

**NOKIA'S HOT  
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**WEEK ONE WITH  
BLACKBERRY'S  
Z10**

**PLUS:  
Q&A WITH TURQUOISE  
JEEP'S FLYNT FLOSSY**

# DISTRO

021513 #78

engadget 



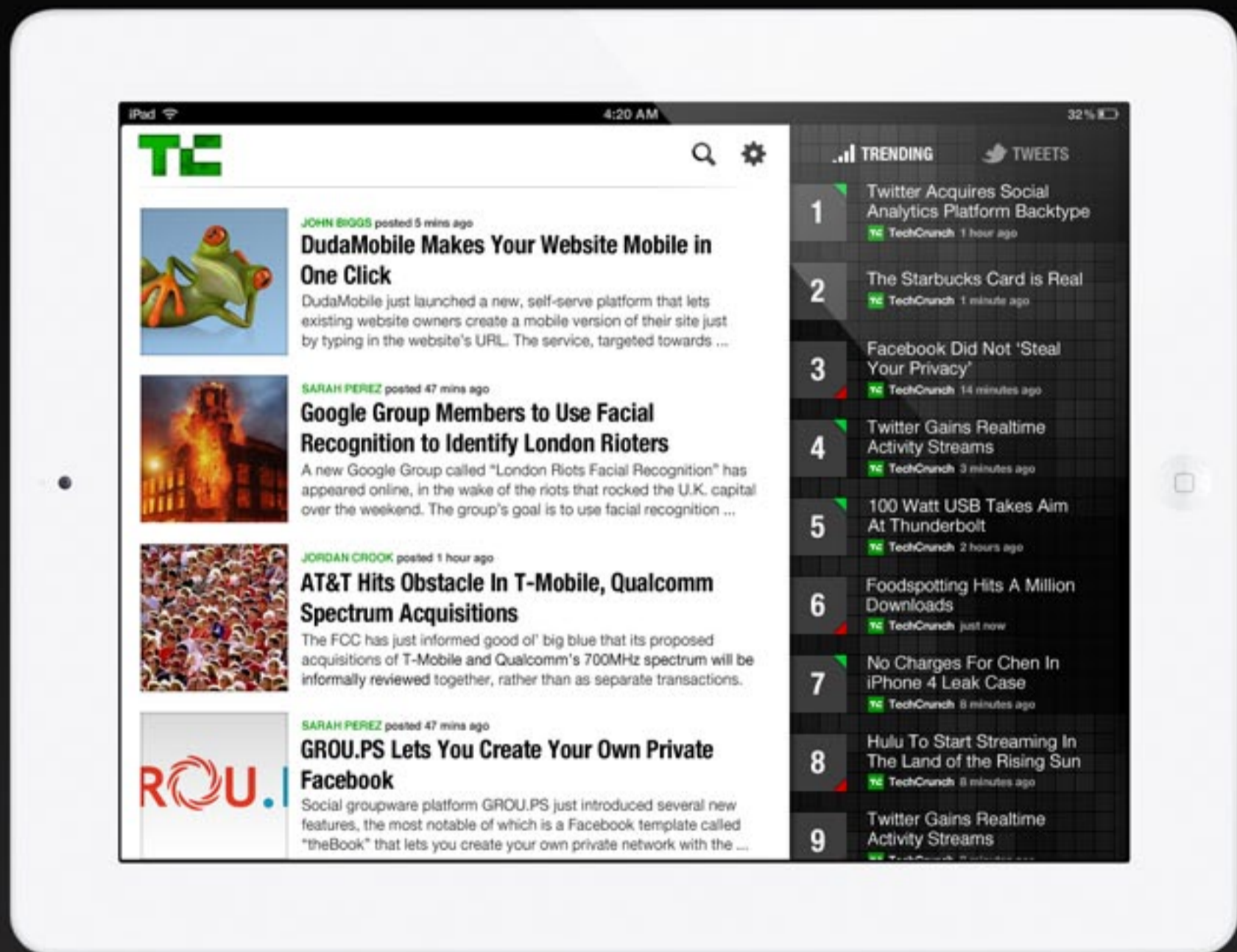
## DOUBLE VISION

**ASUS' TAICHI 21 OFFERS A  
FRESH PERSPECTIVE ON THE  
WINDOWS 8 CONVERTIBLE**



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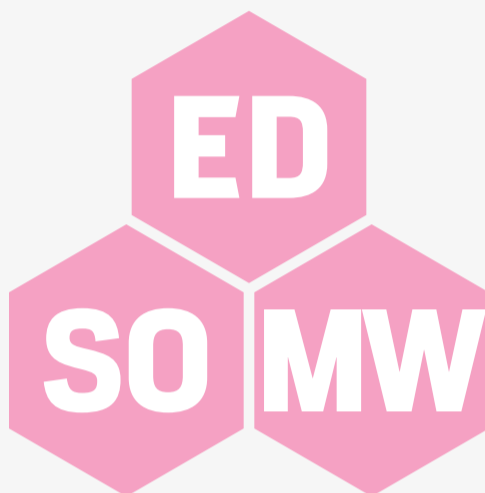


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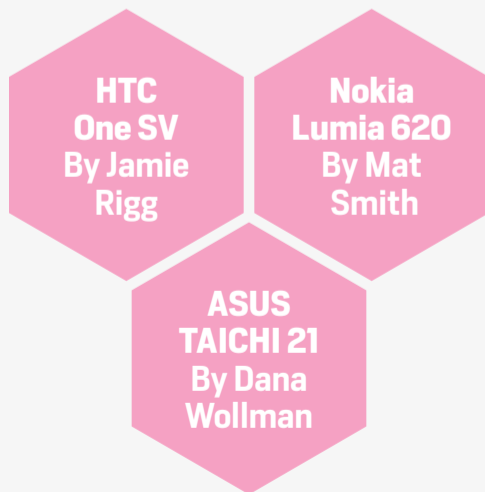


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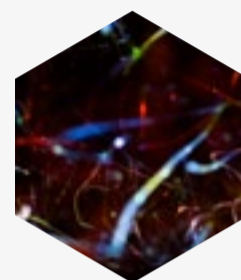
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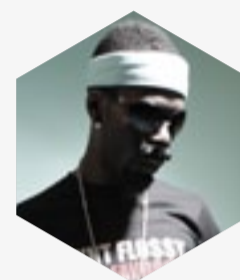
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# WELCOME BACK, GENTLEMEN

DISTRO  
02.15.13



EDITOR'S  
LETTER

**I**t's been a very, very good week for Engadget. On Wednesday, AOL announced it had purchased gdgt and, while we generally don't pay much heed to the acquisitional whims of our parent company, this one we're very, very excited about — and you should be too. Gdgt is the creation of Engadget founder Peter Rojas and former editor-in-chief (and current editor emeritus) Ryan Block. They founded gdgt as a product-focused site in 2008 and, over the ensuing years, transformed it into a comprehensive database of the world's gadgetry, all that backed by an active community of people brought together by an innate love for the hottest in tech.

Of course, technology is one thing, but talent isn't so easily acquired, and that's what I'm most excited about. Not only do we have a team of amazing designers, developers, producers and more joining us, we have Peter Rojas and Ryan Block coming back into the immediate family. Really, I never saw them as having *left* per se, as I've had many conversations with the two of them over the years, but now they're going to be playing a much greater part. Peter is going to be contributing to the

site quite a bit more and is taking the role of executive editor at large, while Ryan is going to be focused on raising the bar for the form and function of Engadget as well as our sister tech sites, TUAW and Joystiq. If you ask nicely, they might even show up on the podcast from time to time.

It's rather too early to say what exactly the future holds as we welcome the amazing gdgt team, but a quick look at what their site offers today makes it easy to see why we're so excited about the potential as our forces combine, Wonder Twins-like. Suffice to say there's a lot of good stuff coming. 2013 is going to be a great year for Engadget, and we're glad you'll be there to join us, but for now let's get on to the week in tech.

Apple this week lowered the price of many of its MacBook models. The 13-inch MacBook Pro with Retina display drops to \$1,499, while the Air with 256GB of flash storage is now \$1,399. A suite of new, faster processors available on both the 13- and 15-inch Retina Pros helps to sweeten the deal.

Apple also rolled out an iOS update, 6.1.1, interestingly only to the iPhone 4S (for now). The decimal increment




**“Not only do we have a team of amazing designers, developers, producers and more joining us, we have Peter Rojas and Ryan Block coming back ...”**

promises to fix some of the cellular issues that users have been facing of late, but interestingly introduces an ornery lock-screen bypass that very patient (and nimble-fingered) hooligans could use to get into your device. Expect another update soon.

Google, meanwhile, started pushing Android 4.2.2 to select Nexus devices (promising performance improvements and a few other tweaks), and finally, after an incredibly long wait, released the Nexus 4 wireless charger. It is, at least for the moment, only available in the US, but for \$59.99 we Americans now have another weapon against this phone's insatiable hunger.

Finally, there was a huge to-do this week surrounding a *New York Times* write-up (and takedown) of the Tesla Model S. John M. Broder of the *Times* wrote of running out of charge with a loaner car (the very same one we tested for our review), blaming cold weather and inaccurate chargers. CEO Elon Musk took to Twitter, calling the article “fake” and later fired back with a

full data log disproving Broder's claims. We're still waiting on Broder's response, but it's safe to say that future Model S testers will probably be driving somewhat more conscientiously.

In this week's Distro we're bringing you a trio of reviews, including Dana Wollman's take on the ASUS TAICHI 21, an Ultrabook with some interesting design attributes. Mat Smith falls in love with the budget-minded Nokia Lumia 620, what could be the perfect Windows Phone, while Jamie Rigg tries out the similarly low-priced HTC One SV. Brad Molen files the first installment of his “Back to BlackBerry” series, in which he lives with the Z10 for 30 days, and Sean Buckley looks at the Wii U's digital content woes. Ross Rubin looks at ARM vs. Intel in Switched On, Josh Fruhlinger dispels the myth of Japan being a world of weirdos in Modem World and Flynt Flossy, the alliterative co-CEO of Turquoise Jeep, does Q&A. It's all waiting for you below to evaluate at your own pace. Rest easy: I won't call you out on Twitter if you skim through the articles. That's for you and your conscience to live with. 



TIM STEVENS  
EDITOR-IN-CHIEF,  
ENGADGET



# EV QUESTIONS, QUIRKS AND QUALMS AND APPALLING PRO POWER



Touch article names to read full threads

DISTRO  
02.15.13

INBOX



TESLA MODEL S  
ISSUE 77,  
FEBRUARY 8TH, 2013

“The biggest issue for EVs going mainstream right now is infrastructure. Not enough charging stations around, and even charging at home will be hard if not impossible for many. (What if you live in an apartment? No way to set up a place for your car to charge in the parking lot.)

How do you set up that infrastructure? Do you give incentives for

stores to put charging stations in their parking lots? For towns to put charging stations in parking spots along the roads? This would require standardization of charging methods between EVs.

Or do you give incentives for a standardization in the EV industry of swappable batteries, so a car can pull into a gas station, and instead of filling the car up with gas, you swap your

dead battery for a fully charged one, and instead of the station having pumps, they have a large charging area for their shelves of batteries? This would certainly be the faster option since people wouldn't have to wait for their car to charge all the time, making EVs much more attractive. And if the national or local government of your particular area were to pass some sort of cap and trade laws on carbon

**“Bottom line: It's worth every penny, even more so if it causes the old guard to rethink how they engineer, sell and service cars. Already I have over 6,000km on mine. Any changes I can think of are potential retrofits or software updates.”**

— COLIN BOWERN



emissions it might give gas stations a very strong incentive to switch from fossil fuels.

Both solutions have their merits, and both require some sort of standardization... I don't see them becoming mainstream before that happens."

— **THEOILMAN191**

"Why is it so hard to make an electric car with no options that I can buy for \$25K?"

— **MSOUTH468**

**"If they're going to put a tablet in there as an instrument dash why use one that lags so much."**

— **LOB**

"Google and Tesla partnering to make all electric, self-driving cars. That's the future."

— **BPWENGER88**

"I own one and will not be standing in line for the SUV! Yes, it is coming — but there are just too many things that aren't quite up to snuff on this car.

The fact that keys aren't coded to people and sometimes the handles don't work. It has locked

itself with my keys in the car more than once because the only approved place for the key inside the car is inside one of the two cup holders by itself, not on a key ring (which you can't do any way) or a key fob. There is no inside storage, so the center floor looks like a mass of wires as your phone goes sliding out of your reach. No seat pockets, or pocket for sunglasses or anything. And the manual is a joke — 30 pages of minimal documentation.

Oh, and the time of use charging and a boat-load of other things are still coming!

Yes, it does drive nice until it loses contact with the key and then it decelerates quickly. They are working on it! For the cost, you'd really like more."

— **TWINENGINEGIRL**

**BATTLING  
FOR THE BRONZE  
ISSUE 77,  
FEBRUARY 8TH, 2013**

"The real prize is not battling for the bronze but



shaking up the market enough that the silver becomes possible.”

— SLICK312

“Don’t forget about Ubuntu, too — coming out this year. And it’s open source like Android, which means at least it has the potential to spread very quickly, and take the third position.”

— YOUREWRONG

“Poor Firefox OS, not even a mention ...”

— CAMERONCAKE

“I give it to Windows Phones but not by much; they have great phones and more to come. However, they need to step up their advertisement and [fix] supply problems to compete with the two big boys on the block.”

— LENNLIGGINS

MICROSOFT SURFACE PRO  
ISSUE 77,  
FEBRUARY 8TH, 2013

“For their next build, if they can bump up the

battery another 1 1/2, I would be sold. Not bad for first attempt, hopefully they keep at it. It’s nice to see MS more and more stepping out of their comfort zone.”

— STAMPS79

“3 1/2 hours on the battery rundown?? Ouch!”

— JONATHANFARLEY

“If that’s the sound of a fan in the video, then this is ridiculous!”

— PRERIZ

“I think there is a niche market for a compromised tablet and PC combined. I have my doubts that the Surface will be the model to bring the hybrid concept to its full potential though.”

— MATT7WIT





# ENTER

EYES-ON

DISTRO  
02.15.13

## MISSION WORKSHOP R6 MODULAR ARKIV FIELD PACK

### ADAPTIVE STORAGE

Bags for transporting an on-the-go gadget arsenal come in all shapes and sizes, but most of the customization occurs just before submitting an order. That's not the case with Mission Workshop's R6 Arkiv Field Pack. The rucksack comes in two sizes and from there, a smattering of exterior storage accessories can be tacked on and adapted to suit individual tasks and extended treks.

PHOTOGRAPHS BY WILL LIPMAN

**THE DAMAGE:**  
\$209 & Up



Tap for  
detail

TOP  
DOWN

CONFIGURATION

BRAVE THE  
ELEMENTS





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stories

# SONOS PLAYBAR

**PRICE: \$699**

**AVAILABILITY: MARCH 5TH**

**THE BREAKDOWN: THE  
PLAYBAR BRINGS SONOS'  
WIRELESS CHOPS AND  
STELLAR DESIGN TO A GADGET  
FOR YOUR LIVING ROOM.**



**We've long been** enamored of Sonos' music-streaming technology and its wireless speakers. Now, the Playbar has arrived, packing all of Sonos' streaming capabilities you know and love in a soundbar form factor. First things first, the Playbar looks and sounds good. Really good. It's an understated bar covered in high-grade black speaker cloth, with an extruded-aluminum plate running along the bottom providing some visual contrast and serving as a heat sink. A volume rocker and mute button reside on the left end alongside an LED indicator light, and there is a pair of IR receivers embedded in the aluminum baseplate.

It connects to TVs, game consoles and cable boxes via Toslink cable and wires into home networks via Gigabit Ether-

net. Wireless connectivity can be had for those who own a Sonos Bridge. Naturally, it can be controlled by the Sonos app, but volume can also be toggled by your TV remote thanks to the IR receivers on board and the remote codes stored on Sonos' servers. While it provides very tight, clean bass by itself, we found that the Playbar benefitted greatly from the presence of a Sonos Sub. The Playbar also packs a pair of enterprise-grade WiFi radios (both 2.4 and 5Ghz) and three antennas that utilize Sonos' proprietary SonosNet peer-to-peer networking mesh that allows all Sonos devices to talk to each other. That SonosNet technology is specially engineered to provide the super-low latency needed to ensure properly synced audio.





# UNDER ARMOUR ARMOUR39

**Under Armour has always** touted the scientific underpinnings of its sports apparel. In 2011, it dabbled with E39, a compression shirt with a space to insert a “bug” that included an accelerometer and heart rate monitor. Now, it has officially unveiled the next evolution of that toe-dipping: Armour39. The system consists of a traditional chest strap, an iPhone app and an optional watch. The only essential piece of equipment is the module itself and the strap. The new bug is quite a bit smaller than the original, which means you won’t be able to pop it into an E39 shirt if you happen to have one. Inside the tiny, light monitor are a

dedicated CPU, an accelerometer, storage and a Bluetooth 4.0 radio. The strap itself feels stunningly soft and comfortable. Having worn a few different fitness-monitoring solutions in my day, this seemingly small detail lent the whole package a seriously premium feel. The bug operates on a standard watch-style battery, which the com-

pany claims should last for up to a year.

The Armour39 app, which is iOS-only for the moment, gives you a quick way to monitor information like heart rate, calories burned and intensity. There’s also WILLpower, a holistic score of how hard you’re pushing yourself on a scale of one to 10. The last piece of the puzzle is the watch, which

**PRICE:**  
**\$150 & \$199**  
**AVAILABILITY:**  
**MARCH 20TH**  
**THE**  
**BREAKDOWN:**  
**UNDER ARMOUR**  
**RETURNS**  
**TO FITNESS**  
**TRACKING WITH**  
**AN ACTIVE KIT**  
**FOR TALLYING**  
**STATS.**

we were a little disappointed to find didn’t include GPS for proper run tracking. Instead it just gives athletes a way to keep tabs on all the data generated by the bug without having to take their delicate iPhone with them to the gym.



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# LITTLEBITS v0.3

**We haven't checked** in with littleBits in quite some time and, honestly, it was a bit of a surprise to find the electronic Tinkertoy-like kits hiding in a quiet corner of the floor at Toy Fair. The property has grown quite a bit in the past few years. For one, it's no longer a "project" but an actual shipping product. For those of you unfamiliar with littleBits, the goal is to do for electronics what Lego did for structural engineering. The small, color-coded "blocks" snap together with magnets allowing even a novice to create a functioning circuit in seconds. The magnets will only connect in one orientation, preventing you from pushing current through a component in the wrong direction and ruining it.

The inspiration is not just Lego, but object-oriented programming languages that simplify building code, allowing developers to focus on the more cre-



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ative aspects of software making. By doing some of the heavy logical lifting for you, littleBits hopes that potential electrical engineers and prototypers can focus on the goal rather than the minutia of laying out a breadboard or soldering resistors in place. The latest version of the platform, v0.3, debuted just a couple of months ago and not only brings new pieces to the littleBits universe, but also adds legs to the blocks for improved stability when piecing together your projects. Though, unlike other electronics project bundles, the magnetic pieces can be easily disassembled and re-purposed if you tire of your creation. While the concept has its

roots in brands like Snap Circuits, littleBits definitely provides more freedom than those single-purpose offerings.

**PRICE: KITS START AT \$29**

**AVAILABILITY:  
NOW AVAILABLE**

**THE BREAKDOWN:  
LITTLEBITS IS NOW READY  
TO MOLD ENGINEERS OF  
THE FUTURE VIA HIGH-TECH  
BLOCKS AND CIRCUITRY.**



DISTRO  
02.15.13

HANDS-ON



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# CLOUDROBOTS

**Cloudrobot is**, potentially, the worst name we've ever heard for a product. Thankfully, if this robotic pugilist ever does come to market, we're pretty confident it'll be under a different brand. These fighters are not nearly as cute or pocketable as the Battroborgs that punched their way through the Engadget compound recently. In fact, these guys are downright intimidating. The product of six developers and engineers based out of Budapest, the 16-inch-tall bots pack 21 motors, controlled by an AVR chip, that allow them a stunning range of motion and precision. The movements themselves are passed to the bot by a computer, which is currently running a crude simulation / video game. The punches, blocks and footwork are all triggered by a standard gamepad connected via Bluetooth.

Rather than risk serious damage to these expensive machines, their all-metal

**PRICE: \$300**

**AVAILABILITY: TBD**

**THE BREAKDOWN:  
THESE ROBOTS  
ARE POISED TO  
DUKE IT OUT VIA  
AVR CHIP CONTROL  
AND BLUETOOTH  
GAMEPADS.**

bodies are protected from blows by Everlast-branded boxing gloves. And, in fact, they rarely come into contact with each other (at least in their

current form). For now, points are counted in the virtual environment, rather than in landed hooks and jabs. Which might not be bad since the bots gain quite a bit of mustard on their shots thanks to electromagnets in their feet that keep them anchored to the ring. Primarily, those magnets are for stability, so that the occasional glancing blow doesn't send them toppling over, but it also lets them "sit down" on their punches, just like a real boxer. **D**



# Kings of Computing

Canalys is still staking its market share estimates on the view that mobile tablets are as relevant to PC market share as desktops and laptops. If we accept that interpretation, Apple was easily on top of the heap during the fourth quarter. Combining iPads and Macs would give it 27 million computer shipments in the fall, or 20.1 percent of the 134 million computers that left facto-

ries — the first time it would have had more than a fifth of the market. Not that Apple was the only one having a good time, however. HP reportedly took back second place from Lenovo by shipping 15 million PCs and claiming 11 percent of the market, while Samsung stepped into the top five for the first time at 11.7 million PCs and nine percent share.

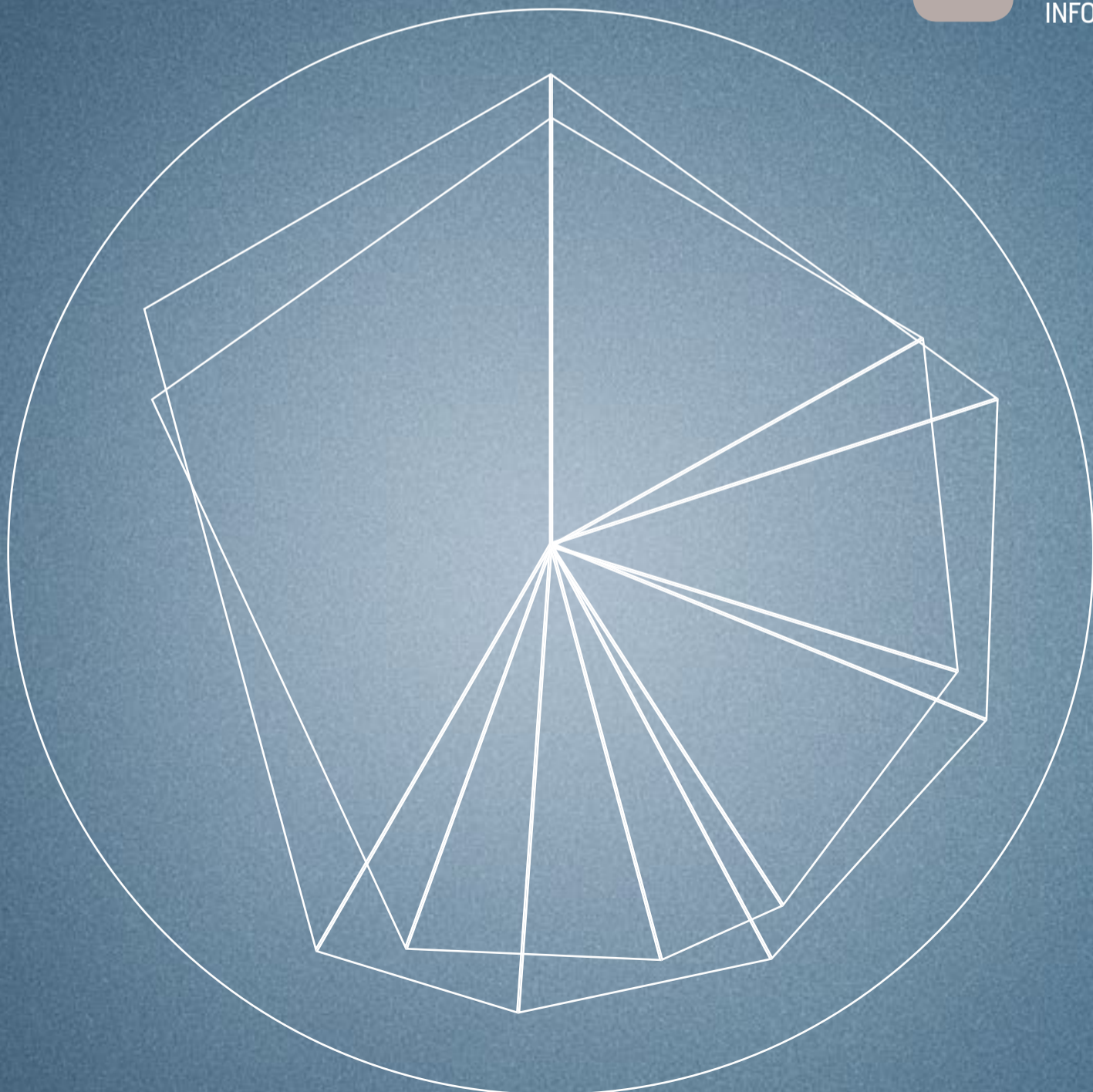
—Jon Fingas

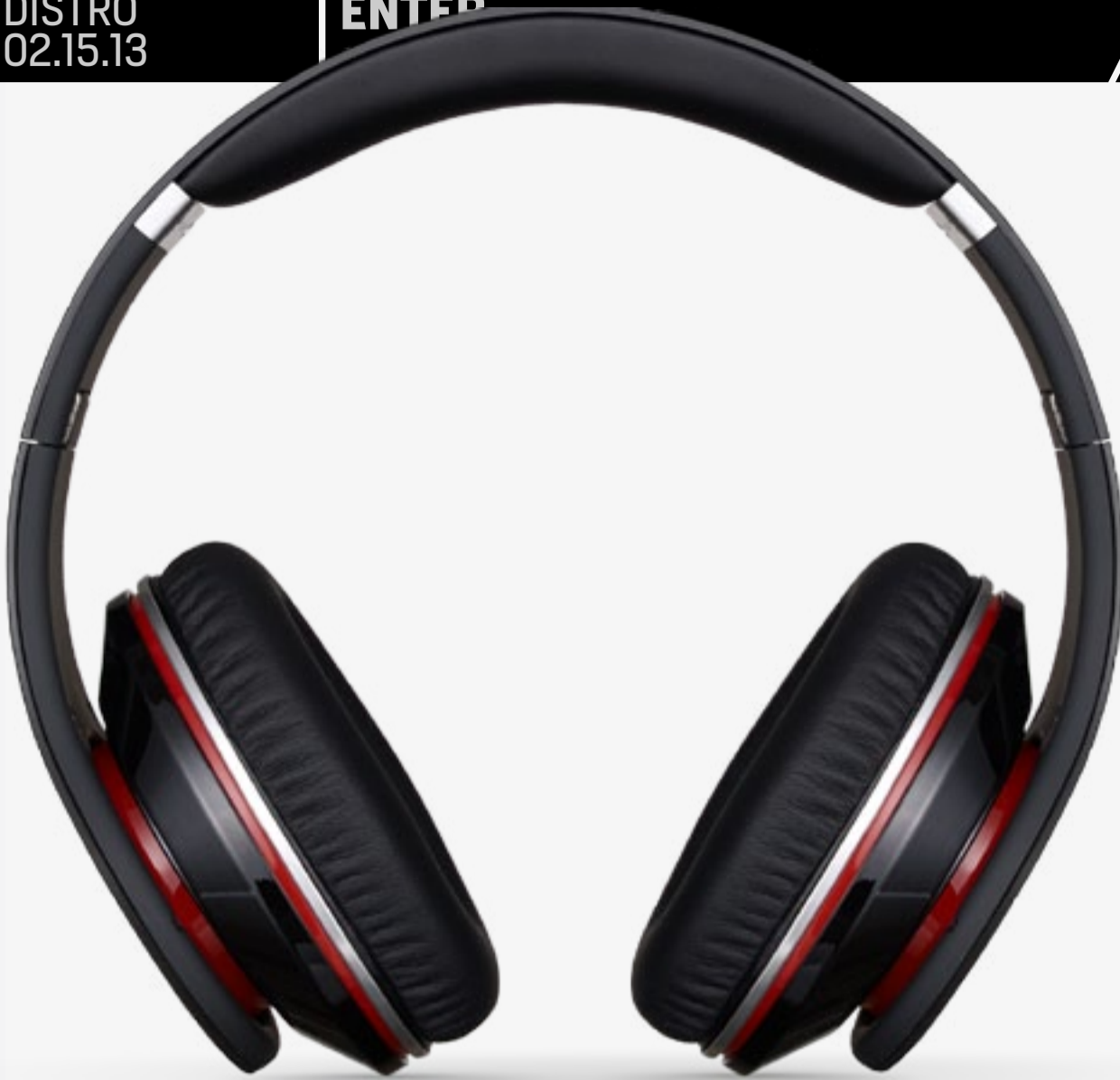
## WORLDWIDE CLIENT PC SHIPMENTS IN Q4

2011

TAP  
FOR  
INFO

2012





## Beat By Dre: The Exclusive Inside Story of How Monster Lost the World

By Sam Biddle  
*Gizmodo*

**Monster is one** of the more infamous technology companies of recent years, having earned a reputation for overpriced HDMI cables and other products before gaining more mainstream acceptance with its also pricey Beats by Dre headphones. In this piece for *Gizmodo*, Sam Biddle details how that partnership was formed, the disputes between the Monster and Beats halves of the deal (including first-hand accounts of Monster's side of the story) and how the two ultimately — and perhaps inevitably — wound up as competitors.

### Smart TVs Have a Serious Communication Problem

By Casey Johnston

*Ars Technica*

There may be more smart TVs than ever sold these days, but there are few that would dispute that they still have a long way to go before they're fully embraced by consumers. Here, *Ars Technica's* Casey Johnston explores one big reason why: interaction, or lack thereof.

### The Origins of 'Big Data': An Etymological Detective Story

By Steve Lohr

*The New York Times*

It wasn't long ago that "big data" would have caused nothing but puzzled looks, but by now there's probably a good chance that you've already grown tired of the term. So, where did it come from? As Steve Lohr found, the answers go back a bit further than you may think.

### Science and a New Kind of Prediction: An Interview with Stephen Wolfram

By Patrick Tucker

*The Futurist*

Wolfram Alpha creator Stephen Wolfram is one of the better-known members of the so-called quantified-self movement — in which individuals track as many data points in their lives as possible, from sleep patterns to email usage. This interview with *The Futurist* covers that and a fair bit more, including Wolfram's thoughts on the future of science.

### Pics and It Didn't Happen

By Nathan Jurgenson

*The New Inquiry*

We've seen profound changes to the nature of photography with digital cameras, and Nathan Jurgenson suggests that we could now be seeing another shift with the temporary photography afforded by apps like Snapchat. Jurgenson says those apps could have the side effect of making other digital photographs more permanent as they become more popular.



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# NINTENDO'S DIGITAL CONTENT PROBLEM



EDITORIAL

DISTRO  
02.15.13

FORUM

BY SEAN BUCKLEY

**The Wii U's launch** was a bit rocky, to say the least. Missing features, promised TV services and slow-loading, day-one firmware updates left Nintendo fans frustrated and disappointed. The company is still cleaning up the mess too, announcing that it will push two additional software updates to fix the console's slogging load times. A quicker console will certainly be welcome, but the Wii U spring updates are missing an opportunity to close a rift that divides Nintendo from its loving customer base: how it handles digital content ownership.

Ever buy an Xbox Live game? You probably know that purchase is tied to your Xbox Live account, and will be available on any subsequent Xbox you purchase. Not in Nintendo's world; Kyoto's digital sales are tied to the gaming hardware, not the user's account. It's been a

sore spot for Nintendo gamers for some time now, and the Wii U was the company's chance to make amends — except it didn't. Like its predecessors, the new console locks content to the device it was originally purchased on, imprisoning digital purchases in a physical cage. The Wii U takes content confinement a step further with its support for legacy software, providing a near-perfect example of the folly of Nintendo's content ownership philosophy: the isolated sandbox of its backwards-compatible Wii Menu.

The functionality of the Wii U's backwards-compatible mode is undeniable — it's a near-perfect replication of the original hardware's system menu. *Too perfect.* Despite offering a fully functional emulation of Nintendo's previous-generation hardware, the Wii U's legacy support is riddled with muted consequences, perplexing limitations and lost potential. The sandbox itself, for instance, is built on the Wii U's expansive beach of internal storage (8GB to 32GB, depending on the model), but limits itself to the paltry 512MB of virtual storage within its personal playpen. This corresponds with the original Wii's available storage, but stands as an







example of how the Wii U fails to deliver a superior Wii experience over the original hardware, presenting an adequate facsimile instead.

Sandboxing the Wii U's backwards compatibility affords Nintendo some degree of protection, isolating the security flaws of the previous generation from the new hardware's operating system. That security comes at a price: isolating one device-based ownership model within *another* owned device. That is to say, your Wii U content is tied to your Wii U console, but your Wii content can now be tied to a virtual Wii within your Wii U console *without* giving ownership of its content to its parent Wii U console. Confusing? Absolutely. By isolating Wii content from its new console's core system, Nintendo has fragmented its own ecosystem. Kyoto's failure to integrate this content leaves users to juggle two digital stores on one console. The 3DS adds *yet another* eShop to the pile, making content management as a Nintendo

fan needlessly complicated.

Unfortunately, Nintendo doesn't see the problem. NOA told us that it feels the "tailored approach" of maintaining three separate storefronts is "the right one," further explaining that the sandboxed Wii menu was designed to "protect the investment that consumers had already made in Wii software." A nice sentiment, but not a very reassuring one: a lost, stolen or damaged Wii U could blip multiple generations of purchases out of existence. Damaged consoles can be repaired for a modest fee, of course, but hardware replacements are at Nintendo's discretion. If you manage to convince the company to swap out your Wii U Basic for a Deluxe, you'll need to send *both* units to its support department to make the transfer. If anything, the company protects content from its users. Makes Nintendo's digital sales push a little harder to swallow, doesn't it?

Worse still, the new console's most important innovation is still shackled by the bonds of device ownership: the Nintendo Network ID. This personal account *finally* associates living, breathing humans with a centralized Nintendo account, but cripples itself by refusing to work with any device besides its console of origin. The Nintendo Network ID could have been the unified account gamers have been asking Nintendo for, but instead it's little more than a retooled friend code and local user login.

## Nintendo has fragmented its own ecosystem.



## Frankly, Mario needs to get with the times.

That isn't to say Nintendo isn't *trying*; the Wii U is the company's most sophisticated online device to date, packing a manageable friends system, an improved shopping experience and even its own quirky social network — but that alone isn't enough.

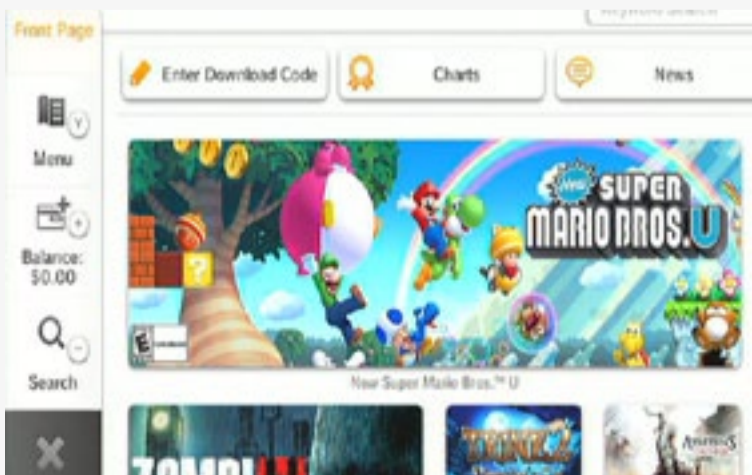
If Nintendo wants the gaming masses to be comfortable diving into its new digital frontier, it's going to have to make a few changes, none of them minor. First of all, the Wii U's legacy sub-menu needs to go, it stands for everything the company is doing wrong: segregation, stagnation and fragmentation. Cleaning up the Wii U's cross-generational mess and integrating the Wii Shop channel with the Wii U eShop will give users a wealth of content in a single location, instantly expanding the fledgling console's meager digital software library while creating a streamlined shopping experience. The Nintendo Network needs to be freed from its bonds too, registering ownership of purchased

content and acting as a unified user account and ensuring customers that their digital purchases are protected against console failure, theft or a fanboy's urge to upgrade to Deluxe hardware. Finally, Nintendo needs to update the 3DS for the newly christened Nintendo Network, allowing users to link their entire Nintendo arsenal under one flag. Truth be told, it's a huge and possibly terrifying task — but frankly, Mario needs to get with the times.

It's strange to think of Nintendo as afraid of change. This is the company that built a touchscreen handheld with two displays, shook up the industry with motion control and even took the 3D fad for a spin 15 years early, so why is it so behind the curve when it comes to content management and delivery? Whatever its reservations are, the company *is* trying to catch up — Wii U documentation promises that the Nintendo Network ID will work with “future” consoles, and a recently announced merger of the company's handheld and console gaming units promises to integrate the architecture of Nintendo's next generation. Admirable goals, to be sure, but we're not certain Nintendo can afford to wait. After all, its competition's next generation is right around the corner. **D**

---

*Sean is a lifelong gamer, a comic-book nerd and an Eagle Boy Scout. He also writes for Engadget. What else is there to know?*



# AN ARM'S RACE WITH INTEL



DISTRO  
02.15.13

FORUM

SWITCHED  
ON

BY ROSS RUBIN

**AS ONE WOULD HOPE** in dealing with two products that share the same name, Microsoft has maintained strong consistency between the Surface with Windows RT and Surface Pro. Allowing for a bit of girth variation, there's a similar industrial design as well as common features that have been nearly universally lauded (the snap-on keyboards)

and lambasted (the underwhelming cameras). There's also an identical user interface as far as "modern" Windows apps are concerned.

This has created an interesting lab test to see what customers really want from a Windows tablet in 2013. The early and unsurprising results indicate that it's really backward compatibility — even at a premium of half the battery life and nearly double the price. Lenovo, which offers its Yoga 11 convertible as a Windows RT tablet, will also bring out the device in a Windows 8 version. Indeed, if one is attracted to some of the advantages that Windows RT offers on its ARM-based variants, such as the Snap and Share

features, multiple devices with integrated keyboards, broad driver support and desktop Office compatibility, its toughest competitor is Windows 8.

Customers, of course, don't really want devices that weigh more, cost more and have poor battery life. But the low prices and long battery life of the Surface RT devices are enabled by the Tegra 3 processor based on a design from ARM, the same architecture that is the basis for the smartphone chips designed by Qualcomm, Samsung, Apple and smaller players. And it doesn't support those old Windows apps that might enable some to use Surface as their only ultraportable instead of



## “One key variable in the race is whether the critical mass of important apps can reach ARM-based systems before Intel narrows the gap ...”


shifting between a notebook like the MacBook Air and a tablet like the iPad.

At CES this year, Intel devoted its keynote to talking about its march toward greater energy efficiency. It mostly focused on its early success in phones for two good reasons. Unlike with PCs, it has no incumbency in pocketable devices so there is far more to prove there, as well as great growth opportunities. Additionally, if it can compete in phones, one of the most challenging device categories in terms of power management, then tablets and laptops should be a cakewalk.

And so, the race is on. Can Intel achieve the kind of power efficiency that makes Windows RT superfluous? For now, some of the company's major customers who use both architectures, such as Microsoft and Apple, seem unwilling to give up the performance and compatibility with app libraries that have been built up over a decade or more and so create devices based on both architectures.

That said, Microsoft is moving aggressively to turn current desktop apps into the future's equivalent of DOS apps; some of those Windows Store apps will run on ARM processors. And rumors of Apple's switch to ARM processors in the Mac line have swirled for years. The company has transitioned Mac processor architectures before, the last one (from PowerPC to Intel) in the name of better power efficiency. (In 2005, an Apple vice president named Tim Cook called a PowerPC G5-based laptop “the mother of all thermal challenges”). What's more, Apple now designs its own ARM chips; you don't see it entering the Intel x86 clone market or buying AMD.

Just as with the familiar mouse-driven desktop, x86 processors will be with us for some time to come. But as Intel continues to ratchet up per-watt performance, so will ARM. One key variable in the race is whether the critical mass of important apps can reach ARM-based systems before Intel narrows the efficiency gap, or at least until it can achieve a satisfactory benchmark such as 10 to 12 hours in a Surface-like device.

But even then, ARM may still retain advantages thanks to its licensing business model. High-volume mobile device companies such as Samsung and Apple may favor ARM for the customizations it can create for their own purposes whereas those who buy chips from the likes of NVIDIA and Qualcomm will want to play off innovations and lower prices driven by ARM licensee competition. 



# JAPAN IS NOT WEIRD



DISTRO  
02.15.13

FORUM

THIS IS THE  
MODEM WORLD

BY JOSHUA FRUHLINGER

**THERE'S A DOTTED LINE** between geekdom and Japan — some of us call ourselves “otaku;” we follow Japanese technology companies; we look to Japanese culture as a beacon of our tech-obsessed future; we dream of visiting Tokyo. And yet we love to criticize Japanese culture, as if to say, “Well, sure, they make cool stuff, but they sure are messed up.”

I'm no expert on Japanese culture. While my visits to the island nation number in the double digits and I'm married to a citizen, I'm not about to claim any sort of authority on matters of Japan.

However, I'm pretty sure they're not as weird as we like to say they are. And if they are, we're just as off-kilter.

We love reading about how bizarre they are: pop stars dress like tarts and shave their heads; teenagers engage in self-destructive behavior; city centers explode with uncharted consumerism. We love the spectacle — we love to amaze at their uniqueness, criticize and

feel better about ourselves.

But didn't we invent pop culture's manic spectacle? Don't we enable an obsession with technology that sometimes brings about uncalled-for results?

It's as if our pop stars have never shaved their heads and acted out in unsavory ways.

In fact, we invented it.

So why the obsession with the “weirdness” of Japanese culture, especially in the halls of nerd storytelling?

Some examples: They create extreme science fiction that challenges social norms. They love novelists who make us uncomfortable. They smoke and



“... we need to chill on the criticism of all things Japanese before we lose sight of ourselves.”

drink. They're messed up.

Just like us. They keep a worshipful eye on technology, look for the next thing and fear a simpler past when things didn't plug in. They idolize pop artists that harness the latest technologies and trends, pushing the limits of music and movies and art and gaming. They are hungry for the absurd.

They are exactly like us.

I remember the first time I ever went to Japan. It was 1998. After landing in Narita, I took a shuttle bus straight to Shibuya where I knew I'd find the epicenter of all that defined what I thought I would find. Stepping out into Dogenzaka Crossing — the busiest intersection in the world — I was tweaked awake by a thousand new sights and sounds. Shrill female voices sold mobile phones that weighed next to nothing. A Starbucks coffee house reminded me of my American roots. Thousands of people dressed exactly alike reminded me that I wasn't in Kansas anymore.

And yet I felt completely at home. These were people who had things to do, jobs to get to, people to meet, friends to see. They weren't selling

their undergarments in vending machines or wielding katana for fights to the finish. They weren't ninjas and samurai. No, they were just a modern society who had accepted technology as their collective lord and savior.


Again, exactly like us.

We can point out examples that make us think they are off their rockers — perverted anime series, wacky pop stars, a moody economy — but you know what? We have every single one of those things, and we do them just as well, if not better.

I'm not a cultural critic. I'm not an expert on Japanese or American culture. But I have read a thing or two about cultural relativity and I'm pretty sure that we need to chill on the criticism of all things Japanese before we lose sight of ourselves.

Perhaps the reason that we look to Japanese culture as an icon of the measurably bizarre is because, well, it's a reflection of ourselves and a very accurate vision of our future. Back in 1998, I remember marveling at high school students choosing to text one another rather than make phone calls, updating their friends with their “status” and even taking pictures with their mobile phones. Sound familiar?

So the next time you are tempted to say, “You know what they do in Japan?!” Ask yourself this: Is this something we're about to do?

Chances are you'll answer either “Yes” or “Not yet, but I wouldn't be surprised.” 



# REVIEW

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## HTC ONE SV



HTC adds another notch to the One series, but does the **SV** have enough bang for your budgetary buck?  
By **Jamie Rigg**

**HTC's One SV has arrived**, and joins a plethora of above-average-spec handsets vying for your money. Available on Cricket in the US and EE in the UK, the 4.3-inch, LTE-ready device fits into the One series between the low-end V and, you guessed it, the better-equipped S. It's a curious release for HTC, given the One VX has just launched with almost identical specs, apart from the 4.5-inch, qHD (960 x 540) screen slightly besting that of the SV. Based on our quick hands-on time at CES, you may have already gathered that it's not a powerhouse





built to wow you with raw benchmarks scores. But how, exactly, does it compare to its bigger brothers in the series? And, what does it offer people who are more concerned with their budget than 1080p displays or octo-core processors? Continue on for our full musings.

## HARDWARE

As with most HTC handsets that cross our paths, the One SV is certainly nice to look at. In particular, it's almost identical in appearance to its slightly lower-spec relative, the Desire SV. A one-piece sheet of Gorilla Glass 2 covers the entire face, with three capacitive keys positioned below the screen. A small, silver HTC logo rides just above the display, with a wide oblong ear speaker over that and the front-facing camera just off to the right. This particular device, courtesy of the UK's first 4G provider EE, has a matte, off-white back panel and capacitive-key illumination to match.

The piece of plastic protecting the battery is smooth but grippy, and is thankfully uncluttered, too. The rear camera sits vertically below its companion flash in a black pod high on the back; a sunken black HTC logo is stamped in the center; and at the bottom is a neat

loudspeaker grille with small 4G LTE and Beats Audio brands on top and underneath, respectively. (It's worth noting that the camera doesn't protrude, so it won't grind on surfaces in the way the One S and X do.) Even the faux-metal plastic rim connecting the front to the back isn't nearly as offensive as the phrase "faux-metal plastic" suggests.

A micro-USB port and the primary mic can be found at the base of the device, a volume rocker sits on the top-right edge, and just round that corner is the power button followed by the secondary mic and headphone jack. Although the plastic back cover survived several encounters with keys and other miscellany in pockets and bags, it's not infallible. After prolonged use, we're sure it would pick up battle scars, but in our experience, minor blemishes are more or less hidden by the

Some subtle branding and the speaker grille appear on the back.



## The handset doesn't have any high-end flair, but you certainly wouldn't describe its appearance as cheap.

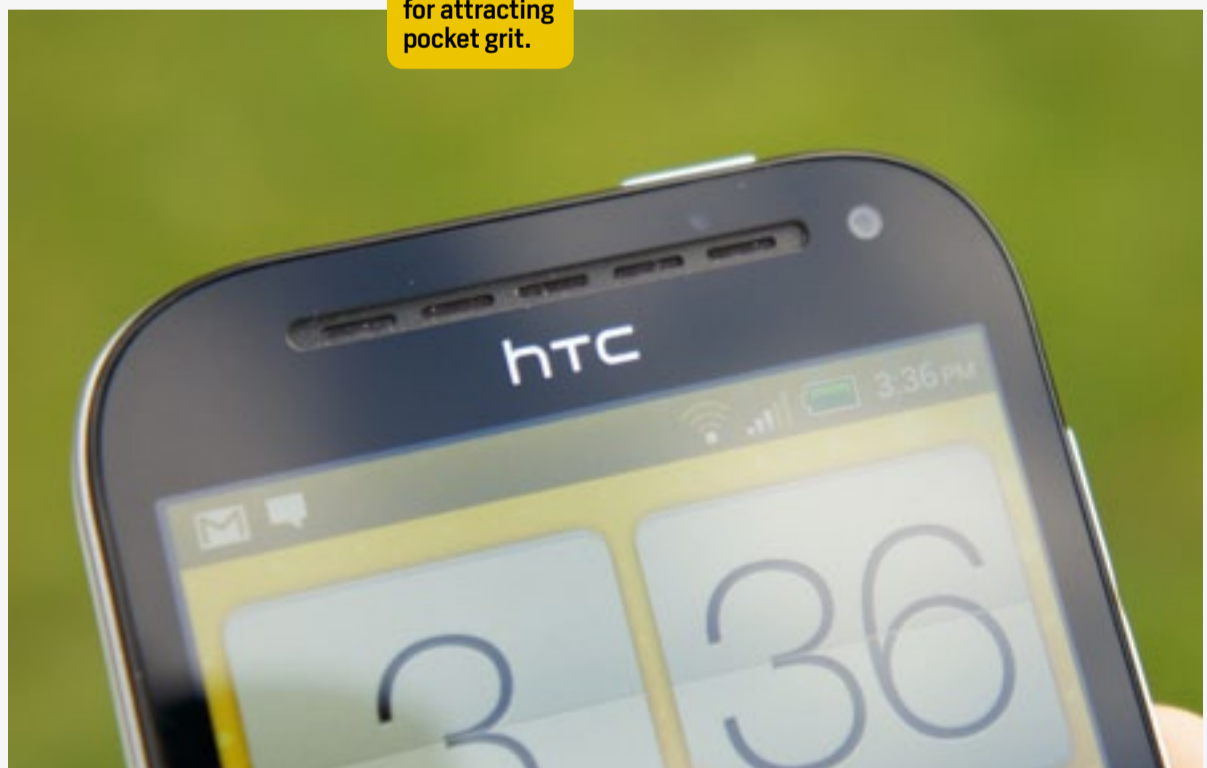
uniform white color.

So what's it like in-hand? The back panel is slightly curved so it rests snugly in your claw and conforms nicely to the palm. In a world of flagships with 4.7-inch screens (like the One X), the more manageable 4.3-inch One SV is a welcome reduction, at least for this particular editor. As a point of reference the One SV is 6mm taller, about the same width and 4mm thinner than the EVO 4G (HTC's 4.3-inch US flagship from 2010). It's interesting how perspectives change — the EVO 4G was the Galaxy Note of its time; now the One SV is considered small. It feels very solid and well built, and despite our best efforts, we couldn't pressure it to squeak or creak. That isn't to say it's heavy, at 122 grams, and there aren't any detectable balance issues. Overall, the handset doesn't have any high-end flair, but you cer-

tainly wouldn't describe its appearance as cheap.

Flattery over: it's time to balance the good with the bad. One minor design hitch we identified early on is the ear speaker recess at the front. It's a magnet for pocket shrapnel, and you might find yourself tempted to blow debris from it like you're fixing an SNES cartridge that didn't load the first time around. Luckily, the tiny notification LED hidden in that recess is a subtle embellishment which somewhat excuses its penchant for grit. Now for our major gripe. Full dimensions of the One SV are listed as 128 x 66.9 x 9.2mm (5.04 x 2.63 x 0.36 inches). However, the back of the device is slightly bigger on all fronts than the face, meaning the rim tapers inwards at an angle. Both sides of the phone are thin as it is, and while the back panel sticking out slightly from the rim makes it easier to get fingernail leverage, this also means that sliver of plastic is the

The recess up front has a penchant for attracting pocket grit.



primary point of hand contact. It puts an irritating amount of pressure on the skin; it's not unlike gripping an oversized credit card. That's seemingly a trivial point, but it registered as an annoyance every time we held the phone. If you're considering a year or two with the SV, it might be worth fondling one in-store to see what we mean.

## DISPLAY

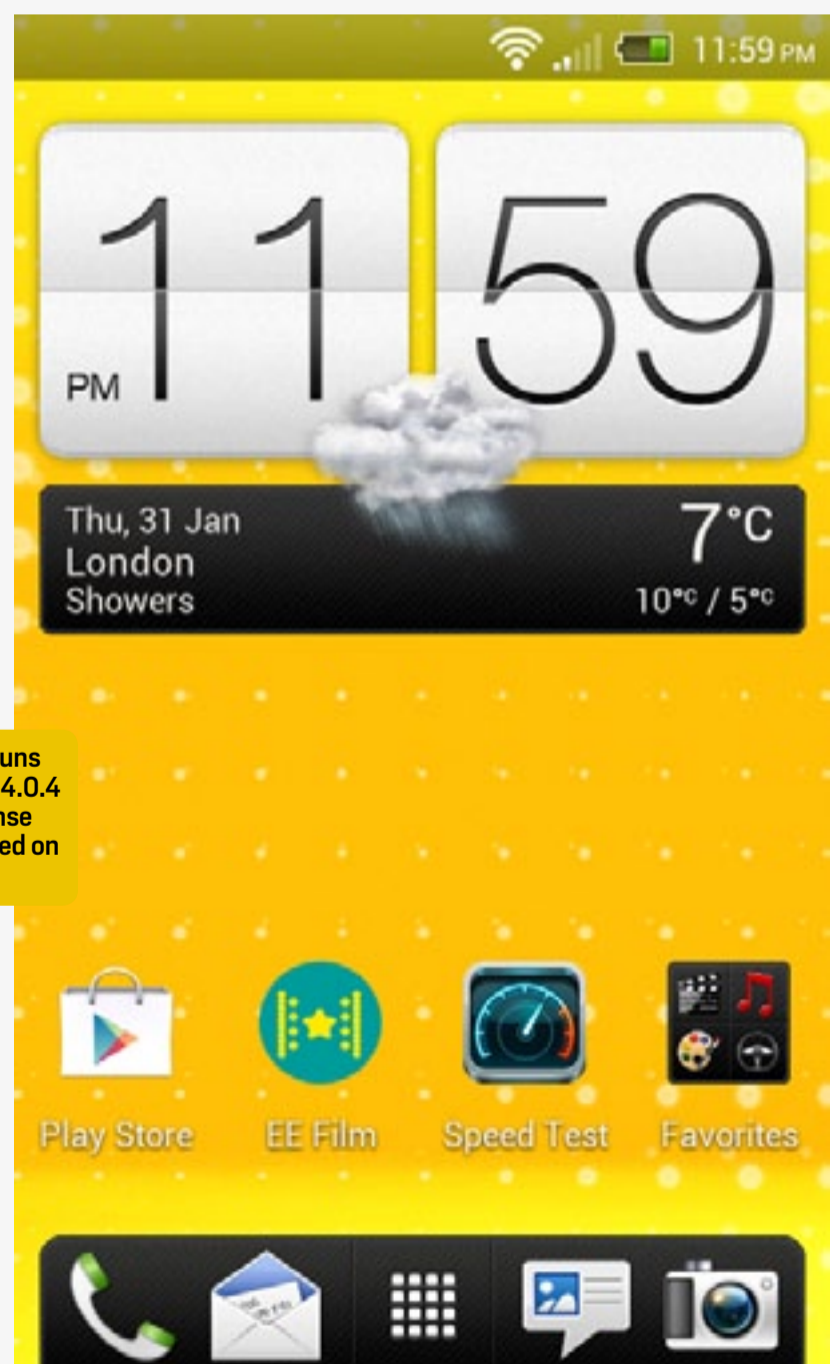
There's no dodging the figures here. When 800 x 480 resolution is stretched across a 4.3-inch screen, you're going to notice the low 217-ppi screen density — individual pixels can often be seen at work, especially on the diagonal. That being said, pixelation on the One S is much worse despite packing more pixels (960 x 540, to be exact) into the same dimensions. Sense 4.1's clean UI is appropriately scaled to give a 4 x 4 grid of icons in the app menu, so everything looks a little bigger than on higher-res handsets, but in general the visuals remain preserved.

Obviously, text isn't super-sharp, but in everyday use it's definitely adequate. As with the 720p One X, Super LCD-2 is the panel technology employed here. The blacks aren't quite as deep on the SV as they are on its older sibling, but being near-perfect is hardly a bad thing. We have no qualms with the whites, and the colors are rich and vibrant. Viewing angles and outdoor visibility are impressive, too. With a WVGA

resolution, it's no surprise that the screen doesn't do certain types of media justice. High-def video is horribly stretched (not to mention a tad jittery), and some games lacked the detail normally afforded by a greater pixel count.

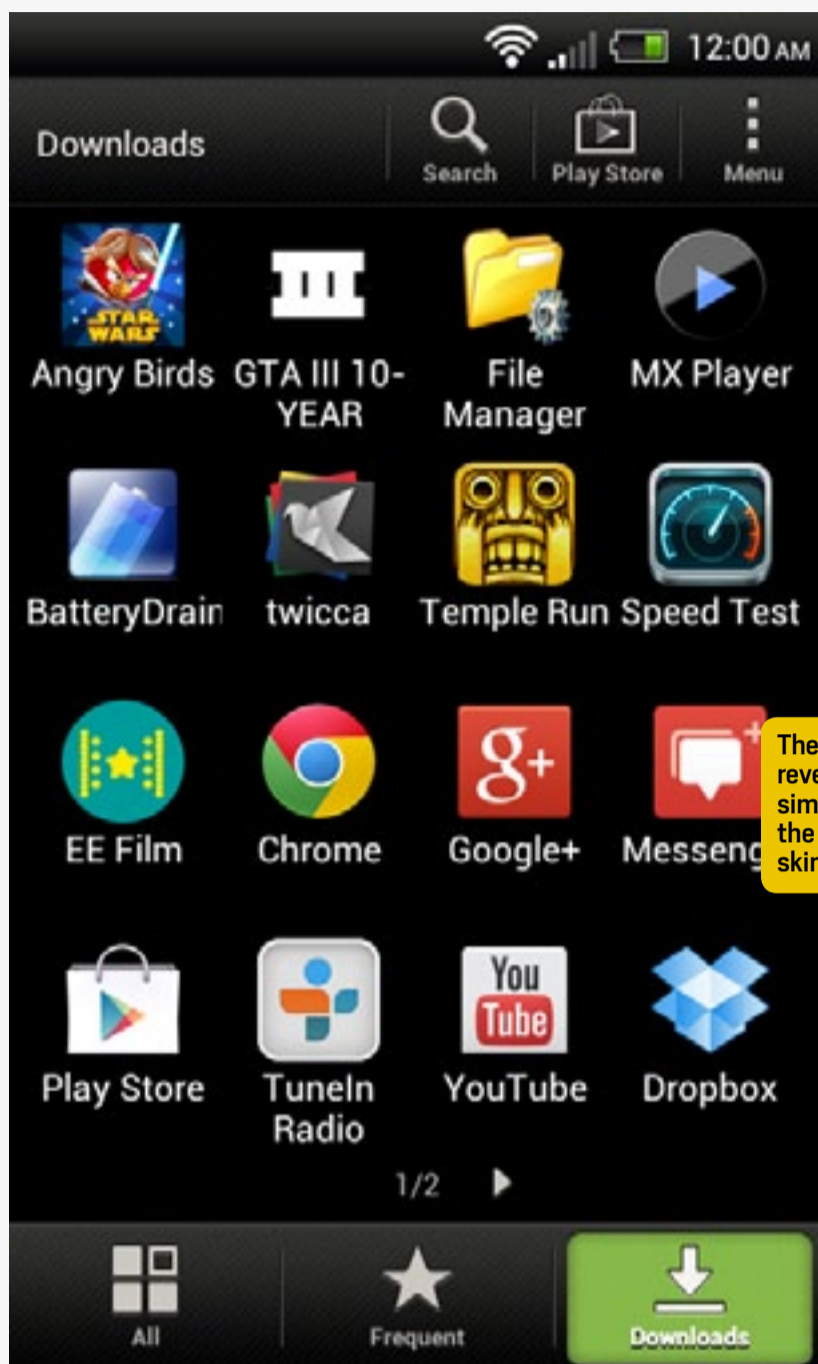
## SOFTWARE

Probably the most important thing to start with is that the One SV runs Android 4.0.4 Ice Cream Sandwich out of the box, with Sense 4.1 layered on top. This means all the sweetness of Jelly Bean — Google Now, for instance — is



The SV runs Android 4.0.4 with Sense 4.1 layered on top.





missing. No official update plans have been announced, but surely a brand-new handset can't stay relevant for long without at least a boost to 4.1. Let's hope HTC is thinking the same thing. If you're unfamiliar with the latest version of Sense, we've given it a comprehensive review, but some key visual points are that it's simple, uncluttered and easy to navigate.

This minimal-frills approach suits the One SV. As we mentioned, Sense is formatted correctly for the resolution and never challenges the device's hardware, so movement through the menus is fluid

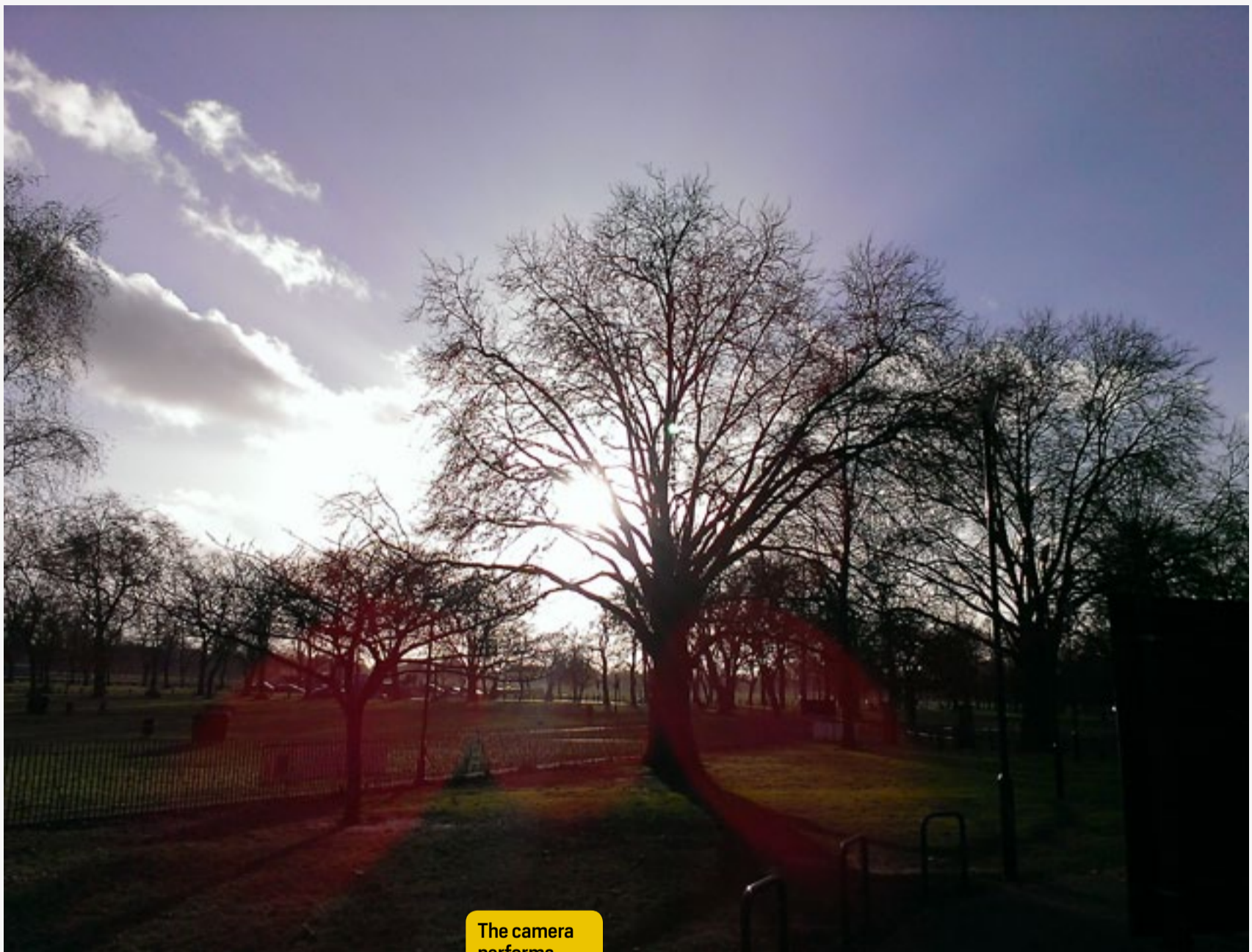
and hiccup-free. Fortunately, the bloatware on our model was light and subtle, hiding in the menus and easily ignored. Sense 4.1 isn't stock Android, but you can't accuse it of needless vanity. Like a loyal sheepdog, it's efficient, quiet and reliable on the One SV. Oh, and it loves you, obviously.

## CAMERA

A modest 5-megapixel shooter may adorn the back of the One SV, but HTC didn't skimp on the bells and whistles: autofocus, backside-illuminated sensor, f/2.0 lens, ImageChip, HDR, burst capture, simultaneous video and snaps, slow-mo recording ... the lot. We had high hopes with the amount of catchphrases attached to the camera, and on some levels, it delivers. You can take some nice pictures, including macro shots, with the best results occurring in decent natural lighting. Colors and exposure are commendable, especially when using the HDR setting. Indoor performance, however, is a little lackluster. Trying to get clever with the white bal-

**We had high hopes with the amount of catchphrases attached to the camera, and on some levels, it delivers.**





The camera performs best in bright, natural light.

ance settings proved fruitless in all scenarios, including outdoors. On auto, it's pretty accurate, but you may as well be applying filters to the viewfinder with all the other options. Low-light performance is acceptable, as long as you've got a steady hand.

One thing we had trouble with was the "smart flash" feature, which adjusts the light's intensity depending upon distance from target. It's wildly erratic and during testing, couldn't be tamed. We mostly skipped digging into the deeper settings, but ISO, exposure,

contrast, saturation and sharpness adjustments are all available to the compulsive tweeker. We did tinker with the sharpness slightly: it seems too high by default. Panorama mode is quite the challenge. We never succeeded in taking a full five-shot stitch, as we imagine only a robot arm is capable of maintaining the panning accuracy that it requires. Oh, and a quick note on the digital zoom: don't use it.

To its credit, the camera app opens quickly, and the shutter speed is extremely fast, as evidenced by the burst-capture feature. Recording video was a



slightly different story. The one-second initialization time felt like an eternity compared with the hustle of stills. Light levels were pretty accurate and the slow-motion mode captured high-FPS clips at the expense of quality — a fun feature to play around with. One issue you may notice is that the autofocus stutters fairly regularly. This occurred while recording video and while framing single shots. In general, the 5-megapixel cyclops is perfectly usable — it's just not in the same league as those on the One S or X. Self-portrait photographers and video callers could do worse than the 1.6-megapixel front-facer provided.

## PERFORMANCE AND BATTERY LIFE

Keeping everything moving under the hood is a 1.2GHz dual-core Snapdragon S4 Plus with Adreno 305 GPU (MSM8930) and a lone gig of RAM. Don't worry about the thrifty 8GB of storage, because a microSD slot supporting 32GB cards can be found under the back cover above the removable battery, and next to the micro-SIM cavity. For connections, it's got all the radios up to LTE, 802.11a/b/g/n — both 2.4GHz and 5GHz — Bluetooth 4.0 and NFC.

If the One SV were a cookie to crumble, general performance would be its chocolate chip. We've said it before — moving through the menus is a breeze. It doesn't cycle through screens quite as fast as the beefier One X, but it didn't freeze or skip once while we were

**In all, we're surprised at how snappy the handset is given the internals.**

swiping at an almost unnatural speed. Waking the device from full slumber takes around seven seconds (plus another seven or eight for everything to wake up), and app-loading times are swift, with most apps ready for use in less than a second. Browsing was a joy, and websites appear in the stock browser basically as fast as your connection allows (Chrome is a smidgen slower, but not much).

*GTA III* was our resource-hogging game of choice, and the initial boot-up time reflects the higher demand. It takes as long as five seconds to fire her up, which often resulted in us crashing the game due to impatience. It's perfectly playable on the low-to-medium graphics settings; anything higher and the One SV begins to struggle, but keeps it running at lower frame rates nonetheless. *Riptide GP*, a good-looking racer released more than a year before *GTA III*, runs smoothly with maxed-out visuals. In all, we're surprised at how snappy the handset is given the internals — the WVGA screen is partly responsible, for sure.

Head to the display section for an overview of video playback (spoiler: it's not great), but here, let's briefly talk audio. Beats branding isn't left off the One





Beneath the battery lies a microSD slot, compatible up to 32GB.

SV, of course, and enhances the sound within the stock music player, as well as third-party apps like YouTube. However, it doesn't work with the loudspeaker, which throws out noise of average quality and volume. Still, it'll be enough to annoy people on public transport if that's your bag. Call quality is clear (not HD, mind), although we can't deduce any noise cancellation at play. WiFi and cellular connections are unproblematic, and let's not forget, the handset has all-important LTE. EE's fledgling 4G network is still a little underdeveloped, and in this editor's South London area, high-speed data reception is patchy. When we got the opportunity to run speed tests, though, scores ranged from a tasty 25 Mbps down and 10 Mbps up, to a delicious 40 Mbps down and 15 Mbps up.

Number crunching time! As with humans, no handset is exactly the same as

its neighbor, but still, there isn't much difference between our One SV and the recently reviewed One VX. Identical S4 Plus chips can be found in both devices, and many other specs are also shared, though the One VX has a larger 4.5-inch display housing 960 x 540 pixels. Benchmark scores show perfor-

mance is very similar between the two, and the AnTuTu figures put them almost on par with the mighty One X. Comparing the One S with the SV, both have bragging rights depending on the measure you're looking at. Something interesting we found when running SunSpider was that the better number was recorded in the stock browser, with Chrome getting significantly worse grades.

We ran our battery test on the One SV's 1,800mAh pack as we usually do: with a video looping, 50 percent brightness, GPS and WiFi on but only LTE connected, one push email account and a couple of social networks updating at regular intervals. The phone died after almost exactly eight hours of runtime. While that's nowhere near the 10-plus hours some devices are capable of, it survived more than an hour and a half longer than the VX, but went quiet up to 60 minutes before the V, S or X. Experi-



BENCHMARK	ONE SV (INT'L)	ONE VX (AT&T)	ONE V	ONE S (INT'L)	ONE X (INT'L)
QUADRANT V2	4,718	5,242	1,636	5,053	<b>6,369</b>
VELLAMO 2.0	1,491	1,268	1,155	<b>2,452</b>	1,638
GLBENCHMARK 2.5 EGYPT 1080P OFFSCREEN (FPS)	<b>12</b>	<b>12</b>	N/A	N/A	9.7
CF-BENCH	7,518	7,423	N/A	9,547	<b>13,750</b>
SUNSPIDER 0.9.1 (MS)	1,418	1,504	3,215	1,743	<b>1,274</b>
ANTUTU 3.1.1	10,871	10,552	N/A	7,067	<b>11,030</b>

SUNSPIDER: LOWER SCORES ARE BETTER.

ments are useful, but how did it fare on the daily grind? Acceptable, but not outstanding. It can handle a full waking period of moderate-to-frequent use, including some browsing, picture taking, status updating and light gaming, but no more. The One SV doesn't escape the nightly recharging ritual we're all accustomed to, and as much as we wanted to believe it was coping fine throughout the day, that semi-conscious reaction to a dwindling gauge made us more economical with screen time, come the evening. You won't be disappointed with the battery life, necessarily, but don't expect it to last more than one day if you exercise your thumbs regularly.

## HTC ONE SV FOR CRICKET

As mentioned, we've also been testing the US version of HTC's One SV which is available exclusively on Cricket's CDMA / LTE network for \$280 contract-free (after \$50 mail-in rebate). LTE is avail-

able in select Cricket markets, including Las Vegas. Our review unit conveniently landed on the last day of CES, which allowed us to run a few speed tests before returning to CDMA-only San Francisco (not a native Cricket area). The One SV also supports Cricket's Muve music service, but our handset didn't ship with the requisite Muve microSD card.

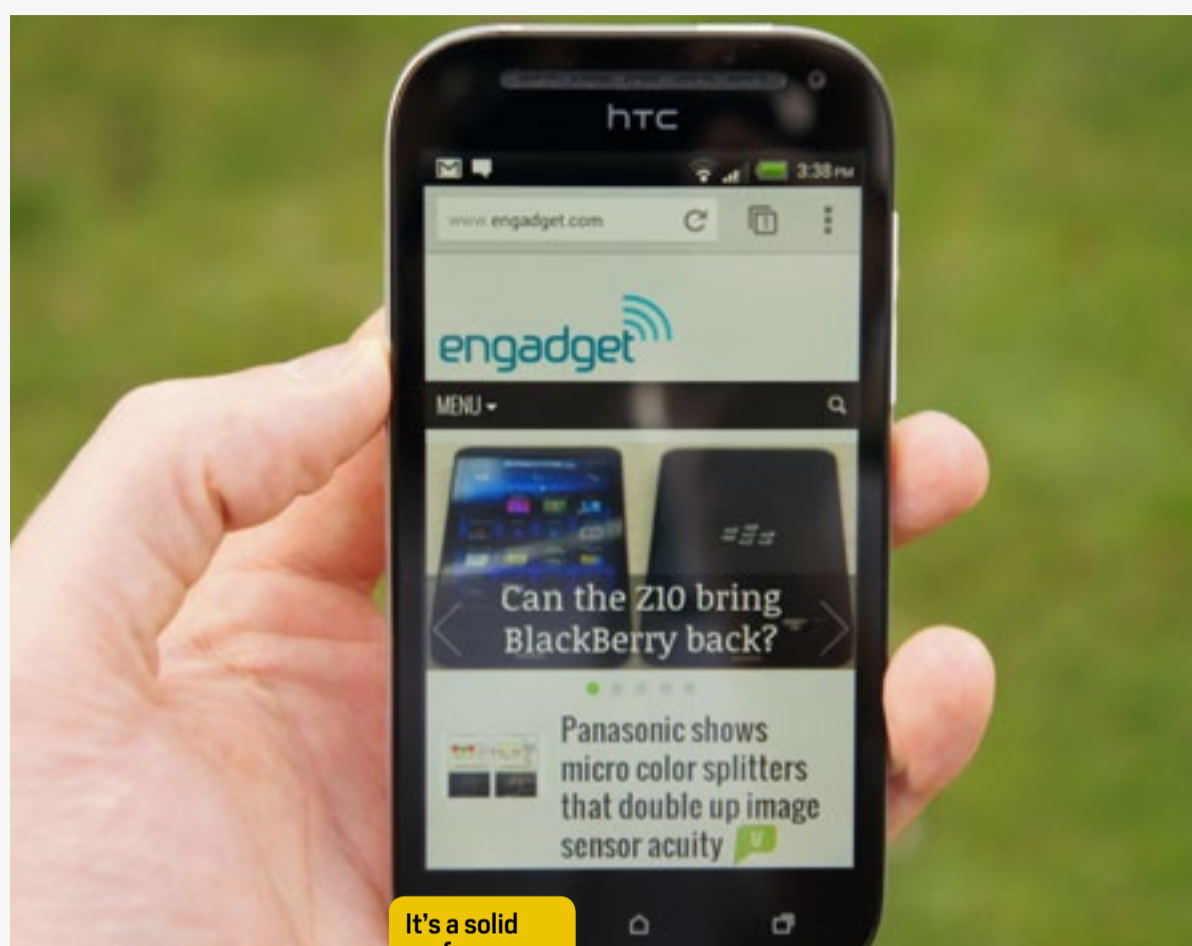
While the US model shares the same design and materials as its UK sibling, it receives a custom paint job. Around the back, white gives way to a striking "Flame Red" color (an almost orange shade of red) and the silver finish around the edge turns metallic red (this includes the power / lock button and volume rocker). Cricket's logo replaces the plain "4G LTE" label above the rear speaker. In front, the capacitive buttons are red instead of white (both the stencil and the backlight) — ditto the mesh inside the earpiece grille. This helps the phone stand out, but it's tastefully done.





Spec-wise the One SV for the US market is identical to its UK counterpart, save for the radios. Both devices feature LTE but Cricket's version is compatible with band 4 (AWS 1700MHz). It also supports CDMA / EV-DO (tri-band) instead of GSM / EDGE / UMTS / HSPA+ (there's no sign of this being a global device). Performance and battery life match what we documented with the UK model. Call quality is decent but data speeds leave a lot to be desired: we only recorded maximums of 7.3 Mbps down and 3.3 Mbps up on LTE in Las Vegas and peaks of 2.2 Mbps down and 900 Kbps up on EV-DO.

Pre-installed software includes *Block Breaker 3 Unlimited*, Cricket Navigator, Cricket 411, the aforementioned Muve Music, MyBackup, Storefront (Cricket's curated app store) and *UNO*. Two bookmarks come pre-loaded in the app tray: Mobile Web and My Account, the former pointing to the carrier's web portal and the latter linking to your Cricket account. Sadly, none of these apps and shortcuts can be uninstalled. Overall, HTC's One SV for the US market offers the same delightful experience as its UK stablemate — it's a budget phone that doesn't look or feel cheap.



It's a solid performer, albeit with a less-than-ideal display.

## WRAP-UP

The One SV is all about compromise. Its specifications aren't going to wow anyone into an impulse purchase, especially in a world spoiled by quad-core chips and 720p displays. Still, performance is more than adequate. However, a fast-loading 5-megapixel camera will allow for some opportunistic shots, even if it won't ultimately satisfy more advanced photographers. You're dealing with an 800 x 480 display, and we wouldn't recommend it to anyone who plans on using their phone to consume high-def content or play detailed games. Still, we would choose it over the One S's denser-pixel screen 10 out of 10 times. You'll definitely get a device that's dressed to kill, but it feels slightly awkward to hold, with



the slim, tapered sides digging uncomfortably into the hand at times. Booting up a brand-new phone only to see Ice Cream Sandwich running in the background is also a bit of a bummer, and one would hope a Jelly Bean update is in the works.

We're sure many will be interested in the One SV, at least in the UK where some still consider 4G a myth, and where Everything Everywhere is offering the handset free on a two-year contract (£36 per month). It's the cheapest deal the network is offering, matched only by identically priced plans for the Nokia Lumia 820 and Huawei Ascend P1 LTE. If you're in the market for an inexpensive Android device with high-speed data capabilities, that leaves you two choices on EE. Huawei's Ascend P1 compromises on different things than the One SV, making both flawed but worthy options. Those who like the biggest or the best aren't going to want

a One SV; it's not a heavy-hitter, and that's that.

It's obligatory that we mention the HSPA+ Nexus 4 here, which'll get you much better specs for £240 or \$300 (8GB model) depending on your location. If, however, you've been aching to get on 4G and have realistic expectations of what the handset does and doesn't do well, the One SV is a good-looking phone that's got a reasonable amount of smarts. Most importantly, the monthly charge won't be extortionate if you manage your data allowance well. The SV is half beauty, half geek — it ain't no prom queen, and it doesn't have a perfect GPA, but it'll more than suffice for people seeking LTE on a budget. **D**

*Myriam Joire contributed to this review.*

*Jamie Rigg is a Contributing Editor at Engadget, and a total sucker for any tech he really doesn't need.*

## BOTTOMLINE

**HTC ONE SV****\$280**

(UK: FREE WITH CONTRACT)

**PROS**

- Solid performance
- Attractive design
- Inexpensive

**CONS**

- Low-res display
- Somewhat awkward to hold

**BOTTOMLINE**

The SV is a solid option for people who want an LTE device on the cheap.



## NOKIA LUMIA 620



Nokia's **Lumia 620** raises the bar for budget-priced smartphones  
By **Mat Smith**

**The Lumia 620 is** Nokia's most affordable Windows Phone 8 device yet. Alas, it's a device that might never make an appearance in the US, due to its very attractive pricing of (£150, or around \$236), unless American carriers are willing to give a rebate from the outset. But it's a surprisingly attractive Lumia — in fact it's hard to put it in the same category as Nokia's previous cheaper Windows Phone options. Those colors hit you right between the eyes, with matte- and gloss-finish covers in cyan, lime, yellow and magenta presenting a nice alternative to the more



staid black and white versions. Behind that shell, a 1GHz Snapdragon S4 Plus beats away, with a bright, 3.8-inch ClearBlack display beaming out a familiar 800 x 480 resolution.

Despite the price, it's running the latest iteration of Windows Phone 8 and Nokia's also ensured its own camera lens apps, along with its music and mapping services, have been carried over as well. The 5-megapixel camera may be bested by the Zeiss-equipped 8-megapixel sensors on its bigger brothers, but with a staggering £300 difference between the Lumia 620 and Lumia 920, what other sacrifices have been made? Is this the best bang-for-your-buck Windows Phone we've ever seen? We think it might be.

## HARDWARE

After trying out both the Lumia 920 and the Lumia 820, it's a relief to see Nokia's phone footprint shrink so that it's closer to 2011's Lumia 800. The 620 model has a marginally larger screen than that polycarb-crafted phone, but it feels just as comfortable in our hands — one-handed use is a non-issue. While the screen's surface is completely flat, the edges curve around gently, forming a rounded back.



The 620 shell comes in a wide array of matte and gloss colors.

The entire cover can be pried off by pressing down on the camera unit and pulling at the top edge of the covering. Does it feel as plasticky as the Lumia 610? Nope. Wobbly? A little — there's a minor amount of give in the center of the back, but the cover and device feel unified and solid. Better still, due to the way the covers are formed (two different color layers, for the likes of the

**Due to the way the covers are formed (two different color layers, for the likes of the lime-green and orange options) they've come out in very vivid hues.**





Along the bottom you'll find a trio of capacitive buttons.

lime-green and orange options) they've come out in very vivid hues — the soft-finish cyan shell is this editor's personal favorite. The cases can also take a fair amount of damage from drops, with the easily breakable headphone port built into each case rather than the phone itself.

Nokia has added a front-facing VGA camera to this model (a first for an entry-level Nokia Windows Phone), while a 5-megapixel sensor and flash are centered on the back. For fans of the Lumia series, the front is even more familiar. The screen is framed with about 2mm of bezel at the sides, with space above it for the aforementioned VGA camera and earpiece. Below the TFT screen, you'll find the staple three-button capacitive control panel.

Along the right edge, there's still a hard camera button — and all the buttons seem to have more give than last year's Nokia devices. The micro-USB port sits

along the bottom with the primary microphone, while the headphone socket belongs at the top, replete with a secondary mic. It's worth mentioning that the Lumia 620 has been gifted with the same distortion-free, high-amplitude mics embedded inside the Lumia 920 — more on that in the camera section. Meanwhile the Lumia 620's built-in speaker is apparently 20 decibels louder than Nokia's flagship phone, able to penetrate *thin walls* at a maximum of 100 decibels.

If you want your music louder, the phone is also compatible with JBL's wireless speakers through its built-in NFC, while a removable 1,300mAh battery resides next to the space for a microSD card. There's already 8GB of built-in storage from the outset, while Microsoft is still offering 7GB of cloud storage through SkyDrive — in short, there are plenty of storage options. There's just 512MB of RAM, but that's plenty for handling the existing app selection on Windows Phone — we didn't have any issues using Skype or other apps, although we can't vouch for how future-proof this phone will be compared to Windows Phone devices housing 1GB of RAM.

The handset isn't going to weigh pockets down at 127 grams, but it's not the most slender phone out there, either. At 11mm (0.43 inch), it's actually incrementally thicker than the Lumia 920, but with this smaller form factor you shouldn't have any issues with one-handed control. Nokia's new phone



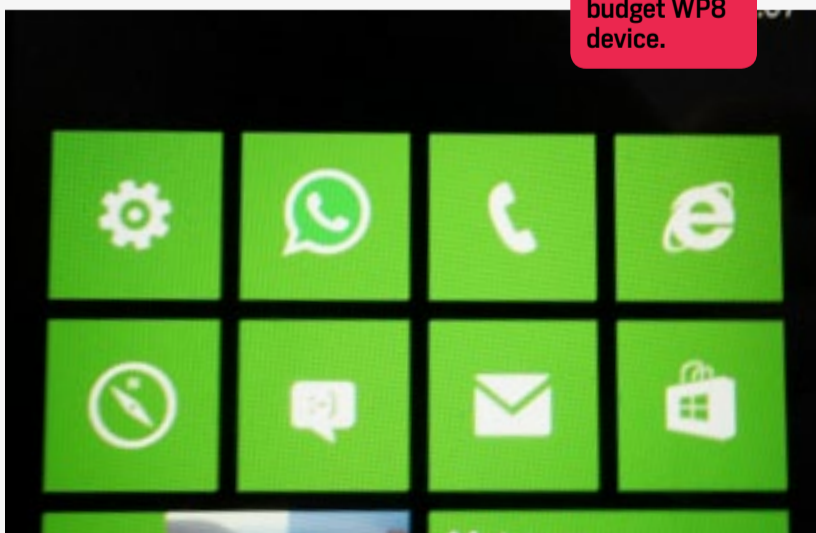
is more comfortable to use, even if that means there's less screen to play with.

## DISPLAY

If you've been looking for a sub-4-inch Windows Phone 8 device, options have been pretty limited as of late. But here, you're getting a display that's appropriate for the price: a 3.8-inch touchscreen that matches the resolution of most Windows Phones — that is, 800 x 480. Nokia's included its ClearBlack tech and an RGB Stripe pixel arrangement, while adding an anti-glare layer to improve outdoor visibility. Stack it against the Lumia 820, and it requires a bit more explaining.

In a way, the 620's screen looks better — it's the same number of pixels in a smaller space, but it's no longer AMOLED. Colors appear slightly more muted on the 3.8-inch TFT in comparison, although it also lacks AMOLED's bluish overcast in white areas. Now, after dabbling with 4.7-inch displays you might think that the smaller display would make web browsing a little more frustrating, but page formatting remained

The display is adequate and fitting for a budget WP8 device.



pretty much identical among the three Windows Phone 8 Lumias.

## CAMERA

If there was one feature that we expected to be underwhelming, it was the camera. Despite the extent to which Nokia raved about the prowess of its optical image stabilization and Carl Zeiss lens, you won't find either here. Maximum image resolution drops to five megapixels, but the sensor is still capable of 720p capture, with an LED flash potent enough to light up your subject — it's possibly a little too strong for close-up shots. The physical button launches into the camera almost immediately, with none of the lag of its predecessor, and with the same ability to lock focus with a half-press. We found in most situations that tapping the screen to focus offered a better lock.

The camera was able to take a handful

**Unfortunately, we've still got the same complaints that we mention in most Windows Phone reviews: there's no HDR mode and the UI itself is relatively low on customizations.**



of decent stills, although focus seemed slightly more temperamental than on other Windows Phones we've tested in the past. It still managed to give us some passable results in less favorable conditions, but if we were aiming for a close-up shot in better light settings, that reduced resolution made itself known in not-so-detailed results. That said, there's none of the fuzz and noise we've seen from other sub-£200 smartphone cameras we've tested in the past 12 months — we're pointing our finger squarely at some of ZTE's and Huawei's cheap carrier-specific models.

Unfortunately, we've still got the same complaints that we mention in most Windows Phone reviews: there's no HDR mode, the UI itself is relatively low on customizations and there's no way to lock down exposure to avoid blowing out your images in bright light. However, the Panorama mode and Nokia's GIF-crafting Cinemagraph are worth installing as they both add some extra talents to the camera.

More interested in video? Well, the Lumia 620 gives a decent showing here too. There's no optical image stabilization, but that remains a very rare addition to phone cameras, so it's hard to hold it against a colorful, rich recording. While a bit of breeze buffeted the mics, it picked up our voice (and some waterfowl noises) with perfect clarity.

## **BATTERY LIFE AND PERFORMANCE**

So, the Lumia 620 has the same resolution as the Lumia 820, memory expan-

sion through microSD and even a pair of high-amplitude mics, but we had to see how Qualcomm's lesser Snapdragon S4 Plus processor would handle an almost-identical Windows Phone UX. You can lay any of those concerns to rest, as the 1GHz dual-core processor offered up a very similar experience; you're getting far more than what you pay for. We ran the Lumia 620 against both the Lumia 820 and Lumia 920, and found that the only major differences in performance were the startup times, with the smaller phone taking about five seconds longer to reach the home screen. Scrolling around on Internet Explorer 10 on any device resulted in largely the same level of speed and responsiveness, a testament either to Microsoft's mobile browser or to Qualcomm's processor know-how.

The 1,300mAh battery inside is smaller than the one found in the Lumia 800, although this time it's thankfully replaceable. During our WPBench

**The dearth of highly polished Windows Phone games to push the technical abilities of the hardware makes it even harder to differentiate real-world performance between the three phones.**



BENCHMARK	NOKIA LUMIA 620	NOKIA LUMIA 820	NOKIA LUMIA 900	HTC WINDOWS PHONE 8S
WPBENCH	180	224	92	180
BATTERY RUNDOWN	3:41	2:07	4:29	3:30
SUNSPIDER 0.9.1 (MS)	1,443	909	6,902	1,415
ANTUTU 3.1.1	7,479	11,506	2,596	7,333

SUNSPIDER: LOWER SCORES ARE BETTER.

rundown tests, which push the processor to the max until the battery cuts out, we averaged a time of 3:41. That puts it below the Lumia 900 but more than an hour beyond most Windows Phone 8 devices. It even bests the hardy HTC 8S. Naturally, this isn't representative of the battery with more moderate use, but the Lumia 620 did better in this regard, too. It typically gave us two days of use before cutting out. This entailed plenty of web browsing, listening to offline playlists and a handful of calls and email replies.

Its benchmark results don't stand up to phones with beastlier processors like the 820 or 920, but the 620 still manages a respectable sub-1,500 score on SunSpider. Meanwhile, the dearth of highly polished Windows Phone games to

push the technical abilities of the hardware makes it even harder to differentiate real-world performance between the three phones. On the rare occasion the device froze, it was often during data upload from the camera app to SkyDrive, but the experience was otherwise smooth and without issue. The HSPA+ radio (WCDMA 850/900/1900/2100 and GSM/EDGE 850/900/1800/1900)

The 620 can work on AT&T's and T-Mobile's networks.





promises speeds up to 21 Mbps down and 5.7 Mbps up. During our tests on Three UK, we were picking up download speeds of around 5 Mbps, while uploads hovered just below 1 Mbps. The good news is that this phone will work on both AT&T SIMs and T-Mobile's recently claimed 1900MHz HSPA+ spectrum, both data and voice. If Nokia US decides to offer the phone directly to customers, it could prove to be a tempting introduction to Windows Phone without the fiscal carrier hangover.

## SOFTWARE

Read our Windows Phone 8 review? Or our reviews of those bigger Nokia models? Then sadly, there's not much new to tell you here. But that's actually good news — despite those lower specifications, the phone gets Nokia Music and Maps, not to mention those Lumia-specific camera enhancements. Mix Radio throws in a substantial amount of offline music your way for free, while Nokia's map navigation loads quickly and reliably. There's also the option to download country-wide maps ahead of any trips abroad. Problems still left to be solved include some major apps that are MIA, in-

cluding Dropbox and Instagram. A beta version of Spotify was just recently released for Windows Phone 8. Despite that Xbox brand association, gaming remains a shallow experience. If you're making noises about having *Angry Birds* in 2013, there's an issue.

It's also worth mentioning that after getting hands-on with (and feeling underwhelmed by) Windows Phone 7.8, we can't recommend picking up those old Lumia devices, even when they can now be bought for a similar price to this new Windows Phone. To get the full experience — and join an app selection that will grow in the future — you're going to have to pick up the Lumia 620, 820 or 920. Another benefit to the off-contract phone means there's no carrier bloatware to be found. The apps that do arrive pre-installed are mostly worth keeping around and getting rid of unwanted programs is just a long-press away.

Panorama is one of several Lens apps to augment functionality.



## WRAP-UP

The Lumia 620 represents a new high-watermark for entry-level smartphones, regardless of OS. Ignoring the app drawbacks, the phone provides a great web browser experience alongside the full Windows Phone 8 feature set. It could be a very exciting phone for Nokia — it's an exciting one for us. We've mentioned the price several times during the review, but for a new smartphone with the latest version of its respective OS, it's a steal. The phone might house a less-capable camera, but for anyone sick of oversized, unwieldy, expensive smartphones, Nokia now has an entry-level Windows Phone to lure the bargain-hunting crowds away from Android, if the Nexus 4 proves too expensive.

What's more, it's arguably more attractive than most Google-powered phones around the same price point and could prove to be a huge hit among smartphone beginners. There's also a

A family portrait with the Lumia 920, 620 and 820.



good chance that the more-gadget obsessed might pick up the Lumia 620 as a second device to give Microsoft's mobile OS a try — and with compatibility on two US networks, it might be worth an import. It delivers real-world performance as good as Windows Phones that cost more than double. If anything, it's making us reconsider whether those other rivals are worth the extra outlay. **D**

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*Mat is an Associate European Editor who lives in the UK. He's a Liverpool supporter who enjoys obscure Japanese game shows.*

## BOTTOMLINE

### NOKIA LUMIA 620

**£150 (\$236)**



#### PROS

- Attractively priced
- Good battery life
- Performance matches higher-end devices

#### CONS

- Middling camera performance
- Windows Phone 8 lacks app selection of entry-level Android phones

#### BOTTOMLINE

The Lumia 620 is a budget phone offering good performance and an attractive design. It sets a new benchmark for low-price smartphones.



## ASUS TAICHI 21



Does the **TAICHI 21's** dual-screen experience make for a viable Windows 8 contender or just an interesting form factor?  
By **Dana Wollman**

**It's tough to forget** the ASUS TAICHI: out of all the Windows 8 convertibles we've seen (and we've seen a lot) this is the only one with two screens on board. In particular, it's got one on the inside, which you'd use in regular notebook mode, along with a touchscreen on the outside that allows you to use the PC as a tablet. If you like, you can shut the lid completely and turn the machine into a slate-type device, but you can also leave the lid open so that you're mirroring your desktop, or displaying something different on each one (imagine the possibilities for pre-



senters!). As an added trick, that outer screen also accepts pen input, though you'll have to splurge on the highest-end configuration to get it with a stylus.

For now, ASUS is selling the 11.6-inch TAICHI 21 (\$1,299 and up), though a 13-inch version is going to start shipping later this month. Hopefully, though, our review answers questions you'd have about either model. Namely, what's it like to use a machine with two screens, anyway?

## LOOK AND FEEL

Until now, our reviews of ASUS Ultrabooks were starting to get a bit repetitive. Sure, the company slapped a touchscreen on one of its older models, but the core design otherwise hasn't changed much in the past year or so. Its Zenbooks have always been flashy, with spun-metal lids and brushed-metal palm rests that contrast with the keyboard. The TAICHI is also eye-catching, but in a different way. Obviously, for starters, there's no spun-metal cover here — the "lid" is actually that secondary display. On the inside, the keyboard deck is done up in a putty color that blends in against the black keyboard. Even

the brushed-metal detailing seems a bit finer here. All told, it's an attractive, tasteful design. Inoffensive, even. Which makes sense when you consider ASUS is mainly marketing this toward business users.

With the lid shut, it actually doesn't look that different from the HP Envy 14 Spectre, or the Acer Aspire S7, or any other laptop with a glass lid. The difference is that you can see the faint outline of the bezel — the sort of thick bordering you'd find on a typical tablet. There's also a touch-sensitive Start key that glows white when the machine is powered on. Ditto for ASUS' logo, which sits in one of the corners.

The effect is sort of neat — until you start using the TAICHI as a tablet. Because most other laptops with glass covers have them purely for decorative purposes, you're

Both displays exhibit stellar, wide-angle viewing.





The TAICHI 21 ships with (an optional) pen, pouches and adapters.

not likely to touch them as often. Here, it's a necessity. And man, are those fingerprints an eyesore, especially when the machine is powered off. Since that's the only piece of the laptop you can see when it's closed, you'd better be prepared to keep it looking like thirteen hundred bucks. On the bright side, ASUS used a custom glass (not Gorilla) that's proved resilient in our testing. Even after we tossed it in a bag to shuttle to and from the office, it didn't pick up any nicks or scratches.

We have mixed feelings about the inner display, too: though the viewing angles are good, it's not touch-enabled, which means you don't have the option of reaching up to tap it when you're using this thing as a regular notebook. What's more, the panel is ringed by a thick, 1-inch bezel that makes the interior feel a little fuddy-duddy; some-

thing closer to an edge-to-edge screen would've gone a long way in making the machine look more modern. Then again, even with one touchscreen this is heavier than other 11-inch laptops, at 2.75 pounds. To put that in perspective, that's midway between the 11- and 13-inch MacBook Air, weight-wise, so we

can't imagine how stocky this would be if there actually were a second touchscreen on board.

The good news is that the TAICHI is fairly thin, at 0.69 inch — not bad considering it has not one, but two displays on board. That chassis is just thick enough that it makes room for two USB 3.0 ports, along with micro-HDMI, mini-VGA, a volume rocker, an audio jack, a screen lock and a slider for powering the machine on. Additionally, the TAICHI ships with a USB-to-Ethernet adapter, a micro-HDMI-to-VGA dongle and, on select models, a pressure-sensitive pen. Like other high-end ASUS machines, it even comes with a pouch for the adapters and a matching case for the computer, which wins extra points on account of its leather detailing, magnetic closure and slot for holding the pen.





After a driver re-install, we felt much better about the trackpad.

## KEYBOARD AND TRACKPAD

The keys on the TAICHI have more or less the same shape as the ones on ASUS' other Ultrabooks, which is to say they're a bit wider than they are tall. Still, it appears ASUS has done some retooling behind the scenes; typing on this keyboard doesn't feel quite the same. Aside from the fact that the layout is more cramped (this is an 11- not 13-inch machine, after all), the buttons here feel slightly less springy than the

ones on the UX31A.

In a way, though, that's just inside baseball: to someone who's never played with an ASUS laptop before, they should be just fine: even if the keys are a bit flatter, they still offer more travel than what you'll find on most competing ultraportables. We were also relieved to find that although this is a fairly small system, ASUS kept most of the major keys intact — Enter, Backspace and the right Shift key are all amply sized, though the Caps Lock and Tab buttons are admittedly small. Additionally, the buttons have a pleasantly soft finish that makes them a comfortable resting spot for the fingers. As a

We didn't get off to a great start with the TAICHI's touchpad.



sidenote, the back-lighting is adjustable, which we can't say of every laptop we've ever reviewed.

We'll admit we didn't get off to a great start with the TAICHI's touchpad. Initially, we ran into lots of problems with the cursor stopping short on the screen before it got where we wanted it to go. At one point, as a matter of fact, we were writing this review in SkyDrive, and an errant touchpad gesture caused us to close out of the site, losing some of our work in the process. It wasn't as bad as that time we were testing the original UX31 and almost threw it against a wall, but it was close.

As you may have surmised, though, we've made peace with it. Mostly, anyway. Even after re-installing the driver, the cursor can still be tough to drag, but we can reliably scroll with two fingers, as well as use pinch-to-zoom to magnify text. As we've often found with Windows 8 laptops, some of the smoothest gestures are those that are native to the OS. That is to say, we had an especially easy time swiping in from the right to expose the Charms Bar and swiping in from the left to toggle through open applications.



The inner screen does lack touchscreen functionality.

## DISPLAYS, PEN INPUT AND SOUND QUALITY

Obviously, using the TAICHI as a regular notebook or even a tablet doesn't require any instruction — you can either close the lid or, uh, not. You will need to do a little configuring to either mirror your desktop on the outer screen or enter the dual-display mode. Just press the fourth button from the right on the Function row of the keyboard — the key with the dual-display graphic on it. That'll launch Taichi Home, a full-screen app that also shows things like battery capacity and shortcuts for mastering things like Windows 8 gestures. In any case, just tap that Function button again to cycle through the different modes.

By default, the TAICHI enters tablet mode as soon as you shut the lid, but you can lock the settings so that this doesn't happen. Oddly, though, there doesn't appear to be a way to lock your





Despite packing two displays, the TAICHI 21 remains thin.

mirroring / dual-display settings. That is to say, if you have the machine set to mirror your desktop and then you shut the lid, it'll go back to regular notebook mode when you lift the lid again, with nothing showing up on the rear screen. It would be nice to control that, though ultimately we think ASUS made the right call in designing the TAICHI this way: can you imagine the battery drain if there was a chance the exterior display could be left on accidentally?

Now about those modes. We can definitely see a use for mirroring. If you were hosting a presentation on your laptop, it'd be nice to show off a page in IE10 or play a slideshow in PowerPoint without having to turn your laptop around for others in the room. This way, you get a good view and so does everybody else. What's disappointing, though, is that dual-display mode only works with specific applications like

PowerPoint, which allows you to display, say, Presenter View on just one screen. We're not sure what else we were expecting — the ability to drag and drop an app onto the outer screen somehow? — but now that we've played with it, we'd say that dual-screen mode isn't as big a

selling point as the mirroring, which has more real-world use cases.

So far, we've talked an awful lot about what it's like to use a notebook with two displays, but we haven't actually said much about the panels themselves. As we alluded to earlier, the inner display offers good viewing angles. In fact, both screens do. According to ASUS, they each make use of IPS technology, even though the outer one has a markedly glossier finish than the other. Regardless of the one we used, we had no problem watching movies from off to the side; the contrast and color balance stayed even. In the case of the interior display — the one you'd use in

**The inner display offers good viewing angles. In fact, both screens do.**





notebook mode — we were still able to follow along with an episode of *South Park* even after dipping the lid almost halfway forward. That means if you're working with the machine in your lap, you don't have to be too finicky with the screen angle; most should work.

As for pen input, the outside screen has an N-Trig digitizer. The accompanying stylus is pressure-sensitive and is powered by a single AAA battery. It also has a button for erasing (not like the Surface Pro pen, where you can flip it over and use the opposite end as an eraser). Without a side-by-side comparison, it's tough for us to say which makes for a smoother experience: the Surface's Wacom-based tech or the N-Trig panel on offer here. Either way, we found we didn't have to apply much pressure while scribbling in SuperNote; we felt like we were pressing about as hard as we would if we were writing on an actual pad.

On the audio side, the TAICHI features an improved version of the Bang & Olufsen ICEpower setup used on the company's Zenbook lineup. As you might expect of a small laptop, the volume coming from the speakers isn't the loudest — we very rarely lowered the sound below the 50 percent mark. In terms of *quality*, though, the TAICHI 21 holds its own. It's not without tinniness — this is a laptop, after all — but in general the listening experience was more pleasant than on other Ultrabooks we've tested. Songs that would normal-

ly sound distorted on other machines — rap tracks, Nirvana singles — were fairly balanced here.

## PERFORMANCE AND BATTERY LIFE

By all metrics, the TAICHI 21 offers similar performance to other machines with these internals — namely, a 1.9GHz Core i7-3517U CPU, integrated Intel HD 4000 graphics and a 1080p display. Those are the same internals as the Acer Aspire S7 we reviewed and indeed, its scores are mostly in line (save for read / write speeds — the S7 has a RAID 0 SSD setup). Booting up the machine takes nine seconds, which is slightly faster, even, than some other Windows 8 Ultrabooks we've tested recently.

It does seem, though, that that high-octane performance comes at the cost of heat management. After leaving the system idle for a few hours and then picking it up to use Evernote, we noticed it was slightly hot around the vents on the bottom side. If you can find a place to put this other than your lap, you should be set, but you might run into a problem if you're using it in tablet mode — it's hard *not* to put your fingers on the back cover in that scenario.

ASUS rates the TAICHI 21 for up to five hours of battery life, but our test machine lasted even less time in our standard rundown test. With a video looping, WiFi on and brightness fixed at 65 percent, the TAICHI lasted three hours and 54 minutes, making it one of the shortest-running Windows 8



BENCHMARK	PCMARK7	3DMARK06	3DMARK11	ATTO (TOP DISK SPEEDS)
ASUS TAICHI 21 (1.9GHZ CORE i7-3517U, INTEL HD 4000)	4,998	4,818	<b>E1137 / P610 / X201</b>	516 MB/S (READS); 431 MB/S (WRITES)
ACER ICONIA W700 (1.7GHZ CORE i5-3317U, INTEL HD 4000)	4,580	3,548	E518 / P506	542 MB/S (READS); 524 MB/S (WRITES)
LENOVO THINKPAD TWIST (1.7GHZ CORE i5-3317U, INTEL HD 4000)	3,113	4,066	E1033 / P549	136 MB/S (READS); 130 MB/S (WRITES)
ACER ASPIRE S7 (1.9GHZ CORE i7-3517U, INTEL HD 4000)	<b>5,011</b>	<b>4,918</b>	E1035 / P620 / X208	<b>934 MB/S (READS); 686 MB/S (WRITES)</b>
LENOVO IDEAPAD YOGA 13 (1.7GHZ CORE i5-3317U, INTEL HD 4000)	4,422	4,415	E917 / P572	278 MB/S (READS); 263 MB/S (WRITES)
TOSHIBA SATELLITE U925T (1.7GHZ CORE i5-3317U, INTEL HD 4000)	4,381	4,210	E989 / P563	521 MB/S (READS); 265 MB/S (WRITES)
DELL XPS 12 (1.7GHZ CORE i5-3317U, INTEL HD 4000)	4,673	4,520	N/A	516 MB/S (READS); 263 MB/S (WRITES)

laptops we've seen. (Note: that's with just one of the two screens turned on.) And that's saying a lot: almost all of the touchscreen systems we've tested recently have been disappointing on the battery life front.

In a weird way, this poor showing makes us glad there weren't two touchscreens after all — we doubt it could

have efficiently driven both of them. That very slim silver lining aside, the TAICHI's battery life could be a deal-breaker for many, considering this is aimed at business users and business people often like to work on their laptops in coffee shops, airplanes, terminals ... places where there aren't necessarily outlets around. For now, you just



BATTERY LIFE	
ASUS TAICHI 21	3:54
ACER ICONIA W700	7:13
SAMSUNG SERIES 9 (13-INCH, 2012)	7:02
MACBOOK AIR (13-INCH, 2012)	6:34 (OS X) / 4:28 (WINDOWS)
DELL XPS 14	6:18
SONY VAIO T13	5:39
LENOVO IDEAPAD YOGA 13	5:32
DELL XPS 12	5:30
ASUS ZENBOOK PRIME UX31A TOUCH	5:15
ASUS ZENBOOK PRIME UX51VZ	5:15
TOSHIBA SATELLITE U845W	5:13
TOSHIBA SATELLITE U845	5:12
ACER ASPIRE TIMELINE ULTRA M3	5:11
TOSHIBA SATELLITE U925T	5:10
LENOVO THINKPAD X1 CARBON	5:07
ACER ASPIRE TIMELINE ULTRA M5	5:05
LENOVO THINKPAD X1 CARBON TOUCH	5:00
SONY VAIO DUO 11	4:47
ACER ASPIRE S5	4:35
ASUS ZENBOOK PRIME UX21A	4:19
ACER ASPIRE S7 (13-INCH)	4:18

might have to keep looking if long endurance is what you're after, but hopefully in the future Haswell will help improve runtime on machines like this.

## SOFTWARE AND WARRANTY

So how's the bloatware load here? Not bad, actually. Not bad at all. Starting with Metro-style apps, there's World Clock, ASUS Calculator, ASUS Converter, Skype, SuperNote and Fresh Paint. Surprisingly, this business machine also comes with a few Xbox Live games, including *Adera*, *Taptiles*, *Microsoft Solitaire Collection* and *Wordament*. Other than that, it's mainly a bunch of utilities designed to either show you how to use the TAICHI, or to tweak certain settings like power management profiles. These apps include ASUS Taichi Essentials, ASUS Tutor for Taichi, NB Guide (for learning Windows 8 gestures), ASUS Power4Gear Hybrid, Waves MAXXAudio, ASUS Install and ASUS Taichi Home, which we described earlier.

Like most other PCs we test around here, the TAICHI comes with a one-year warranty, which includes 24/7 tech



support and a 30-day zero-bright-dot guarantee.

## CONFIGURATION OPTIONS

In the US, at least, the TAICHI 21 is available in three configurations. Starting at the entry level, the cheapest option is a \$1,299 model with a Core i5-3317U CPU, 4GB of RAM and a 128GB solid-state drive. For \$1,499, you can get one with essentially the same specs, but double the storage space. Finally, there's the model we tested: a \$1,599 machine with the works (Core i7-3517U, a 256GB SSD and an included stylus).

Additionally, ASUS is about to start selling a 13-inch version (the TAICHI 31, natch), which will become available this month, says the company. According to an ASUS spokesperson, that model is expected to start around \$1,399, though that's still subject to change.

## THE COMPETITION

If you're looking for a dual-screened laptop specifically, well, we hate to disappoint you but the TAICHI, as imperfect as it is, is it. If all you want is a notebook that can be used in tablet mode, though, we can think of several better options. We'll begin with the Dell XPS 12, whose 12-

inch screen is only modestly larger than the TAICHI 21's. That, too, has a 1,920 x 1,080 display, which pops out of the hinge and flips around into tablet mode. We do like that 1080p IPS screen, we have to say, but we're also fans of the comfortable keyboard, attractive design and decent battery life (at least as far as touchscreen laptops go!). That starts at \$1,200 — so, it's a little less expensive than the TAICHI 21. The only thing you're giving up is the ability to interact with it using a pen.

We're also fans of the Lenovo IdeaPad Yoga 13, whose screen you can fold all the way back into tablet mode. Alternatively, you can fold it only part of the way so that the machine is in "Tent" or "Stand" mode. All told, it's about as versatile as the TAICHI, though for now it's only available with a 13-inch screen, which may or may not be too big if you were considering buying the TAICHI

Dual-screen competitors are non-existent for the TAICHI.





The TAICHI, while a novel concept, doesn't really deliver.

21. (For what it's worth, the Yoga 11S is coming this summer.) This one starts at an even lower price — \$1,000 — with slightly lower-end specs, including a Core i3 processor and a 1,600 x 900 display. There's no 1080p option, unfortunately, but you can step up to a Core i5 or i7 CPU, along with 8GB of RAM. In our experience, this too offers a comfortable keyboard, and the battery life is slightly longer than the XPS 12's.

We'd also be remiss if we didn't mention the Surface Pro tablet (\$899 and up), which also has a Core i5 CPU,

pen support and 1080p display. Unfortunately, though, stepping down to just one 1,920 x 1,080 screen won't get you longer battery life: in our review it fared even worse on our standard battery test.

## WRAP-UP

Around the time I wrote this review, I was also working on Engadget's first-ever laptop buyer's guide. I was sure the TAICHI would be a shoo-in for the convertible section, what with its innovative design and sterling spec sheet. Unfortunately, as inventive as this is



as a *concept*, the finished product isn't quite what we all thought it would be. The battery life is short, even for a touchscreen laptop, and it could be a dealbreaker for the business travelers to whom this is being marketed. And now that we've gotten comfortable with Windows 8, we wish the inner screen were also touch-enabled (that might not have bothered us back in June, when touchscreen laptops hadn't yet become the norm, but it's a bigger turn-off now). To be fair, there isn't really a chipset right now that can effectively power two 1080p touchscreens at once — not without ruining the battery life, anyway. But if we had to have just one touchscreen, then, we would have preferred to use it in both tablet and notebook mode (see: the Lenovo IdeaPad Yoga 13 or the Dell XPS 12).

The good news is that for an experimental product, the TAICHI gets a lot

of things right: both displays offer wide viewing angles, the performance is fast and the audio quality is surprisingly robust. It even supports pen input, which isn't true of most Ultrabooks. Needless to say, we do hope ASUS goes back to the drawing board and takes this criticism to heart — we'd say it has the foundation for a bangin' follow-up product. It's possible you'll want to buy this now if battery life isn't a concern, you want that outer display for giving presentations *and* you're already used to navigating Windows 8 using keyboard shortcuts. Otherwise, though, we're having trouble recommending this when there are other convertibles that offer longer battery life and deliver similar speed for a lower price. **D**

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*Dana Wollman is Reviews Editor at Engadget, a marathoner, lover of puns and a native Brooklynite.*

## BOTTOMLINE

**ASUS  
TAICHI 21****\$1,299+****PROS**

- Innovative design
- Great viewing angles on both displays
- Fast performance
- Supports pen input
- Good sound quality

**CONS**

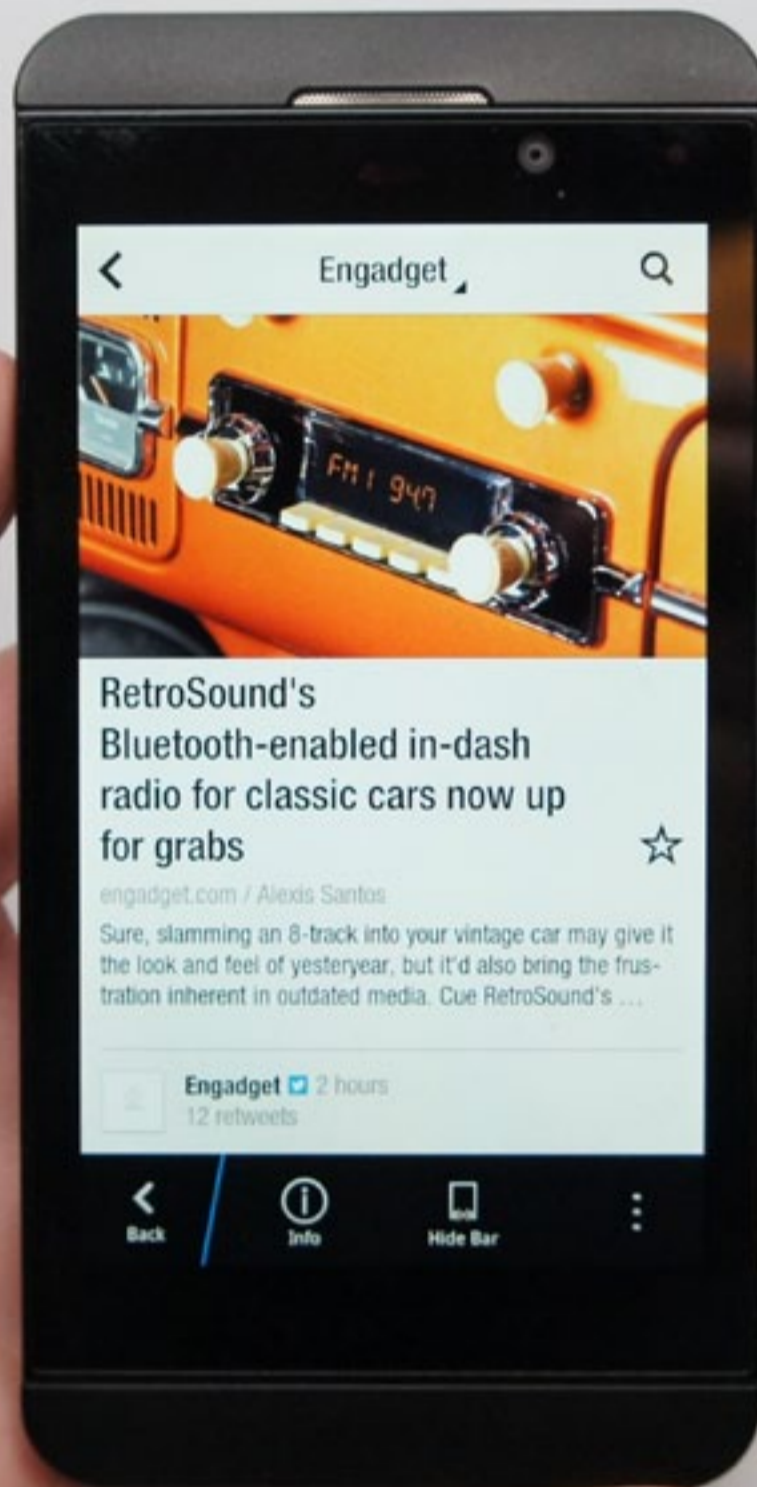
- Short battery life
- Interior screen doesn't support touch
- Runs hot
- Some touchpad issues

**BOTTOMLINE**

The TAICHI has an inventive dual-screen design with fast performance, wide viewing angles and decent audio. But we'd rather wait for a second-gen model with better battery life.



# (Part One)



## **BACK TO BLACKBERRY: 30 Days with the Z10** By Brad Molen



**IF YOU WERE TO ASK ME** what the most significant changes are in BlackBerry 10, I'd likely go into detail about the user interface, gestures, the Hub and the ecosystem. It's an amazing improvement over previous BlackBerry devices in most cases.

It's not too difficult to learn, either: just three days into my 30-day trial, I found myself unsuccessfully swiping up on a friend's Android phone to turn it on. But now that I've had the chance to set

[BlackBerry offers a quick tutorial to help familiarize you with the new Flow gestures that you'll use to navigate the OS.](#)



up all of my accounts, do some hardcore messaging and play around with the device, what are some of my thoughts about those major differences? Continue reading to learn some of the best and worst things I discovered so far.

The setup began with my BlackBerry ID, which was so old that I was surprised when the phone accepted my password. I added all of my email and social networking accounts in just a few minutes, but adding my inboxes to the Hub took several additional minutes. No special BlackBerry data plan was required; all I had to do was simply slide my AT&T micro-SIM card into the phone, boot up and it gave me full access to everything I need.

Even in the setup process, BB10 offered a few smart touches seldom seen on other platforms. For instance, my Facebook account is attached to one of my old Yahoo Mail accounts that hadn't been set up on my Z10 yet. When I added my Facebook logins to the BlackBerry Hub, it instantly recognized that I was using a different email address and asked me if I wanted to set that account up as well. All I had to do was throw in my password and I was ready to go. It's something that seems like common







The BlackBerry Hub makes adding various social and email accounts a quick and painless procedure.

sense, but it's still a rarity in the mobile world.

Once my Z10 was set up and ready to go, I had a chance to get introduced to the user interface. It's modern and beautiful, and the swipe gestures are a great touch. Despite its learning curve, I was used to the BlackBerry Flow gestures after just a couple days — and it got even easier over time.

Flow is much more intuitive than I originally expected. Going back and forth between the Hub and recent (or

running) apps is just a matter of a couple finger swipes, which made multitasking much faster and easier once I became acclimatized to the UI. However, the phone would occasionally ignore my gestures; I've also experienced the complete opposite scenario, like during attempts to swipe up on the keyboard's space bar, which the phone interprets as the "home screen" gesture. Also, it seems odd that an OS dedicated to simple swipe gestures doesn't let me swipe up to get rid of running applications on the main screen (à la webOS).

Speaking of which, the recent apps screen doubles as the UI's home panel, which was a little jarring at first; being accustomed to diving straight into the standard apps, this new style has involved a solid amount of adjustment time. I started using the recent apps much more frequently than I ever had before, since it was so easily accessible. This quick access, as well as the ability to get into apps almost immediately, has provided me with one of the best multitasking experiences I've ever had on a smartphone.

Once I began exploring the app pages, found on the right side of home, I was reminded of iOS, which features a static grid with apps and folders. To the left of home is the Hub. Here, all of my accounts are together in one place (and filterable to specific inboxes for better organization), but it's a half-baked effort. It lacks the numerous customization and communication options from previous BlackBerry devices, and app notifications can be er-





Finding apps and navigating BlackBerry World leaves a lot to be desired, but subcategories are sortable and filterable, easing app discovery.

It's also supposed to fully integrate with native apps, but two-way communication between the two elements is quite lackluster. As an example, after looking through my mentions on the native Twitter app, they remain as unread notifications in the Hub that need to be cleared out (a time-intensive process). Because of this, I have less interest in using the Hub, and only visit it to check my emails.

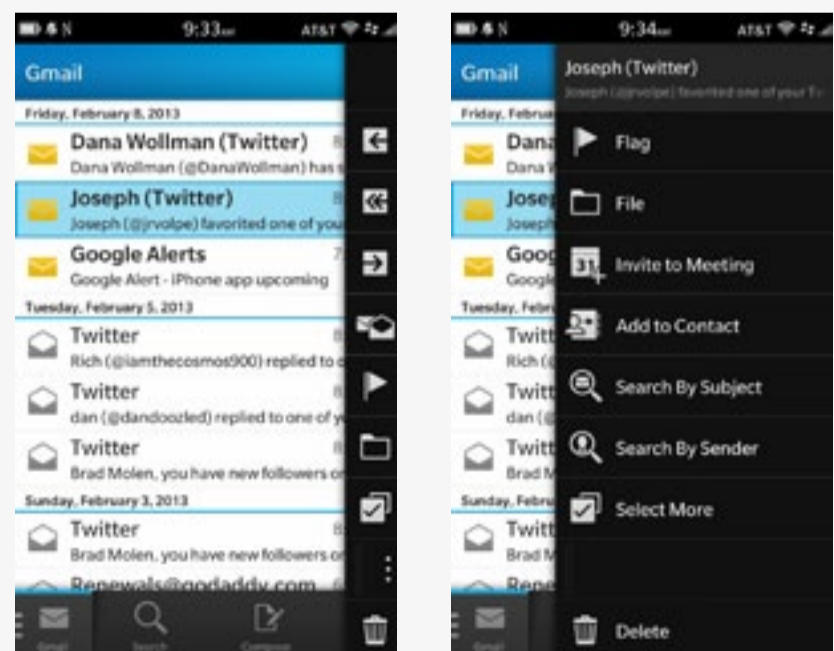
What about the ultimate BlackBerry staple, BBM? After setting the messaging service up — easy to do, since it already had my ID — and chatting with a few of my colleagues, the interface and feel seemed immediately familiar. The two-way video chat and screen-share features are handy, and BBM is just as pleasant to use as I remember. Unfortunately, the feature lacks cross-platform capability, limiting the number of potential friends and family members that I can talk to on the service. (Not to mention video chat is definitely no stranger to the smartphone world.) Un-

less millions of people flock to BB10 over the next year or so, I simply won't have a lot of opportunities to take advantage of BBM — and I don't feel like I'm missing out on anything.

I couldn't even make it through a day before I was setting out to find worthy replacements to the “native” Facebook and Twitter clients. Since Facebook hasn't committed to pushing out its own BB10 app, BlackBerry built one; at best, the application is a horribly implemented Android version wrapped up in BB10 code, and some sections of the app take you to the site on the mobile browser. As for Twitter, I've never been able to refresh my feed without fully exiting and re-entering the program. (Not everyone has experienced this bug, but numerous attempts to re-install the app haven't made a difference on my device.)

As a hardcore emailer, the Z10 has proved to be somewhat cumbersome in real-life use. My inbox is organized into a “conversation view,” but when I click on

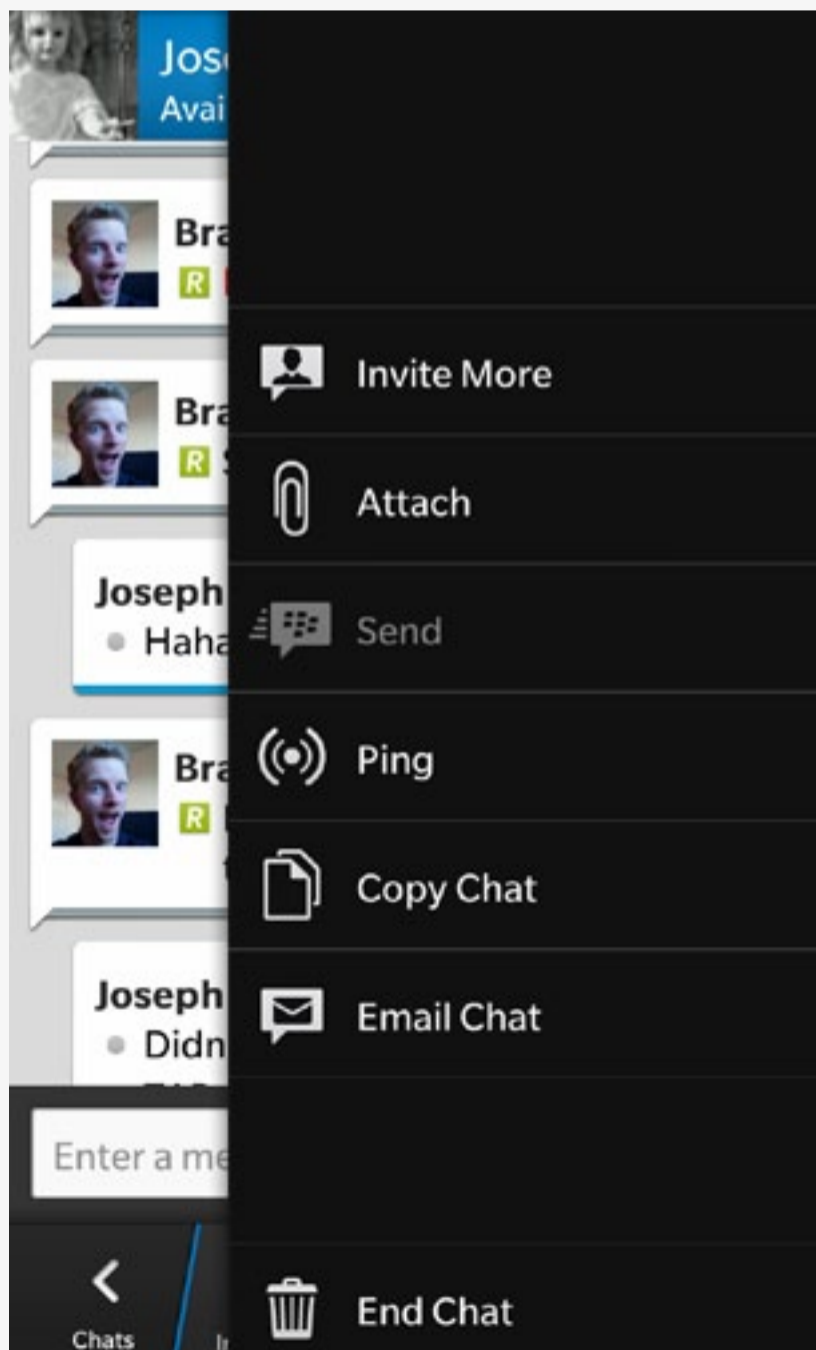
The email interface is rather cumbersome and selecting multiple messages or navigating quickly between emails takes several steps.



the email thread it takes me into an individual-message view and I can't hop from one email to the next without jumping out of the email first. I haven't found a way to preview the first line or two of text before jumping into the message, and the only way to multi-select my messages is to jump into the menu and press "select more" before proceeding. These complications make for a more time-intensive experience.

While I got push emails through IMAP, syncing my account with Google's server wasn't instantaneous.

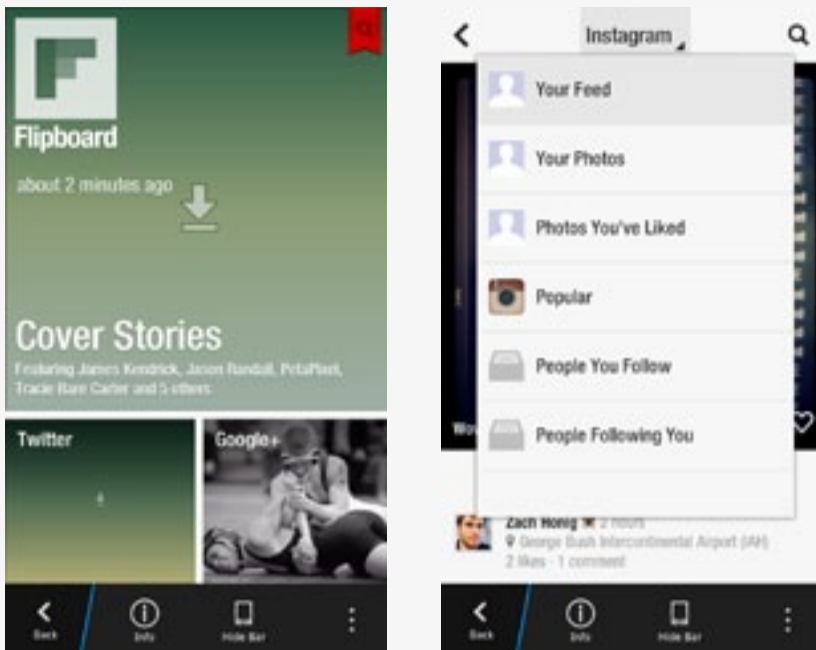
BBM is familiar and pleasant, but until it supports cross-platform access or millions flock to BB10, the available contacts will be limited.



There are a few settings that let me change how often the phone will communicate with Gmail, but whenever I read my email from my desktop, it would take ages before the phone knew about it. As soon as I switched to Exchange, though, everything began syncing much more quickly. On a more positive note: push email works great; BlackBerry Peek helps me see how many email notifications are waiting; viewing / saving attachments is easy; and my experience reading HTML emails is pleasant. Typing messages on the new virtual keyboard is also fast and smooth, though my experience using the word-prediction feature is right on par with our review.

Once all of my essential accounts and social networks were set up, it was time to play around in BlackBerry World. The store, which flaunted 70,000 apps at the time of its launch, still looks amazingly bare. Additionally, BB World isn't easy to navigate, so app discovery was rather difficult. Several times I've exited the store in disgust because I couldn't find anything close to what I was looking for. Only a handful of "featured apps" are shown on the first page, and "trending apps" typically displays just 10 to 15 of the apps BlackBerry wants to show off. To get to the meat, I have to dive into the categories, which are then broken up into subcategories. The silver lining is that once I get there, at least there are filters that narrow down my choices and let me change the sorting order.





The ability to port over Android apps into BB10 is incredibly useful, but performance on the platform can often be problematic.

What if the app you really want isn't available on BlackBerry World? Welcome to the immediate future, folks. The ability to port Android apps over to BlackBerry has been a lifesaver. Once I learned how to sideload Android apps to my Z10, I installed Flipboard and used it to keep up on the usual feeds (I can access Google+ and Instagram this way). Additionally, I found apps for Remember the Milk, Google Voice, speed tests and podcasts, to name a few.

This doesn't mean the use of repackaged Android apps is a flawless experience. Some are clunky, unresponsive and don't give me an experience as smooth as programs written natively for BlackBerry. Since Runtime for Android only supports Gingerbread or older versions (this will be bumped to Jelly Bean eventually), I've dealt with an archaic UI and apps that don't work. Many of the sideloaded files didn't launch. On multiple occasions, some of the apps that actually did work would freeze,

forcing me to exit the app completely or reboot the phone. However, since it only takes a couple minutes to sideload an app, the additional functionality you receive is worth the gamble.

## WRAP-UP

While I'm fully committed to spending 30 days with BlackBerry 10, the first week onboard the new OS hasn't converted me into a dedicated user. I'm not saying my decision to do a month-long challenge was a mistake or that I loathe every waking moment with the Z10, but BB10 simply doesn't offer many competitive advantages that would take me away from the other platforms. The UI and gestures are refreshing and fun to use, but the Hub feels a little too basic for my email needs. I'm also willing to give the ecosystem some more time to grow, but it's not a good sign that I have no other choice but to sideload Android apps to fill massive holes in BlackBerry World. Granted, I believe BB10 is the best first-gen version of any mobile OS on the market, and it has a lot more potential than I originally thought. How well — and how soon — it lives up to that potential is a completely different story. **D**

*You can [follow Brad on Twitter](#), where he is documenting many of his thoughts and observations on BlackBerry 10.*

---

*Brad is a mobile editor at Engadget, an outdoorsy guy, and a lover of eccentric New Wave and electro. Singer and beatboxer.*



# ESC

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02.15.13

VISUALIZED

PROJECTING NEMO

 See it in  
action!



PHOTOGRAPH BY BRIAN MAFFITT / FLICKR



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02.15.13

ESC

Q&A

# FLYNT FLOSSY

**THE TURQUOISE  
JEEP CO-CEO**  
on shower  
meditation and  
capturing hooks  
on the go.



**What gadget do you depend on most?**

I have to say my iPhone; it's really everything in the palm of your hand. You have to own one to truly understand all the awesomeness jumbled in one device.

**Which do you look back upon most fondly?**

My first touchscreen phone! I believe it was the Treo. I remember feeling like the coolest dude on Earth with that phone. I was super-protective of it, using the stylus for the slightest things. I had the bulky leather case and all.

“... I find myself using the voice memo app a whole lot. Whenever I randomly think of a hook or a melody, I run straight to that app ...”

**Which company does the most to push the industry?**

I have to go with Apple right now ... they just seem to do all the right things.

**What is your operating system of choice?**

I'm operating on OS X.

**What are your favorite gadget names?**

I'm a fan of simple, yet clever names like PlayStation, Walkman, Talkboy, etc.

**What are your least favorite?**

Anything that's too long and not catchy.

**Which app do you depend on most?**

You know what ... besides the obvious like Instagram, Gmail, etc. ... I find myself using the voice memo app a whole lot. Whenever I randomly think of a hook or melody for song, I run straight to that app so I don't forget it. I have a TON of stuff.

**What traits do you most deplore in a smartphone?**

I wish you could have multiple apps run all at the same time and not drain your battery so much. I like to multitask.



**Which do you most admire?**

I love the “intelligent personal assistant” like Apple’s Siri or Samsung’s S Voice. You think it’ll be one of those features you don’t really use, then one day you realize, “Hey this thing really comes in handy; it’s way smarter than I thought!” Then you start asking it random questions like “Siri, how many calories in rice pudding?” just cause you know she knows the answer; still amazes me.

Flynt Flossy is known for flexing fly moves, which drives the theme for the Turquoise Jeep jam “Did I Mention I Like to Dance.”

**What is your idea of the perfect device?**

Good battery life, runs fast, no glitches and doesn’t become obsolete just because a newer version comes out.

**What is your earliest gadget memory?**

Oh man, I remember having this red and white Fisher-Price tape recorder with the microphone. It would never leave my side ...

my first rhymes were recorded on it. I wish I still knew where that tape was. I also have to give an honorable mention to my Speak & Spell! I used to love that thing.

**What technological advancement do you most admire?**

I’d say the internet and social media as [a] whole. It gave people like us a platform to display our creative works and build a genuine fanbase. It’s amazing.

**Which do you most despise?**

I hate how easy it has gotten to find out people’s personal information. There’s no real privacy these days ... that sucks.

**What fault are you most tolerant of in a gadget?**

Well, even though it’s annoying, I can tolerate if the battery life isn’t perfect. I’m the type to always have my charger on me, so it wouldn’t bother me *too* much.

**Which are you most intolerant of?**

Freezing! Words can’t express the feeling I get when I see that colored pinwheel (pinwheel of





“Words can’t express the feeling I get when I see that colored pinwheel on my laptop. Especially when I’m in the middle of a project ...”

death) on my laptop. Especially when I’m in the middle of a project ... I can’t count how many times I said, “No please, baby, not now, not now ... nooo!”

**When has your smartphone been of the most help?**

Well, the alarm on my phone wakes me up every morning. It also gets me out the shower. My showers tend to be a bit extended because I meditate. Am I the only one that meditates in the shower?

**What device do you covet most?**

Definitely my laptop; can’t function properly without it. I’m a tech guy.

**If you could change one thing about your phone what would it be?**

Give it legs and breasts; other than that it’s perfect. I *love* my phone.


**What does being connected mean to you?**

I would say being in touch with my fans and being up on what’s new on the internet.

**When are you least likely to reply to an email?**

When we’re touring real heavy or when I’m in the creative process, like writing a new song or treatment for a new music video. My mind can get real cluttered. Other than that, I always try to reply to all my emails.

**When did you last disconnect?**

It’s been a while; there’s always something going on with the team. I can’t stay away too long from our fans, feel me? 



*IN REAL LIFE* is an ongoing feature where we talk about the gadgets, apps and toys we're using in real life.

# MAILBOX FOR iOS

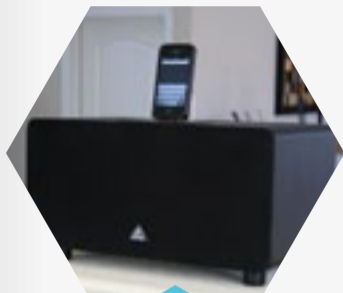
**FIRST, A CONFESSION:** I'm obsessed with inbox zero. With that in mind, it seemed as if Mailbox — an iOS app that's said to be the ideal way to use Gmail on an iPhone — would be perfect for me. In a nutshell, it eschews the use of Labels in favor of a to-do-list-style of management. You can swipe messages to archive, delete or file to a list — or to a special section where the app will automatically remind you to respond at a certain time.

But here's the rub: the app effectively wants you to never use Labels again, which is a horrible idea for yours truly. Who signs up for Gmail with no intention of using

Labels? There are a zillion email hosts out there — if you're using Gmail, why not take advantage of the subtleties that it offers? I use Labels *all of the time*. I categorize every single email I get that isn't trashed.

Why would you choose *not* to keep your digital life in order? And the irony of it all? Mailbox automatically creates its own Label in Gmail to keep itself in check — and you can't remove the blasted thing unless you sign back into the app and specifically remove your Gmail account from it.

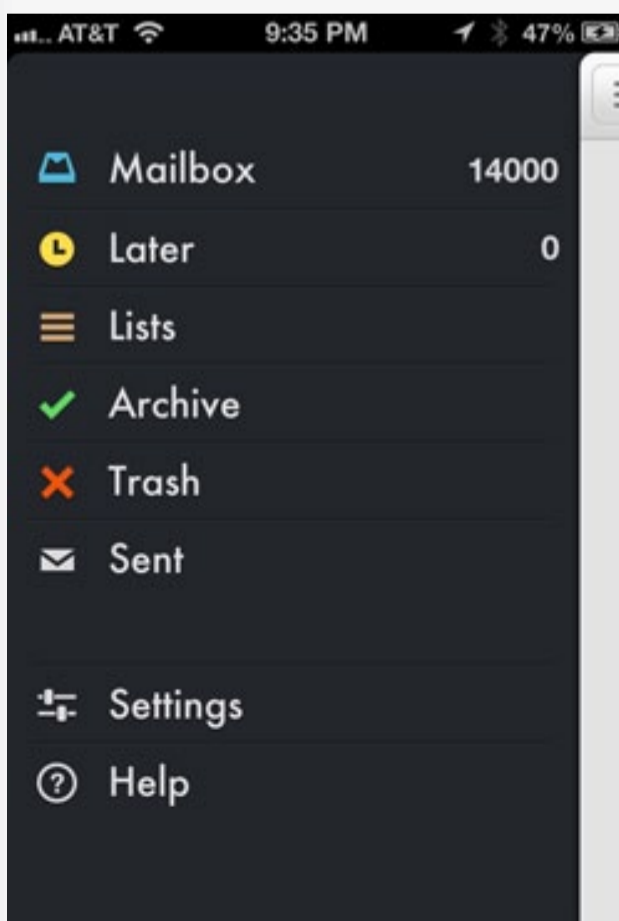
For me, Mailbox is useless. I don't want an app that encourages me to procrastinate on replying. I don't want an app that discourages me from staying true to a rigorous process of categorization and labeling. Best I can tell, the Mailbox method seeks to solve the “inbox overload” issue that so many evidently face. That's the wrong way to go about it. Those overwhelmed by email are likely a) overworked or b) awful at time management — perhaps a combination of the two. Let's be honest: you know as soon as an email comes in if you're going to reply or not. Don't use some swanky new app to help you put it off. Just reply immediately or delete it and move on. Or, don't listen to anything I say. It's cool. Really. — *Darren Murph*



Behringer  
iNuke  
Boom  
Junior



Fujifilm  
X-E1



# BEHRINGER iNUKE BOOM JUNIOR

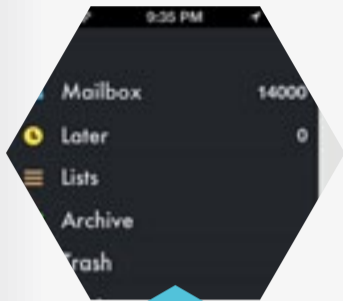
**SOMEWHERE OUT THERE** are people whose definition of fun is cramming the largest engine inside the tightest space that they can. Those are likely the same kind of folks who dreamed up Behringer's iNuke Boom Junior speaker dock for the iPhone and iPad. A smaller re-imagining of the 8-foot, 10,000-watt iNuke Boom, the Junior tries to emulate its older brother's big sound by placing two tweeters, two mid-range speakers and one subwoofer within a frame that's just nine inches tall and 16 inches wide.

By most metrics, it succeeds. Sit next to the speaker at high volume and you'll literally feel the pressure, and wonder whether tinnitus might be in your future. The Boom Junior also handles that volume well; I can crank the speaker so hard it can be heard on the second floor of my house, and there's still no noticeable distortion. Bass levels are strong, however, and can drown out mid-range detail if set too high — though they

can be adjusted along with treble levels via an included remote.

In addition to the classic Apple connector, the Boom Junior features audio inputs for RCA stereo cables as well as a video out for playing movies from an Apple device to a TV. It also comes with a 3.5mm audio cable that I've used to connect my Samsung Galaxy S III, Sansa Clip and ASUS G74SX.

Still, the device is not without issues. Although the Junior isn't as big as the original Boom, it still might be a bit large for some folks. Another is its push-down connector, which can be finicky. I had to remove the case for my iPhone 4S for it to connect properly, which I didn't have to do with other docks I've used. The fact that it uses Apple's old 30-pin connector means you won't be able to connect newer Lightning-based devices right off the bat. Folks who like streaming content also may be disappointed with the lack of wireless connectivity options. Overall, though, I like using the Boom Junior with my portable devices — especially when I'm in the mood for getting loud. — Jason Hidalgo



Mailbox  
for iOS



Fujifilm  
X-E1



# FUJIFILM X-E1

**DESPITE BEING** surrounded by the very latest tech toys at the 2013 CES, it was my personal travel camera that garnered more than a few double takes and hushed whispers. At least a dozen tech editors inquired about the new Fujifilm X-E1 I carried with me, and it's honestly not too surprising. There's a reason this camera's earned the nickname "The Sexy One."

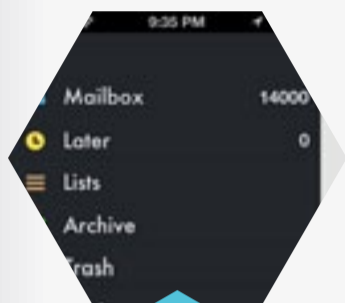
For my travel / casual camera, I was naturally more concerned with image quality and light weight when I bought it. Still, I won't deny how good it looks thanks to its retro-inspired style. A year ago, I was the proud owner of Fuji's X100 fixed-lens compact camera and was immediately impressed with its abilities. It seamlessly blended into my working camera gear setup thanks to its fantastic image quality and solid controls.

Now, with the X-E1, I appear to have purchased another winner — this one with the added versatility of interchangeable lenses.

There were reports of a slightly laggy electronic viewfinder and somewhat slow AF speeds, but I'm not terribly bothered. I've used the X-E1 in some pretty poor lighting environments (read: a nearly pitch-black bar to photograph some local bands) and came away highly impressed. True, the AF isn't always DSLR-quick, but it is at least fairly predictable.

And then there's the image quality. The 16.3-megapixel APS-C X-Trans sensor and Fuji's strong lens lineup combine to produce some impressive results. While I usually prefer Manual modes, I have no qualms about setting the X-E1 to Auto mode, including the ISO (up to 6400, though quality remains impressive at even higher ISOs). This "Auto-everything" mode has yet to disappoint, though a minimum shutter setting would be much appreciated.

It's not perfect, of course. The AF could be faster (and additional firmware updates suggest it will be). The EVF could also update quicker. Lastly, third-party RAW conversion support could be much improved. While Phase One has recently updated its software to support Fuji's X-Trans sensor, I'm waiting to see if Adobe follows suit and improves its conversion support in Lightroom. Those complaints aside, it appears "The Sexy One" is a hit. — *Philip Palermo*



Mailbox  
for iOS



Behringer  
iNuke  
Boom  
Junior



The week that was in 140 characters or less

# Brazil's Android iPhone, iWatching the iTV and Breaking News

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ESC

REHASHED

**@Gartenberg**

Somewhere in Cupertino there's a group laughing really hard about all the "iWatch" chatter. While watching their Apple Television set.

**@harrymccracken**

I must like Mailbox — I'm already afraid that Google might buy it.

**@meghanrcs**

I'm loving that there is an android phone in Brazil called the iPhone #trademarklaws

**@panzer**

Techcrunch employee locks eyes with guy pasting gdgt logo onto a frosted glass door at AOL. A coffee falls. Footsteps. Blog post breaks news

**@jennydeluxe**

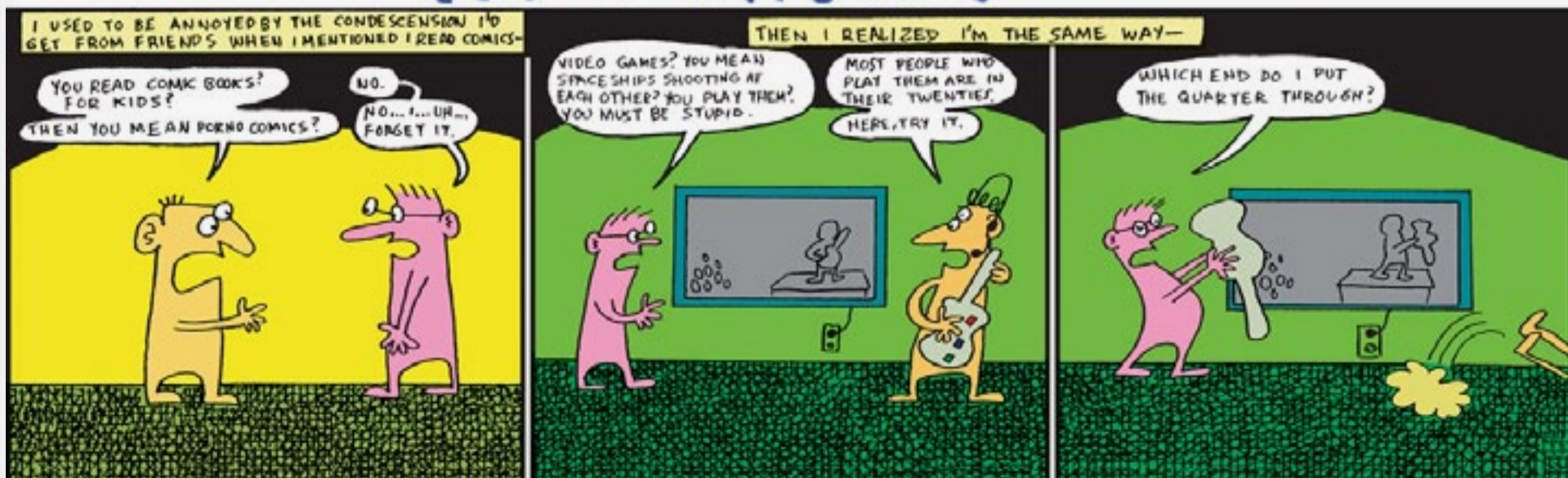
Wait: Did Obama just shout-out 3D printing?! What. Is. Happening.

THE STRIP

BY SAM HENDERSON

**i'm A HYPOCRITE**

henderson 13



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ESC

TIME  
MACHINES

WHAT IS THIS?   
TOUCH TO FIND OUT



PHOTOGRAPH COURTESY OF SHORPY (MAIN) / US AIR FORCE PHOTO/AIRMAN 1ST CLASS COREY HOOK (INSET)



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