’s main appeal is that it



An illustration from Dell shows the convoluted path the memory traces take to get from the CPU in a SO-DIMM (upper left) versus the company’s new CAMM and cDIMM (lower right.)

enables higher memory density while also scaling to ever higher clock speeds.

Some of the motivation for expediency likely comes from the fast-approaching 'brick wall' facing laptops when SO-DIMMs hit at DDR5/6400.

Schnell said the CAMM spec is far from finalized, but the first JEDEC CAMM modules should take over right where SO-DIMM ends at 6400.

### **CAMM IS NOT PROPRIETARY**

When Dell first introduced CAMM, it was somewhat misunderstood as a proprietary spec that would 'lock customers' into a design. Dell has said that's never been its intention and the fast approval seems to vindicate that. Schnell addressed that initial concern, with the adoption underway.

"Dell is a huge company, we don't keep the lights on because we get royalties for a patent," he said. "We basically want to recover the cost of inventing it, and implementing it."

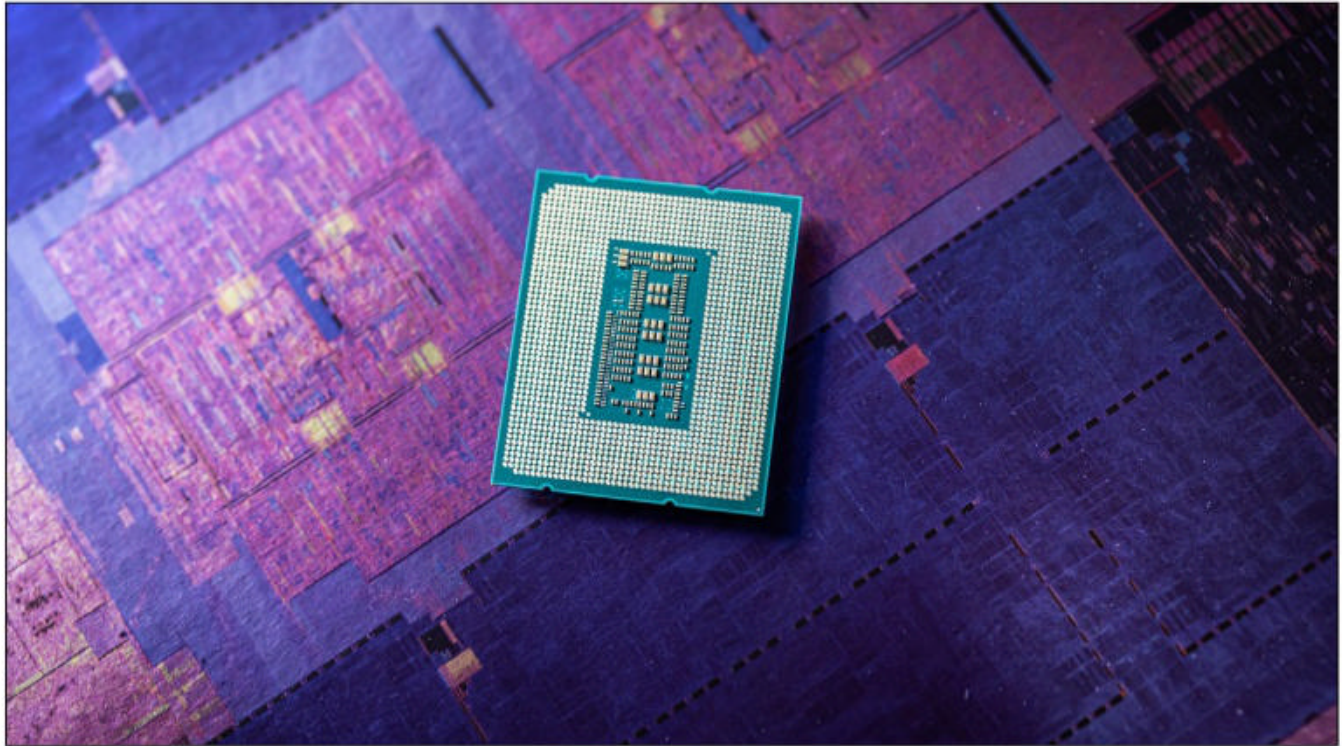
Besides, going it alone is simply not how the PC world works.

"We're part of the PC industry and the PC industry is built out of an ecosystem of partners, suppliers all feeding in," Schnell explained. "Yes, Dell does great innovation of our own in our systems, but we also integrate a lot of innovations from a lot of people."

### **THE FUTURE OF CAMM**

With CAMM being hammered out now, Schnell did lay out some possible paths for CAMM as it replaces SO-DIMM. DDR6 is an obvious road, he said, but CAMM even enables the possibility of LPDDR6 on a replaceable module. LPDDR, or low-power DDR RAM, has long been preferred for smaller and thinner laptops as well as phones for power savings. It's also long been implemented only as soldered-on.

Schnell foresees a version of CAMM enabling the performance and power benefits of LPDDR, but in a replaceable and upgradeable module. With JEDEC adopting CAMM now, that future gets closer.



# Intel's Core i9-13900KS breaks the 6GHz barrier

Intel's Core i9-13900KS will be first CPU to reach 6GHz in stock form.  
GORDON UNG reports

Intel's long awaited Core i9-13900KS was unwrapped in January and will officially be the first x86 consumer CPU to hit the 6GHz barrier. You will pay a premium for the barrier-breaking privilege, as the chip costs £749.

The 24-core Core i9-13900KS is essentially a special edition version of the already released (and unapologetically fast) Core i9-13900K.

It features eight performance cores and 16 efficiency cores. The original Core i9-13900K could reach 5.8GHz on single-core loads, while the Core i9-13900KS will round that up to a smooth 6.0GHz on single-core loads.

"The Core i9-13900KS continues our 13th Gen Intel Core desktop processor family excellence, showcasing the new performance heights made possible by



our performance hybrid architecture,” Intel Client Computing Group manager Marcus Kennedy said in a statement. “Extreme gamers and enthusiasts can now push their everyday performance further than ever before with the first desktop processor in the PC industry to provide 6.0GHz speeds at stock.”

So how much does a 200MHz boost in turbo speeds buy you in performance? On the face of it, the new Core i9-13900KS might outpace the now plain Jane 13900K by about 4 percent in some tasks. It’s also possible the new KS chip might offer a small advantage elsewhere, too. Companies typically sort CPUs based on quality, a process called ‘binning’ that usually means the top binned chips are the cream of the crop, which brings other qualities besides the best stock speeds.

For Intel, however, it gives the company something to crow about over the competition. Humans oddly care a lot about the big round numbers – it’s even said that 6GHz is more eye catching than, say, 6.2GHz to the average person. In other words, it’s really all psychological, but also a point of pride to both companies who have been engaged in a slugfest for years over desktop processor performance.

The Core i9-13900KS will likely go toe-to-toe with AMD’s new Ryzen 9

7950X3D chip, which was announced at CES. AMD has yet to announce a price and availability date, giving Intel a clear runway for its Core i9-13900KS when it goes on sale today.



# Microsoft is killing what made the Surface Duo the Surface Duo

Reports say that the next 'Surface Duo' will be a single-screen device.  
MARK HACHMAN reports

**M**icrosoft's next-gen Surface Duo phone may actually be a single-screen device, according to a recent report – and that's probably for the best. Windows Central's sources say that the 'Surface Duo' may actually be a foldable phone using a single screen rather than the

dual screens that defined the Duo name. While Microsoft originally planned a dual-screen Duo as their next-gen Surface Duo 3, that device has been scrapped, the site reports.

Though my review of the Surface Duo 2 was middling ([fave.co/3H7Gs8L](https://fave.co/3H7Gs8L)), I kept using the device

for months afterwards, just so I could fully experience its strengths and weaknesses. Everything that the review stated is still valid, but I found that over time I just fell out of love with the two screens. Yes, in certain scenarios the Duo 2 excelled, such as placing Mail on one screen and the Calendar app on another.

But in many cases, the two apps simply were random pairings, and not complementary. In this case, swapping from one random app to another felt arbitrary, and I never felt confident enough in the controls to trust that the phone understood what I wanted it to do. That uncertainty extended to the context switching between landscape and portrait mode, which altered the interface, but not always. For example, I really liked being able to flip open the top screen and watch a sporting event on the ESPN app, in landscape mode. But while the Twitter app or messaging would open on the other screen, the keyboard wouldn't. That meant that it didn't offer much of an advantage over any of the other traditional single-screen phones I had available.

I have no idea if a traditional single-screen Microsoft-designed folding device like the Galaxy Fold will sell, though the Fold and its competition argue that the format is a success.

Microsoft's strength, however, has always been in its ecosystem of apps, and I would certainly expect that any device Microsoft launches will continue to be a showcase for what it has quietly and effectively done in the mobile app space. As for the hardware? That's always seemed to be less important.

Unfortunately, that's a lesson that Microsoft has had difficulty learning – Windows Mobile was a cult classic, but it ran a distant third to Android and iOS. When Microsoft shifted over to compete with the vast ecosystem of Android phones, it thought that the Duo's dual screens would be enough to differentiate it. They were not. Now Microsoft will have to come up with something unique to differentiate its offering from the other folding phones that are already established within the market.





# These fake AMD Radeon drivers reveal a deeper Google problem

Don't rely on Google to keep you safe. ALAINA YEE reports

**E**arlier this month, an alert went out on a popular PC subreddit ([fave.co/3H8eSZ4](https://www.reddit.com/r/PCsubreddits)), warning AMD graphics card owners of a malicious website. The way you would stumble onto the site? Clicking on the first search result in Google for 'AMD driver'.

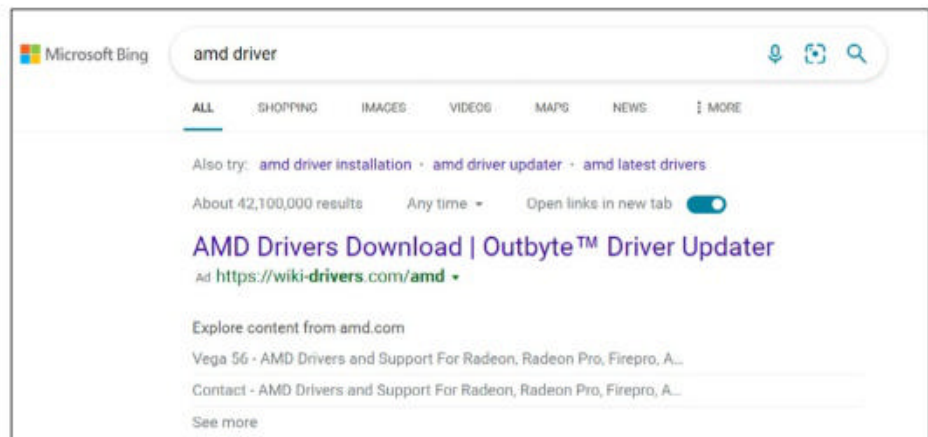
The link of course was not one picked by Google's normal search engine algorithm. It was instead an advertisement sitting in the very first search result slot, but labelled so discreetly that an otherwise conscientious new Radeon owner

could be duped.

These text-based advertisements aren't a new feature to Google, but their extremely discreet label and styling allow even old internet hands to click when distracted or in a hurry.

They don't appear consistently either, adding difficulty in remembering when to avoid the very first result for a search. This tactic is also not a new development in the world of malware. Hackers and scammers have always tried to use text-based ads to get hooks into our PCs and private data.

But though Google has long had the opportunity to better protect its users, the company has continually left consumers to dodge hazards on their own. Reporting malicious ads is the only way to try to scrub them from search results – and there's always more to take their place. It's not the only search engine that does this, either. In fact, while we couldn't replicate this particular issue in Google (possibly because the good citizens of Reddit reported that ad into oblivion), we did in Bing at the time this article was written. Thanks, Microsoft.



Google's not the only search engine guilty of these shenanigans.

Unfortunately, we'll be stuck with this issue for years to come, if the past is any indication. So don't allow yourself to grow lax, even as web browsers and antivirus software improve their security screening. You can take these three steps to guard yourself:

**Always check the address of the link you're clicking.** It's the best way to verify you're going to an official site. If you can't see the full URL, hover your mouse over the text link and it'll appear at the very bottom left of your browser tab.

**Scroll down the list of results.** Text ads for legit companies will appear again as normal search results, often within the top five.

**Don't click on results labelled as ads.** Can't fall for malicious fake ads if you don't click on any ad links.

**Report malicious links as you see them.**

Notifying Google of problematic links makes search results safer for everyone on the web. Complain to Google about it, too. Just because the company outsources their screening to us doesn't mean we have to put up with it silently.





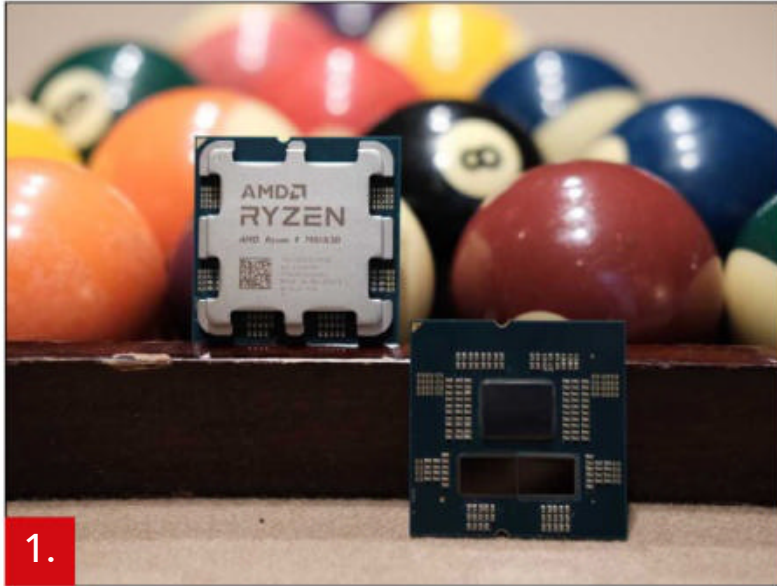
# CES 2023: The most intriguing and innovative PC hardware

It's going to be a great year for the PC, but TVs, exercise bike desks and more also caught our attention. **BRAD CHACOS** reports

**W**e're finally getting back to normal. Most major PC players returned to the Las Vegas desert for CES 2023 after sticking to the safety of remote events last year

– and they brought some very enticing shiny new tech along with them.

Big names AMD, Intel, and Nvidia all made splashy announcements, and PC manufacturers revealed a barrage



of large, in-charge laptops taking advantage of the unprecedented power. Computer monitors witnessed revolution like never before. Heck, we even saw a PC case that breathes.

Yep, CES is back.

No time to sift through all our CES coverage? No problem! Read on for our best of CES 2023 picks – the most intriguing and innovative products that impressed us at the show.

## 1. **AMD RYZEN 9 7950X3D**

The hotly anticipated Ryzen 9 7950X3D packs 16 cores and a surprising, potentially very smart design: the special sauce V-Cache is only on one of the chip's two 8-core chiplets. That lets games that like the 7950X3D's performance-boosting 128MB of L3 cache run

on one die, while games that aren't fond of cache can run on the standard chiplet at higher 5.7GHz frequencies. This design, AMD says, essentially gives consumers a "best of both worlds" CPU that no longer forces gamers to pick between the higher clocks of a non-X3D part or the fat V-Cache of an X3D part. Simply put, the Ryzen 9 7950X3D looks to be the performance CPU to beat in

2023. Gordon Ung

## 2. **ACER EKINEKT BD 3 BIKE DESK**

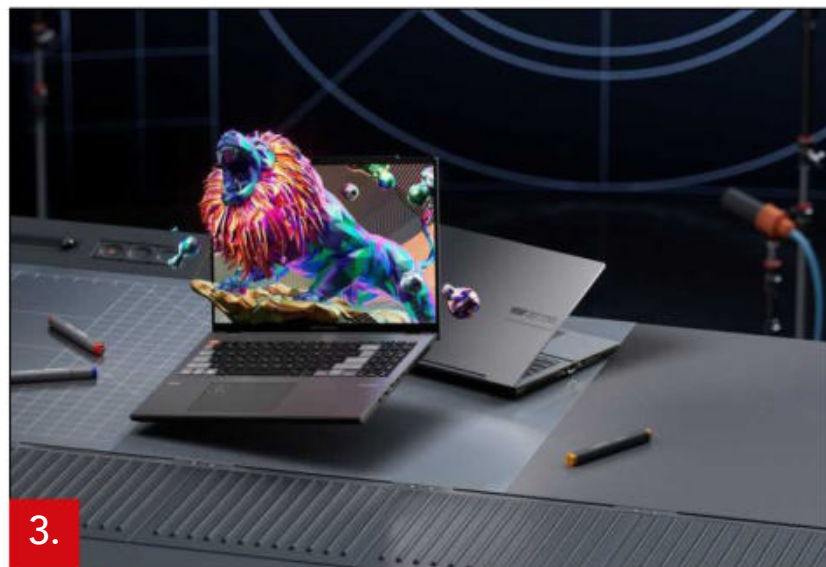
Acer's new eKinect BD 3 Bike Desk turns the kinetic energy of your pedalling into electric energy for



charging up your devices. As a remote employee who likes to stay active during the day, I was immediately drawn to this product. The companion app tracks information like travel distance, calories burned, and so on. You can even charge multiple devices at once, as the desk features two USB Type-A and one USB Type-C. The desk is also eco-friendly thanks to the PCP plastic in its casing. If you have a desk job, this is a great way to exercise while working. Ashley Biancuzzo

### 3. **ASUS VIVOBOK PRO 16X 3D OLED**

The combination of a 3,200x2,000 OLED screen at 120Hz and with glasses-free 3D technology is something that we're already salivating for: the combination of visual quality (infinite contrast, 100 percent DCI-P3 colour



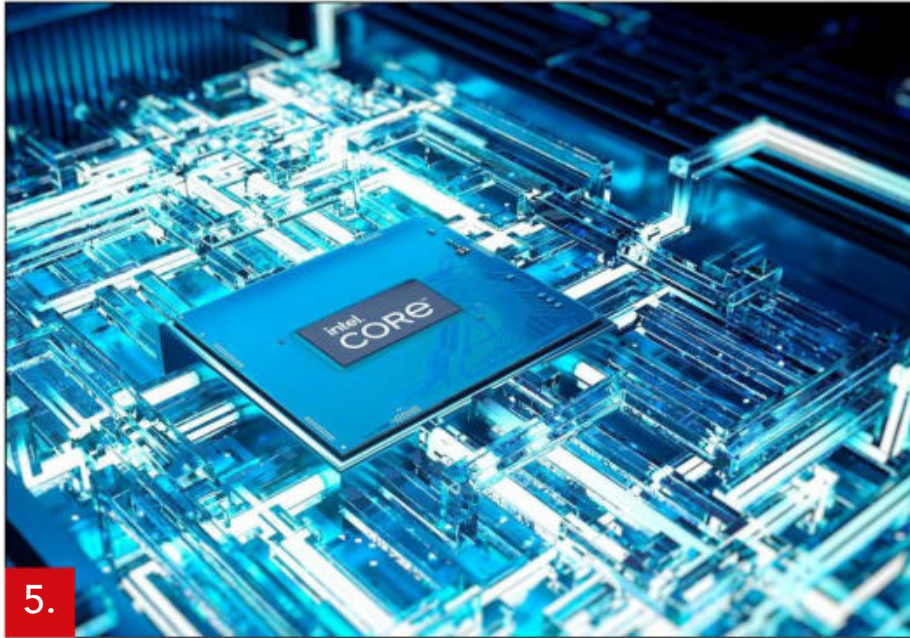
gamut coverage) and a high-refresh rate really is the holy grail of content creation and gaming. Pair that with Nvidia's next-gen RTX 40-series GPU, a 13th-gen Intel Core chip, and up to 2 terabytes of storage, and the Asus VivoBook Pro 16X 3D OLED should be one of the most incredible laptops to ship this year. Mark Hachman

### 4. **ACER PREDATOR X45 OLED GAMING MONITOR**

There's an arms race of high-end gaming OLED monitors emerging at CES. While Samsung's new OLED G9 takes the crown for the biggest, I think Acer's curvy Predator X45 is the one that might just earn a spot on my desk. Its more practical 1440p resolution means it won't break a GPU in half just to render Fortnite, and 45 inches isn't so gigantic that nothing else can fit in your set-up.

Plus, just look at the thing. The dramatic 800R that tries to tickle your ears, the bezel that almost disappears into the frame. It's absolutely gorgeous, and it even includes a KVM switch for handling multiple machines. And at \$1,700 (ftbc), it's surprisingly okay in terms of value. Michael Crider





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## 5. INTEL CORE I9-13980HX

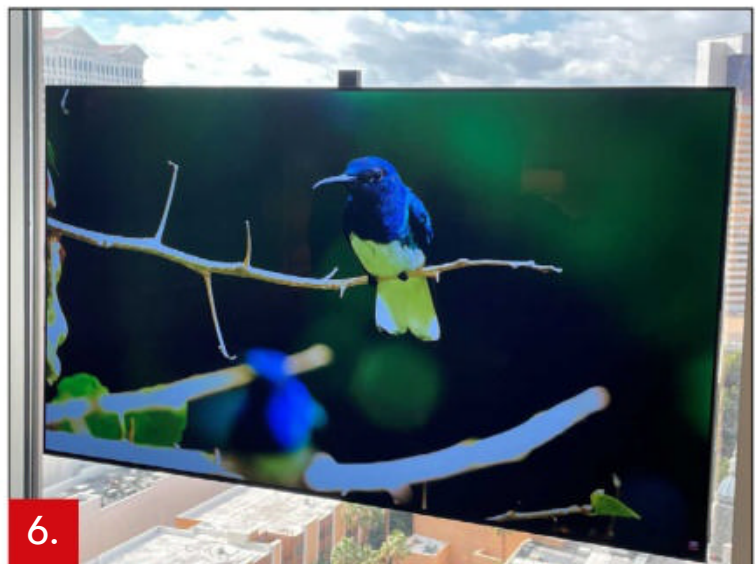
Just stop Intel. You had us at '24 cores in a laptop CPU'. But we admit, we just can't say no to a CPU that cranks out performance 40 percent faster than the already stupidly fast 12th-gen HX-CPU's. And let's not even mention the 164 percent advantage the Core i9-13980HX has over an Apple M1 Max in Cinebench R23. We're pretty hot and bothered by this much performance in a laptop CPU. Did we mention it hits a blistering 5.6GHz? Gordon Ung

## 6. DISPLACE TV

TVs are always a big draw at CES. And often it's the biggest ones that grab the most attention. But I was particularly wowed

by this 55iner, which might be standard size but is brimming with innovations. For starters, the Displace TV is completely wireless, using rechargeable batteries for power and wireless signals for A/V feeds. It also foregoes mounting hardware in favour of an advanced suction solution.

And lest you feel like this 55in 4K OLED panel is too confining, the Displace TV is modular, meaning it has retractable joiners on its edges so you can scale up to 8K by joining four panels. You can send multiple feeds from its remote based station to each screen separately or spread a single



6.



stream across all panels. That's a lot of technological leaps and bounds in one product, should it actually make it to market. Katherine Stevenson

## 7. CYBERPOWER KINETIC 360V

Is it cheating to pick the same product as last year? Not possible when the item is this cool. Of the PC cases I've seen over my career, few have had the CyberPower Kinetic 360V's wildly futuristic, absolutely mesmerizing take on high airflow. It breathes. At first glance, its geometric design and distinctive copper and white colouring seem merely stylish – then the mechanical wizardry fires up. Watching those small, angular panels on the front automatically open and close to keep your system cool feels like the stuff of sci-fi movies. And CyberPower assures us that we can finally get one of our own this year. Spring 2023 can't come soon enough. Alaina Yee

## 8. NVIDIA RTX VIDEO SUPER RESOLUTION

You know DLSS, the amazing AI-powered game upscaling technology that supercharges performance on Nvidia's RTX graphics cards? Now GeForce is bringing those dedicated tensor

cores to bear on crappy web videos. Nvidia RTX Video Super Resolution, which will work on RTX 30- and 40-series at launch and the RTX 20-series at a later date, can intelligently clean and upscale 1080p video to 4K in Chrome and Edge. The proof will be in the pudding but 4K videos remain relatively rare on YouTube, so I'm thrilled by the prospect of having a DLSS-like feature make those HD videos look even better on my pixel-packed screen. Brad Chacos

## 9. GIGABYTE AERO 16

The Gigabyte Aero line is one of my favourites for video editing laptops (I'm actually using one to edit video at the show) and the updated Aero 16 fixed one of my major problems with previous models. Instead of relying on a USB-C



dongle for connectivity in Apple-like fashion, the company brought back a USB Type A port (one is better than none), a full-size HDMI port, and moved the barrel charger to the back. They also added a built in SD card reader, which is certainly welcome, but unfortunately it's only microSD. Maybe next year they'll go full sized.

Of course, the new Gigabyte Aero 16 has been updated with the latest Intel CPUs (up to a Core i7- 13800H) and Nvidia GeForce GPUs up to a RTX 4070. That combination should deliver a huge increase in editing performance. Sign me up.  
Adam Patrick Murray

## 10. HYPERX'S PERSONALIZED KEYCAPS

These 3D-printed custom upgrades from HyperX, HP's gaming peripherals team, make me squeal with delight because they're just so freaking adorable. The limited edition Cozy Cat keycap, which will be available this month, is wonderfully cute and maybe a little necessary. These add-ons may not offer much in terms of function, but they're fun, especially if you're looking to dress up your keyboard or gaming headset. Sometimes you have



to go back to the basics and learn to appreciate the little things in life.  
Ashley Biancuzzo

## 11. ASUS ROG & ALIENWARE 500HZ MONITORS

After first being teased at Computex only to never appear in 2022, face-melting 500Hz monitors are actually a thing at CES 2023. As a self-confessed sweaty try-hard in competitive games, I am extremely here for it.

The Asus ROG Swift Pro PG248QP and aptly named Alienware 500Hz Gaming Monitor (AW2524H) both measure 24.5 inches and rock 1080p resolutions – perfect for esports – as well as Nvidia's fantastic G-Sync and Reflex technologies for even more smoothness. But that 500Hz refresh rate is the real draw. Frames win games

in esports, and fast monitors help games handle even more responsively. Some misguided people think you can't feel the responsiveness provided by ultra-fast displays, but as the happy owner of a 360Hz Asus ROG

monitor I can report that even mousing around the desktop feels smoother the faster your screen goes.

All the new OLED and mini-LED monitors look damned enticing, sure, but these are the displays I can't wait to get my hands on in 2023. Brad Chacos



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## 12. NVIDIA GEFORCE RTX 40-SERIES LAPTOP GPUS

Just how damned impressive are Nvidia's new GeForce 40-series Laptop GPUs? An RTX 4080 Laptop GPU locked

at 50 watts in a smaller, lighter, and quieter Razer Blade 16 outperforms the previous GeForce RTX 3080 Ti Laptop GPU in a larger, heavier, and louder Razer Blade 17. Wow.

In fact, Nvidia's new RTX 40-series of GPUs appears to be so efficient that we're seeing thinner, lighter and now much faster laptops than ever before to go with all the fire-breathing RTX 4090-powered behemoths.

Gordon Ung



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## 13. ROBOROCK S8 PRO ULTRA

I've been slow to jump on the robot vacuum bandwagon after a bad first impression from an early-generation model. Admittedly, that was a long time ago. And



13.

nothing drives that point home more than seeing the Roborock S8 Pro Ultra. This beast does everything! It vacuums, it mops, it empties its dustbin, it wets its own mop, it cleans itself. And it refines those duties in important ways: Suction power is boosted to 6,000Pa (compared to Roborock's previously high 5,100Pa); a new rubber brush design prevents tangling from pet hair; it's able to lift either dry or wet cleaning element to avoid cross-contact with the wrong the surface; and a drying feature has been added to the self-cleaning process to avoid mould growth. I'm sold! Katherine Stevenson

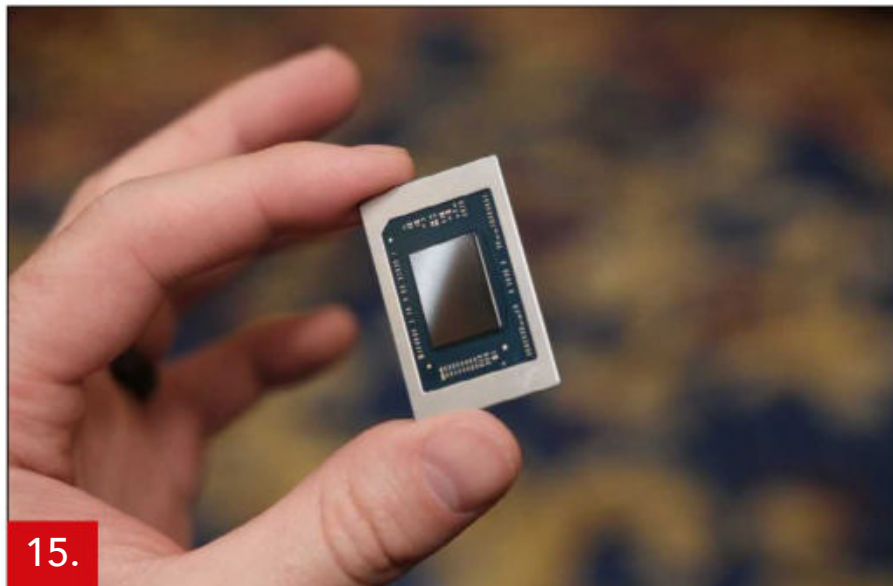
#### 14. **LENOVO THINKPAD TWIST**

I've been burned before by its style of swivel hinge. I already have an e-ink reader. I'm not even convinced I wouldn't damage one of the screens. (And I generally am gentle with my gear.) But boy do I want Lenovo's ThinkBook Twist. Its top panel sports a 13.3in 1440p OLED touch panel on one side and a 12in colour e-ink display on the other – perfect for working on the go. That OLED display will provide sharp, high-res output for image editing and watching videos, while the e-ink display will go easy on battery life when I'm writing articles, reading books, and taking notes with the included stylus. With less eye strain. In Colour. I can't wait for a hands-on experience in June. Alaina Yee



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## 15. AMD RYZEN 7040 LAPTOP CHIPS WITH XDNA AI

The rise of AI art and ChatGPT points to a future where AI-powered experiences will become commonplace. AMD's Ryzen 7040 Mobile series is the first time we've seen AI built directly into an X86 processor. Ryzen AI, as the company calls it, offers four concurrent AI streams at once, thanks to a programmable core sourced from its 2020 acquisition of Xilinx. We'd expect that the XDNA architecture underlying Ryzen AI will be as pervasive as its RDNA GPUs in a few years. This is just the beginning. Mark Hachman



# CES 2023: 5 must-know PC tech trends

CES ain't what it used to be. But it's still worth examining the broader trends that emerged at the show. **MICHAEL CRIDER** reports

**L**et's be blunt: CES feels like it's in a bad place after the pandemic. It looks like taking a couple of years off from the biggest electronics trade show in the world has taught companies that, yes, this could have been an email.

Even so, the PC industry didn't disappoint, with blockbuster keynotes from the major players delivering a sneak peek at what's coming down the

pipe in 2023. And now that the dust has settled, there are some recognizable PC trends that are worth examining – most good, some not-so-good. Here they are, in no particular order:

## **1. MONITORS ARE GETTING INSANE**

Call it fallout from a ton of people transitioning to home office, but it

looks like monitor makers are set to unleash a hoard of new and eye-catching models this year. And not just in one segment, either. All the gaming display manufacturers are rushing to make premium OLED displays now that the panels are out, but we're also seeing even larger and more ridiculous designs with conventional screens, like Samsung's latest 57in Odyssey Neo G9. On the smaller side of things, insanely fast displays with 500Hz panels are coming to the forefront.

At the same time, professional and media-focused displays aren't being overlooked. Dell has a 6K Ultrasharp monitor with LG's exquisite IPS Black tech, complete with a high-end webcam and integrated speakers. It's the kind of hardware that can handle Zoom and Blender with equal aplomb. Whatever

your set-up looks like, you'll have a choice for a display upgrade this year – assuming you can afford it.

## 2. GAMING LAPTOPS ARE LARGE AND IN CHARGE

For a while there it seemed like no one was interested in making a laptop bigger than 15 inches, even if it included discrete graphics and enough thickness to house a wind tunnel's worth of cooling fans. Consider those days over: the big, boisterous gaming laptop is back. Alienware, Acer, and Razer have all revealed new 18in models at the top of their respective lines, packed with the latest tech and enough upgrade options to make a Rockefeller flinch.

If you want to play Nostradamus, you could point to an ongoing trend away from ultraportable designs and

the assumption that users will mostly be playing at home, with an infrequent jaunt to a local cafe or friend's house. But a more likely culprit is newly announced high-end Intel 13th-gen Core HX, AMD Ryzen/Radeon 7000, and Nvidia RTX 40-series mobile chips that just work better in a



The massive Alienware M18 offers a huge selection of ports.

gaming laptop...or perhaps more cynically, just need that extra space for more beefy cooling. These new chips are immensely more powerful than anything we've ever seen in prior notebooks.

### **3. GPUS ARE IN A BAD PLACE**

It seemed like the world was holding its breath as the bottom fell out of the graphics card market, just before Nvidia, AMD, and even newcomer Intel announced new lines late last year. Whelp, they're here, and they're underwhelming.

The response to Nvidia's insanely overpriced RTX 40-series was so bad that they straight-up canned a high-end card before launch, and its replacement the RTX 4070 Ti isn't winning any fans either. Though AMD is positioning itself as a more rationally-priced alternative, its flagship 7900 XTX is facing widespread overheating issues – not a good look right before a big CES keynote. And the best you can say about Intel's budget cards is that, well, they're pretty good for a budget. They still have a long way to go to be competitive on anything except price.

In short, it's a bad time to buy



Asus unveiled a 17in Windows tablet with a folding screen at CES 2022.

a desktop graphics card, whether you want power or value. Sit it out for another six months, or if you're desperate, hunt for a bargain on a last-generation GPU.

### **4. WHERE DID ALL THOSE FOLDING SCREENS GO?**

Remember a couple of years ago when everyone was over the moon for folding screens, perhaps in no small part because Samsung's Galaxy Fold phones were starting to get pretty decent? Both Lenovo and Asus debuted folding laptop designs, to a resounding cry of "yeah, but why?"

Fast forward and that small bubble seems to have popped, because manufacturers can't answer that question any better than we can. While



it makes sense for a device that fits in your pocket to unfold into a larger screen, if you're going to put something in a bag anyway, there doesn't seem to be any reason to fold it in half. Except for, you know, a conventional clamshell laptop design. Lenovo is showing off multiple designs with two screens, and Asus has one with glasses-free 3D, but this particular gimmick seems to be behind us. For now, anyway. Never underestimate a manufacturer's craving for novelty, just in case it's sitting on the next Yoga or XPS 13.

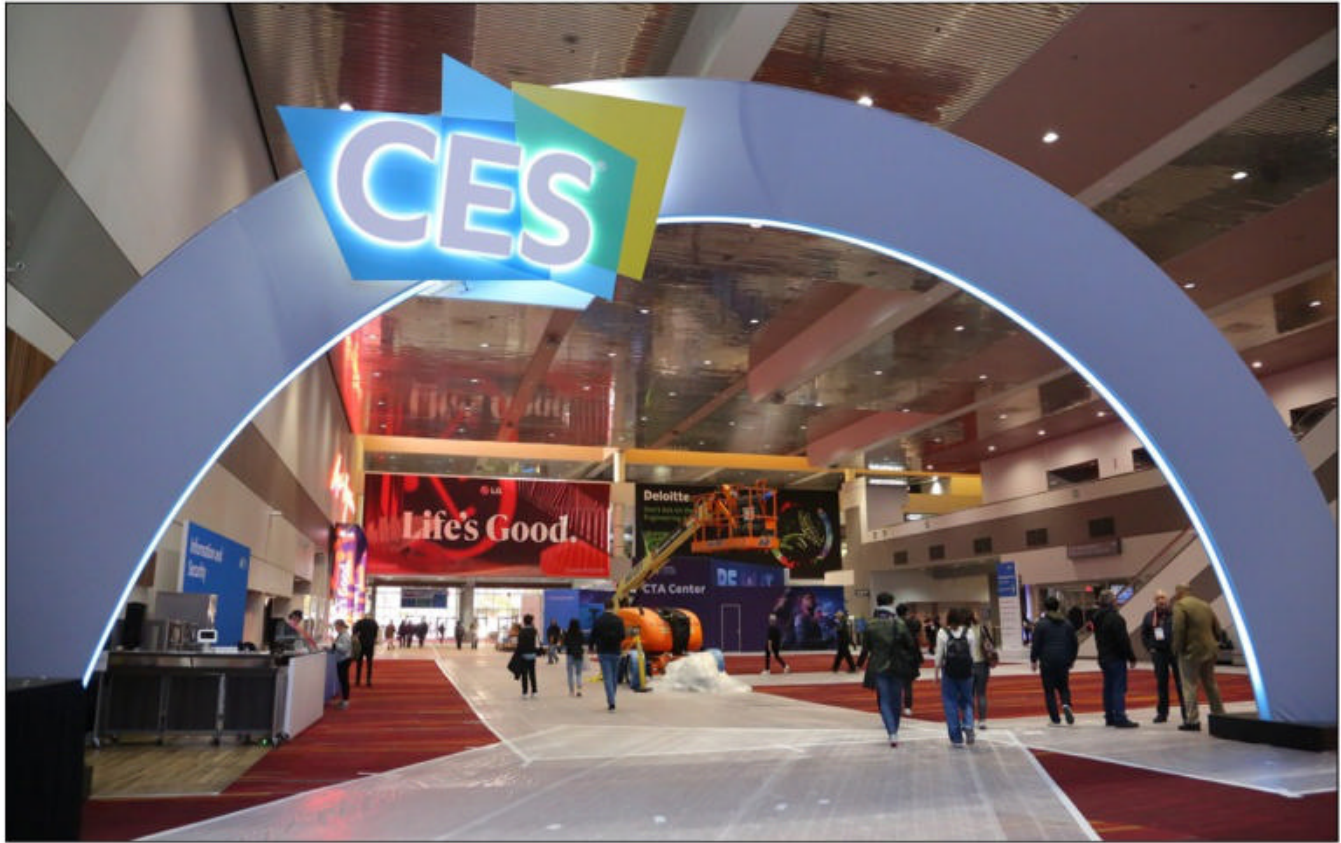
## **5. DO WE EVEN NEED BIG SHOWS ANYMORE?**

To be honest, the relevancy of gigantic, come-one-come-all technology conferences was diminishing even before the pandemic. Big companies like Apple, Samsung, and Microsoft would rather host their own events to get out the message than spend millions of dollars to compete with everyone else to try and get a journalist's face time in the busiest week of the year. Even Dell, a corporation desperate to move units and headquartered a short flight away, decided to ditch the show this year – they invited publications to small, guided tours beforehand instead.

The less consumer-facing parts of the Consumer Electronics Show might

remain. Wheeling and dealing of B2B suppliers, smaller vendors showing off their wares at evening press shindigs, among a bunch of reporters who are checking the bowl game scores in between booths. But for the big names of the electronics industry, a trade show is making less and less sense as a place to try and get the attention of the rank and file customer.

The CEA isn't going to let its flagship event die next year, or maybe even this decade. But the days of CES as the tech industry's year-starting smorgasbord might be over. And that might be a good thing. Look for companies bailing on the larger, headline-grabbing events like Mobile World Congress, E3 and IFA, in favour of smaller showcases and calculated, YouTube-style presentations.



# CES 2023: These stunning notebooks stole the show

Dozens of powerful laptops were revealed this year, but these 10 stood out from the crowd. **MATTHEW SMITH** reports

**T**he Consumer Electronics Show remains a singular event for PC laptop enthusiasts. Aside from Dell, which ditched the show in recent years, every major PC laptop maker is present, and most use it to reveal their best and brightest for the coming year. AMD, Intel and Nvidia also come

packing new mobile hardware heat. Dozens of powerful laptops were revealed this year, but these 10 stood out from the crowd.

## 1. **ACER SWIFT X 14**

Arguably the least glamorous laptop on this list, Acer's Swift X 14 still showcases



key trends of CES 2023: the broad reach of OLED displays and newer, quicker hardware from Intel and Nvidia.

Let's talk display. The Swift X packs an optional 14in OLED screen with 2,880x1,800 resolution and a refresh rate of up to 120Hz, as well as VESA DisplayHDR 500 certification. It's a truly gorgeous screen. And though not a massive laptop, the Swift X 14 finds room for Nvidia RTX 4050 discrete graphics and Intel's new 13th-gen Core H-Series processors. A high-resolution 1440p webcam is thrown in for good measure.

Pricing is what seals the deal. The Swift X 14 will hit stores in April

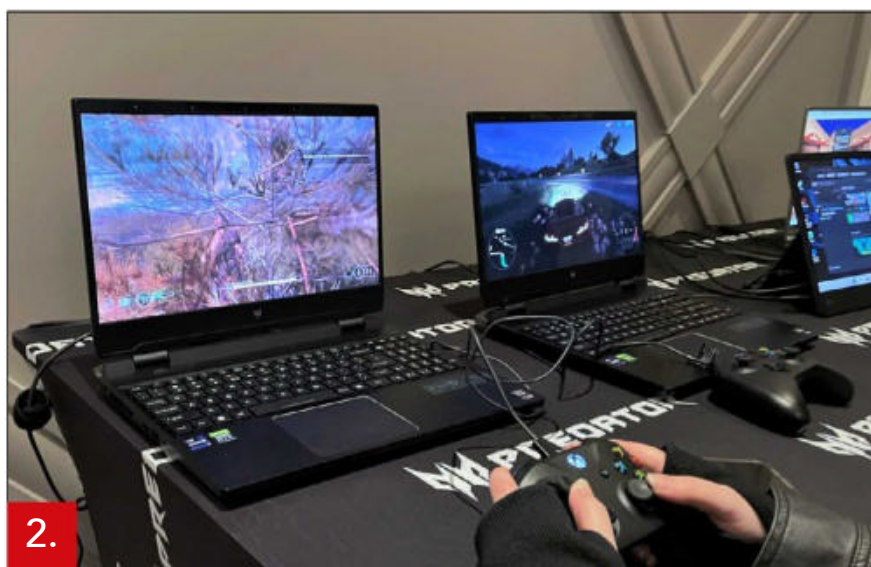
starting at \$1,099 (€tbc). That's great value and positions the Swift X 14 as a budget alternative to more expensive 14in workstation and gaming laptops.

## 2. ACER PREDATOR HELIOS 300 SPATIAL LABS EDITION

Acer SpatialLabs View PCs offer glasses-free 3D on LCD screens – a bit like

Nintendo's 3DS, but larger, and at a much higher resolution. Initially targeted at professional use, Acer brought SpatialLabs to gamers with the Predator Helios 300 SpatialLabs Edition.

Technically, the laptop itself isn't new. What's new is SpatialLabs TrueGame's 3D Ultra mode, which mitigates problems earlier versions of





the technology encountered (interface elements and text were sometimes blurred or didn't appear with a correct sense of depth). I had a blast playing Forza Horizon 5 on the SpatialLabs display. The glasses-free 3D effect is convincing – I felt as if I was playing with a fantastic slot car set or guiding a ludicrously fast radio-controlled car.

Now, I know what you're thinking: will it work with my favourite game? You can check for yourself on Acer's SpatialLabs' website ([fave.co/3Xyw8Mk](https://fave.co/3Xyw8Mk)).

### **3. ASUS PROART STUDIOBOOK 16 3D OLED**

Asus's is getting in on glasses-free 3D, as well, with the ProArt StudioBook 16 3D OLED. It has a 16in 3.2K OLED screen with a maximum refresh rate of 120Hz and, like Acer's Predator Helios 300 SpatialLabs Edition, can deliver glasses-free 3D with the flip of a switch.

The experience is similar to that provided by Acer, as both rely on technology built by Dimenco. Asus's OLED display does offer some benefits, however, with better contrast and excellent colour gamut. I saw both at CES and found Asus's image quality superior. Asus seems to be a step



behind Acer in game compatibility, though, instead focusing more on professional use.

The ProArt is a real powerhouse, too. It boasts Intel's 13th-Gen Core H-Series processors, Nvidia RTX 40-series graphics, and up to 64GB of memory. It also has dual Thunderbolt 4 ports for connecting multiple bandwidth-intensive peripherals and a 'dial' control, which lurks near the touchpad, for quick and easy scrolling through video timelines or colour palettes.

The ProArt StudioBook 16 3D OLED will arrive in Q2 2023. At the time of writing, pricing hasn't been announced.

### **4. ASUS ROG ZEPHYRUS G14**

Several Windows laptop makers came to CES 2023 boasting laptops with Mini-LED displays, but Asus's ROG Zephyrus G14 is the smallest. This





compact 14in laptop, which was already among the best compact gaming laptops available, has found room for a vibrant Mini-LED screen that delivers over 600 nits of brightness and a refresh rate up to 165Hz.

The ROG Zephyrus G14 also delivers the top-tier hardware expected from the Zephyrus model line. This includes up to AMD Ryzen 9 processors and up to Nvidia RTX 4090 series mobile graphics. It also supports USB-C charging up to 100 watts even has a 1080p HD webcam with support for Windows Hello facial recognition login. And, yes, Asus's LED matrix display lid remains, letting you show off jazzy

animations to anyone nearby.

Asus will announce pricing closer to release, which should be in Q2 of 2023.

## 5. LG GRAM STYLE (16 AND 14)

LG's feathery Gram laptop line has long been among the lightest available, but now they have style.

The Gram Style does look quite ravishing with optional pearl iridescent finish. It's attractive, but not so flashy that it becomes garish. Looks aside, the Gram Style maintains the slim appeal of its predecessors. The 16in model weighs around 1.225kg, while the 14in option is only 999g, and both measure a tad more than six-tenths of an inch thick.



They're well equipped, too, with Intel 13th-gen Core P-Series processors, up to 1TB of solid-state storage, and up to 32GB of RAM. The 16iner has a beautiful 3,200x2,000 OLED display with a refresh rate up to 120Hz, while the 14iner has 2,880x1,800 OLED screen that refreshes at up to 90Hz.

LG says the new Gram line, including the Gram Style, will launch next month, but pricing is not yet available.

## **6. LENOVO THINKBOOK P16 GEN 4**

The Lenovo ThinkBook p16 has a little bit of magic. A Magic Bay, to be precise. That's Lenovo's name for a magnetic connector on the top of the display that supports accessories like a webcam, LED light, or 4G LTE modem. The webcam accessory is the start of the show, with 4K resolution at 30fps, a 270-degree mount, and built-in privacy shutter.

But the Magic Bay isn't the only reason to like this laptop. It's a durable, attractive, and powerful laptop boasting Intel's 13th-Gen Core H-Series processors, Nvidia RTX 40-series mobile graphics, and up to 32GB of RAM. This is a classic all-rounder, capable of day-



to-day productivity, photo and video editing, programming, gaming, and just about anything else you can throw at it.

It's also competitively priced. Lenovo says the ThinkBook p16 will hit stores at \$1,349 (£tbc) in May 2023.

## **7. LENOVO YOGA BOOK 9i**

I'll be honest: I burst out laughing when I first saw this laptop. The dual-screen Lenovo Yoga Book 9i looks a bit absurd in its vertically stacked configuration.

But it's no joke, and there's a lot to like. This is a beautifully sculpted, luxurious 2-in-1 laptop with two stunning 13.3in 2.8K OLED screens. They can be used vertically stacked or, more likely, side-by-side. The Yoga Book 9i also supports clamshell and tent modes with the optional to use a virtual keyboard on the lower



display or a detachable physical keyboard. The internals include Intel 13th-gen Core i7 U-Series processors yet, surprisingly, the 2-in-1 weighs around 1.36kg.

The Lenovo Yoga Book 9i will arrive in June 2023 at \$2,099 (ftbc).

## 8. MSI STEALTH 14 STUDIO

The all-new MSI Stealth 14 Studio is a looker, sporting an (optional) two-tone vibe, slim design, and clever LEDs that spell out 'Stealth' hidden in the fan vents. It also feels robust in-hand and has a 1440p, 240Hz IPS screen that seems a perfect fit for the laptop's hardware. So, what's it



packing? The Stealth 14 Studio has an Intel Core i7-13700H and equips Nvidia GeForce RTX 4060 and 4070 graphics. That's impressive performance for a laptop this size, and the laptop does seem to get toasty – but that's true of every compact laptop at CES 2023.

The MSI can also equip up to 64GB of RAM and 2TB of solid-state storage.

Pricing starts at \$1,499 (ftbc) and pre-orders should go live soon.

## 9. MSI TITAN GT77 HX

Apple's Mini-LED displays give the MacBook Pro 14 and 16 an edge over Windows competitors with bright, vivid screens that



pack an HDR punch. But MSI's huge Titan GT77 HX might finally have them beat. It delivers a 4K, 144Hz Mini-LED screen with VESA DisplayHDR 1000 certification, meaning it can hit a peak brightness above 1,000 nits.

Display aside, this laptop is a true powerhouse that leaps ahead of every other laptop on this list. It can be equipped with Intel's Core i9-13980HX, which delivers 24 processor cores, and Nvidia's RTX 4090 mobile. Memory tops out at 128GB of DDR5 RAM and storage support includes up to three PCIe solid-state drives.

Prices will start at \$4,299 (£tbc) when it arrives later this year.

## 10. RAZER BLADE 18

Razer has jumped aboard the big laptop bandwagon with the new Blade 18, a massive machine that's just a bit less of a beast than its competitors. It packs a 18in IPS LCD display with

2,560x1,600 resolution and a refresh rate up to 240Hz, but weighs just over 3kg and measures around 22mm thick. That's not tiny, of course, but it undercuts most competitors. And while the laptop is large, it can be charged using a relatively compact GaN charger





(delivering 280 or 330 watts, depending on the Blade 18's configuration).

The Blade 18 otherwise sticks to Razer's tried-and-true formula for success. It supports the latest Intel 13th-Gen processors up to the Core i9-13950HX, as well as up to Nvidia RTX 4090 graphics. Memory stacks up to 64GB and storage up to 8TB, which should meet the demands of most professional creators. Despite its hardware and larger size, the chassis remains sleek and minimalist, and feels luxurious in-hand.

Pricing is luxurious, too. Razer says the Blade 18 will start at \$2,899 (ftbc) when it arrives in Q1 2023.



# CES 2023: On the cusp of a display revolution

The displays of tomorrow are not like the displays of yesterday.

MATTHEW SMITH reports

**C**ES 2023 is a very, very good year for PC monitors. Both OLED and Mini-LED – the displays of the future – are just on the cusp of mainstream adoption and, as a result, every monitor maker has launched a salvo of both mid-range and

premium options that use these new display technologies. In fact, I'd argue the monitor space is now even more exciting than televisions.

From super-ultrawide form factors to folding panels, the monitors of CES 2023 are a wild bunch. Here are the 10



But the most important spec? The price. At \$999 (£799), the LG Ultragear 27GR95QE-B isn't exactly affordable...but it's much closer than OLED monitors of the past. This is an OLED monitor you can buy without feeling ashamed to admit how much you spent on it. Probably.

best displays we encountered at this year's show.

### 1. LG ULTRAGEAR 27GR95QE-B

The LG Ultragear 27GR95QE-B was technically released prior to CES 2023, yet it's clearly the most important monitor at the show. Why? Because it's the debut monitor for LG's new 27in, 1440p, 240Hz OLED panel.

This panel, also found in several other monitors on this list, will have incredibly wide appeal. 1440p resolution is high enough to look sharp, yet won't melt your GPU the moment you dare to launch Cyberpunk 2077. The panel's refresh rate is ideal for gaming and feels ultra-responsive on the windows desktop.

### 2. ACER PREDATOR X27U

Acer's entry into the mainstream OLED arena is the Predator X27U. It's a 27in, 1440, 240Hz OLED monitor that uses the same panel found in the LG Ultragear 27GR95QE-B and, as a result, looks equally gorgeous. The Predator



X27U also quotes a maximum peak brightness of 1000 nits and a colour gamut covering 98.5 percent of the DCI-P3 colour gamut.

This monitor even delivers a feature far too rare among gaming displays: USB-C. It has one USB-C port with DisplayPort Alternate Mode and up to 90 watts of Power Delivery. This adds versatility and is particularly important for content creators and professionals considering the Predator X27U as a budget alternative to pricey 'pro' OLED monitors.

The Acer Predator X27U will hit retailers in Q2 of 2023 at \$1,099 (ftbc).

### **3. ASUS ROG SWIFT PG27AQDM**

Asus's is often among the quickest to jump on new monitor technology, and CES 2023 is no exception. The ROG Swift PG27AQDM is one of several monitors to pack LG's hot new 27in, 1440p OLED panel. It promises incredible contrast, a peak brightness of 1000 nits, and a colour gamut that spans 99 percent of DCI-P3. There's also support for enhanced refresh rates of up to 240Hz.

But it's the design, not the display panel, that sets the ROG Swift



PG27AQDM apart from competitors. Its aggressive styling and top-notch build quality promises a premium experience worthy of the monitor's premium price. Asus also makes vague claims that its "custom heatsink" will offer superior thermal performance. I'll be eager to see if that translates to an improvement in image quality.

Speaking of which – Asus hasn't revealed a price tag yet.

### **4. ASUS ROG SWIFT PRO PG248QP**

While most premium monitors are just now upgrading to 240Hz, Asus's esports-oriented ROG Swift Pro PG248QP's 24in 1080p IPS screen can hit a blistering 540Hz. This incredible speed puts a new frame on-screen everyone 1.85 milliseconds. Provided





you're playing a game capable of hitting 540 frames per second, of course. The monitor also supports Nvidia G-Sync and Nvidia Reflex Analyzer to ensure smooth frame pacing and the lowest possible latency.

The ROG Swift Pro PG248QP also surprises with an adjustable stand that has two retractable 'claws'. They can be retracted to take up less space on your desk. Asus's says this feature targets esports players who like to play as close to the monitor as possible, but it could be useful for anyone with a small desk.

Competitive PC gamers can expect to see this monitor arrive in Q2 2023. Asus hasn't announced pricing.

## 5. LG OLED FLEX

Corsair's 45in flexible Xeneon Flex offers the best of flat and curved-screen displays, but it has a downside: you have to flex it yourself. Manually. Like, with your muscles. LG's OLED Flex takes a different approach, using a built-in motor to do the flexing for you. The monitor can shift from curved to flat, or some position in-between, with a touch of the bundled remote.

The LG OLED Flex isn't an ultrawide monitor, which makes it less immersive than those stretched-screen alternatives, but it does offer 4K resolution and a refresh rate of 120Hz. It also has several special restricted display space modes that emulate a 32- or 27in screen, adding versatility for situations where



the large display size isn't desired. Personally, I find first-person shooters a bit stomach-churning on big screens, so I'd probably use these modes for Halo and Overwatch.

Pricing and availability for the UK hasn't yet been revealed.

## 6. **LENOVO THINKVISION P27-PZ30 & P32-PZ30**

Lenovo's business-like ThinkVision monitors are often unexciting, but the ThinkVision P27-pz30 and P32-pz30 are an obvious exceptions. These 4K IPS monitors pack a Mini-LED backlight with 1,152 dimming zones. This is top-shelf for modern Mini-LED monitors (aside from Samsung's Odyssey line), providing excellent contrast and extreme bright highlights in HDR content. Both monitors are VESA DisplayHDR 1000 certified and claim a maximum peak brightness of 1,200 nits.

These monitors also support USB-C connections and provide up to 140 watts of power of USB-C power delivery, which is enough to handle most laptops that support USB-C charging and adds a bit of future-proofing (most current laptops don't support USB-C charging over 100 watts, but it's likely to become popular over the next few years).



Lenovo says the 32in model will be priced at \$1,599 (£tbc) – the 27in model's MSRP hasn't been announced. That's a big price drop over prior Mini-LED monitors with 1,152 dimming zones. The only catch? It won't be available until August.

## 7. **SAMSUNG ODYSSEY OLED G9 49IN**

Samsung's flagship 49in super-ultrawide returns to CES 2023 with a big new upgrade: a QD-OLED panel. The new Odyssey OLED G9 promises all of the perks of other OLED monitors including a nearly infinite contrast ratio, a refresh rate up to 240Hz, low pixel response times, and a broad colour gamut. The



prior Odyssey Neo G9, which had a Mini-LED backlight, was already a stunner, so it'll be interesting to see how the new OLED model compares.

The Odyssey OLED G9 also adds Samsung's Smart Hub features including support for streaming apps, such as Amazon Prime, Netflix, and Hulu, plus Samsung Gaming Hub, which supports Xbox Cloud Gaming and Nvidia GeForce Now. Conveniently, Nvidia will soon add support for ultrawide screens to GeForce Now: not enough to make the most of the Odyssey OLED G9's super-ultrawide format, but a

step in the right direction.

At the time of writing, pricing and availability remain under wraps.

## 8. SAMSUNG ODYSSEY NEO G9 (G95NC)

Does a 49in super-ultrawide still feel a bit small? Well, Samsung has just the thing for you: the new Odyssey Neo G9, a 57in monster. It's big, it's curved, and it's the last word in

monitor immersion.

Size aside, 2023's Odyssey Neo G9 also impresses with its 'dual 4K' resolution of 7,620x2,160. It has a Mini-LED backlight and is VESA DisplayHDR 1,000 certified, meaning it can hit a maximum brightness of up to 1,000 nits.





Despite its resolution, the monitor will still provide a maximum refresh rate of 240Hz. The monitor's extreme resolution and refresh rate requires a ton of video bandwidth, so it includes support for the latest DisplayPort 2.1 standard.

Once again, pricing and availability remains to be seen – but it's sure to be very, very expensive.

## 9. ACER PREDATOR X45

The Acer Predator X45 is the company's take on LG's new 45in OLED panel, which is also found in the Corsair Xeneon Flex and LG Ultragear 45GR95QE-B. Indeed, the Predator and Ultragear monitors are extremely similar. Aside from sharing the same LG OLED Panel, with 3,440x1,440 resolution and 240Hz maximum refresh, they also have an identical (and aggressive) 800R

curvature. These are big, beautiful displays only a few inches smaller than Samsung's Odyssey OLED G9.

For me, though, the Predator X45 has one little extra that sets it apart. USB-C. The Predator X45, like the Predator X27U, has a USB-C port with DisplayPort Alternate Mode and up to 90 watts of USB Power Delivery. This offers added versatility and the chance for a one-port connection with modern laptops.

The Acer Predator X45 will arrive in Q2 of 2023 at \$1,699 (£tbc).

## 10. MSI MEG 342

The MSI MEG 342 is an alternative take on the popular Alienware AW3423DW ultrawide that dominates our list of the best gaming monitors. It's a 34in ultrawide with a QD-OLED panel,

3,440x1,440 resolution, and a refresh rate of up to 175Hz. While I haven't had a chance to view this one first-hand, I expect MSI's version will deliver image quality to rival Alienware's top-notch ultrawide.

Of course, you might be wondering: why buy the MSI







instead? In truth, they are very similar, and the winner may often come down to whichever ends up on sale at the lowest price. Still, MSI does throw in an RGB light sync feature called Glow Sync. The Alienware also include RGB lighting, but it's more subdued.

The MSI MEG 342's pricing and availability remain unannounced.



# Microsoft Surface Laptop 5

**Price:** £1,299 from [fave.co/3QOJHW0](https://fave.co/3QOJHW0)



**T**he Surface Laptop 3 was a great piece of hardware – so good in fact that Microsoft changed as little as it could in its successor, and hasn't changed much more for the Surface Laptop 5.

That means the fifth model won't appeal much as an upgrade option, but if you're using an older Microsoft laptop – or another brand entirely – then there's still plenty here to like, so long as you can forgive what's becoming

a bit of a dated design and don't mind the decision to ditch AMD and go all-in on Intel.

## **DESIGN**

The Surface Laptop 5 is a pretty slick looking piece of hardware, with the caveat that we've seen it all before and it's beginning to get old-fashioned.

Microsoft has chosen not to update the design it's used for the past few years, so we get the same simple



The Surface Laptop 5 is a slick looking piece of hardware.

metallic exterior with a reflective Windows logo, and a sparse interior with a spacious keyboard and trackpad.

It looks pretty sharp, and to be honest it only shows its age in one area: the screen. The display itself isn't the problem – I'll get to that in a minute – but there's so much blank black space around it, in a thick bezel that other manufacturers have long since done away with.

In turn that means that the laptop as a whole is bigger than it really needs to be for the screen size, giving you extra chunk and heft to lug around with you.

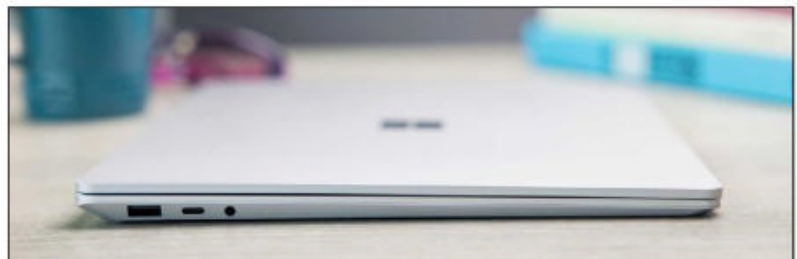
That problem is certainly worse on the larger 15in model I've been reviewing, which is downright heavy at over 1.5kg – every time I lift my backpack

I remember this thing is in there – and I expect the smaller 13.5in version (£999) would be a little more forgiving.

It helps that ports are the same between both sizes at least. Either way you get a single full-size USB-A 3.1 port, one USB-C 4.0/Thunderbolt 4 port, a 3.5mm headphone jack, and the little-loved

Surface Connect port for charging. You'll appreciate that if you have older Surface accessories, but otherwise it feels like an increasing waste given that the USB-C port can also be used for charging.

The other reason to prefer the smaller model might be the range of colours. While the larger laptop is only available in black or platinum, if you go small you can also get it in either sage green or a burnished sandstone finish. And if you're a fan of Microsoft's suede-like Alcantara fabric linings, note



You get a single full-size USB-A 3.1 port, one Thunderbolt 4 socket and a 3.5mm headphone jack.

that this is only found on the smaller version in the platinum colour.

## DISPLAY

Microsoft hasn't yet made the jump to OLED in its laptops, and instead still equips the Surface Laptop 5 with LCD displays, using panels it calls 'PixelSense'. Contrary to rumours ahead of launch, it also sticks with the standard 60Hz refresh rate, rather than adopting a more responsive panel.

There's little difference between the screens on the two sizes here other than the resolution: 2,256x1,504 in the smaller model, and 2,496x1,664 in the larger – with a matching pixel density of 201ppi in either case.

Either way, it uses the increasingly popular 3:2 aspect ratio, giving you a taller, boxier display that's better suited to productivity. You'll get a little extra screen space for documents and email, with the trade-off that you'll probably have to put up with black letterboxing whenever you fire up a film on Netflix.

Actual screen quality mostly impresses. You won't enjoy the deep blacks and wider dynamic range of an OLED panel, but this is bright enough to



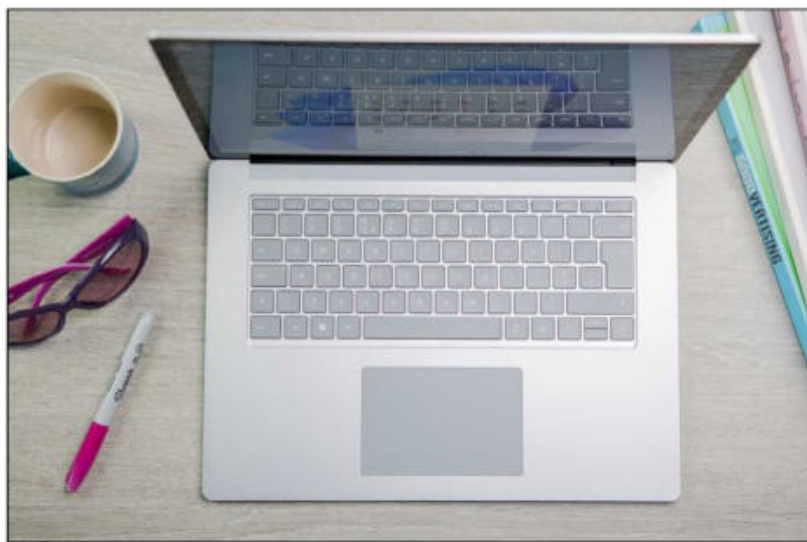
We were impressed by the quality of the display.

suit a range of lighting conditions, with vibrant colours and plenty of detail on offer. It's a touchscreen too, giving you another option for navigating Windows, and it supports the Surface Pen stylus, though this is sold separately.

As for audio, in addition to the 3.5mm headphone jack (no longer a guarantee on a modern laptop) you'll get a pair of built-in speakers. These are upfiring – which is good – but fire through the keyboard – which is less so.

Quality is decent, with plenty of clarity, but a distinct lack of bass even by laptop standards. Dolby Atmos support should help when watching movies or playing games in particular, but at this quality level won't make a whole lot of difference.





The Surface Laptop 5 has an impressive keyboard.

## KEYBOARD

The large keyboard on the Surface Laptop is generally impressive. Comfortable key spacing, decent travel, and three backlighting settings sum up to produce a comfortable typing experience that isn't the best in a Windows laptop – Dell and Huawei lead the way there – but isn't too far behind.

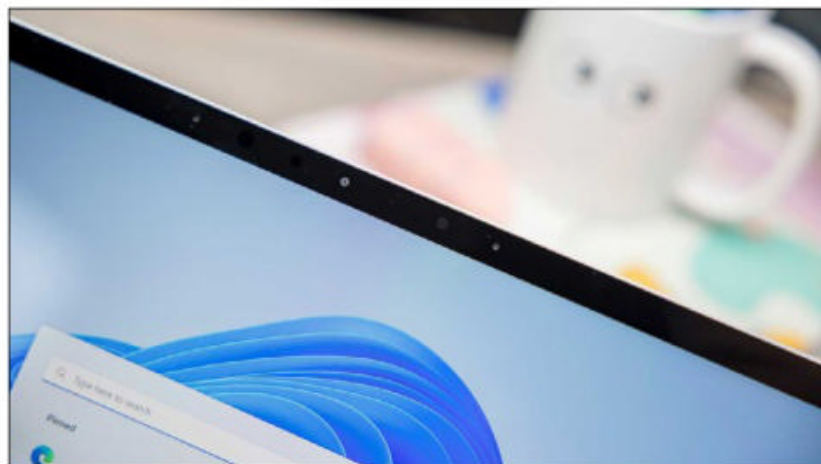
I have one caveat to that. I've been using the Surface Laptop 5 for just about a month for this review, and just today, as I write it up, it's developed an unusual fault: a squeaky space bar. It's a sporadic but irritating sound that's only crept in today but is already getting on my nerves – and raises my doubts about the keys' ultimate longevity.

Below the keyboard you'll find the spacious glass trackpad. Using glass instead of plastic results in a smoother pad with less friction and drag. There's no support for the haptic feedback many premium laptops now offer, but otherwise there's little to complain about here.

Then there's the webcam. This is one of the elements overdue an upgrade, as the

720p resolution and grainy quality don't quite cut it any more. Together with the dual microphones this serves for basic video calls, but it definitely won't have you looking your best.

It does however support Windows Hello facial recognition for signing into the PC, which works pretty well. That's your only biometric option though, as there's no fingerprint scanner.



The webcam supports Windows Hello facial recognition.

## PERFORMANCE

While 2021's Surface Laptop 4 gave buyers a choice between Intel or AMD processors, Microsoft has made the choice for you this time around: it's Intel or bust.

At least Microsoft is using the latest 12th-gen Intel chips – the first 13th-gen laptop models haven't arrived just yet – though you are limited to the low-power U-series versions. If you opt for the 13.5in model you'll still get to choose between the i5-1235U and the more powerful i7-1255U, though the 15in laptop only comes with the i7 chip.

The processor comes with up to 16GB of RAM on the smaller machine and up to 32GB for the larger, with a similar split of up to 512GB storage for the little laptop and a maximum of 1TB for the 15in version.

In benchmarks, the Laptop 5 essentially does about as you'd expect: it's not the most powerful machine around, but it's comparable to most similarly priced flagship rivals. Some do a little better, some do a little worse, but they're all in the same ballpark.

### Geekbench 5 (multi-core)

Microsoft Surface Laptop 5 (2022):  
6,978

Microsoft Surface Laptop 4 (2021):  
5,569

Huawei MateBook X Pro (late 2022):  
4,591

Asus ZenBook S 13 OLED (2022): 7,714

Dell XPS 13 Plus (2022): 8,781

Apple MacBook Air M2 (2022): 8,959

### PCMark 10

Microsoft Surface Laptop 5 (2022):  
5,096

Microsoft Surface Laptop 4 (2021):  
4,735

Huawei MateBook X Pro (late 2022):  
5,232

Asus ZenBook S 13 OLED (2022): 5,738

Dell XPS 13 Plus (2022): 5,348

### 3D Mark (Night Raid)

Microsoft Surface Laptop 5 (2022):  
16,013

Microsoft Surface Laptop 4 (2021):  
16,377

Huawei MateBook X Pro (late 2022):  
16,082

Asus ZenBook S 13 OLED (2022):  
20,532

Dell XPS 13 Plus (2022): 16,640

### Battery life

Microsoft Surface Laptop 5 (2022): 13  
hours, 40 minutes

Microsoft Surface Laptop 4 (2021): 16  
hours

Huawei MateBook X Pro (late 2022): 11  
hours, 27 minutes

Asus ZenBook S 13 OLED (2022): 17 hours, 55 minutes

Dell XPS 13 Plus (2022): 7 hours, 14 minutes

Apple MacBook Air M2 (2022): 17 hours, 30 minutes

### Charge in 30 minutes

Microsoft Surface Laptop 5 (2022): 37%

Microsoft Surface Laptop 4 (2021): 31%

Huawei MateBook X Pro (late 2022): 57%

Asus ZenBook S 13 OLED (2022): 37%

Dell XPS 13 Plus (2022): 25%

Apple MacBook Air M2 (2022): 30%

The bottom line is that performance is strong, in line with what you'd expect from a productivity laptop at this price. With lower power chips and no discrete GPU option this won't really suit gamers or creative power users, but there's still plenty of power for Photoshop, basic video editing and spreadsheets galore.

### BATTERY LIFE

Last time around, there was one clear advantage to picking an AMD chip in the Surface Laptop 4: better battery life.

With no AMD option this year you're denied that perk, though the good news is that

this year's Intel silicon has picked up when it comes to power efficiency.

My i7-powered 15in model lasts just about a full day of work including web browsing, writing, light photo editing, and a little too much Slack chat. Going by benchmarks again, it's in the middle of the pack for similarly sized devices.

Still, it's not quite a comfortable full-day, and I'd definitely want to have a charger with me if I was out and about, as there's still a touch of battery anxiety when you try to stretch this out to a full shift.

The good news is that you can charge the laptop with either the Surface Connect charger it comes with, or any sufficiently powerful USB-C charger. That means your phone charger may well do the job, saving you from carrying another cable and power brick, and freeing you from the frustratingly



You'll bet a full day's work from this laptop.



fiddly Surface Connect socket.

With 37 percent charge restored in half an hour this is far from the fastest laptop charging around, but it's ultimately pretty typical.

## SOFTWARE

There's surprisingly little to say about the software side of the Surface Laptop 5, which ships with Windows 11.

Although this is Microsoft's flagship hardware it doesn't pack the laptop with custom features or extra tricks the way that Google does with its Pixel phones, instead trusting this to serve as a showcase for the standard Windows experience. You don't even get any extra software freebies beyond the standard month-long free trials of Microsoft 365 and Xbox Game Pass. The welcome flip-side of that is that unlike some Windows rivals you won't have to put up with loads of pre-installed apps and bloatware – this is Windows at its cleanest.

## VERDICT

Microsoft has arguably phoned it in with the Surface Laptop 5 this year – all



Unsurprisingly, the Surface Laptop 5 runs Microsoft's latest operating system: Windows 11.

it really did is throw in the latest Intel chips and Thunderbolt 4 and call it a day, but fortunately the start point was good enough to get away with it.

Some elements are undeniably dated, such as the thick black bezel around the display and the basic 720p webcam, but with strong performance and an otherwise sleek design the laptop still holds up well.

A good spread of ports help, and while I'm no fan of the fiddly Surface Connect socket its appearance will appeal to existing Surface owners with accessories they're hanging onto.

Next year Microsoft will have to make real changes, but in this iteration the Surface Laptop 5 can ride out one more year as an appealing option.

Dominic Preston

## SPECIFICATIONS

- 15in (2,496x1,664; 201ppi) PixelSense display
- Windows 11 Home
- Intel Core i7-1255U processor
- Intel Iris Xe GPU
- 8GB/16GB/32GB LPDDR5x RAM
- 256GB/512GB/1TB SSD
- 1x Thunderbolt 4
- 1x USB-A 3.1
- 3.5mm headphone jack
- 1x Surface Connect port
- Windows Hello Face Authentication camera
- 720p HD front facing camera
- Wi-Fi 6 802.11ax compatible
- Bluetooth 5.1
- 340x244x14.7mm
- 1.56kg



# MSI Prestige 15 A12UC

**Price:** £969 from [fave.co/3ZKJZ40](https://fave.co/3ZKJZ40)



**Y**ou'd expect to spend loads to get a laptop that delivers huge amounts of power and a head-turning design, but the MSI Prestige 15 claims to fit the bill while costing £969.

To get the job done, the Prestige 15's exterior boasts diamond-cut edges and sandblasted textures. On the inside you'll find one of Intel's latest processors alongside dedicated Nvidia graphics.

When more of us than ever before are blurring the lines between home and work – and when more people use the same laptop for both – it's important to have a one that can tackle every task.

Given that situation it's unsurprising that the MSI faces some strong contenders. The Dell XPS 15 starts at £1,399 and the Huawei MateBook 16s



costs £1,299. Can the MSI Prestige 15 claim a spot on our best laptop chart?

## DESIGN

MSI's big talk about design translates to an unfussy aesthetic. Those diamond-cut edges are clean and gently curved, and you won't find any extraneous design touches – the Prestige is minimal and classy.

It's available in grey or silver shades – both of which have a matte, slightly shimmering quality – and it's made from aluminium and plastic. The screen folds right back so it's flat against the desk, but it doesn't have the drop-hinge design you'll find elsewhere.

The left-hand edge has two Thunderbolt 4 ports and an HDMI 2.0 output. On the right-hand edge, there are two full-size USB ports and a

microSD slot. Above the screen there's a 720p webcam that offers Windows Hello, but only middling image quality.

That connectivity compares well to rivals. The Huawei only has one Thunderbolt 4 socket and no card reader, while the Dell includes an SD slot but no full-size USB connector, something many people still want.

MSI's notebook does well on the scales, too. The Prestige weighs 1.69kg, is only 18.9mm thick and 357mm wide. The Dell and Huawei machines are slimmer and narrower, but they're heavier than the MSI.

The Prestige 15's big weakness is stiffness. Its screen is sturdy enough, but the base feels weaker – the area beyond the keyboard is easy to depress and it doesn't take much force to flex the entire base.

MSI says the laptop has been through MIL-STD-810G testing, so should withstand shocks, drops and falls, but the fact remains: it just doesn't feel robust. And it isn't the first time we've said this. We noticed it on the Prestige 14 Evo as well, and it clearly hasn't been addressed.

Nevertheless, the Prestige 15 should survive



The Prestige's design is minimal and classy.

commutes and household life and elsewhere the MSI combines sleek, attractive design with solid connectivity, so it's a good start.

## KEYBOARD

Start typing and you'll soon forget about the flexing base. The buttons have a decent 1.5mm of travel, and the typing action is excellent: crisp, fast, and easily comfortable enough to withstand entire days of typing. The backlight is bright, and it easily matches Dell and Huawei's hardware.

Our only disappointments concern the layout. On a positive note, you get extra Page Up and Page Down keys and full-size cursor buttons. Negatively, there's no number pad, the Return key is single-height – very annoying if you regularly swap between a desktop PC keyboard and a laptop – and the Function key is tiny. The key presses are quite loud, too.

The trackpad is inconsistent. It's wide, smooth and includes a fingerprint reader, but its mechanical design means clicks at the bottom are too soft and deep, and they require too much force at the top.



The keyboard's buttons have a decent 1.5mm of travel, and the typing action is excellent.

## DISPLAY

The 15.6in screen is standard fare. It's an IPS panel with a 16:9 aspect ratio and a 1,920x1,080 resolution, which is fine for everyday working and browsing.

We've got not complaints about quality. The brightness of 339 nits is good enough to for indoor and outdoor use in most situations, except when it's really sunny and bright, That figure pairs with a black point of 0.27 nits to give a contrast ratio of 1,256:1.

That rock-solid result means you get ample depth in dark areas and plenty of vibrancy everywhere else. The Delta E of 1.16 is excellent, too, and means accurate colours.

It's worth remembering that the MSI Prestige 15 is a relatively affordable laptop, though, and it has limitations. It renders 90.1 percent of the sRGB

colour gamut and little more than 60 percent of the Adobe RGB and DCI-P3 colour spaces, so it's okay for most things but not for tasks where you have to be absolutely precise with colours. Usually, we'd expect a screen like this to manage 100 percent sRGB.

Similarly, its 60Hz refresh rate is only suitable for single-player games and casual e-sports play.

Rivals have better screens. The Dell XPS 15 uses a 16:10 aspect ratio to deliver a little extra vertical space and, at 500 nits, is brighter. The Huawei's 3:2 aspect ratio and 2,520x1,680 resolution mean you get more space and sharper definition.

Don't expect much from the speakers, either. The 2-watt units offer decent mid-range clarity and they're

not tinny, but they're not bassy or particularly loud. They're fine, but that's it.

## PERFORMANCE

Intel's Core i7-1280P is an Alder Lake-P chip designed for slimmer, lighter laptops. It's the most powerful chip in this particular range, so you get six Performance cores with a 4.8GHz top speed.

Elsewhere, the MSI's specification is ordinary. There's only 8GB of sluggish DDR4 memory, and it's soldered to the motherboard so upgrades are impossible. The SSD's read and write speeds of 6,831MB/s and 5,096MB/s are good, but its 512GB capacity will be exhausted after a few game installs. However, if you're not a gamer, capacity shouldn't be a big worry.

The GeForce RTX 3050 is Nvidia's entry-level mobile graphics chip but MSI has chosen to 'de-tune' it for the Prestige 15 where it uses up to 40 watts of, rather than the 80 watts these chips can run at in other laptops. It's also worth remembering that the performance of the mobile RTX 3050 won't



The 15.6in display is fine for both work and play.

be as good as a full-size RTX 3050 graphics card in a desktop PC.

The Prestige 15 packs Wi-Fi 6E and Bluetooth 5.2, but there's no wired Ethernet port.

Unsurprisingly, the Core i7 processor is the MSI's best component.

Its single-threaded Geekbench score of 1,448 equals the full-power Core i5-12500H you'll find in the Dell XPS 15, and it even matches the i7-12700H. The MSI's multi-threaded result of 9,025 is a little slower than the i5-12500H and 3,000 points behind the i7-12700H, but it's still impressive from a CPU that consumes far less power.

The MSI easily handles day-to-day office tasks and web browsing, and it's got the ability for light creative workloads, like photo editing. You should only spend more on an i7-12700H laptop if you need multi-core ability for tough creative tasks such as editing 4K video.

The MSI's PC Mark 10 result of 6,473 is excellent and further underpins the Prestige's prowess in everyday tasks. It's not particularly noisy and doesn't get hot, either.



The MSI easily handles day-to-day office tasks and web browsing.

In terms of 3D performance, the MSI isn't half bad for a laptop that doesn't bill itself as a gaming one. It handled Far Cry New Dawn's Ultra graphics settings at a solid 63fps. It'll play any e-sports title – it ran Rainbow Six Siege at 182fps – even if you'll need to output to a 144Hz screen to enjoy competitive gaming. Don't expect to run the most challenging games, though – the RTX 3050 could muster only 42fps at Cyberpunk's Medium settings.

Batter life is respectable. In a work benchmark the MSI lasted for nearly twelve hours, and it played video for almost as long – results that barely differ from the Huawei and creep ahead of the Dell. Unless you're really working the processor and GPU, the Prestige 15 should make it through a whole day away from mains power.



## VERDICT

Ultimately, the MSI Prestige 15 – despite its lower price – competes with more expensive laptops on processing performance, keyboard quality and connectivity. You can play games on it too, so long as you don't expect to be putting everything on Ultra quality. Battery life is very reasonable and, if this matters to you, it's also lighter than some of its competitors.

What we didn't like so much was the inconsistent build quality, the fact the screen is very average, and that you can get better performance from similarly priced alternatives.

The bottom line is that you shouldn't overlook the Prestige 15. It's a capable, lightweight all-round laptop at a good price, so it's an impressive option that won't break the bank. **Jon Mundy**

- 720p webcam
- Wi-Fi 6E AX211
- Bluetooth 5.2
- 233.7x356.8x18.9mm
- 1.69kg

## SPECIFICATIONS

- 15.6in (1,920x1,080) display
- Windows 11 Home
- Intel Core i7-1280P processor
- Nvidia GeForce RTX 3050 GPU
- 8GB LPDDR4 RAM
- 512GB SSD
- 2x Thunderbolt 4
- 2x Type-A USB3.2 Gen 2
- 1x micro SD
- 1x HDMI 2.0
- 3.5mm audio jack



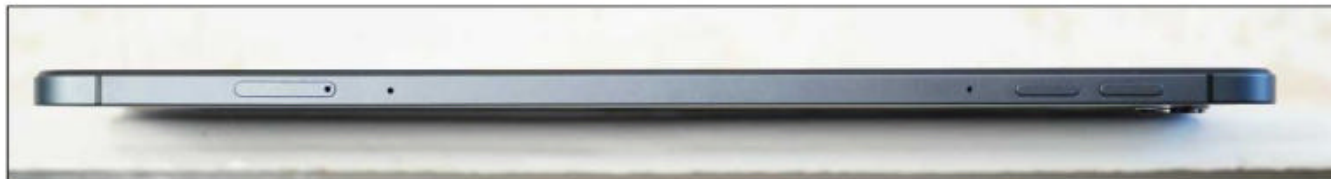
# Oppo Pad Air

**Price:** £239 from [fave.co/3WdSwto](https://fave.co/3WdSwto) ★★★★★

Oppo has clearly thought long and hard about how to make its tablet debut here in the West. Rather than rushing in with an all-singing, all dancing flagship tablet – as it’s clearly capable of doing – the Oppo Pad Air turns out to be a highly affordable rival to the Samsung Galaxy Tab A8.

With the Apple iPad range mopping up at the top of the market, all of the potential is further down the ladder, with few outstanding contenders for the £200-ish tablet throne. So is the Oppo Pad Air in with a shout?

With a refined design, a decent display, and competent performance, it certainly makes a good first



The Pad Air has a slim attractive design.

impression. Let's take a look at how it all comes together.

## DESIGN

You wouldn't necessarily guess that the Oppo Pad Air is a £239 tablet simply from seeing and holding it. This is a classy bit of kit, with a slim (6.9mm) all-metal construction and attractively iPad-esque flat edges. In that sense, it's very much like the Samsung Galaxy Tab A8.

What helps the Oppo Pad Air stand out from its Android tablet rival is the little visual flourish on the top half of its rear section. The gently undulating texture of this plastic panel is both distinctive and attractive, as well as being pleasant to grip when holding the tablet in portrait view.

Talking of holding the Oppo Pad Air, it's also quite a bit lighter than the Samsung Galaxy Tab A8 at 440g (versus 509g). This is bound to tell over extended reading, web browsing, or gaming sessions.

The choice of colours is a

little underwhelming – either Grey or Silver – but the overall impression this conveys is of a sober, professional tablet for adults rather than the 'my first tablet' vibes of some other affordable options.

The Pad Air's budget nature peeks through with the lack of a fingerprint sensor. It shares this omission with the Galaxy Tab A8, but it's still a shame that this basic biometric feature wasn't included. You'll need to rely on a rudimentary facial recognition system, which is neither particularly secure nor wholly reliable in lower lighting.



What helps the Oppo Pad Air stand out from its Android tablet rival is the little visual flourish on the top half of its rear section.



The 10.36in display has a 2,000x1,200 resolution.

## DISPLAY

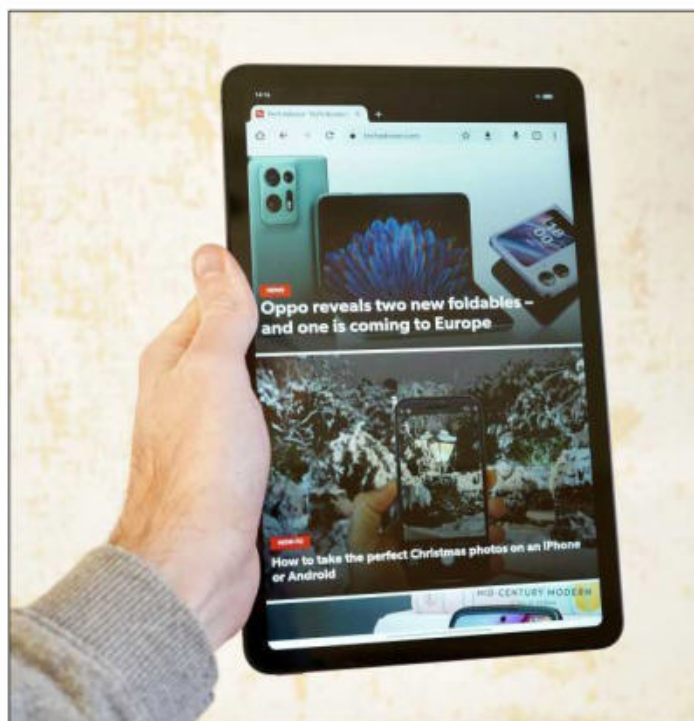
The Oppo Pad Air features a 10.36in IPS LCD with a 2,000x1,200 resolution. That's quite the step up from the Samsung Galaxy Tab A8's inferior TFT and 1,920x1,080 resolution, with more vibrant colours and better viewing angles.

It gets up to 355 nits of brightness, which isn't particularly bright at all, though this again beats out its Samsung rival. Colour accuracy isn't astounding either, but a gamut coverage of 89 percent sRGB and 64.5 percent Adobe RGB tops the Galaxy Tab A8, and an average Delta E of 2.74 – while far from exemplary – also comfortably outdoes its low-end rival.

It's a shame the display's refresh rate doesn't exceed 60Hz, but that's honestly not something we'd

expect from such an affordable tablet at this point. Apple still supplies its iPad and iPad Air with such a spec, and they sell for hundreds more. With that said, the Redmi Pad has launched with a 90Hz screen for just a little more money (£269).

All in all, it's a solid canvas for video and web-based media content. That's further enhanced by the Oppo Pad Air's stereo speakers. There are four of the things, with two on either edge when



The screen is a solid canvas for video and web-based media content.



held in landscape, and they sound good for the money.

## PERFORMANCE

Oppo has equipped its tablet with a Snapdragon 680 4G processor, which is a chip we're accustomed to seeing in budget phones like the Realme 9 4G and the Redmi Note 11.

It's not a hugely powerful component, but it doesn't need to be. There's no pretence of this being a power user's tool, nor does the processor have to drive a high refresh rate display.

In benchmarking terms, the Oppo Pad Air comfortably out-performs the Samsung Galaxy Tab A8 on the CPU-focused Geekbench 5, but loses out in all of the GPU-focused GFXBench tests. With the latter, it's worth remembering that the Oppo Pad Air is driving a higher-resolution display than its affordable rival, which undoubtedly takes its toll. It scores higher than the Nokia T20 across the board.

### Geekbench 5 (multi-core)

Oppo Pad Air: 1,609  
 Samsung Galaxy Tab A8: 1,250  
 Samsung Galaxy Tab S6 Lite: 1,230  
 Nokia T20: 1,126  
 Xiaomi Pad 5: 2,758  
 Apple 10-2in iPad (2021): 3,384

### GFX Car Chase

Oppo Pad Air: 7fps  
 Samsung Galaxy Tab A8: 9fps  
 Samsung Galaxy Tab S6 Lite: 9fps  
 Nokia T20: 6fps  
 Xiaomi Pad 5: 25fps  
 Apple 10-2in iPad (2021): 43fps

### GFX Manhattan 3.1

Oppo Pad Air: 13fps  
 Samsung Galaxy Tab A8: 15fps  
 Samsung Galaxy Tab S6 Lite: 10fps  
 Nokia T20: 11fps  
 Xiaomi Pad 5: 28fps  
 Apple 10-2in iPad (2021): 57fps

### GFX T-Rex

Oppo Pad Air: 36fps  
 Samsung Galaxy Tab A8: 39fps  
 Samsung Galaxy Tab S6 Lite: 44fps  
 Nokia T20: 30fps  
 Xiaomi Pad 5: 112fps  
 Apple 10-2in iPad (2021): 60fps

### Charge in 30 minutes

Oppo Pad Air: 23%  
 Samsung Galaxy Tab A8: 10%  
 Samsung Galaxy Tab S6 Lite: 22%  
 Nokia T20: 12%  
 Xiaomi Pad 5: 25%  
 Apple 10-2in iPad (2021): 19%

When it comes to gaming, the Oppo Pad Air is better suited to lighter 2D



The Oppo has a solitary 8Mp rear camera.

fare. Even when running the likes of Slay the Spire you'll receive that tell-tale pause when you hit the moment of death which reliably lets you know you're playing on humble hardware. If you need more power, the next best bet on Android is the Xiaomi Pad 5, which starts from £369.

Aside from the Snapdragon 680 4G, the Oppo Pad Air comes equipped with 4GB of RAM and 64GB of storage. That entry level storage provision is double that provided by the Galaxy Tab A8, which is another tick in Oppo's favour. Other territories have 4+128GB and 6+128GB options as well.

## PHOTOGRAPHY

We can sum up the Oppo Pad Air's solitary 8Mp rear camera easily: it's pretty terrible, but you shouldn't worry about it.

Unlike with smartphones, the camera is just about the least important component of any tablet, especially when it comes to an affordable tablet like this. Most people don't go around taking snaps with their 10in tablet, so the bare minimum is acceptable.

Which is good news, because the bare minimum is precisely what you're getting here. In the handful of snaps I took with the Oppo Pad Air's camera detail proved poor, exposure was off, and the sensor struggled with dynamic range. It also failed to focus correctly from time to time.

Elsewhere there's no dedicated night mode, and shooting in anything less than optimal lighting will yield lots of noise. You won't find any flash here either.

There's a 5Mp selfie camera around front, but you really shouldn't be relying on it for anything other than video calls.

## BATTERY LIFE

The Oppo Pad Air's 7040 mAh battery is a decent size for such a humble 10in tablet. If you're a light user it'll last you days between charges, and I was

This is an example of the camera failing to focus properly.



Next up, we have an indoors shot...







...and an outdoors one.



Here's an example of a portrait photo.



This is an doors shot taken in low light.



Finally, we have an outdoors photo taken on a rainy day.



impressed at how little power it consumed when I left it more or less untouched for a couple of days. This is an excellent tablet for occasional casual usage.

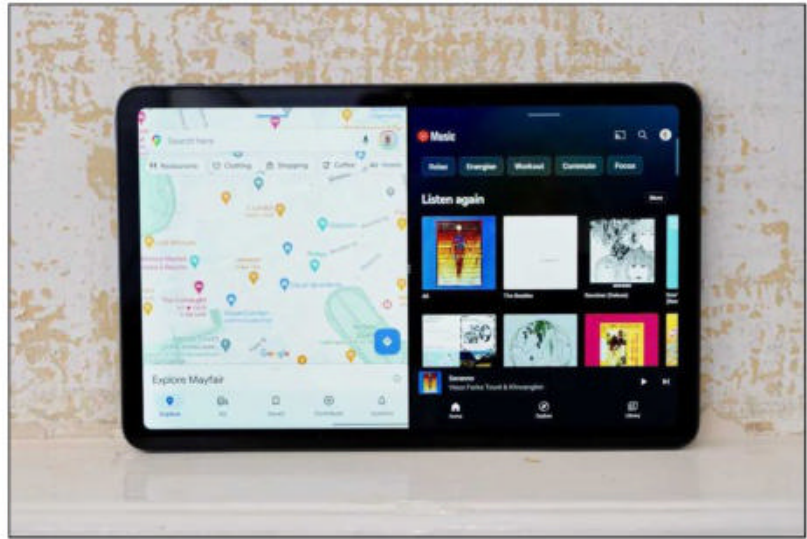
Our usual PCMark 3.0 battery life test wouldn't complete on the Pad Air, seemingly due to an annoying low battery notification causing the app to quit out at the key moment. However, a glance at the Battery Settings menu revealed that the tablet appeared to last between 8 hours and 8 hours, 30 minutes on this looping test.

This would place it a little behind the Samsung Galaxy Tab A8, well ahead of the Nokia T20, and about level with the Samsung Galaxy Tab S6 Lite.

Oppo supplies its tablet with an 18-watt wired charger, which is good for getting the tablet from 0 to 23 percent in 30 minutes. That's hardly snappy, but is a good deal faster than the Galaxy Tab A8.

## SOFTWARE

Oppo has fitted its tablet out with Android 12. That's no longer the latest version of Google's OS, but it doesn't matter all that much with Oppo's heavy ColorOS 12 skin added on top.



The Pad Air runs Android 12.

ColorOS isn't too objectionable, with a fairly clean design and simple icons. But it strays a little further from stock Android than we'd prefer, with a heavily modified notification bar and Settings menus.

Mercifully, it doesn't go too heavy on the bloatware. Aside from the usual suite of home-brewed tool apps (Calculator, Compass, and so on), it's pretty much free of extraneous provisions. You get Netflix pre-installed, but that's a justifiable inclusion on a device that's pretty much built for casual video streaming.

## VERDICT

The Oppo Pad Air is an excellent full-sized budget tablet that matches its key rival, the Samsung Galaxy Tab A8, in a number of ways and tops it in others. Its

design feels every bit as accomplished, with a sturdy all-metal body and quad stereo speakers.

However, its IPS LCD display is sharper and of superior quality, making everything from media playback to web surfing and gaming look and feel better on Oppo's tablet. Performance is fairly mediocre, but it's perfectly up to the casual tasks that you'll be requiring of the Pad Air.

Battery life is strong, and the Oppo Pad Air has the impressive ability to sip the juice while not in use, making it a reliable tablet to have to hand for occasional use. If you have less than £250 to spend on your next tablet, the Oppo Pad Air will do the job with a fair amount of poise. Jon Mundy

Wi-Fi Direct

- Bluetooth 5.1, A2DP, LE, aptX HD
- USB Type-C 2.0, USB On-The-Go
- Non-removable 7,100mAh lithium-polymer battery
- 245.1x154.8x6.9mm
- 440g

## SPECIFICATIONS

- 10.36in (2,000x1,200; 225ppi) IPS LCD display
- Android 12, ColorOS 12
- Qualcomm SM6225 Snapdragon 680 4G (6nm) processor
- Octa-core (4x 2.4GHz Kryo 265 Gold, 4x 1.9GHz Kryo 265 Silver) CPU
- Adreno 610 GPU
- 4GB/6GB RAM
- 64GB/128GB storage
- Rear-facing camera: 8Mp, f/2.0, AF
- Selfie camera: 5Mp, f/2.2
- Wi-Fi 802.11 a/b/g/n/ac, dual-band,



# Lenovo Tab P11 Pro Gen 2

**Price:** £440 from [fave.co/3w9I3EN](https://fave.co/3w9I3EN) ★★★★★

**T**he Lenovo Tab P11 Pro is a mid-range Android tablet that's here to sweep up prospective entry-level iPad 10.2 or iPad 10.9 buyers who like the sound of a slightly larger screen.

It has an 11.2in screen, a bit smaller than that of the first-gen Tab P11 Pro, which had a 11.5in display. This panel is the highlight, as it's a sharp and punchy

OLED. The rest? It's not quite as hot. The Tab P11 Pro is a lot less powerful than even the basic 10.2in iPad, and its use of a relatively little-used MediaTek chipset does not seem to help with game optimization.

Its build is also less pleasant than the Samsung Galaxy Tab S6 Lite's, which is cheaper and still the go-to for non-iPad





The Lenovo looks smart, with a two-tone finish.

**DESIGN**

The Tab P11 Pro looks the part from arm’s length, and on paper, but get your hands around one and you’ll find it’s not quite as high-end as an iPad Air or Samsung Galaxy Tab S8.

Its back and sides feel like plastic. Lenovo describes the build

digital drawing on a budget.

While Lenovo has not messed up any key elements here, the P11 Pro costs a bit too much to nudge its way into any top positions for buyers. By itself the tablet price is too close to the iPad 10.9 for comfort, and for the same price as combining it with the optional keyboard and stylus, you could get a decent laptop instead.

here as “magnesium alloy + PMMA + PC”. Our best guess is that the sides are ‘PC’, polycarbonate, and the rear is a thin sheet of magnesium alloy with a layer of PMMA on top. PMMA is acrylic, a kind of fake glass in this context.

It looks good, at least until it picks up a thousand fingerprint marks after a hour of use, but does not feel as expensive as aluminium or real glass.



The Tab P11 Pro is 6.8mm thick, and comparable to the competition in weight at 480g.

This was, unfortunately, about the first thought we had on using the P11 Pro. Still, it's light enough at 6.8mm thick, and comparable to the competition in weight at 480g. It looks smart too, with a two-tone finish, one side shinier than the other.

However, the speakers are the true highlight of the outer hardware. The Tab P11 Pro has four JBL-branded drivers. Their mid-range projection and bass power outclasses the output of the 4th generation iPad Air we had to hand for comparisons. Great for games, great for movies.

It's a shame that the audio focus doesn't extend to putting a headphone jack in though. Leaving sockets out of phones is one thing, but tablets? There is, however, a SIM-style tray that is home to a microSD slot. Expandable storage but no headphone jack – that's the state of portable Android tablet tech in 2022, apparently.

The Tab P11 Pro can also function a bit like a laptop if you buy the keyboard case accessory. While this mimics the

keyboard of a Microsoft Surface Pro, the style is a little different. It comes in two parts, necessary because the tablet does not have its own stand.

There's a backplate with a clever integrated hinged stand, and a little compartment for the stylus (also not included as standard). The keyboard part is completely separate, and both parts attach to the tablet using magnets.

With both bits in place, the Lenovo Tab P11 Pro becomes about as chunky as a laptop, but both sides of the tablet get a good layer of protection. The keyboard feels quite good too, with proper key action and a nice stiff key plate. However, we're not in the same league as the Microsoft Surface keyboard here.



The Tab P11 Pro can function a bit like a laptop if you buy the keyboard case accessory.

The touchpad is plastic, not glass like Microsoft's, and there's no keyboard backlight.

## DISPLAY

As in any good tablet, the Tab P11 Pro screen is a highlight. This is a relatively large 11.2in OLED panel with an aspect ratio that sits somewhere between 16:9 and 16:10. It's actually a 15:9, or 5:3 display, with resolution of 2,560x1,536 pixels.

This gives it pixel density similar to an iPad, although iPads look slightly sharper because their LCD screens have a more tightly regular sub-pixel structure. Still, the Lenovo P11 Pro looks smooth up close, a clear upgrade over the less pixel dense Samsung Galaxy Tab S6 Lite.



Lenovo's screen is a highlight.

Colour and contrast are excellent too, as is to be expected of an OLED tablet. The default colour mode looks a bit excitable, but you can switch down to a more sRGB-like 'Standard' mode if you want to make it easier to appreciate the difference between more and less saturated app icon designs, for example.

This is a 120Hz screen, for that extra-smooth high refresh rate appearance when scrolling, and peak brightness is good too. Indoors the P11 Pro will reach 463 nits, enough to look outright uncomfortable in a darker room. And unlike a lot of older tablets, there's a 'high brightness' mode that engages when you go out into direct sunlight. This bumps the brightness up to 622 nits, comparable with the power of an okay mid-range OLED phone.

There are just two issues with the screen. As with some OLEDs, it takes on a slight blue-green tint at an extreme angle – it's an effect that has largely gone in many recent OLED phones.

The tablet also has major issues with HDR content. While it supports HDR 10+ and Dolby

Vision, we found HDR content on YouTube exhibited very obviously raised blacks. It makes it seem as though you are watching on a low-quality LCD display, so hopefully this will be fixed in a software update.

This tablet also supports the Precision Pen 3 stylus, although it is not included as standard. It's a full-size pen with 4,096 levels of pressure sensitivity and intuitive tilt detection.

This isn't a basic active stylus, as it has a battery and wirelessly charges when you attach it to a magnetized spot on the tablet's back. And the single button can be used to bring up a shortcut menu on the tablet itself.

It feels good to use, although the lag – how far the line drawn trails behind the stylus nib – varies quite a bit between apps. The preinstalled note-taking app is super responsive, but there's noticeable lag in Infinite Painter, although its virtual pencils work beautifully with the pen's tilt detection.

## PERFORMANCE

A common criticism of Android tablets is that they are basically huge phones,



This tablet also supports the Precision Pen 3 stylus.

with little in the way of optimization to make them seem more than that. That would still largely be the case if you left it to Google – maybe this will change in 2023 with the Pixel Tablet.

Google made sure Android apps can generally scale to screens of different shapes, resolutions and sizes, and called it a day, more or less. That doesn't matter too much in cheap tablets, but in pricier ones like the P11 Pro it's left to the manufacturer to go a little further.

You only really see the results of this when you attach the Tab P11 Pro's keyboard, which makes it enter 'Productivity mode'. This is an interface designed to look and feel a bit more like Windows or macOS.

Some touchscreen navigation gestures are disabled, there's a more





The tablet's interface looks like Windows or macOS.

built-up status and app shortcut bar at the bottom. Apps also load in scalable windows, rather than automatically filling up the screen.

It makes the tablet look more like a laptop but, as usual with these custom UI layers, a few creaky parts remain. The big one is that most apps will launch as little portrait aspect windows, making it look as though you just booted up an Android phone emulator on, say, a Windows laptop.

If you want to use the P11 Pro as a laptop, you can. But you will have to put up with reminders it wasn't made for the job.

A MediaTek Kompanio 1300T runs the show, and this seems to be very similar to the better-known Dimensity

1200 used in phones like the OnePlus Nord 2. It's a solid processor, but not nearly as powerful as those of any of the iPads sold today.

In Geekbench 5 it scores 2823 points (772 per core), where the basic iPad 10.2 scores around 3300 and the iPad 10.9 around 4200 points.

The gap grows when you look at a GPU-led test like 3D Mark's Time Spy. The P11 Pro manages 4422 compared to around 7,300 in the cheap 10.2in iPad, 8,600 in the 10.9in iPad.

**Geekbench 5 (multi-core)**

Lenovo Tab P11 Pro 2nd Gen: 2,823

Lenovo Tab P11 Pro 1st Gen: 1,786

Apple 10.2in iPad (2021): 3,384

Apple 10.9in iPad (2022): 4,175



The kickstand lets you use the Lenovo more like a laptop.

Samsung Galaxy Tab S6 Lite: 1,230

Samsung Galaxy Tab S7 FE: 1,957

### 3D Mark Time Spy

Lenovo Tab P11 Pro 2nd Gen: 4,422

Apple 10.2in iPad (2021): 7,300

Apple 10.9in iPad (2022): 8,600

Lenovo comes out better if we compare the P11 Pro to Samsung tablets instead. It is much more powerful than the Samsung Galaxy Tab S6 Lite, and the GPU side is punchier than that of the ageing Samsung Galaxy Tab S7 FE. It also comfortably outpaces its predecessor, the 2021 Tab P11 Pro.

However, run Fortnite and you see the downside of buying a tablet with an unusual SoC, released without much fanfare. It will only run at bog-standard graphics settings even though the P11 Pro should have the power to do much better. Only Medium (or below) graphics is available, and 30fps is the maximum frame rate setting. It runs very well, but the game will look a whole lot better on some other tablets.

### BATTERY LIFE AND PHOTOGRAPHY

The Lenovo P11 Pro has an 8,000mAh battery, the same size as the Samsung Galaxy Tab S8's, which has a similar-

sized screen.

As is usually the case with Lenovo tablets, it lasts a good long while when playing video. Streaming YouTube it lasts 12.5 hours, a bit below Lenovo's 14 hour claim but close enough to make that seem feasible at lower brightness, or using a different app.

On the other end of the scale, the tablet should last around 5.5 hours of 3D gaming based on our testing.

Battery life is good, but the cameras? Not so much. The P11 Pro has a single 13Mp rear camera with a flash and a front 8Mp camera.

Stills are going to look significantly worse than those of any half-decent recent phone that costs upwards of, say, £180. Night images are very poor, and while daytime ones can look okay, we're dealing with a pretty small camera sensor here so they are never



The P11 Pro has a single 13Mp rear camera with a flash and a front 8Mp camera.

going to be great.

The Lenovo P11 Pro rear camera can shoot video too, at up to 4K resolution. However, there's no software stabilisation so handheld clips are liable to look jerky.

Around the front, the 8Mp camera is more notable despite being lower-spec, mostly because it's going to do a better job for video chat than the average laptop webcam. While lower light video looks quite noisy, this front camera can capture a solid amount of facial detail even in slightly murky indoors lighting. While your phone may still have better hardware, using the P11 Pro for video calls is a sound idea.

## VERDICT

The Lenovo Tab P11 Pro Gen 2 is a solid Android tablet that is going to struggle to compete with the iPad 10.2 and 10.9. It sits between these two in price and isn't as powerful or as expensive-feeling as either.

It also lacks the core appeal of the Samsung Galaxy Tab S6 Lite, which offers one of the cheapest ways to get a quality digital art tablet.

Mid-tier tablets like this really struggle to get out of the iPads' long shadows, and the plasticky feel of the outer shell doesn't help. However, there's plenty of good stuff

to appreciate here, like the strong speaker array, good light-use battery life and punchy OLED display – at least when not playing HDR video, as that is bugged out at launch. **Andrew Williams**

## SPECIFICATIONS

- 11.2in (2,560x1,536; 267ppi) OLED, HDR10+, Dolby Vision, 120Hz display
- Android 12
- MediaTek Kompanio 1300T (6nm) processor
- Octa-core (4x 2.6GHz Cortex-A78, 4x 2GHz Cortex-A55) CPU
- Mali-G77 MC9 GPU
- 4GB/6GB/8GB RAM
- 128GB/256GB storage
- Rear-facing camera: 13Mp, f/2.4, (wide), AF
- Selfie camera: 8Mp
- Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct
- Bluetooth 5.1, A2DP, LE
- GPS, GLONASS
- USB Type-C 3.0, OTG, magnetic connector, video output
- Non-removable 8,200mAh lithium-polymer battery
- 263.7x166.7x6.8mm
- 480g



**INSIDE:** INTRODUCING MICROSOFT DESIGNER

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# Motorola Razr 2022

**Price:** £949 from [fave.co/3keVAZ6](https://fave.co/3keVAZ6)



**M**otorola is back for another stab at the modern foldable phone and the Razr 2022 is the third-generation attempt.

It's been a couple of years since the last model, and the Razr 2022's predecessors both had some issues that need ironing out.

The good news is that the main complaints, including performance, cameras and most importantly, price,

have all been heavily improved to offer a tempting option to compete with the Samsung Galaxy Z Flip 4, the dominating clamshell foldable in Western markets.

The question is, has Motorola done enough? You might be surprised...

## DESIGN

The Razr 2022 is the same but different when compared to the 2020 Razr 5G.

That was unmistakably a Razr but this year the iconic chin is completely gone, for better or worse.

On the one hand, it no longer gets in the way of using the main screen when the phone is unfolded. But it also means the phone loses some of its personality, looking similar to other clamshell foldables on the market.

Still, the phone remains slick and desirable and it's clear Motorola has refined things further with no visible screws on the hinge, for example.

It is slightly weightier at 200g, and it's fairly wide even when folded, closely mirroring the width of the iPhone 14 Pro Max at 79.8mm wide. Of course, it doesn't matter as much when the thing folds down to a pocketable 86.5x79.8x17mm, but it's worth noting.

Whether you like the new, slightly glittery, satin-textured rear cover will be down to personal preference, but previous models were far too slippery, so this does add a bit more grip. This applies to the lower section, whereas the top part with the secondary screen is all glass.

One thing I'm not so keen on is the way the

power button and volume buttons are all grouped into a small space on the right side. The folding nature means the power button is either on top or below depending on whether the phone is open or closed.

This would be easily remedied if the volume buttons were on the left side of the phone. The current positioning can also make it tricky to unlock the phone using the fingerprint scanner embedded within the power button, as I found myself constantly resting my finger on the volume buttons instead.

It's also a little too high up the phone (when open) for it to be comfortable and registers a lot of accidental brushes of fingers, so there's certainly some work to be done there.

There's still no IP waterproof rating unlike Samsung's popular Galaxy Z



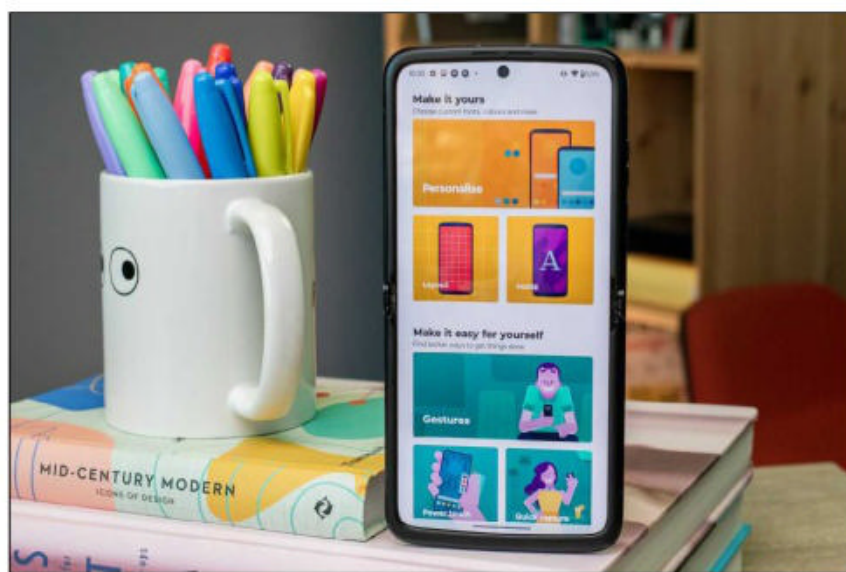
The Razr is a slick and desirable device.

Flip 4 so you'll have to make do with a water-repellent coating once again. It should be okay in very light rain, but I wouldn't trust it in anything more.

## DISPLAYS

When it comes to the displays, it's a story of two halves; while there have been significant upgrades to the internal foldable display, the exterior 2.4in display is essentially the same as its predecessor.

Let's start with the big foldable display. It's larger this time around at 6.7in, giving the likes of the Google Pixel 7 Pro and iPhone 14 Pro Max a run for their money, complete with a super-fast 144Hz refresh rate and HDR10+ support. It's ideal for watching videos on the punchy AMOLED screen.



The crease – which has plagued foldables since their inception – is nearly unnoticeable on the Razr.

That means that while the phone is compact in its folded form, it's fully in big phone territory when unfolded, offering the big-screen experience without the associated size and weight. It's bright, crisp and detailed, with no real downgrades compared to standard slab phones.

In fact, the crease – which has plagued foldables since their inception – is nearly unnoticeable on the Razr, making it instantly more appealing than the likes of the Galaxy Z Flip 4. With a new hinge system at play, the indentation is barely noticeable even when running a finger over it, and when looking front-on, it's difficult to spot the curvature.

Glancing from the sides will reveal a slight crease, but when was the last time you looked at your phone side-on?

It's truly a phenomenal feat of engineering and the Motorola team should give itself a pat on the back for that one.

As noted, the external 2.7in HFD+ display remains unchanged, but that's not a huge deal. It offers a distinctly different experience from the 1.7in display on the



The Razr's external 2.7in HFD+ display is the essentially same as its predecessor.

Z Flip 4, with the ability to reply to incoming messages, open apps (albeit awkwardly), control music and even access high-quality cameras for selfies.

Core display experience aside, the foldable nature of the phone had the bonus effect of stopping me from mindlessly scrolling as often as I usually would. The barrier of having to first unfold the phone makes me question whether I really need to use my phone at that point.

When texts and other notifications came through, I could simply check and respond on the exterior display and move on. It's not perfect for texting admittedly, with a relatively small on-screen keyboard within that 2.7in display, but it worked well for quick, simple replies.

As you might expect, the audio performance isn't that impressive on the Razr, but it'll suffice for watching TikToks and YouTube videos on the go. Dolby Atmos support provides a high-quality audio experience with connected headphones, with tailored modes for everything from music to movies to podcasts.

The big disappointment is the loudspeaker – while it's plenty loud enough to take calls on speakerphone, for some reason, participants can't hear me with the functionality active, complaining that I sound like I'm 'underwater'. It happened with different people on different calls in different locations, so it's certainly not down to signal either.

It may sound like a small thing, but as someone that puts calls on speaker fairly often, it's a frustrating annoyance that I hope can be fixed via software update.

## PERFORMANCE

The Motorola Razr 2022 sports Qualcomm's very power-efficient Snapdragon 8+ Gen 1 chipset. It was the very best chipset on the market at



launch, though it's worth noting that it has recently been replaced by the Snapdragon 8 Gen 2.

That said, the pairing of the 8+ Gen 1 and 8GB of RAM makes for a speedy experience on the Razr, further enhanced by that buttery smooth 144Hz refresh rate that makes everything feel instantaneous. There was no hint of stutter or lag no matter what I was doing on the phone, and considering its sleek form factor, that's pretty impressive.

It's not a dedicated gaming phone and as such, it should come as no surprise that it can get hot over longer gaming sessions, but for the occasional game of Call of Duty Mobile or PUBG, it should more than suffice. We've got a rundown of the best gaming phones if gaming really is your thing.

Simply put, the 2022 Razr gets a massive upgrade performance compared to the mid-range Snapdragon 765G chipset that shipped with the previous Razr 5G, making it worth its premium price tag. If you're curious, here's how it stacks up to the foldable



The Motorola Razr 2022 comes with Qualcomm's Snapdragon 8+ Gen 1 chipset.

(and non-foldable) competition in benchmarking apps:

**Geekbench 5 (multi-core)**

- Motorola Razr 2022: 4,102
- Motorola Razr (2020): 1,894
- Samsung Galaxy Z Flip 4: 3,659
- Samsung Galaxy S22: 3,199
- Asus Zenfone 9: 3,294
- Xiaomi 12: 3,754
- OnePlus 10 Pro: 3,429

**GFX Manhattan 3.1**

- Motorola Razr 2022: 92fps
- Motorola Razr (2020): 48fps
- Samsung Galaxy Z Flip 4: 77fps
- Samsung Galaxy S22: 56fps
- Asus Zenfone 9: 91fps

Xiaomi 12: 114fps  
OnePlus 10 Pro: 60fps

## Battery life

Motorola Razr 2022: 9 hours, 9 minutes  
Motorola Razr (2020): 6 hours, 24 minutes  
Samsung Galaxy Z Flip 4: 7 hours, 42 minutes  
Samsung Galaxy S22: 10 hours, 28 minutes  
Asus Zenfone 9: 13 hours, 37 minutes  
Xiaomi 12: 9 hours, 32 minutes  
OnePlus 10 Pro: 11 hours, 20 minutes

## Charge in 30 minutes

Motorola Razr 2022: 59%  
Motorola Razr (2020): 39%  
Samsung Galaxy Z Flip 4: 48%  
Samsung Galaxy S22: 53%  
Asus Zenfone 9: 56%  
Xiaomi 12: 90%  
OnePlus 10 Pro: 94%

Performance aside, you get the latest connectivity including 5G, Wi-Fi 6E and Bluetooth 5.2, and there's 256GB storage as standard.

## PHOTOGRAPHY

Performance wasn't the only issue with the original Razr – the camera set-up was

another weakness, with a single rear-facing 48Mp snapper and an internal 20Mp snapper. They were fine, but nothing to write home about. It's safe to say that has changed with the Razr 2022.

Now don't get your hopes up and expect the same multi-camera set-up as the likes of the Samsung Galaxy S22 Ultra as the foldable form factor simply doesn't allow for it, but the camera offering is much more competitive this time around.

The main star of the show is the rear-facing 50Mp snapper, with an aperture of f/1.8 and OIS. While a 2Mp jump doesn't sound like much, the sensor has been upgraded to offer something near flagship level.

It's capable both during the day and, much to my surprise, at night too, with decent nighttime performance without



The main star of the show is the rear-facing 50Mp snapper.

the need for a tripod. It certainly helps that, as with the Z Flip 4, you can half-fold the Razr and stand it nearby, ideal for both selfies and videos.

It's a huge upgrade that makes the Razr a much more attractive option, with results that can compete with other high-end competition.

That's flanked by an all-new 13Mp 120-degree ultrawide camera, adding a wider perspective to shots. It's not quite as impressive as the main sensor, with a notable drop in overall quality when viewing images side-by-side. Images are softer overall, and lack the crisp detail of the main sensor. Still, it's more than enough for social media sharing

– just don't try and use it for nighttime photography with an aperture of f/2.2.

The rear camera has also had a bump in the video department, going from 4K at 30fps to 8K at 30fps with a 4K at 60fps option also available.

There is a 32Mp internal selfie camera, but with the ability to close the phone and use the exterior cameras to take selfies using the outer display as a viewfinder, I find it to be pretty redundant. The images from the main sensor are, unsurprisingly, more detailed with better dynamic range and vibrancy, but it'll more than suffice for video calling. Here are a few snaps to show what the camera set-up is capable of:

Here's a selection of our test shots taken with the main lens.













## **BATTERY LIFE**

Considering the form factor on offer from the Razer and the fact the battery tops out at 3,500mAh, I was pleasantly surprised by just how long it could last, no doubt benefiting from the impressive power efficiency of the Snapdragon 8+ Gen 1.

I wouldn't consider myself a power user by any means, but I do regularly text, call and scroll through social media on my phone, and apps like TikTok in particular usually hammer battery life.

However, I found that I'd comfortably last all day on a single charge, getting to bed after a 14 to 16-hour day with

around 30 percent battery left in the tank. That's not enough for a second full day, but it certainly helps alleviate battery anxiety, and makes for a nice change compared to the lacklustre battery life of the original.

It achieved a fairly decent nine hours nine minutes in our PCMark battery test benchmark, comfortably beating the 7 hours 42 minutes of the foldable Galaxy Z Flip 4, though unsurprisingly it can't compete with standard candybar phones like the Sony Xperia 10 IV and its crazy 24:52 battery life score.

Still, the inclusion of 30-watt fast charging is welcome, providing 30



percent charge in 15 minutes, 59 percent in 30 minutes and a full charge in just over an hour. The 30-watt charging brick comes in the box too, a nice change compared to a growing number of phone manufacturers.

## SOFTWARE

Motorola keeps things simple on the software front. The phone ships with Android 12 but the firm sticks with a stock-like experience, avoiding the annoyance on other Android phones where you have duplicate apps, bloatware and a frustrating user experience.

The likes of TikTok and Facebook are pre-installed which is more than normal but it's likely many users will want these anyway.

Otherwise, there are just a couple of basic games and the very useful Moto app which contains various tips, settings and gestures. Doing a karate chop gesture to activate the torch is a personal favourite of mine. Yes, really.

I like Motorola's touches dotted around the OS such as the dynamic wallpaper which moves when you open and close the Razr, although it can get



The phone ships with Android 12.

a bit jerky if you don't do it in a smooth motion. The clock widget is one of the best out there with info on battery, date and weather and I also love the tweaks to the exterior display to make it more useful, with shortcuts to apps, the weather and the camera app.

The only downside is the update promise. Unlike manufacturers like Samsung offering four years of OS upgrades with its smartphones, Motorola has only confirmed that the Razr will get one update to Android 13, with no word on longer-term support.

If you like to stay on the bleeding edge of Android updates, Samsung's One UI-powered Z Flip 4 could be a more tempting option. It has been promised four years of Android updates and five of security patches.

## VERDICT

The original foldable Razr was certainly a looker, but it relied heavily on the nostalgia of the old clamshell with a lacklustre camera set-up and middling performance despite a very high-end price tag. Thankfully, Motorola has fixed that with the Razr 2022.

It's no longer a compromise to own a foldable, offering flagship-level performance, a stunning display with a barely noticeable crease and a boosted camera set-up that better allows the Razr to compete with high-end alternatives, both foldable and non-foldable.

Sure, there are still a few compromises to be had, particularly around durability without any official water resistance, and the single Android OS update commitment is a massive disappointment compared to the four years of Samsung's foldable, but it remains a solid choice that undercuts most of the foldable competition. Lewis Painter

## SPECIFICATIONS

- 6.7in (2,400x1,080; 393ppi) Foldable AMOLED display; Second external AMOLED display, 2.7in (573x800)
- Android 12
- Qualcomm SM8475 Snapdragon 8+ Gen 1 (4nm) processor
- Octa-core (1x 3.19GHz Cortex-X2, 3x 2.75GHz Cortex-A710, 4x 1.8GHz Cortex-A510) CPU
- Adreno 730 GPU
- 8GB/12GB RAM
- 128GB/256GB/512GB storage
- Dual rear-facing cameras: 50Mp, f/1.8, (wide), 1/1.55in, 1.0µm, PDAF, OIS; 13Mp, f/2.2, 120-degree (ultra-wide), 1.12µm, AF
- Selfie camera: 32Mp, f/2.4, (wide), 0.7µm
- Wi-Fi 802.11 a/b/g/n/ac/6e, dual-band, Wi-Fi Direct
- Bluetooth A2DP, EDR, LE
- GPS (L1+L5), GLONASS (L1), BDS (B1I+B1c+B2a), GALILEO (E1+E5a), QZSS (L1+L5)
- NFC
- USB Type-C 3.1
- Fingerprint scanner (side-mounted)
- Non-removable 3,500mAh lithium-polymer battery
- Unfolded: 167x79.8x.6mm; Folded: 86.5x79.8x17mm
- 200g





# Asus ROG Phone 6

**Price:** £899 from [fave.co/3W62lta](https://fave.co/3W62lta)



If you're familiar with dedicated gaming phones in 2022, one brand probably comes to mind: Asus.

The ROG (Republic of Gamers) Phone made its debut four years ago, and has since established itself as the go-to handset for mobile gamers. That's despite fierce competition from brands such as Red Magic, Black Shark and even Poco.

But even if you're set on an Asus handset, there are four devices in the latest ROG Phone 6 Series to choose from. The regular 6 is the second cheapest of these, coming in at just under £1,000 when paying full price.

As it turns out, this is the sweet spot for most people – the extra features on Pro and Ultimate handsets don't justify the increased cost. Here's my full review.

## DESIGN

There are plenty of similarities between the ROG Phone 6 and 6 Pro, starting with design. But that might isn't obvious from most of the photos in this review, which show the Diablo Immortal special edition I tested.

The image below illustrates what you can expect on the regular version:

You'll probably be buying the regular version instead, which shares its Pro sibling's gamer aesthetic without being too wacky or garish. Only being available in black or white emphasises this, although you still get some RGB lighting, something that rarely makes its way to regular phones.

However, not all RGB lights are created equal. The secondary 'ROG Vision' display from the 6 Pro and 6D Ultimate is gone, replaced by a large light strip on the right side.

This can be customized in Settings and works in tandem with the small 'Dare to Play' logo on the opposite side, alerting you of incoming calls or notifications. As someone who often has their phone on silent, this was a great subtle way to ensure I didn't miss anything important.

Of course, it's not quite as capable as that secondary display, which can also be used for battery percentage and accessory details. But given the ROG Vision screen doesn't support notifications or respond to touch, I'd argue this is actually an upgrade.

You'll notice splashes of colour and branding elsewhere on the back of the phone, but the only other core design element is the rear camera module. It adopts an irregular hexagonal shape and extends across the top of the phone, but I quite like its quirky design.

One minor gripe is that it protrudes from the back of the phone, though that's quite usual these days and can easily be solved by applying the case included in the box. Even without it, there's no adverse effect on gaming in landscape mode.



The ROG Phone 6 in white (left) and black (middle), next to the 6 Pro.



You'll notice splashes of colour and branding on the back of the phone.

The most demanding games all use this orientation, so it's great to see Asus include two USB-C ports. Alongside the regular one at the bottom, there's another on the left side (this becomes the bottom while gaming). It's a great



The ROG Phone 6 has a 3.5mm headphone jack.

feature, meaning you can easily charge and play at the same time.

But the ROG Phone 6 has another port you won't find on most 2022 phones: a 3.5mm headphone jack. It's great to still have the option for wired headphones, which still provide a superior audio experience to wireless.

Either side of the regular power and volume controls are shoulder triggers, a useful alternative to on-screen controls, which can become fiddly at times. These can be customized to your liking via the Game Genie software once you boot up a relevant app.

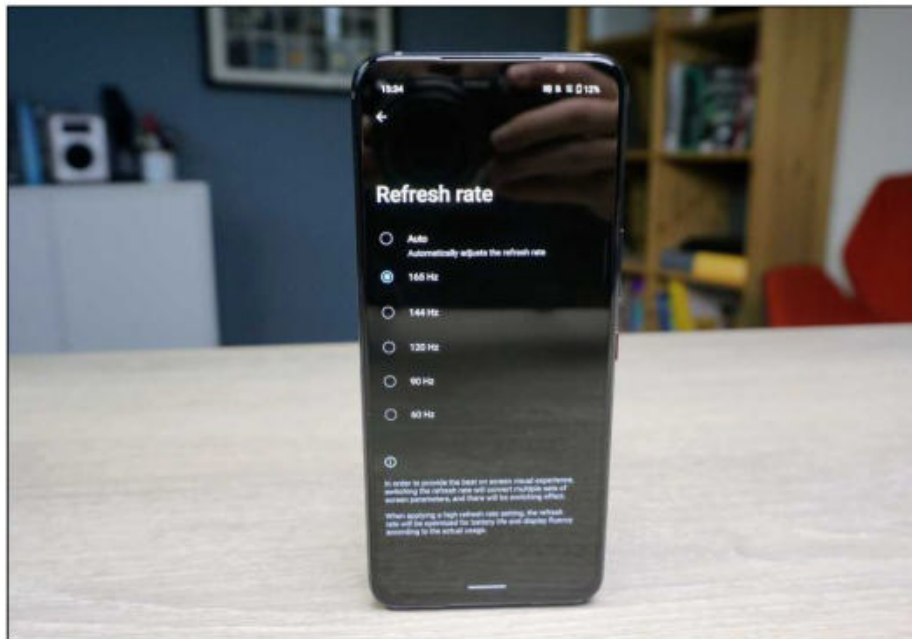
As you might expect from a 6.78in gaming phone, the ROG Phone 6 is a bulky device. At 239g, it's identical to the 6 Pro and one of the heaviest handsets out there. The size of that screen and 10.3mm thickness makes it unwieldy and not easily pocketable, but that probably won't come as a surprise.

## DISPLAY

Let's talk about that 6.78in screen, then. Asus has gone for the exact same display as the 6 Pro, which reflects well on this cheaper phone.

It's a 2,448x1,080 OLED panel, giving it a very specific





The display's headline feature is its 165Hz refresh rate.

20.4:9 aspect ratio. That makes it a tall phone, but not quite to the same degree as Sony's Xperia handsets.

However, the headline feature here is that 165Hz refresh rate. It's the joint-highest you'll find on any phone, alongside the other ROG Phone 6 handsets and recent Red Magic phones.

However, I'd recommend setting it to 'Auto' mode, which automatically switches between 60-, 90-, 120-, 144- and 165Hz to help conserve battery life.

Combined with 720Hz touch sampling (how many times the display can register touch input each second) everything feels incredibly slick and responsive. Performance on this phone is outstanding, but it's the display that gives it the real wow factor.

The screen delivers rich, vibrant colours which really pop – helping to enhance the gaming experience. Despite only being Full HD, I have no complaints about the level of detail on offer.

It also gets impressively bright, hitting a maximum of 515 nits during testing. I had no problem using the phone

outside, even if direct sunlight is in short supply at this time of year.

Within the display, you'll find the main unlocking method: an under-display fingerprint scanner. These have been commonplace in phones for a while now, and this one is particularly impressive. It's easy to set up, reliable and relatively quick – I couldn't ask for much more.

Alternatively, you can use face unlock via the 12Mp selfie camera. It's incredibly fast, but lacks the extra security of something like Apple's Face ID or the fingerprint sensor. As a result, I wouldn't recommend using it as your main unlocking method.

That selfie camera is located within some large bezels by modern phone

standards, but that's actually one of the ROG Phone 6's strengths. The absence of any notch gives it an attractive symmetry, while having something to hold onto while gaming is helpful.

Asus has put this area to good use, as you'll also find dual front-facing stereo speakers. The audio they produce is far superior to most phones, with great detail and an impressive depth to the sound. One of these doubles as the earpiece, meaning calls are very clear and get plenty loud enough.

They certainly add to the experience while gaming, although you'll still want to connect headphones for the absolute best quality.



Within the display, you'll find the main unlocking method: an under-display fingerprint scanner.

## PERFORMANCE

Like the 6 Pro, the ROG Phone 6 is powered by the 5G-enabled Snapdragon 8+ Gen 1 chip. This is no longer Qualcomm's latest and greatest, following the release of the Snapdragon 8 Gen 2, but it remains a supremely capable chipset.

While you might be tempted to wait for a gaming phone that uses the 8 Gen 2, there's really no need. The ROG Phone 6 delivers truly excellent performance, blazing through everything I could throw at it with ease.

Of course, that included some of the most demanding games on the Google Play Store. Call of Duty: Mobile was a particular highlight, with ultra-slick

gameplay and shoulder triggers that felt like they gave me the upper hand over opponents.

That also applies to PUBG Mobile, although there are a few more controls there that you'll need to master. But don't worry if you're not a fan of combat games – the likes of Asphalt 9 and FIFA Mobile are just as impressive, with not even a hint of stutter or hesitation.

In all four of those titles, the high refresh rate and 720Hz touch sampling combine for an impressively slick and responsive experience. That's despite none being able to output at that ultra-high refresh rate.

There's a much smaller selection that can, but nothing that will properly test the ROG Phone 6. Popular casual games such as Hill Climb Racing and Subway Surfers were fun to play, but phones that cost a fifth of the price can still handle them fine. It's certainly not what you should be buying a dedicated gaming handset for.

It's worth noting that my impressions only apply to the top-spec model with 18GB of RAM. The cheapest version is limited to 12GB, but I'd be very surprised if there was a noticeable drop-off in performance.

In general, the Snapdragon 8+ Gen 1 is considered slightly more powerful than the MediaTek Dimensity 9000+ that powers the ROG Phone 6D and 6D Ultimate. The benchmarks below certainly suggest that's the case.



The ROG Phone 6 delivers truly excellent performance, blazing through everything I could throw at it with ease.

### **Geekbench 5 (multi-core)**

ROG Phone 6: 3,607  
ROG Phone 6 Pro: 4,162  
ROG Phone 6D Ultimate: 3,554  
ROG Phone 5s Pro: 3,626  
Red Magic 7S Pro: 4,192  
Black Shark 5 Pro: 3,699

### **GFX Manhattan 3.1**

ROG Phone 6: 107fps  
ROG Phone 6 Pro: 100fps  
ROG Phone 6D Ultimate: 91fps  
ROG Phone 5s Pro: 100fps  
Red Magic 7S Pro: 120fps  
Black Shark 5 Pro: 118fps

### **Battery life**

ROG Phone 6: 12 hours, 43 minutes  
ROG Phone 6 Pro: 11 hours, 51 minutes



ROG Phone 6D Ultimate: 12 hours, 31 minutes  
 ROG Phone 5s Pro: 13 hours, 1 minute  
 Red Magic 7S Pro: 10 hours, 37 minutes  
 Black Shark 5 Pro: 9 hours, 6 minutes

## Charge in 30 minutes

ROG Phone 6: 80%  
 ROG Phone 6 Pro: 88%  
 ROG Phone 6D Ultimate: 71%  
 ROG Phone 5s Pro: 25%  
 Red Magic 7S Pro: 100%  
 Black Shark 5 Pro: 100%

But it wouldn't be a gaming phone without accessories, and the ROG Phone 6 has plenty that are compatible.

The one you'll probably want to use is the AeroActive Cooler 6 fan, which attaches via the side-mounted USB-C port. This is particularly effective during longer gaming sessions, when the phone is prone to running on the hot side.

It includes two physical buttons which can be used to control games, but I still wish Asus had included a fan within the body of the device. Nubia's Red Magic phones have shown how effective this can be – the hassle of an extra accessory doesn't seem necessary.

The other one you might want to use is the Kunai 3 Gamepad, which delivers an effective console-esque

controller experience. You can either use it wirelessly like an Xbox controller or attach either side of the phone like a Nintendo Switch.

While the model I tested has a generous 512GB of storage, the cheaper version drops down to 256GB. This should still be fine for most people, but you'll need to make sure – there's no support for expandable storage.

## PHOTOGRAPHY

All four ROG Phone 6 handsets share the same four cameras. That reflects the fact that they're not a priority on gaming phones, but some of the lenses are better than you might expect.

That's particularly true of the 50Mp main sensor, which delivers decent stills across a range of scenarios. I was especially impressed with the way it handled architecture, preserving key details without blowing out the exposure of the background.

Landscape shots are also solid, although that's when you'll probably want to switch to the 13Mp ultrawide lens. It has a 125-degree field of view, but unfortunately there's a noticeable drop-off in quality. Many photos are still usable, but dynamic range is clearly affected.

There is a separate 5Mp macro lens, which I enjoyed using for close-up shots

of flowers and plants. It worked better than on most phones, but still doesn't feel like a good use of space.

A dedicated telephoto sensor would have been much more useful. Without it, moving beyond 2x zoom (it can go to 8x digitally) isn't worth it for anything more than reference purposes.

There's also no depth sensor, but it's not a requirement for great portrait-style photos these days. The ROG Phone 6 can produce an attractive background blur, but struggles with edge detection like so many phones.

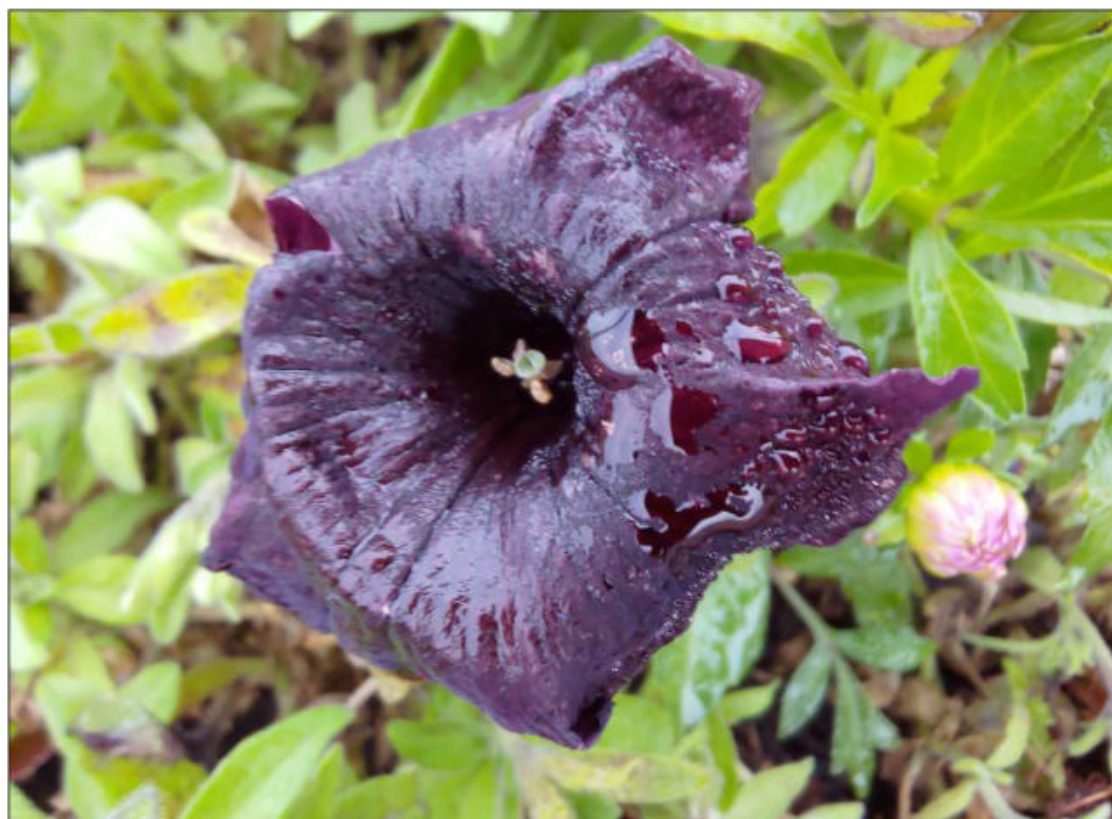
Both the main and ultrawide lenses benefit from a Night mode, which is automatically enabled when taking a

shot in low light. You'll have to wait a few seconds for the photo, but it does a good job of brightening without losing the key details.

On the front, you'll find a single 12Mp lens. The selfies it produces have an impressive level of detail and handle exposure well – just make sure you turn off beauty mode for the best results.

Check out some of my camera samples in the gallery below:

It's also worth mentioning video. The ROG Phone 6 can capture footage up to 8K at 24fps, but the default Full HD at 30fps is a better option for most people. Its colour accuracy and level of detail is fine, but without optical image



We'll start off our series of test shots with a macro photo.

Next up we have the same scene taken with a 0.6x lens...



...1x lens...







...2x lens...



...and 8x lens.



Here's an image shot using night mode...



...and here's a low light photo.





We'll finish off with a selfie.

stabilization (OIS) footage is juddery with any significant movement.

## **BATTERY LIFE**

Asus is usually generous with battery capacity on its gaming phones, and that's no different here. The ROG Phone 6 has two 3,000mAh cells, giving a total of 6,000mAh.

Battery life is solid as a result. You can expect a full day on a single charge, even with the refresh rate set to 165Hz. But of course, it'll last significantly longer on 'Auto' mode, which can automatically drop down to 60Hz (or something in between) depending on

what you're doing.

That's the setting I used for PCMark's battery benchmark, which simulates real-world usage at a typical 200 nits of brightness. A score of 12 hours and 43 minutes is impressive, although long gaming sessions will deplete the battery much more quickly.

When you do run out, just plug the 65-watt charger into either of the USB-C ports. Unlike many phones these days, it's included in the box, albeit not the fastest.

I recorded 39 percent in 15 minutes, then 80 percent in 30 minutes. You're still looking at under 45 minutes for a



full charge, but it's not particularly impressive by modern standards.

Disappointingly, Asus is yet to add wireless charging to any of its gaming phones. This isn't a dealbreaker, but should be available on a device that costs almost £1,000.

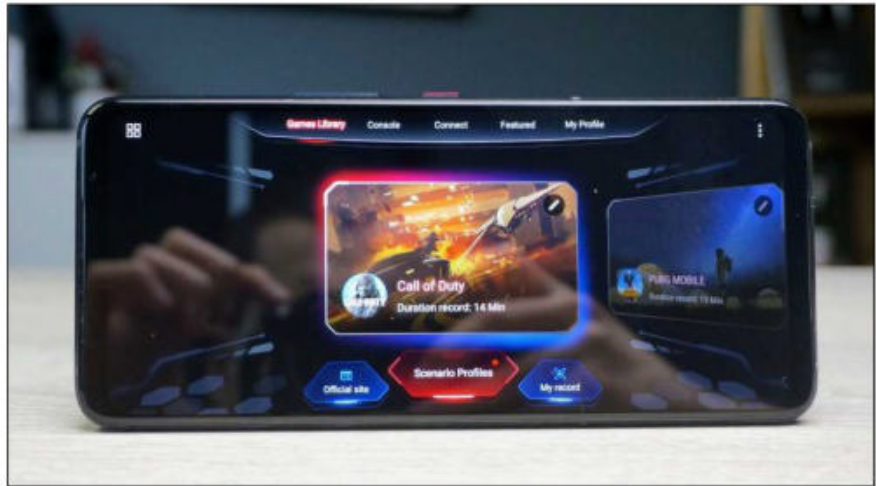
## SOFTWARE

The ROG Phone 6 is built for gaming, but Asus also wants you to use it as a regular phone. That's reflected in the software, with a combination of the Zen UI and ROG UI skins over Android 12.

Zen UI is what you'll find on other Asus phones, and it's surprisingly close to the experience on Pixel handsets. Android 12's distinct quick settings menu, rounded corners and Google Discover feed are all here, and Asus has kept bloatware to a minimum.

But turning on what's known as 'X Mode' changes the wallpaper, shifts the colour scheme to red and makes it clear you're ready to game. It's not a huge change, but I like the distinction between the two.

You can launch games like usual, but Asus would prefer you used the Armoury Crate companion app instead.



Asus offers a wide range of settings to fine tune your gaming experience.

It offers a wide range of settings to fine tune your experience, while Game Genie offers an extensive toolbar once you've started playing.

In terms of updates, Asus commits to only two major versions of Android. That means it'll get Android 13 (expected in Q1 of 2023) and Android 14, but only security updates until 2024 after that.

Many Android phone makers are more generous these days, so it's an area Asus could improve on.

## VERDICT

There are loads of options when it comes to gaming phones in 2022, but I believe the regular ROG Phone 6 is the best for most people.

It excels at the fundamentals, delivering stellar performance, a stunning display and great battery

life. With decent cameras, two USB-C ports and even a headphone jack, there's a lot to like here.

However, it's not perfect, with a lack of wireless charging and poor software update commitment the most prominent. You'll also need to connect a fan for long gaming sessions.

But none of these are dealbreakers for most people, and the ROG Phone 6 provides such a well-rounded experience elsewhere. If you're serious about gaming on your phone but just want the best core experience, this is the phone to buy. Anyron Copeman

- Bluetooth 5.2, A2DP, LE, aptX HD, aptX Adaptive
- GPS (L1+L5), GLONASS (L1), BDS (B1I+B1c+B2a), GALILEO (E1+E5a), QZSS (L1+L5), NavIC (L5)
- NFC
- USB Type-C 3.1 (side), USB Type-C 2.0 (bottom), OTG, accessory connector
- Fingerprint scanner (under display, optical)
- Non-removable 6,000mAh lithium-polymer battery
- 173x77x10.3mm
- 239g

## SPECIFICATIONS

- 6.78in (2,448x1,080; 395ppi)  
AMOLED, 65Hz, HDR10+ display
- Android 12
- Qualcomm SM8475 Snapdragon 8+ Gen 1 (4nm) processor
- Octa-core (1x 3.19GHz Cortex-X2, 3x 2.75GHz Cortex-A710, 4x 1.8GHz Cortex-A510) CPU
- Adreno 730 GPU
- 8GB/12GB/16GB RAM
- 128GB/256GB/512GB storage
- Triple rear-facing cameras: 50Mp, f/1.9, (wide), 1/1.56in, 1.0µm, PDAF; 13Mp, f/2.2, (ultra-wide); 5Mp, (macro)
- Selfie camera: 12Mp, 28mm (wide)
- Wi-Fi 802.11 a/b/g/n/ac/6e, tri-band, Wi-Fi Direct



# Microsoft's biggest wins, fails and WTF moments of 2022

Just another weird wonderful and wacky year for Microsoft. **MARK HACHMAN** reports

It's not unexpected to think that, after two years of a global pandemic that bounced employees and workers and supply chains around like billiard balls, that 2022 would be a little weird. And for Microsoft, it was: confusing, a bit random, but full of some unexpected successes.

Microsoft's Surface division? Dull, but with a few sparks of life. Windows? Unexpectedly strange. As for the rest of it, yes, we definitely scratched our heads. As we sit next to our glowing monitor, a glass of eggnog next to our mousepad, here's the wins, fails and WTF? moments of Microsoft's 2022.



## **SURFACE PRO 9 (5G): WIN**

We were one of the few publications that actually liked the Surface Pro 9 (5G), an Arm tablet that still suffers from some of the compatibility issues of its forebears. But the Surface-on-Arm premise has always been to power a few key Microsoft apps: Edge, Office, Teams, and so on. In this, the Surface Pro 9 (5G) performs well enough to earn our seal of approval.

We've criticized Windows on Arm devices before because of their performance issues, in part because if you wander too far afield, the anaemic processor performance combined with compatibility issues can deliver a subpar experience. It's a little weird to reserve the 5G option for just the Arm platform, but the choice doesn't really diminish the Surface Pro 9 experience.

## **ARM VERSUS QUALCOMM: FAIL**

Underneath the Surface Pro 9 (5G), however, is a head-scratching mess. Qualcomm, the so-far exclusive provider of Windows-on-Arm PC hardware, is currently embroiled in a patent suit with its IP provider, Arm, which still hasn't been settled.

Qualcomm Snapdragon processors don't have a sparkling reputation in the PC space – see the Surface Pro 9 (5G)



We were one of the few publications that liked the Surface Pro 9 (5G).

above. The next-gen Arm designs that Nuvia brought with them are being challenged in court by Arm, which says they're not covered by Qualcomm's license agreement. Those Nuvia chips are due in late 2023, anyway, months after Intel and AMD are scheduled to ship mobile processors that will probably drastically outperform the new Snapdragon chips. Qualcomm still has its stellar phone business to fall back on, but for Windows on Arm? A real catastrophe in the making.

## **SURFACE LAPTOP 5: IT EXISTS**

We also reviewed the Surface Laptop 5 positively (page 43), if only because it doesn't fall flat on many fronts, if at all. But the Surface Laptop 5 is the laptop version of an EA Sports game,

largely unchanged from generation to generation, with few names changed to justify its premium price. Sure, there are some welcome upgrades. We're a fan of Thunderbolt 4 ports (for a new Microsoft Audio Dock, hurray!) Basically, tossing out the Surface Dock in favour of Thunderbolt hardware is a plus. But we just don't see the effort that a Dell or an HP add to their laptops within the Surface Laptop line.

### **SURFACE LAPTOP GO 2: FAIL**

Microsoft keeps taking swings at budget laptops and they keep coming up a little short. At £729, the Surface Laptop Go 2 couldn't quite deliver what an Asus or Acer can in terms of a quality budget laptop. But it's also unfair to say that it fell dramatically short of what

those other manufacturers offered. But Microsoft did include a full-fledged version of Windows in it, added a (last-generation) 11th-gen Core chip, and it's now available for £475.

We still think that consumers would be best served to look elsewhere, but Microsoft knows what it needs to accomplish in this space and seems to be working toward addressing it. We think it's a bit late for our purposes, but if Microsoft can keep taking cost out, it's likely the Surface Laptop Go 3 will be a true winner.

### **SURFACE LAPTOP SE: FAIL**

The Surface Laptop SE was yet another attempt to take on a budget PC or a Chromebook. Microsoft said that it would ship the Laptop SE in early 2022

alongside some similar third-party hardware and a simplified version of Windows 11, Windows 11 SE. Though a handful of sites reviewed Microsoft's new laptop, it vanished into a black hole afterwards. Or maybe it was the Bermuda Triangle?



The Surface Laptop Go 2 couldn't quite deliver what some of its rivals can in terms of a quality budget laptop.

## **XBOX ADAPTIVE PC PERIPHERALS: WIN**

I don't need to use Microsoft's Adaptive PC Peripherals. But it's wonderful that Microsoft continues to think about, accommodate, and design for those people who need some assistance in playing PC games. That's where the Microsoft Adaptive Mouse, Microsoft Adaptive Hub and Microsoft Adaptive Buttons come in.

Microsoft's hasn't said so, but designing for disabilities is reminiscent of the space race: by solving problems that you'd normally ignore, you learn more than you otherwise would. Take the Adaptive Mouse, by swapping the thumb support, you can turn a right-handed mouse into one for lefties. That's simply impressive.

## **MICROSOFT HOLOLENS: FAIL**

Microsoft's HoloLens began dying the moment the company migrated away from the consumer to the enterprise – sorry, Microsoft. But 2022 was apocalyptic as far as Microsoft's AR headset was concerned: after delays pushed back operational testing from 2021 to May 2022, a US Defense Department report concluded that the



Microsoft's Adaptive PC Peripherals are impressive.

devices needed further refinement before they could be used by the US Army. That could put Microsoft's \$22 billion contract on hold.

And while early 2022 was spent playing he-said, she-said over whether the HoloLens 3 would be cancelled, it certainly didn't help that HoloLens lead Alex Kipman was said to have inappropriately behaved toward women. Kipman is no longer with the company. With Kipman gone and the DoD contact on the ropes, the HoloLens is one major headache for Microsoft – ironically, one of the DoD's chief complaints against using it.

## **PLAYING GAMES WITHIN MICROSOFT TEAMS: WTF**

Playing games? Great. Playing games with friends? Even better. But playing



games over Microsoft Teams? Er, what? Yes, if multiplayer Minesweeper is your thing, you can now play multiplayer games while your next Teams conference call takes place.

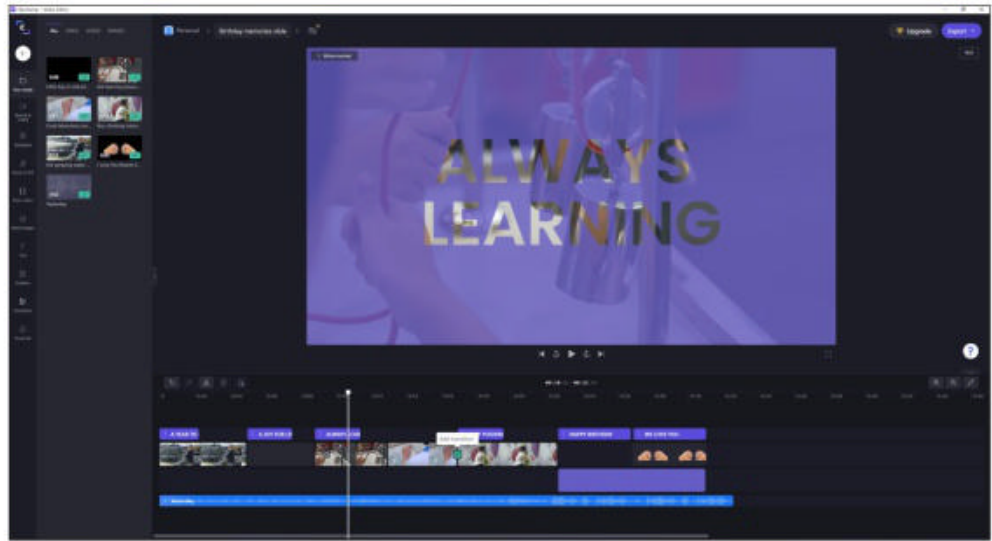
(You know Elon Musk would use this as a training exercise and fire the engineer who tripped over the bomb.) And yes, you can even break the whole concept of a solitary Solitaire and play that with your friends, too. Are the Teams team out of ideas?

The free consumer version of Teams continues to fail, by the way. Communities just won't save it.

### **MICROSOFT CLIPCHAMP: WIN**

Windows 10 entered the market on the shoulders of an ambitious creative effort, with everything from mixed reality to a dynamic mobile platform to a whole host of creative apps – all of which largely bombed. Shell-shocked, Microsoft returned to its winning strategy, productivity apps that just make money.

In 2021, however, Microsoft bought



Clipchamp is simple, intuitive and enjoyable to use.

Clipchamp, a web-based video-editing platform – and boy, what a breath of fresh air it has been. I adore Clipchamp. It's simple, fun, powerful, and a joy to use. It's a tool and an approach that needs to be tried to be appreciated, and should be used to signal to Microsoft that we need to seed Windows and Microsoft 365 with even more creativity. This is clearly one of Microsoft's biggest successes of 2022, and one I hope that the company can build upon going forward.

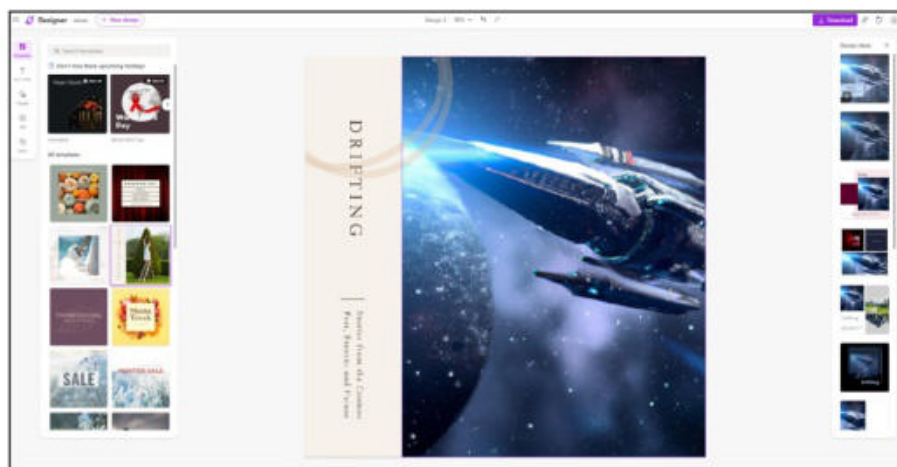
### **MICROSOFT DESIGNER: WIN**

And build upon they did. The rise of AI art (and AI in general) has been as fundamentally unsettling as it has been rapid, with major potential changes coming to art, design, writing, and even the structure of the Internet as

a whole. But what AI art excels at is simply offering up a custom piece of art on spec. The downside? It doesn't always deliver as promised, and there are usually limits (or an outright price) attached to how many requests you can make.

Designer takes AI and integrates it into the creative process, quickly and efficiently. Our preview of Microsoft Designer shows that Microsoft built AI art neatly into its workflow – and does it with (from what we've seen) virtually no limits on the generative process. If you want to try out 100 different images in your brochure, feel free. About the only thing you can't do yet is simply generate AI art outside the creative workflow – but you will, with Image Creator for Microsoft Edge. (Image creator probably isn't quite live yet, but you can check.)

We haven't used the ink-first



Designer takes AI and integrates it into the creative process, quickly and efficiently.

version of OneNote, Microsoft Journal, extensively. But rave reviews at the Microsoft Store imply that there's a creative renaissance going on within Redmond.

## **WINDOWS 11 2022 UPDATE: PUSH**

It's not bad, anyway. After years of being fed next to nothing, Microsoft took a swing at a substantial update... and drew a walk. Most of the nifty features of the Windows 11 October 2022 Update lie underneath the surface, with Live Captions providing a genuinely noteworthy accessibility feature and the Snap Bar reworking Snap for multiple monitors. Clipchamp rocks. So does Windows Spotlight. But, seriously, does dragging and dropping a file onto the taskbar actually work for anyone else?

The fact that Microsoft had to issue

an update to the Update to deliver additional features, though....

## **WINDOWS 11'S FEATURE TIMETABLE: WTF**

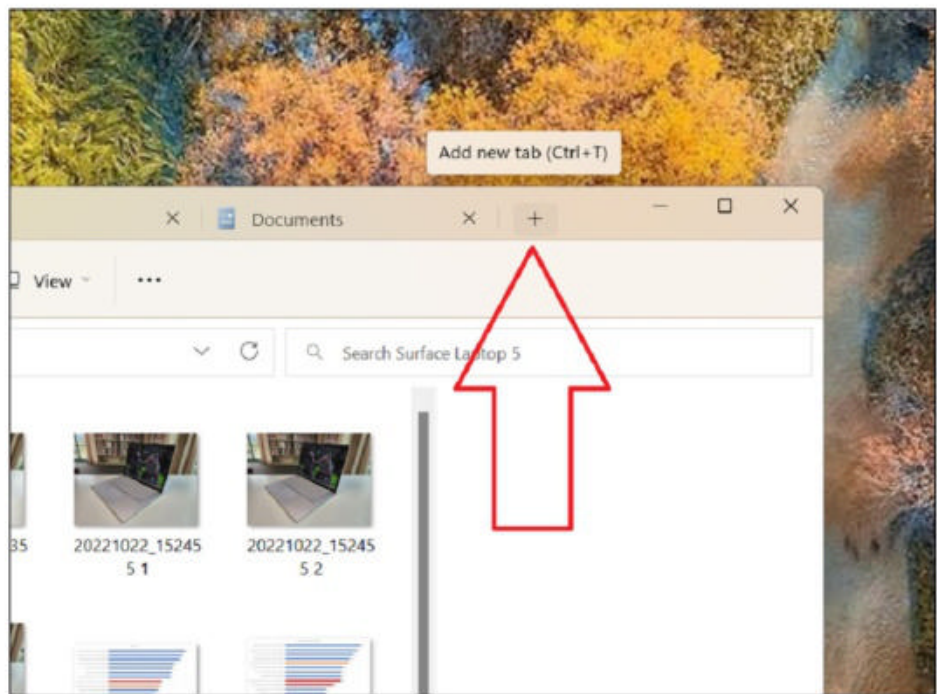
At one time, Microsoft felt quite strongly about delivering new features to Windows on a strict timetable: April and

September. Businesses depended on a strict schedule that they could plan for and consumers liked to know when a new feature would roll out so that they could plan for or block it.

Microsoft, however, has given all of that up. Now, Microsoft will add new Windows features whenever it feels like it, on its own schedule. Twice a year? A dozen times a year? Who knows? Furthermore, the company is simply quietly pushing them out to Windows PCs, without fanfare. Don't get us wrong, we're fans of new features and innovation for innovation's sake. But if you're going to change how a PC works, why not tell people about it? Most app developers use a changelog to inform users of new updates. Microsoft? Nah.

## WINDOWS 11'S OCTOBER MOMENT: WTF

Microsoft issued its first patch to the Windows 11 2022 Update this past October, which normally would be called the Windows 11 October



Tabbed File Explorer browsing is a useful, though simple, feature.

Update (22H2) except that the name was already taken, except that it wasn't. Nor did Microsoft stick to the 'moment' moniker that apparently is being used internally to describe the new features. Instead, they're being referred to as 'experiences'.

It all feels like an English teacher cooped up their apartment during quarantine, simply turning on the screen reader on a PDF for a Zoom call and calling it a day. (Yes, that was indeed curiously specific.) But these weren't new features, just a set of makeup features that the Windows team apparently submitted for course credit.

Hey, we like them – tabbed File Explorer browsing is actually quite



useful, though simple – but we'd appreciate a bit more formality to the whole process. Just semi-randomly launching stuff sounds like something we might see at Twitter, not a corporation run by adults. At least you have until 2025 to run Windows 10. Or maybe Windows 12?

We kid, we kid. Happy new year to Microsoft and to all of you.

**FOUNDRY**

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