

# DISTRO

022213 #79

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**SONY REBOOTS  
ITS MOBILE  
APPROACH**

**THE RETURN  
OF LENOVO'S  
THINKPAD  
TABLET**

**WEEK  
TWO WITH  
BLACKBERRY'S  
Z10**

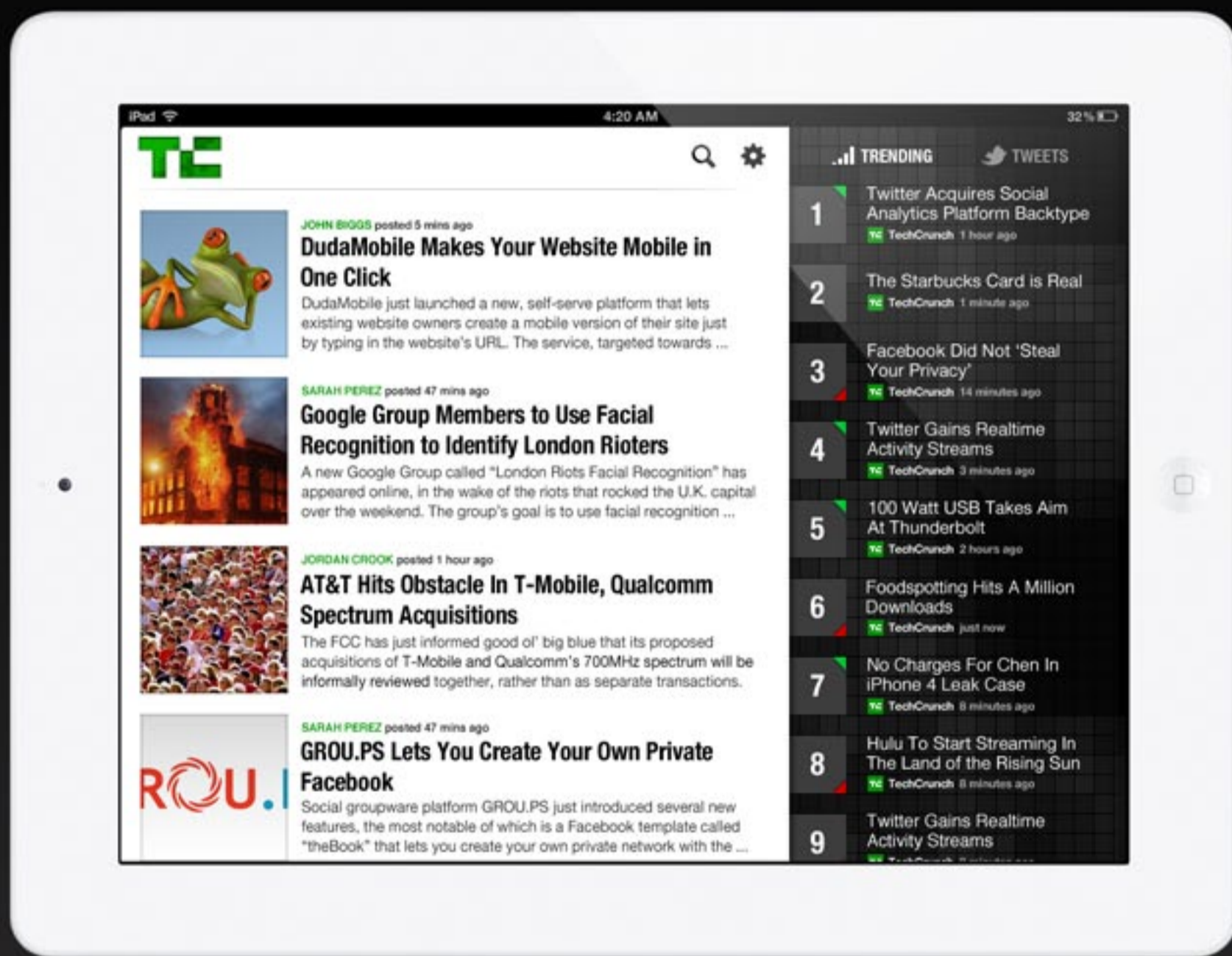


## The Rise of the Ever-Expanding Smartphone Screen



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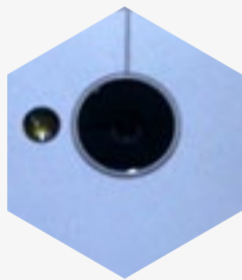


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# PLAYSTATION NEXT



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EDITOR'S  
LETTER

**WE'RE NOT EVEN THROUGH** February yet, but already we're looking at a time where there are two major product unveilings in a single week. If anyone was wondering whether 2013 would see the private event trend continue, rest assured that we'll be jetting all over the damned place even more this year than we did the last. Not that we're complaining, mind you, especially when the events are prefaced by the kind of excitement that Sony built up ahead of its PlayStation 4 unveiling in New York City on Wednesday night.

As an unapologetic console gaming fiend, I was certainly looking forward to what Sony had to show. While I can't say that when the lights came up I was *totally* fulfilled — the event was something of a big tease — I did leave feeling generally enthused that Sony is actually making gaming a priority. I had serious concerns the PS4 would be more of a holistic media consumption device, with gaming existing as just one of many, many facets. Indeed that may yet

prove to be true, but for now the story was all about game developers and the cool stuff they're doing with the system. For that I am thankful.

And what of the system? Well, Sony didn't actually show the thing to us, but it did take the old Nintendo route of showing us the controller first. It's a controller that looks like a slightly more bulbous, wider DualShock 3. In fact it's the DualShock 4, augmented over its predecessor with a touchpad in



“It’s a controller that looks like a slightly more bulbous, wider DualShock 3. In fact it’s the DualShock 4.”



Sony's new controller includes Move-like features.

the middle, a light bar that enables it to work like a Move controller (in concert with a new stereo camera) and a new Share button that lets you immediately post video replays of your games online for others to peruse — and to insult.

Thankfully we know more about what’s inside the thing than on the outside, including 8GB of GDDR5 RAM, an AMD CPU and GPU, 802.11n, USB 3.0, Bluetooth 2.1 and, yes, a Blu-ray player. This one clocks in at 6x, which will hopefully reduce load times for games ... assuming they sell games on Blu-ray. We didn’t hear a peep about physical distribution, but we did hear a lot about a system that will figure you out so comprehensively that it’ll download games you’ll want to buy even before you know you want them. Presumably the PS5 will just go ahead and play them for you. Think of the time savings!

So, we didn’t see a box and we didn’t get a price — but hopefully the largely off-the-shelf hardware of the

thing means it won’t demand the premium the PS3 did back in the day. It’s coming sometime this holiday and we’re pretty sure we’ll be learning a lot more at E3 in a few months.

HTC, thankfully, had no qualms showing and telling us all about its new superphone, the HTC One. Yes, the company is dropping the alphabetic add-ons and just going with One for the company’s latest best-ever phone. It is indeed looking quite good, a 4.7-incher with a 1080p display, quad-core 1.7GHz Snapdragon 600 processor and either 32 or 64GB of storage — though sadly no microSD expansion.

Two things are particularly interesting about this phone. One is the software. Yes, it’s running Android (4.1.2 to be exact) but you’d hardly know it. While Samsung and Motorola and others seem to be stepping away from heavy Android customizations, HTC has gone running in the other direction. Sense 5 basically does away with



“The other curiosity is the camera, which measures just four megapixels. HTC, though, calls these ‘UltraPixels.’”



The HTC One has a super-up Sense 5 UI and a 4.7-inch display.


the traditional Android look and feel, baking a very Flipboard-like news and content aggregation service into the OS to the point where it takes over. Many have compared it to the Windows Phone Live Tile format, and aesthetically it is rather similar.

The other curiosity is the camera, which measures just four megapixels. Yes, four — the sort of stat we haven't seen in a proper smartphone in ages. HTC, though, calls these “UltraPixels” that are said to be three times larger than your average smartphone pixel. Those, plus an f/2.0 lens, should mean excellent low-light performance.

We're looking forward to testing that out, and indeed we can't wait to see how Sense 5 is to live with, but we can't help but be left wondering if, by employing such heavy customizations, HTC isn't shunning hardcore Android users — the ones who might otherwise like to own such a nice-looking, and feeling, phone.

Finally, and briefly, Google gave us the most comprehensive look at its Project Glass yet. In an incredibly mov-

ing video posted to YouTube, Google took us up in a hot air balloon and then back again skydiving. Best of all, Google is asking for more folks to step up and be part of the pilot program later this year by posting applications using #ifihadglass on Google+. Winners will, sadly, still have to pony up the \$1,500.

In this week's Distro we have Mat Smith's review of another hugely important product for Sony, the Xperia Z. Dana Wollman falls in love with the Lenovo ThinkPad Tablet 2 and Jon Fingas asks how much is too much when it comes to smartphone screen size. We have hands-on with the HTC One and notes on the DA14 asteroid that whizzed by. It's all in here, and I promise I won't tease you any more than that. 

TIM STEVENS  
EDITOR-IN-CHIEF,  
ENGADGET



# COFFEE SHOP SHARING, LUMIA LOVE AND WEIRD LIKE US



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DISTRO  
02.22.13

INBOX



ASUS TAICHI 21  
ISSUE 78,  
FEBRUARY 15TH, 2013

“Clearly none of you have worked with colleagues in a coffee shop. This is a game changer for working with someone sitting across from you. Where’s the 15-inch version?”

— PEASHOOTER14

“Two screens and still a longer battery life than the Surface Pro? WTH MS?!”

— SIGMA

“MUST BE AWESOME FOR PLAYING *BATTLESHIP*.”

— DARK\_LASER

NOKIA LUMIA 620  
ISSUE 78,  
FEBRUARY 15TH, 2013

“Finally a cheap updatable phone! ... in contrast

to my Android 2.1, 3.0, 4.0.4 tablet and phones which were never updated! Not even a single security update.”

— WMAC

“Well done Nokia. Now bring 720 and 520 also.”

— COMPETITION\_IS\_BETTER

“They need to put this on the smaller carriers in the US like right now.”

— DUBYA B



HTC ONE SV  
ISSUE 78,  
FEBRUARY 15TH, 2013

“Why do they put SD slots on phones like this but not on their flagship? C’mon HTC, stop being dumb dumbs.”

— P\_LINDSAY

JAPAN IS NOT WEIRD  
ISSUE 78,  
FEBRUARY 15TH, 2013

“Dear lord, you mean ALL humans are human???”

— MATTHEW PRICHARD

“I am Japanese. Yes, there is so much misinformation here, just like in any other Western news outlets — but I deeply appreciate the fact that people here are interested in our culture, attracted to it for one reason or another, and provide perspectives we would otherwise not get. Thanks guys.

And when you get a chance, please come and see it for yourself. It’s a great country. We are actually very welcoming people.”

— TTPYY

“It’s not that it’s weird, it’s just different ... same thing happens with North Americans; you guys have lots of behavioral aspects that seem really weird to many of us that are not raised here.”

— HINCAPIE12





# ENTER

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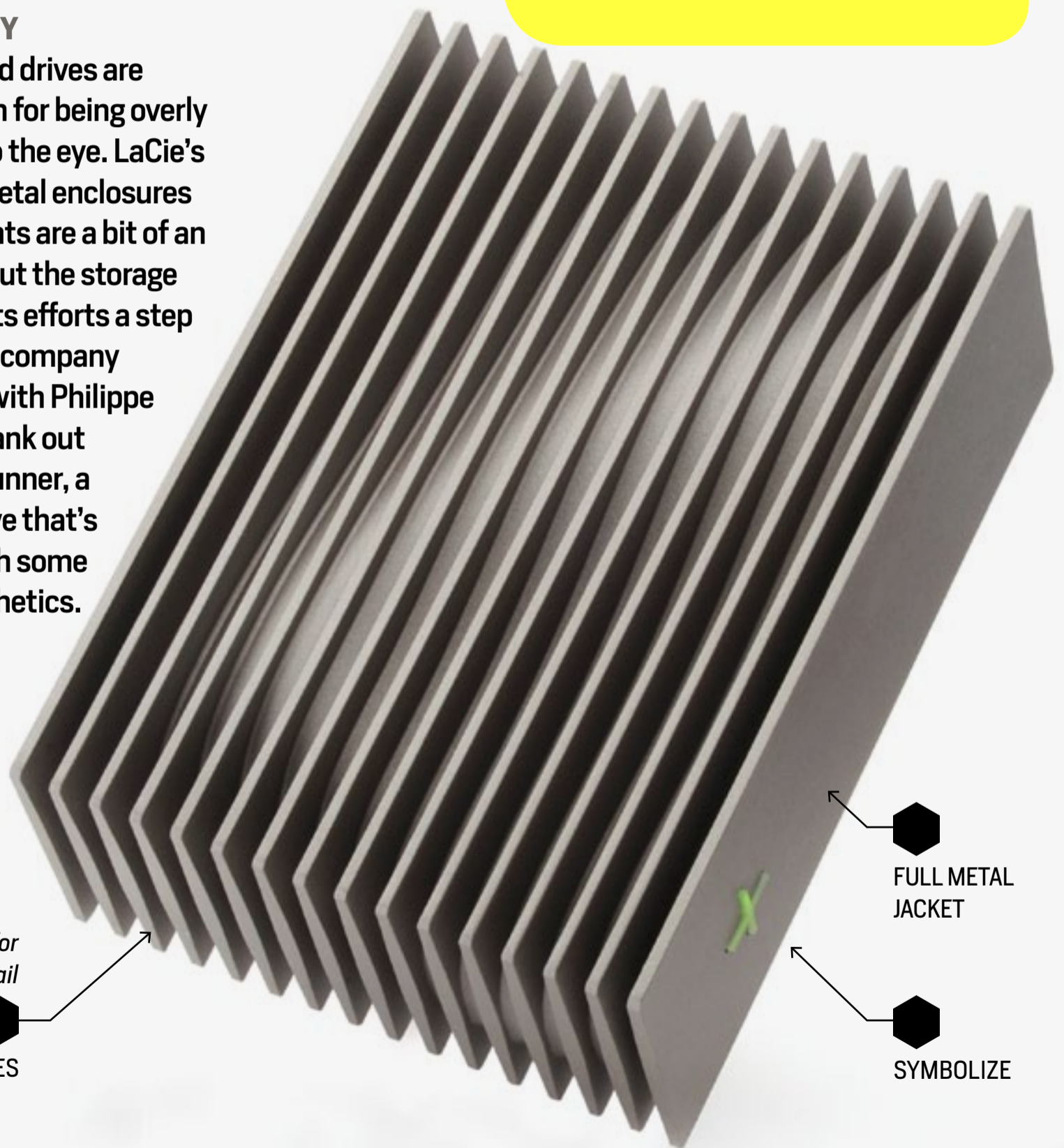
EYES-ON

## LACIE BLADE RUNNER

### A DESIGNER FILE REPOSITORY

External hard drives are rarely known for being overly attractive to the eye. LaCie's signature metal enclosures and blue lights are a bit of an exception, but the storage outfit took its efforts a step further. The company teamed up with Philippe Starck to crank out the Blade Runner, a desktop drive that's ironclad with some unique aesthetics.

THE  
DAMAGE:  
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detail



CAGED BLADES



FULL METAL  
JACKET



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# HTC ONE

**The HTC One made** quite an entrance with a slick-looking design and reimagined Android user experience. It's a significant departure from last year's One X — our favorite handset of 2012 — and represents the company's most important product to date. There's no doubt about it — the HTC One is a fine piece of kit. It's particularly beautiful when viewed from the back and sides, with a semi-pyramidal shape reminiscent of HTC's own J Butterfly and phones like the Xperia Ion. The front is more staid and channels the BlackBerry Z10. Look a little closer and the attention to detail is staggering — this is a product that stands shoulder

to shoulder with the iPhone 5 in terms of materials and build quality.

The unibody polycarbonate design of the One X gives way to a machined-aluminum shell that seamlessly incorporates polycarbonate accents. In front are two aluminum bands separated by a vast sheet of Gorilla Glass 2 covering a gorgeous 4.7-inch, 1080p (468 ppi) Super LCD 3 display. Both of these bands feature a matching set of perforations that conceal a speaker — that's right, the HTC

**PRICE: TBA**

**AVAILABILITY: MARCH 15TH**

**THE BREAKDOWN: THE FLAGSHIP SPORTS A STELLAR EXTERIOR WITH SENSE 5 AND ULTRAPIXEL CAMERA TECH BAKED IN.**



One boasts stereo speakers, each with a dedicated proprietary amp design that minimizes distortion and maximizes volume. You'll find HTC's brand under the glass just below the screen, flanked by two buttons: back on the left and home on the right. How does this work? Holding the home button brings up Google Now and double-tapping shows the recent apps. There's no menu option.

The back of the device is home to the



main UltraPixel camera and a single LED flash (to the left of the lens). Basically you're looking at a 1/3-inch 4-megapixel BSI sensor with large 2 $\mu$ m pixels capable of gathering 330 percent more light than the 1.1 $\mu$ m pixels usually found in phones. This sensor is mated with a 28mm f/2.0 autofocus lens that is slightly recessed for protection and equipped with optical image stabilization (OIS), just like Nokia's Lumia 920.

Along the edges of the HTC One you'll find a power / lock key (left) and standard headphone jack (right) at the top, a machined-aluminum volume rocker on the right side, a micro-USB / MHL port on at the bottom (right) and the micro-SIM holder and matching pinhole on the left side (near the top). The power / lock key is black and doubles as a bi-directional IR blaster for the handset's TV remote software. Just like with the One X, the battery (rated at 2,300mAh) is sealed and there's no microSD card slot. At 137.4 x 68.2 x 9.3mm and 143g, the new phone is slightly taller, thicker and heavier than its predecessor — it feels solid yet comfortable in hand and just exudes quality.

The HTC One is powered by Qualcomm's newly minted quad-core 1.7GHz Snapdragon 600 paired with 2GB of LP-DDR2 RAM and 32 or 64GB of built-in storage (depending on the version). Wireless functionality includes 802.11a/ac/b/g/n, Bluetooth 4.0 with aptX, GPS / aGPS, NFC and DLNA — sadly there's no wireless charging support. We do know it's coming to most carriers in the US (and indeed, the world), except Verizon.





# NEXUS 4 WIRELESS CHARGER

**Palm's Touchstone dock** immediately came to mind when we first saw LG's Nexus 4 Wireless Charger last fall. Both devices are circular, with a micro-USB port in back and a slanted front surface on which to rest the phone. That's where the similarities end — while the Touchstone is cylindrical and uses a proprietary wireless charging system, the Nexus 4 Wireless Charger is larger, spherical and Qi-compatible. Another major difference is

**PRICE: \$60**  
**AVAILABILITY:**  
**NOW AVAILABLE**  
**THE BREAKDOWN:**  
**LG'S ACCESSORY**  
**FULLY CHARGES**  
**YOUR NEXUS 4**  
**SANS CABLES**  
**IN AROUND**  
**FOUR HOURS.**

that Palm's dock uses permanent magnets to line up and secure the handset, and LG's accessory relies primarily on the friction / suction between a rubber ring and the glass back of Google's flagship phone. Design-wise the Nexus 4 Wireless Charger looks similar to a smaller Nexus Q cut in half, down to the matching recessed square connector cutout.

In the box you'll find a 5V 1.8A AC adapter along with a micro-USB cable. The manual warns to "use only the power adapter and micro-USB cable that come with your Nexus 4 Wireless Charger," but we didn't have any trouble with other USB power sources beyond longer charging times. We tested the dock with the Nexus 4, Droid DNA, Lumia 920 and Lumia 822 (with the optional Wireless Charging Cover) — basically, LG's accessory provides the same experience as Nokia's Wireless Charging Plate (\$50), which is also Qi-compatible. It takes about four hours to fully charge Google's flagship phone using wireless power.



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# CHROMEBOOK PIXEL

**Taking a small stage** in San Francisco's Potrero Hill neighborhood, Google's Sundar Pichai introduced the Chromebook Pixel, the company's attempt to "rethink everything" in terms of laptop design. Weighing in at 3.35 pounds, the Chromebook Pixel's unibody frame looks and feels somewhat like a MacBook Pro — flanking a comfortable chiclet keyboard and a luxuriously large trackpad with a small dip at its south end. The usual bevy of navigation and control keys headline the

**PRICE: \$1,299 (WiFi) & \$1,499 (LTE)**

**AVAILABILITY: NOW (WiFi), APRIL 2013 (LTE)**

**THE BREAKDOWN: GOOGLE'S PRICEY CHROMEBOOK SPORTS A GORGEOUS DISPLAY AND CORE i5 PROCESSING.**

keyboard, and the machine's left side is populated by a Mini DisplayPort, a power plug and two USB 2.0 ports. The right edge houses an SD / MMC card reader and, well nothing else. The Pixel is a minimalist machine, and it both looks and feels good for the subtlety of the design.

The machine's real star is its 12-inch, 3:2 display. True to Google's word, the screen is gorgeous,

and makes full use of that 2,560 x 1,700 resolution. Photos pop, text is crystal clear and at 400-nits, everything is stunningly bright. At first swipe, it seems to be a capable touchscreen too — in the

few minutes we had with the device, we didn't have any trouble flicking our way through Engadget's news roll, though the traditional trackpad still feels more natural at this stage. Still, everything we did was comfortable, eye-catching and rather quick, thanks, no doubt, to the Pixel's Intel Core i5 processor. **D**



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## ASTEROID 2012 DA14

DIAMETER : 150 FT  
WEIGHT: 130,000 METRIC TONS  
SPEED: 17,450MPH / 4.8 MILES PER SECOND

TRANSIT THROUGH THE  
EARTH/MOON SYSTEM  
LASTED 33 HOURS

OUTER PERIMETER OF  
GEOSYNCHRONOUS  
SATELLITE RING  
22,200 MILES ABOVE  
THE EARTH

DISCOVERED ON  
FEB. 23, 2012 BY LA  
SAGRA SKY SURVEY  
OPERATED BY THE  
ASTRONOMICAL  
OBSERVATORY OF  
MALLORCA, SPAIN

ASTEROID'S CLOSEST  
POINT: 17,200 MILES  
ABOVE THE EARTH

## A Day with DA14

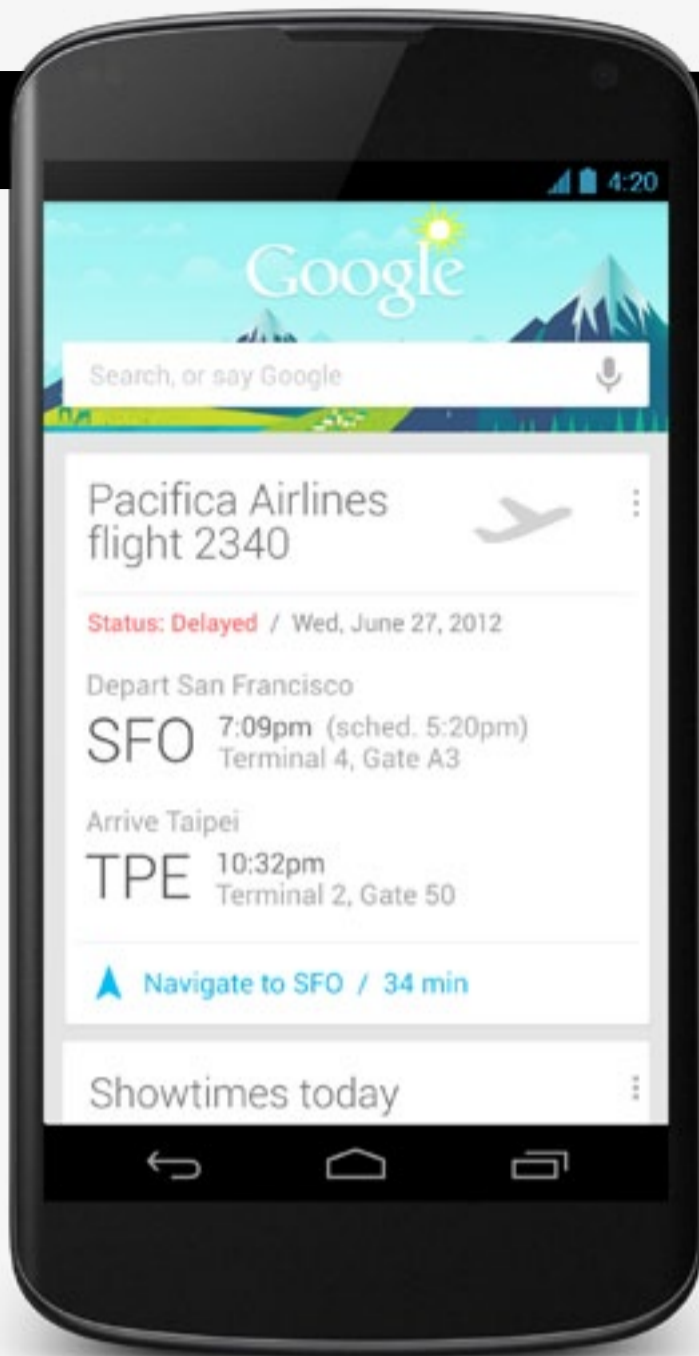
In order to supplant fear with knowledge, NASA's taken the time to share some factoids about our recent close call with asteroid 2012 DA14, which was discovered on February 23rd, 2012. There was little doubt that the asteroid would miss Earth by at least 17,200 miles

during its 33-hour passage through the Earth / moon system. About once a year, an auto-sized chunk of asteroid does hit the atmosphere, only to burn up before it can cause any mischief. So, it's safe to say we can all ease-off the Bruce Willis emergency plan for a while. — Jon Turi

SOURCE: NASA | IMAGES COURTESY OF ISTOCKPHOTO/MOLOTOVCOCKETAIL [EARTH]; CRESTOCK [CRYSTAL]

09:00  
UTC FEB 15





# How Google Retooled Android With Help From Your Brain

By Robert McMillan  
*Wired Enterprise*

**Speech recognition** has long been promised as a key component of future computer interfaces, but it hasn't been until relatively recently that it's really begun to catch on. What's more, that shift hasn't been due to advances with traditional computers or home automation, but with new smartphone tools like Apple's Siri and Google Now. Here, Robert McMillan looks at some of the most recent advancements seen in the latter, which involved studying the human brain and mapping out more advanced neural networks.

## In High-Tech Japan, the Fax Machines Roll On

By Martin Fackler  
*The New York Times*

Fax machines may be on the fast road to obsolescence in most countries, but that's not the case everywhere. As Martin Fackler explains for *The New York Times*, Japan is one country that's bucking the trend, with over a million fax machines sold there in the last year.

## When Google Got Flu Wrong

By Declan Butler, *Nature*

Google's Flu Trends service has been becoming an increasingly prominent tool in forecasting flu outbreaks, but it turns out it was a bit off the mark with its estimates this winter. In this piece for *Nature*, Declan Butler examines what went wrong and what other forecasting methods could be in store for the future.

## A Chinese Hacker's Identity Unmasked

By Dune Lawrence & Michael Riley  
*Bloomberg Businessweek*

There certainly hasn't been a shortage of stories about Chinese hackers lately, but this one from *Bloomberg Businessweek* goes beyond the generalities to focus on one hacker and the researchers who outed him. That, as you might imagine, is a complicated tale, one that involves a veteran researcher from Dell SecureWorks and another anonymous one who picked up the trail.

## Envisioning the Urban Skyscraper of 2050

By James Holloway  
*Ars Technica*

Skyscrapers of the future? If design firm Arup (of Sydney Opera House fame) has anything to say about it, they'll be tall and modular, with facades that serve a purpose. Here, *Ars Technica's* James Holloway looks at one proposal in particular from the group, which offers a detailed look at some possibilities for the year 2050.



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# MOVING FORWARD WITH LEANING BACK



DISTRO  
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FORUM

SWITCHED  
ON

BY ROSS RUBIN

**JUST A FEW MONTHS HAVE** passed between the introduction of the Droid DNA and the new HTC One, but it seems that HTC has been turned upside down in that time. While the Droid DNA was introduced in conjunction with Verizon and can't be a wholly representative picture of how HTC might have introduced the device otherwise, it was a spec- and design-driven product — a 5-inch, 1080p display with a 440-ppi density that appeared to spill over onto sides that included a microperforation.

In contrast, little was said about the HTC One hardware itself until later in the device's introduction, surprising because the HTC One is not only the most attractive handset the company has ever built, but also certainly one of the most attractive on the market. While it is an Android device, the casing builds upon the tapered, Windows Phone-inspired 8x, substituting aluminum for polycarbonate. That said, there is also the

spillover glass effect found on the Droid DNA. The HTC One retains the 1080p display found in the Droid DNA. However, since the screen is smaller, the pixel density is even higher (468 ppi) than in that record-breaking device.

Key specs continue to influence the HTC One, sometimes in surprising ways. Many companies have declared the megapixel wars over through the years, but few have actually stood behind that





claim by reducing resolution as HTC has with its 4-megapixel “UltraPixel” camera. Other hardware choices such as the integrated stereo speakers and dual microphones also enabled key functionality and differentiation.

However, what provides direction for that functionality — indeed, what HTC devoted the first half of its introduction to — is the software experience. A theme that ran through the features was the way the One will take what is often a lean-in, 1-foot experience and imbue it with elements of a bigger-screen, lean-back experience. Examples of this included:

### **BLINKFEED**

While HTC Sense has previously sought to be a bubble-up experience across a wide range of activities, those have now been concentrated into a Flipboard-like scrolling mélange of social- and media-driven updates. As with other content aggregators, it takes some time to set up, but once it’s in place, it’s time to feed at the content trough.

### **BOOMSOUND**


Applying amplification and Beats processing to those stereo speakers enables the One to rise above the tinny mono-phone of most cellphone speakers to create a tiny theater experience. You’ll still probably want headphones for most listening, but there’s no work to be done here. Just lean (slightly) back and enjoy.

### **SENSE TV**

Adding an infrared emitter and TV program guide to a mobile device is the kind of thing you might expect from TV vendors such as Sony and Samsung. Indeed, both have put such a port on their tablets and paired it with guides. But for HTC this is a step forward beyond the Media Link it introduced with the first One.

### **ZOE**

“Shall I take a picture or video?” So much to think about. Not anymore. Taking advantage of the One’s bigger pixels and fast processor for automatic HDR, Zoe is a nifty photo / video combination that includes capabilities seen in Microsoft Photosynth as well as from Scalado. HTC’s new photo and video experience can even automatically create highlight videos, a process that takes an extra step on the iPhone or BlackBerry Z10.

Speaking of BlackBerry, there have been rumors that Lenovo has been interested in acquiring the smartphone pioneer. The kind of personal and professional productivity optimizer that the former RIM has targeted is very much in line with Lenovo’s slogan, “For those who do.” The HTC One, on the other hand, seems designed “for those who would rather not” — rather not dig through separate feed apps, rather not strain to hear a music video, rather not even pick up a separate remote control. And that’s OK. It can require a great deal of overachievement to enable underachievement. 



# REVIEW

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Lenovo  
ThinkPad  
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## LENOVO THINKPAD TABLET 2



Lenovo's ThinkPad is back in the slate game with the **Tablet 2**, hoping that performance and pen support will let it stand out from the crowd.  
**By Dana Wollman**

**B**efore we talk about the ThinkPad Tablet 2, Lenovo's new Windows 8 hybrid, we need to talk about the original ThinkPad Tablet, the one that came out in fall of 2011 to mixed reviews. It was an okay device, when push came to shove, with useful features like a full-size USB port, 1080p output and pen support — a rarity on Android tablets. But the tablet itself was bulky, performance was sluggish, battery life was mediocre and there weren't even that many Android apps designed to be used with a pen. It was a concept that didn't totally work — at least not with that



OS — and indeed, Lenovo's long since discontinued it.

Fast-forward to the present, and the ThinkPad Tablet's been resurrected in the form of a 10.1-inch Windows 8 device, one that starts at \$579 and can be used with an optional keyboard dock. It's a much lighter product, at 1.3 pounds (down from 1.58), and although it uses a heavier-duty Atom processor, battery life is said to top out at about 10 hours. (The original lasted eight in our usual test.) Like the OG version, it allows for pen input on select models, but of course, Windows comes ready-made with a larger selection of apps where a pen might actually be useful. So is the second time a charm? In a word, yes.

## LOOK AND FEEL

The ThinkPad Tablet 2 doesn't have all that much in common with the original — the first ran Android and this one's powered by Windows 8; one was a bit of an odd duck and the other is our favorite thing since sliced bread. If nothing else, though, they both look exactly the way you'd expect a ThinkPad slate to look. Which is to say, this new ThinkPad Tablet 2 has a rubbery, soft-touch finish, similar to the coating



The IPS display is framed in a soft-touch outer shell.

used on Lenovo's various business laptops. Even the ThinkPad logo with the glowing "i" has been replicated here. If you order a tablet with a dual digitizer, the included pen has a red cap, modeled after the ol' TrackPoint. The optional Bluetooth keyboard dock is also styled like a typical ThinkPad keyboard, but let's not get ahead of ourselves — we'll discuss the typing experience in excruciating detail later on.

First, though, the tablet. It's remarkably comfortable to hold. We're not sure if it's the soft-touch finish, the rounded edges or some combination thereof, but the ergonomics here are nearly perfect. The left landscape edge is extra curvy, since it makes room for the slot where the pen is stowed. That means, dear reader, that you get a little more space your left thumb, and you get to rest that finger on rubber instead



of glass, to boot. The device feels light-weight, too, at 1.3 pounds and 0.39 inch thick (that's lighter than the current iPad and about as thin, for those keeping score). Meanwhile, the tablet's soft edges make this easier to hold than either of the boxy Surface tablets, though we'll admit neither is a direct match for the ThinkPad Tablet 2 — at least not in terms of performance.

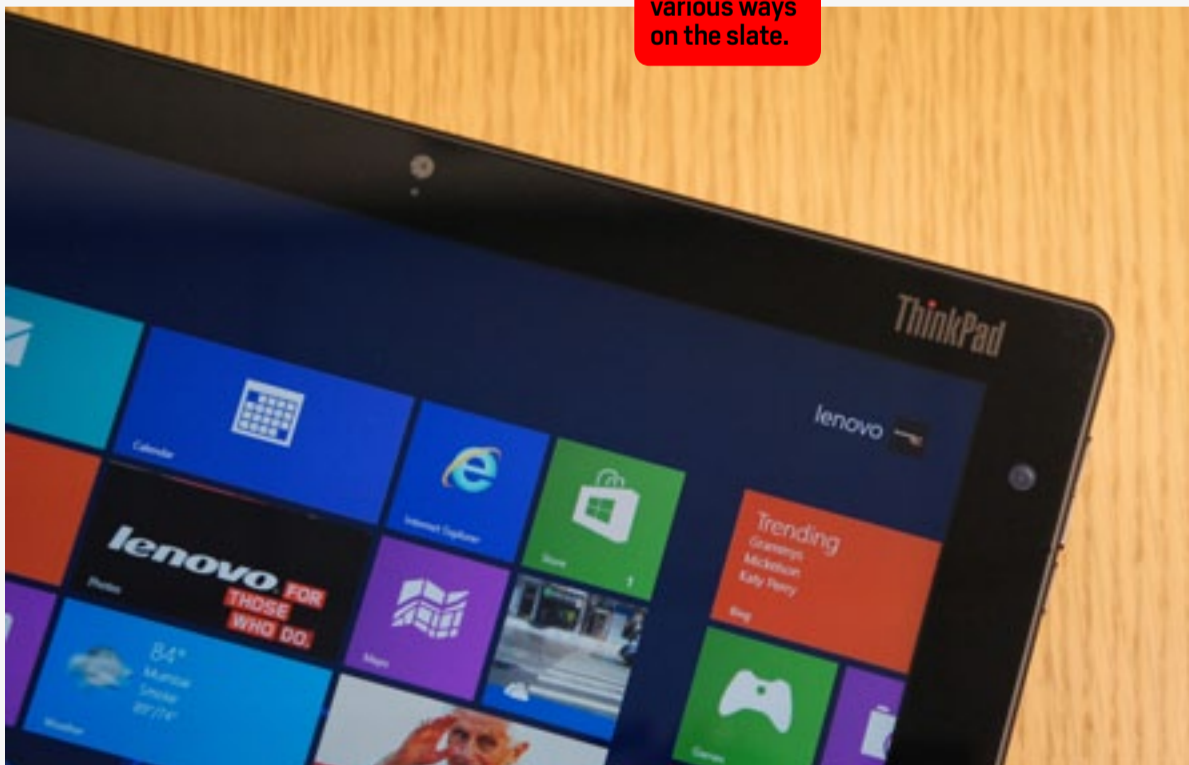
If we're going to continue our tour of the device, we may as well pick up where we left off: near the pen slot. The pen's got a notch attached up top, with a series of grooves allowing you to lift the pen out of its hole using your fingernail. We're happy to report the damn thing stays put, but wresting it out of its slot can take a bit of practice. A little farther down on that same side is the full-size USB 2.0 port, covered by a pull-out door. Unfortunately, while that's normally a nice feature to have, the 2.5-watt socket here doesn't

work with either USB hard drives or external optical drives, even when the tablet is plugged in. In theory, though, that's a problem you could solve by using the USB port on the optional docking station.

There's also a micro-USB socket, which you'll need to charge the device (you can't use it to transfer data, Lenovo says). Since this is a standard sort of connection, you can supply your own cable, which you might want to do, since the one that comes in the box is awfully short — i.e., it won't reach from a desk to an outlet on the floor. Over on the right landscape edge you'll find various essentials: a headphone jack, volume rocker and power / lock button. Up top (we're still in landscape mode here), there's another covered door, this one hiding a microSD slot and a SIM card slot. In the US, at least, you can get LTE, courtesy of AT&T, but in other parts of the world you're looking at HSPA+.

On the bottom side you'll find HDMI output, along with a docking connector. No surprise here: there's a physical, requisite Start button on the bezel below the screen. Lenovo also stuck an NFC radio under the hood, in case you happen to have handy another device that's capable of Near-Field Communications.

The classic red dot motif is used in various ways on the slate.



And what would a tablet be without cameras? You've got a 2-megapixel one up front for video chatting, and an 8-megapixel shooter with flash around back for more-detailed stills.

## KEYBOARD DOCK

Purchase the ThinkPad Tablet 2 by itself and you've got a nice a slab of metal and glass. Buy the \$120 Bluetooth keyboard, though, and you've got yourself a *real* ThinkPad. The six-row layout here isn't an exact replica of the one you'll find on Lenovo's new laptops, but it's pretty damn close. The keys have the same U-shaped "Smile" design, with a healthy amount of space separating them — an impressive feat when you consider the keyboard is about as small as a netbook's.

As you might expect, some of the buttons have been shrunken down to the size of fingernails — in particular, we often missed the Backspace key and hit Delete instead. Still, most of them are easy to find without looking — even the little arrow keys squeezed into the lower-right corner. Most importantly, though, the keys feel like a real ThinkPad's: if there is in fact less travel here, we can barely tell the difference. These but-

**The buttons are dense and cushy, backed up by a sturdy panel that can withstand even the pushiest of typists.**

tons are dense and cushy, backed up by a sturdy panel that can withstand even the pushiest of typists. It's easily the best keyboard you'll find on a hybrid device — the sort of thing you can use to get some real work done.

Most of the time, anyway. Occasionally, we experienced some lag over the Bluetooth connection, which caused letters to appear on screen many seconds after we typed them. There's not much you can do when that happens, save for flip-

As Bluetooth keyboards go, this one is at the head of the class.



ping the power switch and re-pairing the keyboard to the tablet. The dock doesn't allow you to adjust the tablet's screen angle at all, though fortunately glare was never much of an issue. You can rest it in your lap too — the weight distribution is such that the device isn't likely to topple over. But if it does, out goes the tablet: there's no physical latch mechanism to keep it in place.

You'll also need to charge the keyboard separately, though it at least uses the same micro-USB standard as the tablet, which means you can swap the same cable back and forth if you only have one on you. That's fine (so is choosing to always have two micro-USB cords on hand), but we think we would have preferred a latch-style keyboard, preferably one with a built-in battery. That way, we'd be able to charge both devices at once and get a little extra runtime while we're at it.

At this point, it might sound like our write-up about the keyboard has taken a sour turn, but in fact we like it quite a bit. And it's not just the buttons that won us over; it's also the optical touchpad taking the place of the usual TrackPoint. The best way to think about it might be to compare it to the optical touchpads on BlackBerry devices

of yore. There's no "stick" here to bear down on, to push from left to right. Instead, you run your finger over the surface, as you would the touchpad you have on your laptop. And it works well. Very well. Tracking is precise, and the two touch buttons are placed in such a way that they're very easy to reach with your thumb. There's even the usual third button for fast scrolling, which is interesting since Lenovo just got rid of all the buttons on its ThinkPad touchpads.

### ETC.

In addition to that \$120 Bluetooth keyboard, Lenovo is offering a bunch of other accessories. These include a \$40 case with two slots: one for the keyboard and one for the tablet. That's available in black and red. For \$50, meanwhile, the Slim case is thinner (natch) and folds up in the back, transforming it into a stand. Need some more ports than that single USB 2.0 socket? Lenovo

The black and red ThinkPad styling is used to full effect here.



is also selling a \$100 dock that adds Ethernet, HDMI and three USB connections. Rounding out the list is a DC charger (\$20) and a VGA monitor adapter (\$40).

## DISPLAY, PEN INPUT AND SOUND

Like all other Atom-powered hybrids, the ThinkPad Tablet 2 has a resolution of 1,366 x 768 (if you want 1080p you're going to have to step up to i5, or maybe give AMD a shot). As we've said many times before, though, pixel count isn't everything: we rather like the screen here, as the IPS technology makes for some wide viewing angles. We didn't have any problems with glare, and the fact that the screen is easily view-

able also means you can probably get away with using it in your lap — even if you can't adjust the screen angle on the Bluetooth keyboard dock. The only area where it stumbles is in outdoor use: even with the brightness pumped all the way up, we could barely frame a photo in direct sunlight.

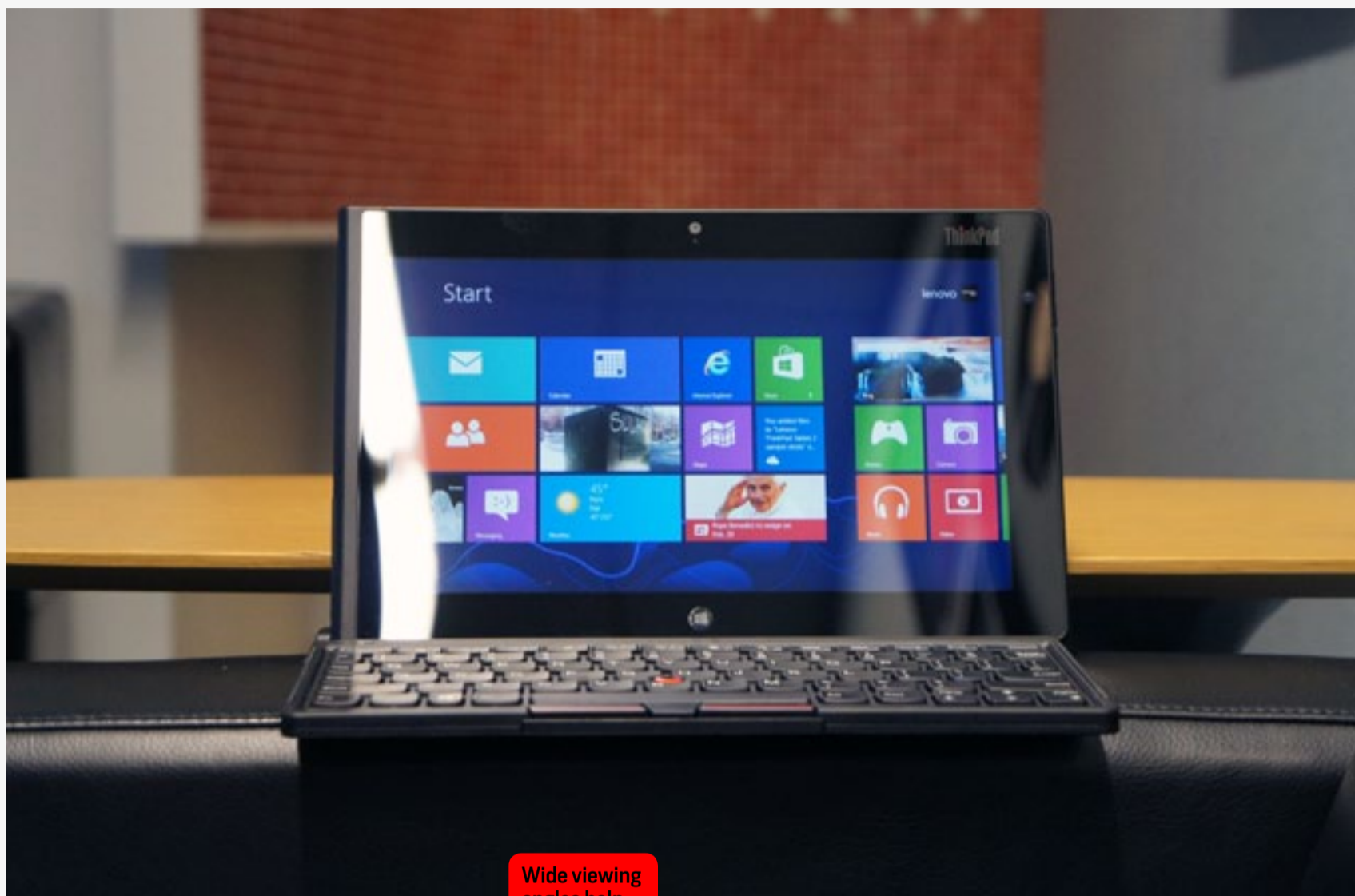
As it happens, the configuration we tested had a dual Wacom digitizer with support for both finger and pen input. That's not a standard feature, though: Lenovo is also selling finger-only versions that don't come with a pen (or even a slot for a pen). If you want to do some scribbling, models with dual digitizers start at \$50 more.

So which should you get? A little pen input is better than none, we sup-

The pen isn't standard, but may be worth the extra few bucks.







Wide viewing angles help offset the dock's lack of adjustability.

pose, but we have to say: the writing experience here just isn't as smooth as what you'll get on other Windows 8 devices, like the Surface Pro or ASUS TAICHI 21. The pen is technically pressure-sensitive, as we found while goofing around in Fresh Paint, but it felt like it was registering fewer degrees of sensitivity than other pens out there. Even with writing, we found we had to push a little harder than we would on those other tablets.

For what it's worth, though, most Atom-powered hybrids don't even offer pen support as an option, so if you want both long battery life and the ability to doodle now and then, this might be your best bet. What's more, you at

least get the ability to customize how the pen actually works; using the included QuickSnip application, you can program the pen's button so that it works for either right-clicking or taking screen captures.

Considering the ThinkPad Tablet is, well, a tablet, the volume here is surprisingly sufficient, especially in quiet spaces like a den or conference room. When it was just us listening, we usually had the volume somewhere between the 50 and 75 percent mark, which meant we had a good deal of overhead if ever we wanted to crank a song for a little extra emphasis. Quality isn't bad, either. Maybe we're just conditioned to mediocre tablet-grade speakers by now,



but we had a pleasant time sitting back and listening to various rock and classical tracks. If you don't normally notice distortion on your laptop, you probably won't notice it here. And if you do, well, you probably have a Jambox or something handy anyway.

## PERFORMANCE AND BATTERY LIFE

The neat thing about reviewing Atom-powered hybrids is that they tend to have the same specs: a 1.8GHz Intel Atom Z2760 CPU, Intel HD graphics and 2GB of RAM. That makes it really easy for us to compare the performance in an apples-to-apples sort of way.

Which is to say, the scores are nearly the same. In the disk benchmark ATTO, for instance, the ThinkPad Tablet 2 turned in nearly the same numbers as the Envy x2 and the Samsung ATIV Smart PC. Its PCMark 7 score was also virtually the same as the x2's.

In any case, as we've said many times before, while Atom might not cut

it for gaming or complex photo edits, it handles the overhead of Windows 8 just fine. Swiping through open programs feels smooth, and programs are quick to launch. Not a single app crash to speak of, which we can't say of every single device we've tested. If you're doing a cold boot, it'll take about 15 seconds for the tablet to launch into the Start Screen, which is maybe three to five seconds behind what you can expect from a faster Core i5-powered hybrid. Sounds reasonable to us. What's more, the fanless design is also mostly successful in keeping the heat down: after an hour of surfing in IE10, the upper corner of the back panel was warm, but not at all hot.

Lenovo says the tablet is good for up to 10 hours of battery life. Typically, we find those battery life ratings are best-case scenarios at most, if not complete fiction. But the ThinkPad Tablet 2 actually lives up to its maker's claims, and then some. In our standard rundown

BENCHMARK	PCMARK7	3DMARK06	ATTO (TOP DISK SPEEDS)
LENOVO THINKPAD TABLET 2 (1.8GHZ INTEL ATOM Z2760, INTEL HD)	1,423	460	83 MB/S (READS); 35 MB/S (WRITES)
HP ENVY X2 (1.8GHZ INTEL ATOM Z2760, INTEL HD)	1,425	N/A	83 MB/S (READS); 34 MB/S (WRITES)
SAMSUNG ATIV SMART PC (1.8GHZ INTEL ATOM Z2760, INTEL HD)	N/A	374	82 MB/S (READS); 36 MB/S (WRITES)
ACER ICONIA W510 (1.8GHZ INTEL ATOM Z2760, INTEL HD)	1,297	N/A	81 MB/S (READS); 28 MB/S (WRITES)



WINDOWS 8 SYSTEMS	BATTERY LIFE
THINKPAD TABLET 2	10:27
ACER ICONIA W510	8:19 (TABLET ONLY) / 14:17 (WITH THE DOCK)
HP ENVY X2	7:53 (TABLET ONLY) / 12:30 (WITH THE DOCK)
ACER ICONIA W700	7:13
SAMSUNG ATIV SMART PC (AT&T)	7:04 (WIFI ONLY) / 6:43 (LTE)

test (video looping, WiFi on, fixed display brightness) we got 10 hours and 27 minutes of runtime — far more than what we’ve gotten on any other Atom-

powered Windows 8 tablet. Technically, devices like the Acer W510 and HP Envy x2 offer longer runtime, but that’s only when you factor in their keyboard docks, which have secondary batteries built in.

## CAMERA

The tablet’s main 8-megapixel shooter is about on par with other tablet cameras, with a respectable amount of detail at full resolution and decent, if slightly muted, colors. Shutter lag seemed shorter than on other products, so you likely won’t be waiting around quite as long for your shots to go through. Macro performance was a hit-or-miss prospect, though: some of our attempts at close-ups resulted in a sharp back-

As with most tablet cams, the shots are decent, but not amazing.

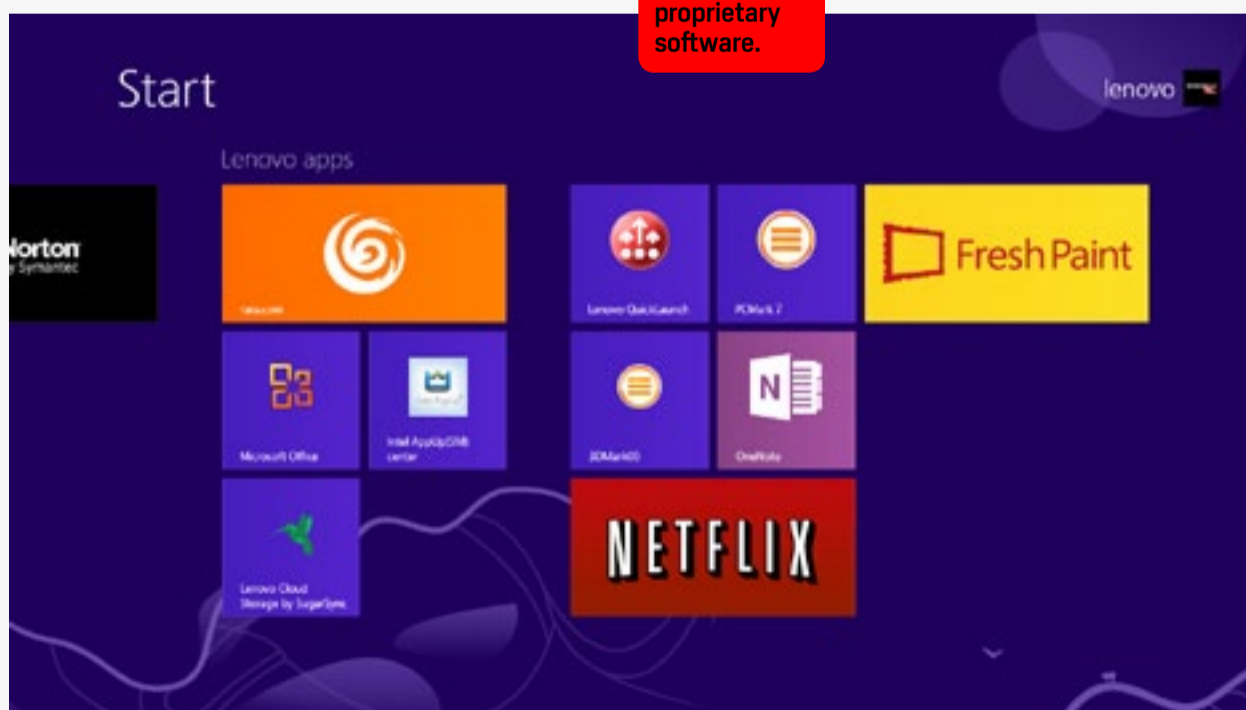


ground and blurred subject. Essentially, the opposite of what we were going for. Of course, too, since this is a Windows 8 tablet, there's no way to adjust the focus. (There's nothing in the way of special photo filters or HDR enhancement, either.) Video, meanwhile, shows fairly minimum ghosting, though the mics are no match for wind and other distracting background noise. Keep that in mind before pulling this out at your next trade show.

## SOFTWARE AND WARRANTY

Compared to some companies (we're looking at you, Acer), Lenovo went easy on the bloatware. As far as third-party apps go, all you'll find is a trial of Norton Internet Security, as well as Skitch Touch, Evernote Touch, AccuWeather.com, Kindle, Skype, rara.com and Intel's AppUp store. Additionally, you'll find a few tame offerings from Lenovo itself, including Lenovo Companion, Lenovo QuickSnap, Lenovo

Lenovo didn't overload the tablet with proprietary software.



Settings, Lenovo Support and Lenovo Cloud, which is actually based on SugarSync. And that's it. Between those apps and the OS, you should have 50GB of free space left on the 64GB model to install whatever you want.

The ThinkPad Tablet 2 comes standard with a one-year warranty, which includes 24/7 phone support. If you like, you can extend the warranty to either two or three years, in which case you also get extended care for the sealed battery (a total of three years once you extend the main warranty).

## CONFIGURATION OPTIONS

The ThinkPad Tablet 2 starts at \$579 with 32GB of built-in storage and the same 1.8GHz Atom processor and 2GB of RAM we mentioned earlier. You won't find that model on Lenovo's site right now, but Lenovo has a history of not listing models that are out of stock, so if you browse the company's store and only find pricier models, don't despair. The 64GB,

pen-enabled model is \$679 while the 3G/4G version (also with pen support) costs a much pricier \$949. Note that if you get the HSPA+/LTE model, it comes with Windows 8 Pro, and is missing the NFC you'll find on the WiFi-only models.



## THE COMPETITION

This is the part where we convince you the ThinkPad Tablet 2 is the best low-powered hybrid you can buy right now. Think that's presumptuous of us? Let's consider the evidence piece by piece. First up: the Acer Iconia W510. With a starting price of \$550 in the US, it's one of the least expensive devices running Windows 8. The 10.1-inch screen is easily viewable from lots of angles. More importantly, the tablet offers fantastic battery life: more than 14 hours with the keyboard dock. But our praise ends there. The keyboard is cramped and ugly, a throwback to netbooks. Meanwhile, the HP Envy x2 costs more, at \$850-plus, but the battery life is shorter and the typing experience isn't much more comfortable. For the extra money, at least you get pen support and NFC.

Moving on, the Samsung ATIV Smart PC costs \$750 with the keyboard included. Not a bad deal, seemingly, especially since this has pen support and comes loaded

Overall, the case and styling are clean and professional.



## The ThinkPad Tablet 2 is the best low-powered hybrid you can buy right now.

with the same S Pen apps you'll find on Samsung's Android-based Galaxy Note devices. Still, we had serious issues with the keyboard when we tested the LTE model — not only was it awkward to type on, but it has a nasty habit of disconnecting from and reconnecting to the tablet, creating lots of annoying distractions along the way.

There's also the Dell Latitude 10, which we haven't reviewed yet, but is available to purchase now, starting at \$499 for the 32GB model. More tricked-out models have 64GB of storage, along with pen support, TPM, a fingerprint reader and a SmartCard reader. If anything, though, the ThinkPad Tablet 2's biggest competitor might be Lenovo's own IdeaTab Lynx, which has the same internals as the ThinkPad, except it has a bigger 11.6-inch screen, and the keyboard dock has a built-in battery. And though the keyboard is different than the one on the ThinkPad, it too looks promising, based on the brief hands-on time we've had (we're still hoping to do a full review). If you choose this, you should know it lacks NFC or pen input, but accordingly, the



price is lower: \$649 for the 64GB model versus \$679 for the ThinkPad Tablet 2 with 64GB of storage and a pen digitizer.

## WRAP-UP

Until now, all of our recommendations of Atom-powered Windows 8 tablets have come with faint praise: most of these products have been marred by cramped keyboards, middling runtime and occasionally poky performance. Even the okay one, the Acer Iconia W510, is mostly saved by its low price and 14-hour battery life. It's otherwise no better than a netbook.

But the Lenovo ThinkPad Tablet 2 is different. It's seriously, refreshingly good. It's the sort of device we'd award an editor's choice ... if Engadget did such things. Though the tablet was designed for business users, we'd go a step further and recommend it to anyone who's been looking for a Windows 8 tablet with great

battery life. Truly, there's very little it doesn't do well: in addition to that long runtime, it offers stable performance and the best typing experience you'll find on a device like this. If there's one thing we'd have Lenovo address in the second-gen model, it would be the keyboard: the current one is great for typing, but a dock with a latch would allow for a second battery, and maybe adjustable screen angles. It would also eliminate any typing lag over Bluetooth.

Unless you were hoping to spend a little less money, we can't think of a reason why you'd bother with most of these other low-powered hybrids. Even then, we'd recommend paying the premium: you'll be rewarded with a more pleasant experience in the long run. **D**

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

## BOTTOMLINE

### LENOVO THINKPAD TABLET 2

**\$579+**



#### PROS

- Long battery life
- Comfortable keyboard
- Allows for pen input
- Wide viewing angles

#### CONS

- Pen support isn't standard
- Bluetooth occasionally causes typing lags
- USB port doesn't work with USB hard drives or external optical drives

#### BOTTOMLINE

The ThinkPad Tablet 2 is the best low-powered Windows 8 tablet we've tested, thanks to its 10-hour battery and an unmatched typing experience.



## SONY XPERIA Z



Will Sony's renewed focus on mobile boost the **Xperia Z** all the way up to Android's top tier?  
**By Mat Smith**

**The Xperia Z is one** of the main pillars of Sony's new plan to focus on mobile, gaming and imaging. In fact, it's a device that addresses all three of those areas, while also pressing reset on Sony's smartphone past. The handset ushers in a new design language, one Sony's decided to bring to its new tablet too. It's called OmniBalance design, but it's best described as a combination of 90-degree angles, even weight distribution and flat glossy sides.

Once you get to look at the phone in person, all Xperias that came before it pale in compari-



son. The phone feels solid and you'd be hard-pressed to describe any part of it as plasticky. Between those mirrored sides, you'll find Sony's first 1080p phone display, measuring five inches and benefiting from the company's new Bravia Mobile Engine 2. Improvements to the Xperia line aren't merely cosmetic, though: Sony's added a 13-megapixel camera (featuring the HDR video-capable Exmor RS sensor) and a 1.5GHz quad-core Snapdragon S4 Pro — Qualcomm's most potent mobile processor currently available.

Meanwhile, those precious electronics are protected by a shell that's water- (IPX5/7) and dust-resistant (IP5X). It's rare to see such protection on a phone that's not being marketed as a rugged device, let alone a company's new flagship. Sony is looking to succeed in mobile and, with just a few days away from the world's premier phone tradeshow, has the company created something that can stand up against current Android champions and win?

## HARDWARE

Where to start with the hardware? How about here: this is Sony's best-looking smartphone ever. Lacking any removable panel to access the battery meant that the Xperia Z's components could be squeezed together into a slender profile measuring a mere 7.9mm (0.31 inch) and weighing in at 146g (5.15 ounces). Thanks in part to the hidden ports, light is able to bounce off the

## Where to start with the hardware? How about here: this is Sony's best-looking smartphone ever.

phone's white sides. In short, it's a real beauty. It's worth noting that alongside the increasingly safe choice of black and white, there's also a purple edition — one that our Spanish team got to play with.

But while it's certainly a looker, the expanse of that 5-inch screen and accompanying bezel mean that it isn't the most comfortable smartphone we've handled. Compared with the substantial Lumia 920, the Xperia Z is slightly taller, but it's easier to grip, thanks to that slimmer shape. Put differently, it feels more like the Droid DNA than, say, the Galaxy Note II. As we noted before, reaching the phone's upper edge is a bit of a stretch if you're using it one-handed — we're hoping Sony's incoming Xperia ZL (with its smaller dimensions) will prove a little more manageable. Thanks to one very geometric silhouette, the phone is a little uncomfortable to hold after extended use, what with those sharp corners pressing into your palms. However, we had no problems sliding it into our pockets — something we can't say of other phones with 5-inch screens.

That glass-coated backing brings







The Xperia Z packs all of its internals into a 7.9mm frame.

the Xperia Z into such esteemed company as the Nexus 4 and iPhone 4S, although Sony has differentiated its design by extending these glass panels to the sides too. Both the back and front include a shatter-resistant layer (*not* Gorilla Glass), while a glass-fiber polyamide skeleton connects all those panels together. This skeleton rounds out the corners between the panels, which helps smooth those angles at least to some extent.

Two other notable features are the Xperia Z's IPX5/7 and IP5X ratings. In real terms, Sony says the phone can handle water up to a depth of one meter, and is resistant to guided water jets. It's also designed to steer away

dust from the phone's more delicate parts. To access the micro-SIM and microSD slots, as well as the micro-USB and headphone sockets, you'll need to flip out the sealed covers. There's a rubber lining behind each one, ensuring the water's kept out. We tested it in bowls of water, the shower and even gave it a quick hose down, but none of this resulted in a panicked call to Sony requesting another review unit. The flaps also feel substantial — we have no concerns about them breaking off after extended use. Heck, you could even lift the phone up with them (not that we suggest you do that). At the same time, opening these flaps is less laborious than pulling off



a battery cover or battery to access a micro-SIM slot or SD reader.

While you won't have to open those flaps very often, you'll be accessing that micro-USB port pretty frequently. (Not to spoil our battery performance section, but the runtime isn't great.) With all those mechanical openings covered, it would have been nice to see some form of wireless charging, given that it's already out there on rival phones like the Lumia 920, Droid DNA and Nexus 4.

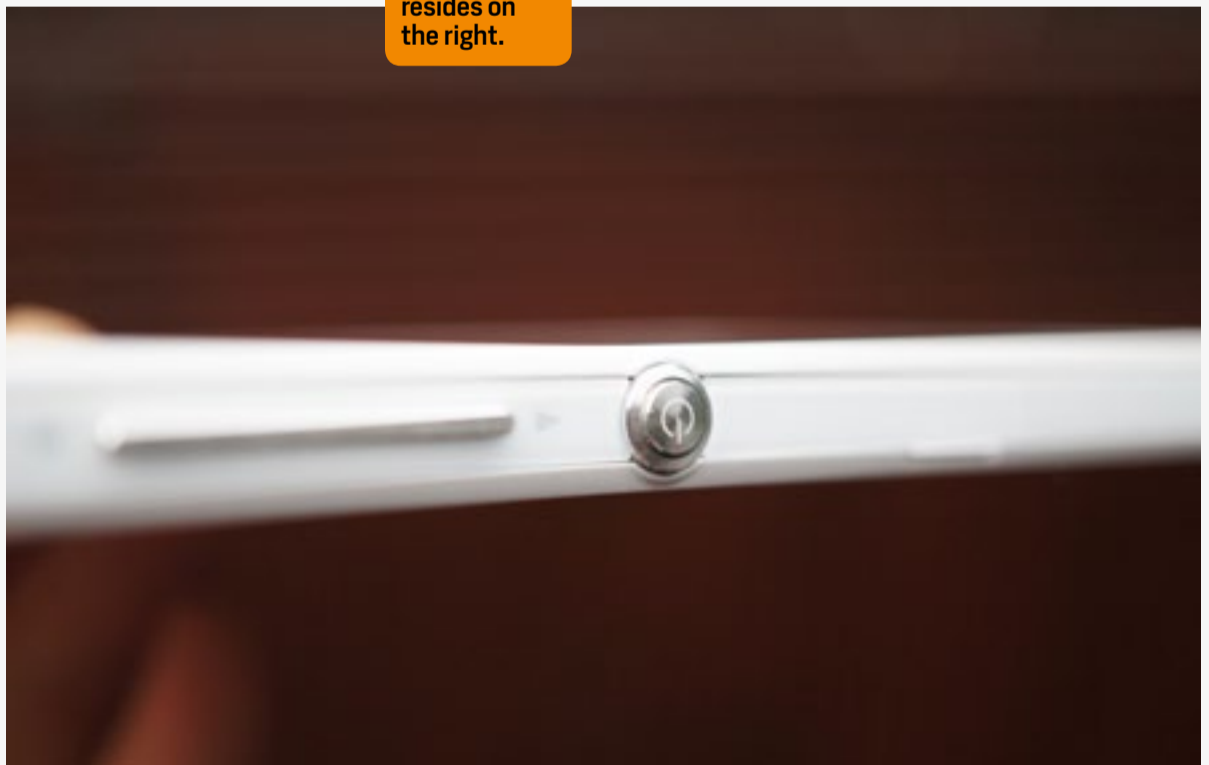
Thanks to those port covers, however, the phone's streamlined perimeter is interrupted only by the power button, which will look familiar to anyone that's turned on a PlayStation Vita. Just off-center along the length of the right edge, it's made of machined aluminum (like the volume rocker just below it) although you won't get a camera button this time around. This is apparently a sacrifice that had to be made to ensure the phone would be water-resistant, but it feels like a glaring omission just the same. The micro-SIM slot is on the same side, while a single loudspeaker sits on the bottom of the right side. Unfortunately, the speaker is tinny and, even on full blast, lacks punch

during video playback.

On the left edge, you'll find the covers for microSD and micro-USB, plus contacts for an as-yet-unseen dock. Flip the phone over to the glossy (but fingerprint-prone) back, and you'll note the main 13-megapixel camera, flash and secondary mic. The lens is fortunately slightly recessed, which should defend it from scratches. When we pulled the phone out of its packaging, there was a removable NFC sticker, but otherwise there are only some Xperia branding and a few serial numbers at the bottom interrupting that white surface.

On the front, there's no white paneling (aside from a sliver of the side), with a black border instead framing the 5-inch screen. Up top, you'll find the front-facing 2-megapixel camera with Sony's Exmor R sensor — and it also supports HDR! Below the screen, there's nothing be-

A machined-aluminum power button resides on the right.



yond the phone's mic. The Xperia Z has on-screen buttons rather than any capacitive keys.

## DISPLAY

While quite a few companies have announced phones with 5-inch, 1080p displays, the Xperia Z is still *one* of the first to arrive for review, if not *the* first. The phone beams out a resolution substantially higher than the Xperia T, and as dimensions have increased only slightly (4.6 to five inches), it offers a higher screen density of 443 pixels per inch. As we said during our Droid DNA review, while there's less of a leap from 720p to 1080p compared to qHD to 720p, that's not to say you won't notice sharper fonts, richer images and a crisper view of your photos.

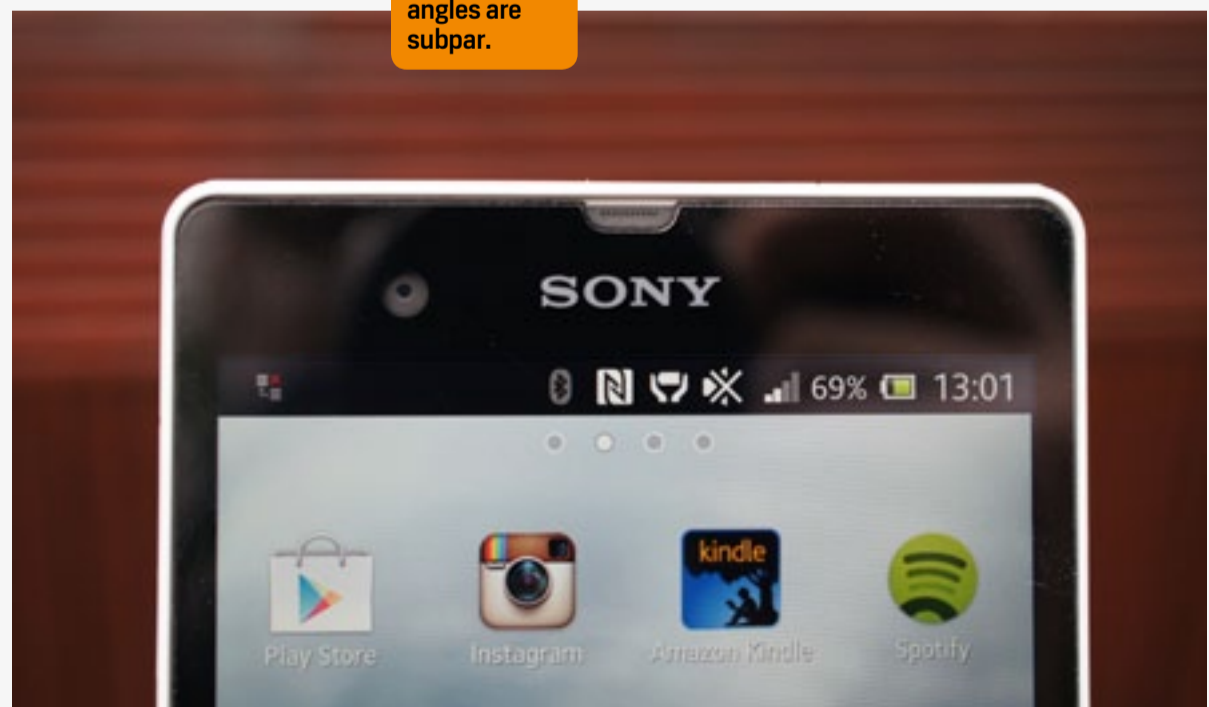
Comparing the Xperia Z against the only other 1080p phone we've reviewed, the Droid DNA, Sony unfortunately comes in second place. Sony is calling its new, thinner display the OptiContrast panel, but its performance doesn't offer the same viewing angles, or outdoor performance, as HTC's Super LCD 3 screen. In fact, turn the screen away from straight-on viewing, and you'll see a grayish discoloring that starts to obscure

Comparing the Xperia Z against the only other 1080p phone we've reviewed, the Droid DNA, Sony unfortunately comes in second place.

what's going on — especially under bright light. While Sony says the new display construction should reduce reflection, sunshine and certain lighting conditions often made it difficult for us to read even the home screen.

As we've also seen on Sony's mobile displays in the past, black backgrounds and detail often appeared more like a dark gray. If anything, the phone is often too bright — the Xperia Z's brightness setting could

The 1080p display's viewing angles are subpar.



do with a wider range of contrasts and a lower base setting. Not that we'd want to lose the brightest option, as while you won't have anything to fear from rain with the water-resistant Z model, we needed one of the top brightness settings to see what we were doing on the touchscreen when the sun came out.

This is the first phone to feature Sony's improved Mobile Bravia Engine 2, which is responsible for a host of contrast and sharpness enhancements to your photos and videos (whether they were recorded on the phone or downloaded from some other source). The software will tweak darker regions to be even blacker, while distortion from lower-quality videos from the likes of YouTube is also reduced — videos did look marginally smoother. Conversely, there's also a sharpness filter for images, which boosts edges and contrast — apparently without adding noise, either. The additions seem a bit more aggressive than on preceding Sony phones, and when we looked at our freshly captured photos, we noticed an excessive bluish tinge on some of them, regardless of white balance selections. This doesn't appear to be tied to the Bravia tweaks (which can be turned off if you don't like your photos extra-saturated) and appeared substantially reduced when we viewed them on other device, like a PC.

## CAMERA

It's the debut for Sony's new Exmor RS sensor. Promising improved signal processing, while matching the image size of the Xperia T (up to 12 megapixels),

it's a whole new sensor. The standout improvement here is HDR video, offering a bigger dynamic range of lighting in your video capture. In practice, it works well. We test a lot of cameras, and the Xperia Z's new feature generally offered better light composition during our tests. Sometimes it overcooks colors, with a bit too much noise, but we'll definitely take that in exchange for the better light balance.

Naturally, HDR stills are also possible, although during our time with the camera we found the new "auto i+" setting generally offered up results that were as good (if not better) than what we got with the HDR option or manual settings tweaks. The new auto setting mostly does an excellent job adjusting ISO, white balance and toggling HDR. After we were done taking our comparison shots, we ended up leaving the phone on auto for the majority of our photos.

Most of our shots were taken on the preset 9-megapixel setting and though the phone does output images at 12 megapixels, they arrive in an awkward 4:3 ratio that doesn't really do the high-resolution screen justice.

However, when comparing both sizes to 8-megapixel images on rivals, we found those larger images offer scope for a little more detail. The 9-megapixel images appeared almost identical in quality to the full 12-megapixel samples, although the subject appears closer. Color reproduction was good, with HDR offering a boost to our low-light

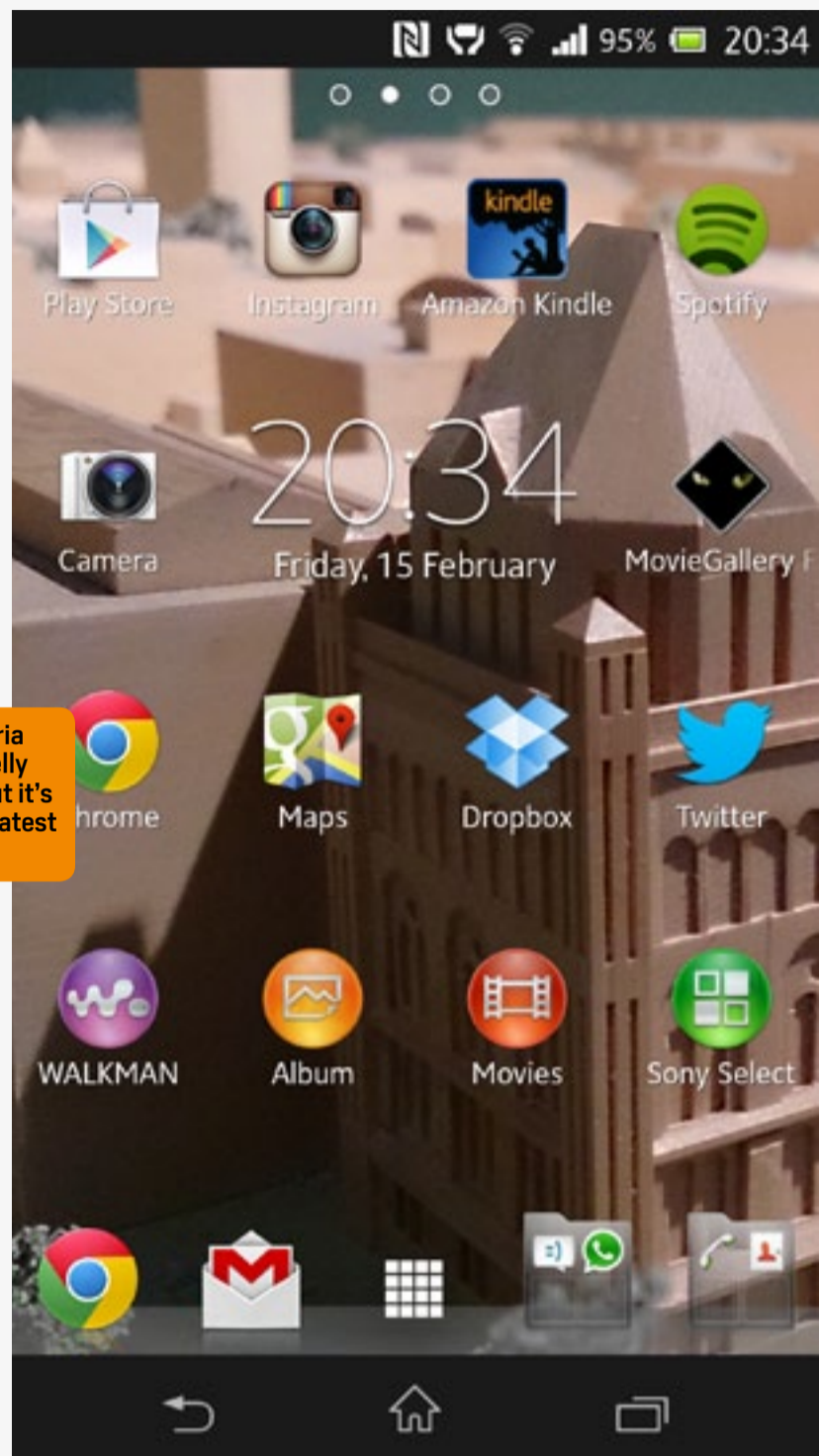


images. We did notice that HDR mode on stills was pretty gentle — probably due to that Exmor RS sensor tweaking we heard about late last year. Compared to our photos on normal mode, there's some slight highlighting of darker areas. So it's bad news if you were hoping for the same sci-fi-esque effects you get on other HDR cameras, but it's at least more realistic.

Sony has also made adjustments to the camera interface, which at least started in a good place, with access to ISO and white balance, not to mention the ability to create shortcuts for these right on the surface camera UI. There's now a burst mode, capable of 10 frames-per-second at 9-megapixel resolution. You can now grab shots while taking video, but better still, there's no need to flip between camera and video camera modes — just choose the appropriate record button. Also, if you've used one of Sony's point-and-shoots (or even NEX cameras) you'll find navigation and icons have been transported across. Like the button detail from the Vita, it's great to see Sony's many electronics lines finally start to converge towards each other.

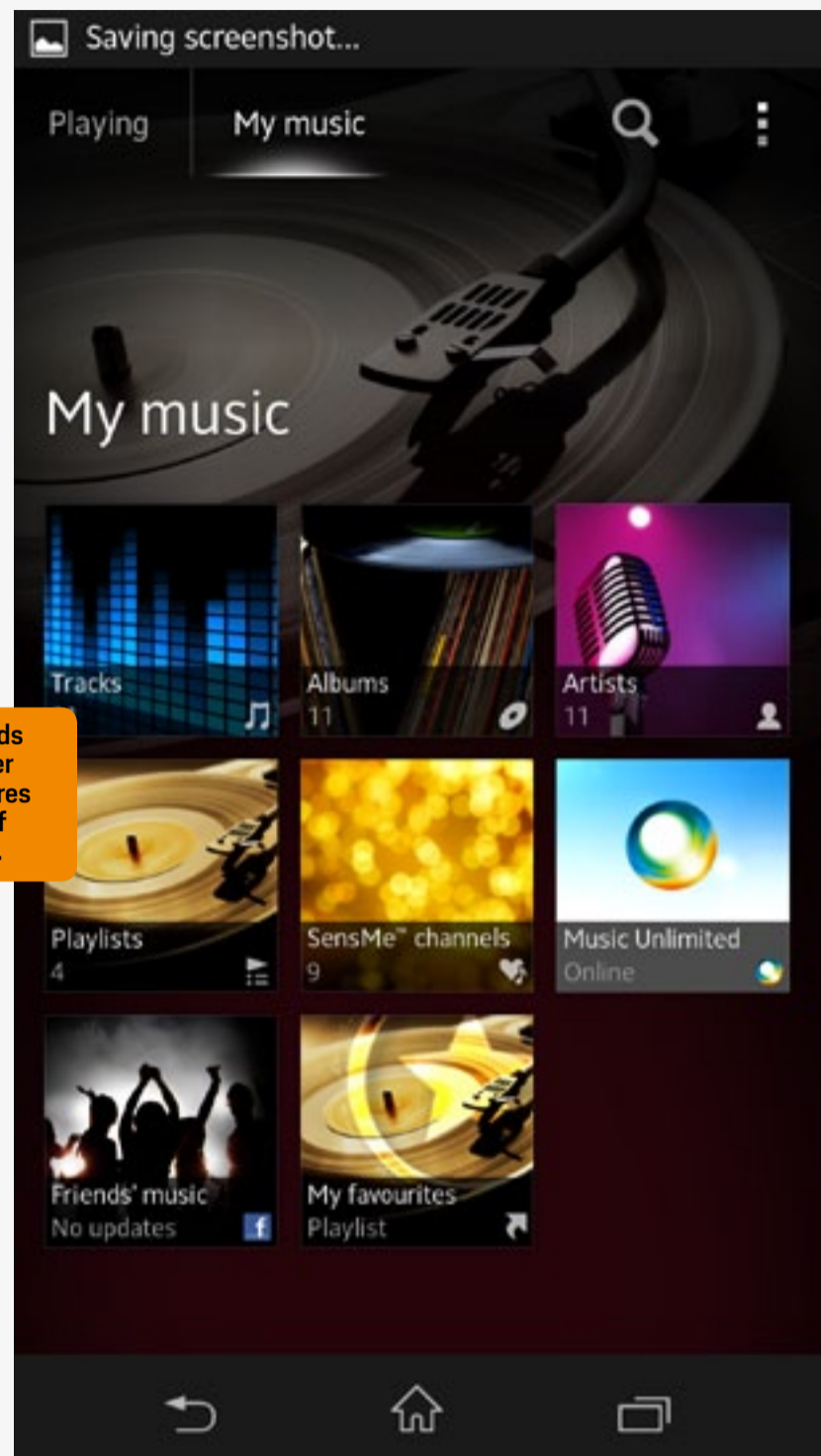
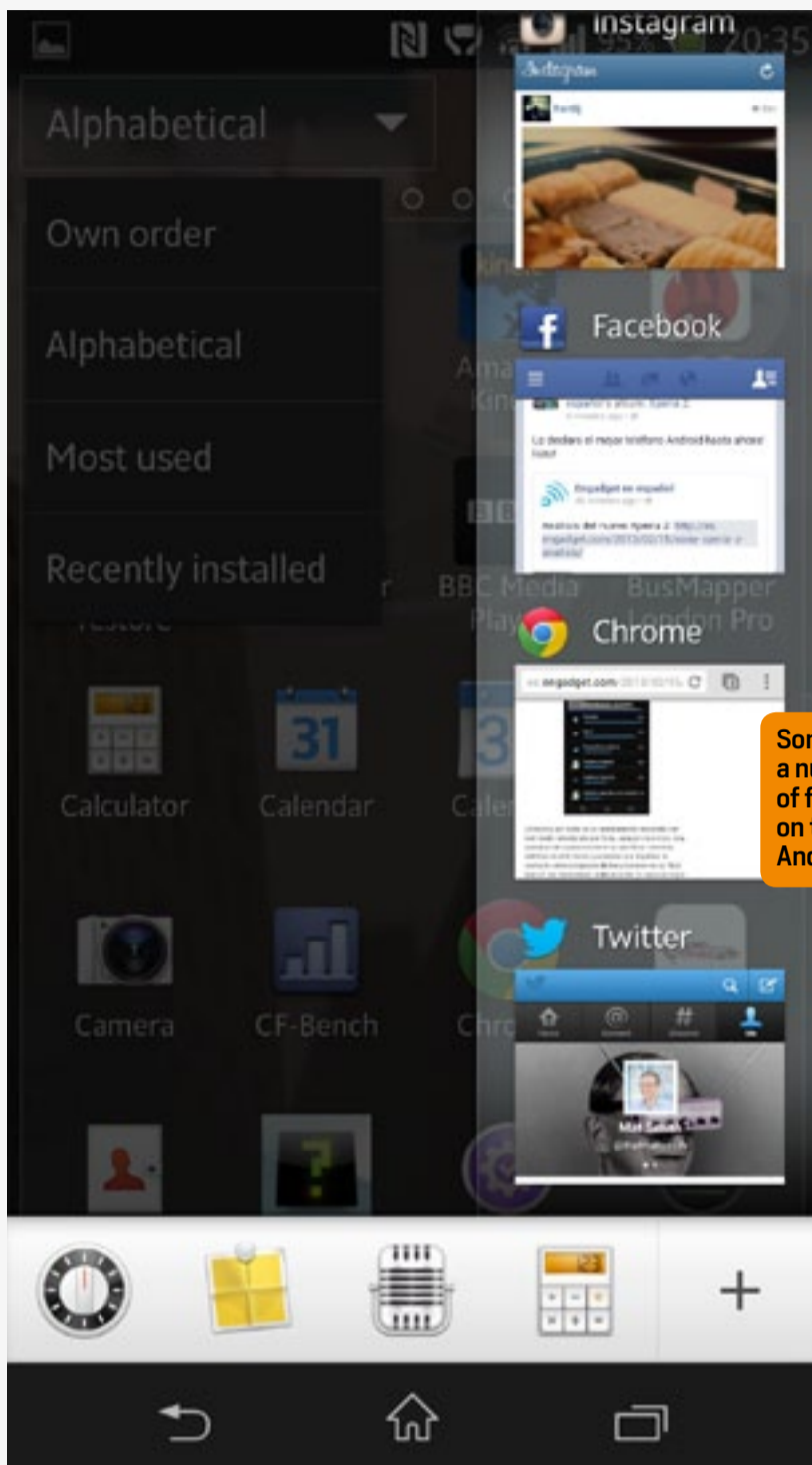
## SOFTWARE

The Xperia Z arrives just behind the latest Android iteration. It's *still* Android Jelly Bean, but it's version 4.1.2. Admittedly, the additions since then are relatively minor, but Sony has the



unfortunate knack for launching its best phones without the very brightest software. Since last year's Xperia models, we can now welcome Google Now to the fold, while Spotify and other apps are now accessible from the lock screen. Take a closer look at Sony's distinct take on Android and you'll find some likable additions, like the Rolodex-style gallery widget or the expandable power management widget pre-installed alongside some





slightly more unnecessary space hogs, like a Walkman audio player widget or Sony's Entertainment Network.

Yep, you'll be hard-pressed to avoid Sony's media libraries when you first boot up the phone. We resisted the urge to delete these from the outset and gave them a try, regardless. Sony Select offers a gentle introduction to Google Play wares, as well as Xperia-centric music and movies. We can't fault it for offering a spot-on selection of beginner apps, but you'll find there's

a lot of crossover from Google's own recommended section. The gaming options here are a little more tiresome, although you'll get some of Gameloft's better (and licensed) titles here. Again, we're not sure if anyone already versed in buying their apps and games direct from Google will need the Select service — the icons even redirect to Google Play.

Sony's thrown your video collection into its new movies icon. It's also a more subtle way to usher you towards



## It's a shame to see so relatively little 1080p content, something to showcase that full-HD display.

its Video Unlimited catalogue of movies and TV shows. We tried the service out, downloading a 90-minute (1GB) movie quickly enough. Prices are a little steep: we bought *Mass Effect* for £11.99 (it's just £8 on the UK's Google Play), while renting costs £3.49 — the same as on Android's stock movie service. The payment process is all relatively painless once you've got your Sony Entertainment Network account up and running — you can even use the same username from your PlayStation. Still, it's a shame to see so relatively little 1080p content, something to showcase that full-HD display. Almost everything we browsed (even Sony movies like *The Amazing Spiderman*) had a standard-definition option and nothing else. The player itself was at least capable; it plays back DivX videos and uses Gracenote to grab extra details, like cast lists.

Walkman, its musical counterpart, contains your own music catalog, a few free tracks from artists like Tom Odell and — no surprises here — Music Unlimited. Signing up for a premium subscription will net you offline playback across your compatible Sony hardware, the iPhone and other Android devices. In

the UK, this rings up at £10 and there's a good amount of music on offer — thanks to Sony's own music industry clout. The service has also recently upgraded its streaming quality to 320 Kbps on Android, PS3 and PCs. But if you've already got a Spotify subscription going, we can't find much here to pull you away.

There are also a few extra apps that also land on the phone right out of the box — some good, some less so. They include Dropbox, File Commander, Sony's WiFi-connected Media Remote for compatible TVs, OfficeSuite, Sony car (think big icons for use on the move) and Socialife. That last one is Sony's latest effort to combine your favorite RSS feeds with Twitter and Facebook updates. It's less intrusive (and resource-hungry) than the widget we remember from previous Xperia phones, but there's nothing that compelled us to use it beyond some cursory testing. For now, we'll stick to Flipboard and Pulse.

A more notable addition is Sony's new Stamina battery saver mode. Located under power management in settings, the focus here is to stop rogue apps from accessing data through your phone signal (or WiFi) when the screen is turned off. We're sure you're thinking, "Makes sense, but what about your email?" Not to worry, as your mail and the likes of Whatsapp, Twitter and Facebook can all be added to a whitelist, so that they can ping for updates whenever they please. The power management section also gives you a rosy estimate of how many



hours left on standby you're likely to get. Flip the stamina mode off, and you'll see that slashed, sometimes halved. It took us a while to figure out how to give apps permission to access data (hint: you need to tap on the Stamina mode bar) but once you have, adding apps that just need data is no hassle.

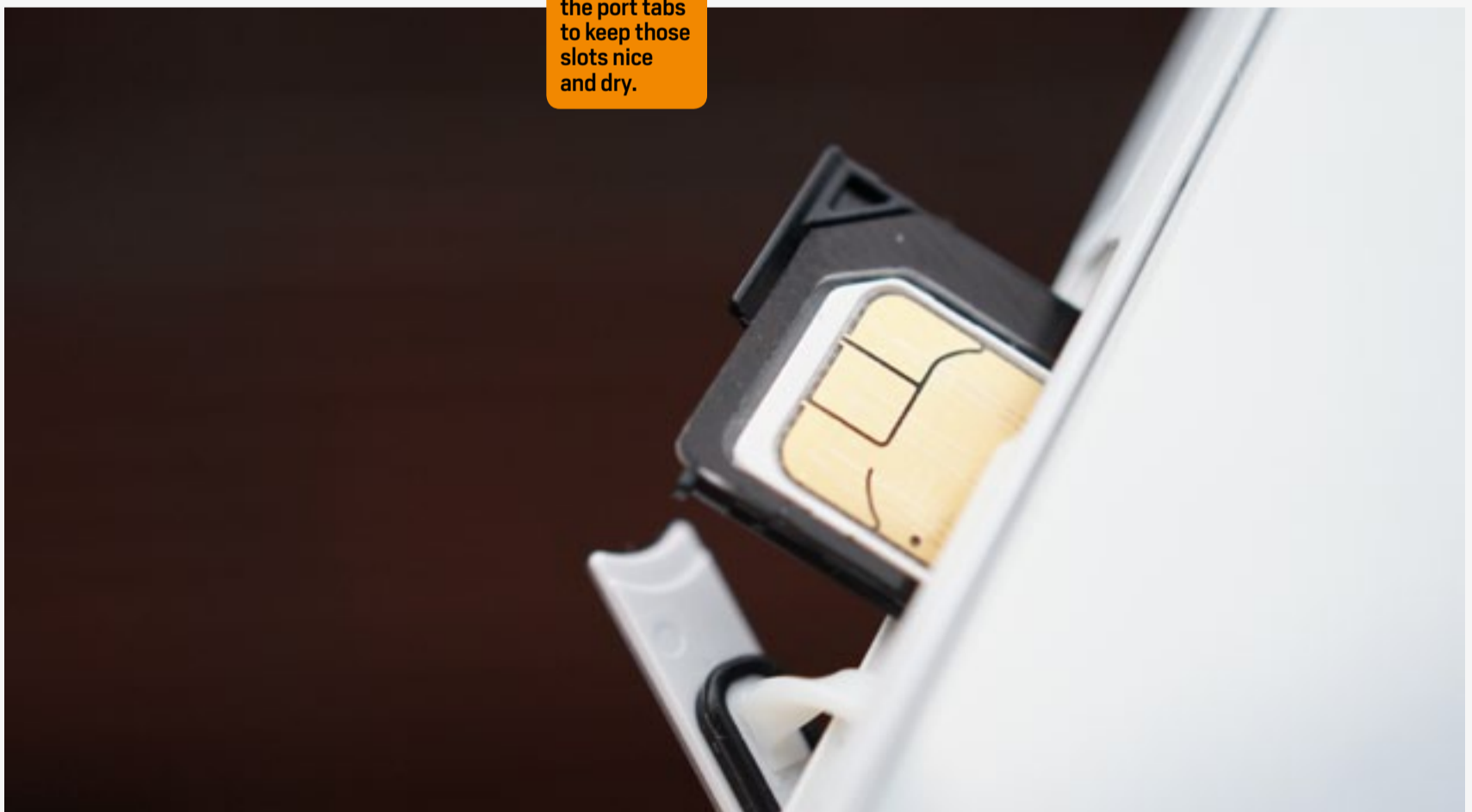
However, perhaps due to the fact that we need to prod and poke the device during the review process, we didn't find any miraculous expansion of battery life through the new stamina mode. The screen was on *a lot*, meaning not only did the battery have to power that rich 5-inch display, but also all apps were free to dip into data as needed. If you're a more casual phone user, the service could add a few extra hours of use, but we'd treat the phone's estimates of standby time with a pinch of salt.

We already touched on the improvements made to the Xperia Z's camera app, but highlights include HDR video capture, seamless camera and video modes, burst capture and an enhanced auto mode that made taking decent stills much easier. For this editor, Sony has a more usable interface than that found on the stock Android camera, which can sometimes feel a little too stripped down.

## PERFORMANCE AND BATTERY LIFE

Qualcomm's quad-core 1.5GHz Snapdragon S4 Pro powers the lush 1080p screen, and is paired with 2GB of RAM, 16GB of flash memory and expansion through microSD up to 32GB. Does it sound a bit familiar? It should, as this is nearly identical to the HTC Droid DNA and (barring that microSD option and resolution boost) LG's Optimus G

Rubber lines the port tabs to keep those slots nice and dry.





BENCHMARK	SONY XPERIA Z	LG OPTIMUS G	HTC DROID DNA
QUADRANT (V2)	8,019	7,628	<b>8,028</b>
VELLAMO (V2.0 HTML5)	<b>2,198</b>	1,710	1,752
ANTUTU	<b>19,876</b>	11,284	14,474
SUNSPIDER 0.9.1 (MS)	1,900	1,284	<b>1,150</b>
GLBENCHMARK 2.5 EGYPT 1080P OFFSCREEN (FPS)	29	<b>31</b>	<b>31</b>
CF-BENCH	16,079	14,398	<b>18,386</b>
BATTERY LIFE (RUNDOWN TEST)	5:35	<b>8:43</b>	6:38

SUNSPIDER: LOWER SCORES ARE BETTER

and Nexus 4, which at least makes for some interesting comparisons.

Curiously, the benchmark results are a mixed bag. While the Xperia Z took the lead in AnTuTu and Vellamo, it offered us a surprisingly poor score in SunSpider, a test for browser performance, and one where you'd expect a top-drawer handset to score closer to 1000ms (remember: lower numbers are better in this case). Meanwhile, CF-Bench, which tests subsystem goings-on and JavaScript performance, placed the Sony phone squarely between LG's Optimus G and HTC's Droid DNA.

However, numbers are just numbers and we found the Xperia Z to be impressively swift in most use cases. If anything, it handled processor-intensive tasks better than simple ones. We had a few issues with the phone stuttering while trying to open the task manager widget — there's a substantial lag between your tap and

the widget expanding to offer access to various wireless and brightness toggles. Similarly, when launching the camera app from a freshly booted device, it took a mind-numbing three seconds on average — something that could be a dealbreaker for shutterbugs, especially considering the lack of a physical camera key. At least once it's running, it then launches within a more bearable timeframe. Alas, even then, launching the camera from the lock screen still took around two seconds — not good enough.

**When launching the camera app from a freshly booted device, it took a mind-numbing three seconds on average.**



What concerned us more, though, was that the Xperia Z didn't go beyond six hours on our battery rundown test. Looping video at 50 percent brightness, with WiFi on (but not connected), the phone managed a little over five and a half hours on our first test. That's actually longer than the Nexus 4 which also had issues going the distance at 5:18, but less than both the Droid DNA and the 720p Optimus G. Oddly, the Z model packs a 2,330mAh power cell, versus the 2,020mAh battery found on HTC's 5-incher. So what's going on here? We repeated our test twice, as it'd be a shame for an erroneous benchmark to sully the Xperia Z's name. However, the second round added only 10 minutes. It could be that Sony's screen tech is less power-efficient than HTC's IPS Super LCD 3. That's our best guess, as there's really not much else to separate the pair — we even ran the video clip from the flash storage, not the microSD slot.

Our UK-bound review model arrived with plenty of radio bands to share. There's quad-band GSM/EDGE (850/900/1800/1900) plus tri-band HSPA (850/900/2100) and a healthy dose of LTE on Bands 1, 3, 5, 7, 8 and 20. Unfortunately, we were unable to test the phone with an EE SIM, but across Three, EE and O2's HSPA services, we saw download speeds on HSPA+ around 4 Mbps, while uploads hovered around 1.5 Mbps. AT&T customers, with their compatible HSPA bands, are the ones most

likely to benefit from importing the device early — we've still heard no word about US pricing and availability for either the Xperia Z or the Xperia ZL.

## WRAP-UP

It's been five months since Sony's last phone, Xperia T, was released. During that review, we noted that while Sony had perfected the art of the press shot, the hardware really didn't live up to the fantasy. Particularly in comparison to an iPhone, Lumia or HTC's One series, it did the Sony brand a disservice. So, it's a relief to see the company now making a concerted effort to make a premium phone — and that's what this is. If you weren't sold on the older polycarbonate look, perhaps Sony's new beauty will be more to your tastes. Exactly how much rough and tumble the Xperia Z's glossy sides will stomach remains a mystery, but after our testing period the phone is still free of scratches. We also applaud Sony for bringing water resistance to its new phone. Pro-

Sony brings glass around to the back panel on the Xperia Z.



## It's a relief to see Sony now making a concerted effort to make a premium phone — and that's what this is.

tection from an early watery grave often meant settling for less when it came to design or performance, but that's certainly not the case with the Xperia Z.

We can expect to see many, many more 1080p phones through 2013, and while the Xperia Z might not best the overall quality of HTC's 5-inch panel, the phone itself has a far more distinctive look than its competitors. While the Snapdragon S4 Pro was the best of the 2012 processor bunch, we already know what to expect from phones later

this year — maybe Sony should have waited a little longer?

Perhaps the bigger question is how to square the £300 difference (off-contract) between the Xperia Z and the Nexus 4. Both are powered by the same high-performance S4 Pro, with 2GB of RAM, but Sony's option has expandable storage, a 13-megapixel camera capable of HDR video and that 1080p display — even if the Google phone's screen performs better outside of a pure pixel count. If the Xperia Z had trounced the Nexus in battery life, we'd have happily recommended the OmniBalance smartphone, but a disappointing showing there makes it a much tougher call, and one your wallet might have to make for you. **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

## SONY XPERIA Z

**£525**  
**(\$815 APPROX.)**



### PRO

- The most beautiful Sony phone yet
- Water resistance on a flagship device
- Strong performance

### CON

- Disappointing battery life
- Poor viewing angles

### BOTTOMLINE

The Xperia Z proves that Sony has what it takes to make a compelling phone in an increasingly competitive market, but issues like battery life need to be confronted, even at the expense of the design.



# (Part Two)



## **BACK TO BLACKBERRY: 30 Days with the Z10**

By Brad Molen

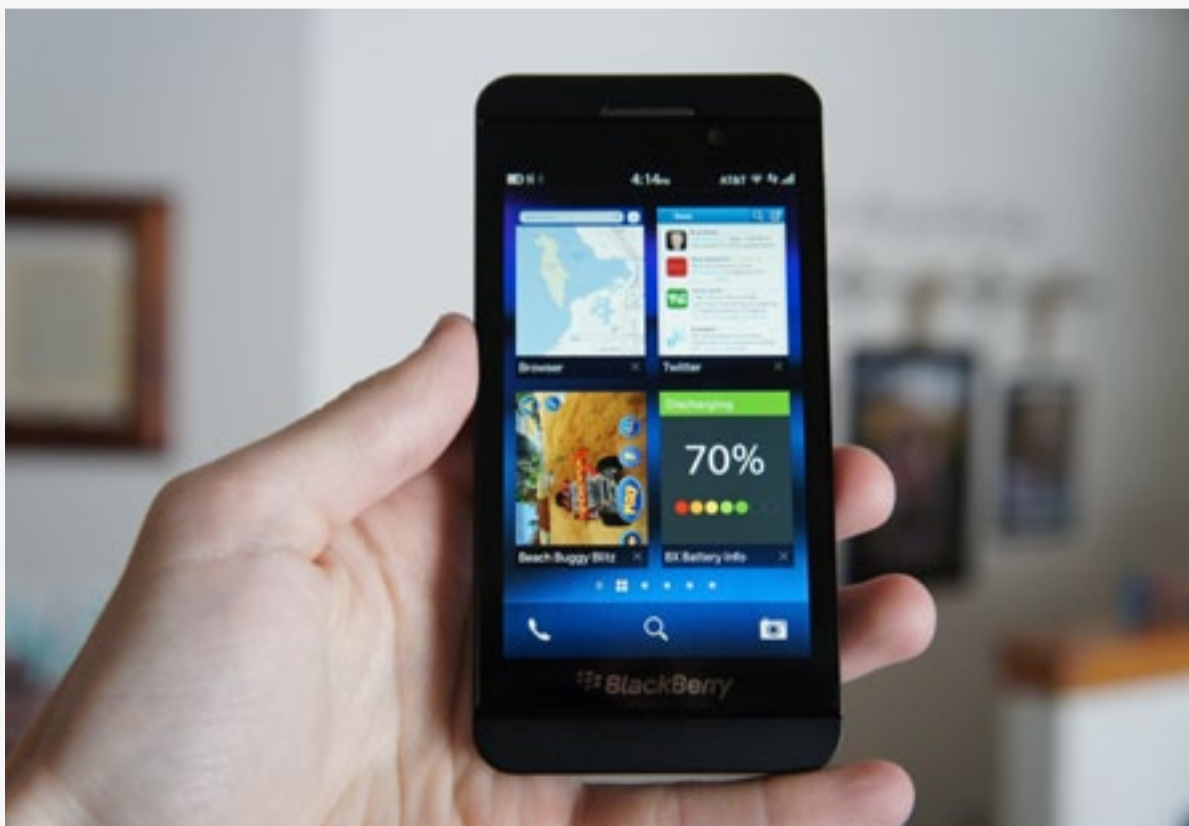


## THIRTY DAYS IS JUST A TINY FRACTION of the two-year commitment you sign when buying discounted phones in the US — one-twenty-fourth of the actual time you're stuck with the device before switching phones. For a reviewer

like me, however, it's actually about twice as long as I typically spend with any given device as my daily driver. I'm halfway through my monthlong BlackBerry 10 experiment, which means this is the point at which I'm usually ready to move on to something new.

Strangely, I'm not feeling the same about the Z10 — at least, not as much as I had expected. While I became accustomed to the user interface during the first week, my experiences during the second week were even smoother and more natural than before. That's great

*A view of some of the currently running applications on BB10, including the indispensable BX Battery Info app.*



news as I've been preparing for my trip to Spain to cover Mobile World Congress, since my habits as a power user will be amplified during my weeklong venture to the other side of the Atlantic. Phone-wise, what would normally be a minor frustration at home can become an emergency in other countries, so I spent this week putting the Z10 to the test. I wanted to make sure it's prepared for the rough and taxing journey the two of us will face in Barcelona.

One of my fondest recollections from my BlackBerry Curve days was the phone's intricate use of shortcuts. They were everywhere; discovering new shortcuts was the equivalent of locating hidden treasure on a pirate map. At the time, I had the feeling that there were plenty of keystrokes and other shortcuts that I never found — and now I'm experiencing that same thing with BlackBerry 10. Since my first week was dedicated to learning the





After almost two weeks with BB10, picking up some helpful tips and tricks along the way, the OS began to reveal its true capabilities.

user interface and ecosystem, I didn't learn many of BB10's secrets; this past week, however, was a completely different story. Thanks to a plethora of online resources (including some helpful Engadget commenters), I was immersed in the phones inner workings.

I discovered that there's a delicate balance between necessity and luxury. In other words, shortcuts can add a great deal of convenience and depth for power users, but it's also important that they don't overwhelm users that only want to

utilize of the platform's simple features. Fortunately, BlackBerry does a beautiful job of striking this balance. For instance, the keyboard offers several handy tricks — type “ld” to automatically insert today's date, “mypin” for the device PIN, “mynumber” for your phone number and so on. I've also put in my own custom autocorrects, the same way I can with most other platforms. If you don't want to see the keyboard anymore, just pull it down with two fingers (and vice versa). The most mind-blowing shortcut, though? If the Hub misbehaves, you can reset it without a battery pull by pulling down





The Z10's textured backplate shows off the BlackBerry branding as well as the lens for its rather middling camera.

from the top-right corner of the screen five times.

I wish I could say that BlackBerry 10 offers that same kind of flawless execution in every facet of the OS, but unfortunately there are still plenty of areas that need extra work. One such area is battery life. Nearly every review I've read (including our own) makes mention of the Z10's power-management struggle, and my experience over the last two weeks matches those claims. I'm emailing, messaging, tweeting and browsing the internet much more frequently than any sane person should, but I'm lucky if the phone gets me

through a standard workday — usually eight to 10 hours at the most. Not once have I been able to make it through a full day on a single charge. Granted, there are some power-saving measures you can take to extend the Z10's life, but these will likely only work if you aren't wholly dependent on the phone for any degree of your livelihood. (And don't even think about playing graphic-intensive games on it unless you're close to an outlet and a charger.)

This week, I also explored (and became frustrated by) BlackBerry Maps. Its simple interface might do the job for some travelers, but it's too basic for my needs. The voice turn-by-turn navigation, GPS tracking and traffic updates



are handy to have and all work well, but those are staples for any OS at this point, which means they aren't stand-out features. The bigger concern is what the Maps application *doesn't* supply: I need transit directions, walking options, offline maps, distance between two points, a bird's eye or Street View feature, more POIs and Zagat- / Yelp-style reviews. I also noticed that while it's able to find most businesses I search for, there are a few smaller establishments that don't show up (many of which have been around for years).

Unfortunately, I've grown increasingly hesitant about relying on BB Maps as my sole navigation option for my trip to Spain, so I've been playing with two other options: an older APK of Google Maps sideloaded from my computer — it's sluggish, but usable — and Nokia Here on the BB10 browser. So far, the latter has been

Some of the available apps, including the extremely basic Camera app, along with a necessary sideload of an aging Google Maps APK.



my top choice. While it's a web app, it works amazingly well with very little delay in response. Best of all, it does everything BB Maps doesn't do with the exception of voice turn-by-turn, and I actually don't even use that feature very often.

Apart from my experience using Nokia Here, the browser as a whole is one of my favorite elements of BB10 so far. I typically use HTML5 much more frequently than I use Flash, but it's nice to have the option to take advantage of the latter whenever I want. If it's not needed, I can easily turn it off in the settings. This is one feature that may persuade others to give BB10 — an OS without many competitive advantages over its rivals — a shot. I do wish text would auto-adjust to fit the screen whenever I zoom in (much like HTC does on its browser), but I use Reader mode to check out long-form articles in a larger font, so it's not a huge pain. The only thing missing on the browser to appease this frequent flier is

the ability to save pages for offline reading, so I'll likely depend solely on movies and podcasts en route to Barcelona. How well will that work out for me?

The stock video and music players deliver decent quality, but they're still a little too basic. No audio enhancements can be found on either player,






though at least the video app offers sharing and editing options, something I believe is essential on every flagship smartphone. While I can't do much tweaking, the phone's audio element is at least loud and balanced enough to get an above-average listening experience, which means it'll work well enough on my upcoming flights. Without additional settings, however, the Z10 won't be my personal media device of choice unless I find solid third-party options to take the place of both players.

Just like multimedia playback, the camera UI is surprisingly scarce and simple. I'll discuss the imaging performance in more detail later this month (spoiler alert: it's not terrible, but I won't look at it as my go-to device if I need to take high-quality shots). Sadly, BB10's camera UI doesn't offer very many settings to tweak. I'd rather have options available to adjust my shot for each unique situation, but even the most basic camera features are missing. I'd like to see HDR, ISO, white balance, panorama mode, exposure and additional Scene modes, among others. Using the volume rocker as a shutter button is a nice touch, especially when the only alternative is to touch the viewfinder, but very few tricks are available for the camera aside from this.

The camera, maps and multimedia apps offer just a few examples of the minimalism that appears throughout various parts of the OS. It's been one of my major takeaways from the first half of my BB10 trial, and I don't believe things were left out by accident — in fact, most

mobile platforms start out the same way. It makes sense that a company like BlackBerry would want to focus primarily on the core OS and features first and tackle smaller things like extra settings and options iteratively as the platform grows and progresses. Unfortunately, it also means I'm making compromises in order to use BlackBerry 10, but I'm hopeful that we'll start seeing third-party apps that throw in more options.

## WRAP-UP

The first half of my experiment was the easy part. As I prepared for my trip to Spain, I began to realize the second half of the month would be the true test of what the BlackBerry Z10 is capable of, especially from a power user's point of view. My reliance on the device will increase dramatically as I work overseas, and to be honest, I'm a little nervous about it. While I've had enough time to become acquainted with BB10, and to make sure I'm equipped with everything I need, there's no way I can count on the device's battery to last me the whole day without an external pack. Still, there's nothing like a huge trip to turn an unproven OS into a proven (or worse, still unproven) one. 

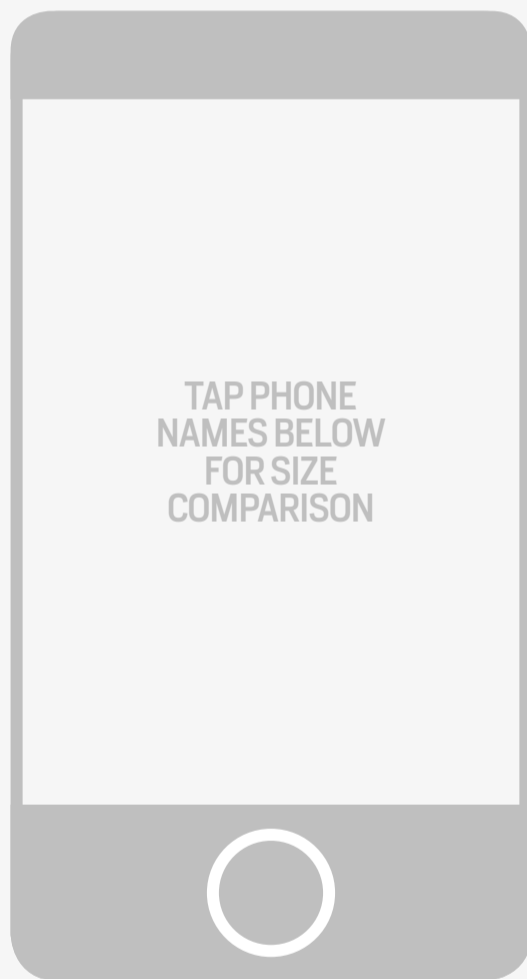
*You can [follow Brad on Twitter](#), where he is documenting many of his thoughts and observations on BlackBerry 10.*

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



# THE RISE OF THE EVER-EXPANDING SMARTPHONE SCREEN



2007 APPLE  
iPHONE

MOTOROLA  
DROID 2

NOKIA  
LUMIA 920

SAMSUNG  
GALAXY NOTE II

HUAWEI  
ASCEND MATE

The future once belonged to the incredible shrinking form factor, but now it seems that cinema-scale screen real estate has captured the zeitgeist of the times.

**By Jon Fingas**





**IT USED TO BE THAT ANY SMARTPHONE SCREEN** beyond three inches was considered big — and it was, for an audience still weaning itself off of flip phones and PDAs. Flash-forward several years, however, and we're to the point where many won't even consider less than a 4-inch screen, and the once-unfathomable 5-inch

display is quickly becoming the de facto standard for high-end models. It's clear that many of us like our phones supersized, Zack Morris style. But when the 6.1-inch Ascend Mate is a reality, and Mobile World Congress or future events may push the boundaries even further, there's still a worry that the focus on successively bigger displays might have gone too far. Have we pushed too hard for more glass? Or are we witnessing a wholesale shift away from the smartphone as we once knew it? There's truth to both sides. Follow along as we look at how smartphones have swelled over time, and how we're learning to love (or cope with) their dimensions.





### **BLACKBERRY 5810, 2002:**

The first proper BlackBerry smartphone had a 3-inch monochrome display. It was huge at the time, but few phones would go much bigger for years. The BlackBerry 6200, as well as most similar successors or rivals, would have smaller screens.

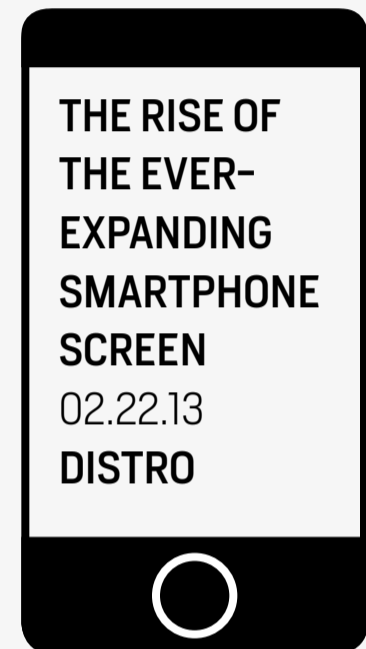


**HTC UNIVERSAL, 2005:** While it had many variants, the Universal always had a comparatively large 3.7-inch LCD, and a gigantic body to match. The swiveling, keyboard-equipped Windows Mobile phone was more of a pocketable PC with calling as an extra.

## **BEFORE 2007: SMALL IS A VIRTUE**

We almost need a reminder that much of the smartphone's development before 2007 reflected a drive to shrink the phone, not make it bigger. A desire to slim down the body sometimes took the screen along for the ride, with relatively few objections from buyers who were often just happy to have a smartphone in the first place. The BlackBerry's display shrank from a 3-inch screen on the 5810 to 2.6 inches on the 6200 series, but sales didn't exactly slow down. There were exceptions like the 3.7-inch HTC Universal, too. When even the (now ironically named) TyTN had a 2.8-inch display, however, it's safe to say screen size didn't play nearly as much of a role as it does now.

To some extent, this was dictated by the technology. Bigger displays were more expensive to make than they are today, and they demanded battery power that phones couldn't always supply. Moreover, the resistive touchscreens of the day weren't making a convincing case for touch input as a whole — anyone who's had to stab multiple times at an unresponsive panel will know why. Combine that with interfaces that often weren't optimized for finger touch, and it's not surprising that phone makers sometimes decided it was easier to combine a smaller screen with a directional pad, a keyboard or both. This was the heyday of the BlackBerry, Nokia's N series and the Palm Treo, when many of us were just getting used to email on our phones.



## **2007-2009: THE IPHONE AND EARLY ANDROID**

Whatever your platform allegiances, it's hard to dispute the significance of the iPhone's January 2007 announcement in changing our expectations for smartphone screens. Never mind that Steve Jobs describing the device's 3.5-inch LCD as "giant" seems quaint several years later — the iPhone's support for capacitive multi-touch, and the more intuitive interface that came with it, helped justify replacing hardware buttons with a larger display. Apple also highlighted full web browsing and advanced media playback, both tasks that benefited from a larger screen.

There weren't any immediate responses in 2007, if only because





### **IPHONE, 2007:**

Apple's breakthrough with the iPhone wasn't so much the screen size as giving us a good reason to use it. Finger-driven multi-touch, full HTML browsing and then-elegant media handling took advantage of all that extra surface area.



### **MOTOROLA DROID, 2009:**

Android's poster child, in part for a then-big 3.7-inch display. The Droid's 854 x 480 panel helped show off Android 2.0's multi-touch and Google Maps Navigation to their fullest.

most competitors already had products in mid-development. The HTC Touch was locked in at 2.8 inches, and Palm was going even smaller with the Centro's 2.2-inch screen. In 2008 and 2009, however, the battle of bigger displays was starting in earnest as companies raced to introduce modern touchscreen phones of their own. Both the BlackBerry Storm and T-Mobile G1 carried 3.2-inch screens. Nokia followed the conventional, 2.8-inch N96 with the touch-focused, 3.5-inch N97. Others even staked the survival of their brands on bigger displays, as complete overhauls of their OS platforms revolved around truly touch-native interfaces. Motorola dropped its BlackBerry-like, Windows Mobile-based Q9 series for the 3.7-inch Droid and the Palm Pre jumped to 3.1 inches after years of 2.5-inch Treos. HTC pushed the limits toward the end of this period with the 4.3-inch HD2 — a device that seemed like an oversized outlier in late 2009, but it would set the tone for 2010. It was safe to say that any major smartphone builder worth its salt had at least a 3-inch model going into the new decade.



## **2010: THE ANDROID SCREEN-SIZE EXPLOSION**

Android was taking off in the wake of the Motorola Droid, and the software's support for both finger touch and multiple resolutions effectively opened the floodgates for companies wanting to one-up each other with bigger screens across more of their lineups. HTC matched Motorola with the 3.7-inch Desire, Nexus One and Droid Incredible earlier in 2010, and expanded its 4.3-inch line to include the Desire HD in October. Motorola continued a hit streak with the 4.3-inch Droid X. Samsung wasn't quite as aggressive as its peers, but there's no denying that the 4-inch Galaxy S served as a benchmark for the entire industry, if just through sheer ubiquity. When it was available on seemingly every carrier and well-regarded for both its vibrant display and its high performance, there was a good chance that many smartphone buyers at least considered a Galaxy S if they weren't dead-set on another device. Samsung managed to sell 10 million units of the flagship smartphone by the start of 2011, proving that 4-inch or larger phones could be popular.

We even got a peek at how smartphones would look two years



# We even got a peek at how smartphones would look two years down the road, although we didn't realize it at first.



## **SAMSUNG GALAXY S, 2010:**

While the Galaxy S wasn't the largest smartphone of 2010, its 4-inch Super AMOLED screen would set the baseline for Android (and ultimately the wider phone industry) for years to come. It proved that larger phones weren't relegated to a niche.

down the road, although we didn't realize it at first. LG's 4.8-inch, Intel-packing GW990 prototype was labeled as a Mobile Internet Device because it was so much larger than its contemporaries; we had a hard time even believing that it could be a smartphone, even though the necessary cellular ingredients were in place. Nevertheless, the quickly scuttled design served as an unofficial template for future phones by showing how the web and video could benefit from a large canvas. And who can forget the 5-inch Dell Streak? While a chunky frame, cellular data in only some models and a misplaced emphasis on tablet-like software kept the Streak from setting the world on fire, it would prove to be prophetic. It suggested that phones would eventually turn into big-screened data devices that just happened to take phone calls. As often as we teased those who insisted Dell's crossover was pocketable, they had foresight that would have been immensely valuable to phone makers.

Not every designer hopped on the bandwagon. Apple, Nokia, Palm and RIM mostly stayed the course on screen size in 2010. However, this conservatism wasn't necessarily a setback at the time. Apple had no trouble selling the iPhone 4 with an extra-sharp 3.5-inch display, and it was even defensive about its choice: Jobs is well-known for insisting at the time that phones needed to be usable with one hand, and app compatibility was better served by maintaining the status quo for resolution and size. Palm and other companies bleeding market share had far more on their plates to worry about than mere phone dimensions, even if short-lived devices like the Pre 3 signaled intentions to catch up. Nonetheless,





developments during the year would set the stage for the size debate ahead. There were now multiple phones that really needed two hands to work, with no signs of the trend slowing down.

### **DELL STREAK, 2010:**

The prototype for today's gigantic phones — only Dell wasn't fully aware of it. While it could be used like a phone in some variants, Dell most often encouraged us to use the 5-inch device like a tablet, in a landscape orientation.



### **HTC SENSATION XL, 2011:**

A supersized, 4.7-inch version of the Sensation when most of us were still getting used to 4.3-inch phones. Its relatively low WVGA resolution and sub-par battery life gave little reason to go big, however.

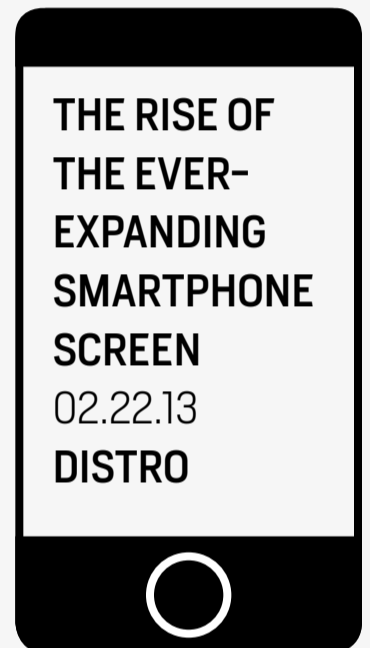
## **2011:**

### **DAWN OF THE SUPERSIZED PHONE**

And then the gloves came off. Almost as soon as 2011 began, 4.3-inch smartphones were in the pipeline from most major manufacturers, including Samsung's platform-defining Galaxy S II. Only it didn't stop there: we saw Samsung's 4.5-inch Infuse 4G eclipsed by the 4.65-inch Galaxy Nexus, and HTC rolled out 4.7-inch phones like the Sensation XL and Titan. The rush toward ever-larger phones was sometimes dictated as much by the extreme battery demands of early LTE as it was corporate one-upmanship — just ask any long-suffering Thunderbolt owner — but it ultimately led to a market where phones that seemed enormous a year earlier were suddenly modest.

All this doesn't even include Samsung's original Galaxy Note. Its 5.3-inch screen and pen pushed it so far past smartphone conventions that it popularized a new term — like it or not, the “phablet” badge gained wider acceptance after the Note's arrival in October 2011. It was arguably too big to comfortably use one-handed, like the Streak, but faster hardware, a better display and smartly optimized software kept it from becoming a specialist device. The Note would go on to become one of Samsung's best-selling smartphones during the period, and it would ultimately spawn a horde of me-too devices.

That breakneck pace in screen growth made the exceptions (voluntary or otherwise) all the more visible. While Apple had no shortage of customers for the iPhone 4S, the gap between the



**The Galaxy Note's 5.3-inch screen and pen pushed it so far past smartphone conventions that it popularized a new term — like it or not, the “phablet” badge gained wider acceptance.**





### SAMSUNG GALAXY NOTE, 2011:

Really, the reason this article exists. Its 5.3-inch Super AMOLED HD screen and pen support left some struggling to call it a smartphone at all, but its sheer capability (and popularity) was enough to foster a new category full of competition.

**Companies using large screens were increasingly self-conscious of the design limits. A big screen had to work well, not just serve as a bragging right.**

iPhone's 3.5-inch LCD and that of its rapidly growing competition was becoming glaringly obvious to those who wanted as much screen area as possible. The difference was even more apparent in the BlackBerry line, where 3.2 inches was still the maximum. Meanwhile, Nokia was mostly saved by its full-steam-ahead transition to Windows Phone, where a brief regression from four inches in Symbian phones to 3.7 inches in the Lumia 800 was accompanied by a more sophisticated platform that may well have rescued the company. Whatever the arguments about the value of screen size, the goalposts for common sizes were shifting.

### 2012: HUGE IS THE NEW NORMAL

By 2012, even those who hadn't rushed to embrace larger displays had them on deck. Nokia proved it could grow with the 4.3-inch Lumia 900 and, later, the 4.5-inch Lumia 920. Apple also answered a longstanding call for a bigger screen with the 4-inch iPhone 5 — a comparatively modest leap, but an acknowledgment that the market had changed since the iPhone first arrived. The conservative increase was once again justified by Apple's view that a phone had to be usable with one hand.

Elsewhere, screen dimensions didn't grow up so much as grow out. Sizes once thought extreme were now making their way into thoroughly ordinary devices. Remember how the GW990's 4.8-inch screen seemed impossibly large in 2010? By 2012, Samsung's Galaxy S III made that size commonplace. Many other predominantly Android-based phones, such as the HTC One X, LG Optimus G and Sony Xperia T, often came close at 4.6 or 4.7 inches. The 4.3-inch

displays we'd been awed by in 2010 were more often reserved for mid-range handsets like the One S and Motorola's Droid RAZR M. Thankfully, many of the companies using large screens were increasingly self-conscious of the design limits. A big screen had to work well, not just serve as a bragging right. Motorola and Samsung respectively





## **NOKIA LUMIA 920, 2012:**

The 4.5-inch Lumia 920 was big in all senses of the word, but notable mostly in showing how far Nokia had come from the days when the 2.8-inch N96 seemed like a behemoth. The Windows Phone's display also had a fast refresh rate and glove-friendly sensitivity.



introduced the Droid RAZR HD and Galaxy S III by emphasizing how efficiently they used screen space, occupying little, if any, more total area than their ancestors.

The extra-large category saw a similar trend. LG only had limited success in countering the Galaxy Note with the overly squat, 5-inch Optimus Vu, but Samsung's own 5.5-inch Galaxy Note II was considerably smarter.

While it was more expansive than its ancestor, the Note II was easier to hold, better justified its pen and included settings to make one-handed use feasible for some tasks. Sometimes that improved ergonomic design was the very selling point, as with Pantech's

Vega R3 — its one-handed grip was a relative novelty where such a notion was once a certainty.

Toward the end of the year, we'd see a trend that would spill into 2013: the 5-inch, 1080p smartphone. HTC's Droid DNA justified its larger size not through pens or other special tricks, but through sheer resolution. It was hard to deny the at least superficial appeal of a phone with as many pixels as the 55-inch TV in the den, even if that device was scarcely smaller than the Galaxy Note from a year earlier.

## **SAMSUNG GALAXY S III, 2012:**

The most iconic smartphone of 2012 was also one of the biggest. The Galaxy S III stuffed a 4.8-inch Super AMOLED HD screen into a phone not much larger than the Galaxy S II, all while staying slim and relatively long-lived.



point where manufacturers back off, we haven't yet reached it.

As such, it's doubtful that we'll hear a different tune from

**THE RISE OF  
THE EVER-  
EXPANDING  
SMARTPHONE  
SCREEN**  
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## HTC DROID DNA, 2012:

The prototypical 5-inch, 1080p phone. Besides offering exceptional image quality, the Droid DNA was proof that we weren't done expanding phone screens for the mainstream.




## HUAWEI ASCEND MATE, 2013:

At 6.1 inches, the Ascend Mate is the biggest smartphone we know of ... so far. While not much different in total size than a 5.5-inch Galaxy Note II, the LCD gives it the appearance of a tablet that just happens to fit in some people's pockets.

many of those who have yet to show key parts of their smartphone lineups this year. Apple and BlackBerry are the two companies that haven't pushed their phones to 4.3 inches or beyond, but they've purposefully drawn lines in the sand that they won't cross, at least not in the near future. They have the advantages of OS differences and brand cachet to explain their more moderate screen sizes. Others won't necessarily have that luxury if they're competing mostly on hardware features, however. "Go big or go home" is more than just a truism in this field.

We wouldn't say the seeming arms race is a problem, however. Most of the phones we've tried so far include design traits that offset their massive surfaces, such as narrow edges and curved backs. We wouldn't have believed that the Xperia ZL would be comfortable if you'd told us the year before, for example. Samsung's software optimization for single-hand use may be an admission that its hardware design is stretching the limits of human hands, but it's also a way to get the advantages of a big device without requiring both hands at all times.

Moreover, the primary purposes of smartphones have clearly changed. Early on, they were phones first, and data devices second. The various advents of modern apps, browsing and media shifted the focus enough that voice is almost incidental today. Our smartphones are now pocket computers, and they're often our cameras and GPS units, too. Until and unless wearable computing replaces the smartphone, a bigger screen helps us process the glut of information we face in a day, and frequently provides a source of entertainment when it's time to relax. There's undeniably a threshold at which smartphone builders will have to relent: no one's about to stuff a Galaxy Tab into their pocket. Likewise, there's a good chance we'll still see smaller devices for those who can't (or won't) switch to a phone that's too big for their hands or pockets. Still, the past few years have taught us not to make too many assumptions — through technology and shifting tastes, what's an extraordinary screen one year often becomes run-of-the-mill fare the next. 

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*Jon is an Associate Editor, serial phone upgrader, photography junkie and unrepentantly Canadian.*



# ESC

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VISUALIZED

SPAWN OF W49B



PHOTOGRAPHS COURTESY OF NASA/CXC/MIT/L. LOPEZ ET AL (X-RAY); PALOMAR (INFRARED); NSF/NRAO/VLA (RADIO)



# BRIAN MAFFITT



The **TOTAL TRAINING CO-FOUNDER** and **AE GURU** talks about hot-plate dinosaurs and the sexy side of ASCII.

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

It's so boring to say my iPhone, but it's true. It's a *Star Trek* Communicator, James Bond spy camera, and *The Hitchhiker's Guide to the Galaxy* rolled up in one device.

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

In the late 1960s I got a "Strange

Change" machine for Christmas. Possibly the most ludicrously dangerous toy ever invented, it was a hot plate that you employed to convert colorful "memory plastic" cubes into dinosaurs, then melt them down again to squish them back. So there were two opportunities for bad burns ... a hot plate, and melted plastic. It was awesome.

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

Certainly Apple did before Steve's death. Now I'm not so sure ... I see a lot of companies trying to artificially create a need, so they can fill it. 3D TV, for example. That's very hard to do.

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

For creative puttering, I still prefer my Mac, but when I have a deadline, I'm comfortable enough on my homemade Windows 8 tower ... it's a real beast for video production. Apple has some catching up to do on the high-end of the desktop, I'm sad to say.

**What are your favorite gadget names?**

I think "Drobo" is a great name





The entertaining, yet dangerous Strange Change toy from the '60s.

and describes their product really well (drive robot).

### What are your least favorite?

Almost any game peripheral with a macho name. I recently needed a new programmable keyboard for my PC — I like to have my PC and Mac keyboard shortcuts mapped to the same keys — and I also wanted a “chiclet” keyboard so the feel would be similar to my Mac. The one I settled on was a very nice piece of hardware from Razer with the stupidest product name I have ever heard: “DeathStalker.”

### Which app do you depend on most?

Leaving aside the web browsers where I waste copious amounts of time, I actually depend on the Adobe Creative Suite the most, specifically Photoshop and After Effects, with Premiere, Illustrator and InDesign right behind. I use

those apps to pay the bills, so I literally depend on them.

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

Inconsistency. Siri is a great example ... a wonderful feature, when it actually works. But most apps can't access her, and sometimes even ones that do don't always work. I hate it when I hold the phone up to my ear to dictate a message and the Siri “beep” doesn't happen ... and I look at my phone and the tip of my ear has triggered some other event. That's not supposed to happen. So I end up not using the feature at all, because I don't want to be frustrated. Which is a shame, because the second-most deplorable smartphone feature is typing. I have a long email address and I dread it whenever I have to type it out on my phone.

### Which do you most admire?

I admire how such sheer power has been made so accessible to everyone. We already take it for granted of course, but when you have a pocket device with massive computing power, and you've made it so simple to use that a baby can figure it out — or an octogenarian — you've really created something special. I think this was one of Steve Jobs' greatest contributions to the world. He evolved how humans interact with devices.



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

A solar-powered supercomputer that fits in my pocket but that can expand out to a full screen and keyboard, with infinite storage and unlimited high-speed bandwidth.

**What is your earliest gadget memory?**

My dad was a programmer going back to the late 1950s, so I grew up with punch cards, and green & white-striped printer paper, and 5MB removable hard drives that would barely fit into the trunk of his car. I remember when he discovered ASCII art, and would bring home printouts of Abraham Lincoln or George Washington, or even a Playboy Playmate. Ones and zeros never looked so sexy.

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

Well, the internet has changed the world forever, hasn't it? With a few exceptions, people anywhere in the world can have access to endless information, reach other

**“... My brain has rewired itself to depend on the internet — for communication, for information retrieval, for entertainment.”**

people, and improve their lives. It really is the great leveler, and is the most important technological step towards a true global society.

**Which do you most despise?**

The darker corners of the internet are an unfortunate by-product of unlimited access. The loss of privacy is obviously something we're continuing to adjust to, but the internet allows some people with truly warped thoughts or creepy intentions to find other like-minded individuals, who prop each other up and feed off each other in ways that were previously impossible. Conspiracy theorists are an obvious example that most of us are familiar with. But there are chat rooms where cannibal fetishists can hook up with people who actually want to be eaten. Who even imagined that could be a thing? But the internet makes it possible.

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

Limited battery life. Almost as soon as I buy something useful, if it has a removable battery, I get a backup, and if it doesn't, I get extra chargers so I don't get stuck without one. One reason I like Apple products is their focus on battery technology is pretty great.

**Which are you most intolerant of?**

Laptop hard drives. It's nuts that I



can't put anything bigger than ITB in a laptop, and this has been the case for several years. Moore's Law went on vacation, I guess. And I'm looking forward to the death of the platter drive. SSDs are awesome, but they are only now getting to a useful size and affordable price. I store a lot of crap in my laptop so the lack of storage is a big pet peeve of mine.

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

During the weeklong blackout following Superstorm Sandy, our iPhones and iPads were our only contact with the outside world.

**What device do you covet most?**

Within reach? I'd say a Canon EOS 5D Mark III. As you can see from my work, I really like low-light photography, and the sensitivity of Canon's new chips is just amazing.

Out of reach? A Phantom HD Gold camera. Shooting at ultra-high speeds is fun, but doing it in normal light, with true filmic depth of field would be great fun to experiment with. I played with an early generation Phantom about a decade ago, and while it was cool, you basically had to take pictures of the sun in order to get enough light into the thing. They seem to have fixed that, and I'd love to have another go at it.

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

I would make it magically transport itself into my hand when I realize at the restaurant that I have left it behind, plugged into a charger next to the dog's dish.


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

It means everything, really. I suppose some people will find that sad. I've been online since the early days of Prodigy and CompuServe, and I honestly think my brain has rewired itself to depend on the internet — for communication, for information retrieval, for entertainment. I create technology, and I create training, and I try to create art, but I use the internet to share those things with others.

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

When I'm asleep.

**When did you last disconnect?**

During the hurricane, I suppose. We were blacked out for a week, but for the first two days we had no cell service either, so we were very cut off. It took two days for the workers to clear enough fallen trees for us to drive far enough to find a signal, and let the outside world know we were all right. 



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

# SONY CYBER-SHOT DSC-RX100

**IT'S A TALE** of two cameras, and the RX100 is very much the consistent, quick-thinking, svelte, ever-impressive know-it-all. It's a 20.2-megapixel point-and-shoot with a one-inch sensor and a \$650 price tag, so you'd expect it to be fantastic. The experience, however, far exceeded even my most optimistic dreams. This is, hands down, the best compact camera on the market today. There



Sony  
Cyber-shot  
DSC-RX1



aren't enough positive adjectives to sufficiently describe Sony's masterpiece, but take me on my word: it's absolutely fantastic.

It's really hard to find things not to like about this

camera. The focusing system is mind-blowingly fast and accurate, the exposure is always spot-on, color balance is consistently correct and the image quality is superb. The build quality is outstanding, the 3-inch LCD is sharp and bright, the dedicated mode dial is convenient and the f/1.8-4.9 Carl Zeiss lens is quite versatile — it captures sharp snaps at night, or close-ups with creamy bokeh during the day.

This dream of a camera came along on my two-month tour of Asia toward the end of last year. It captured brilliant shots of temples in Kyoto, beaches in Bali, ruins in Cambodia, shops in Singapore and elephants in Thailand. It snapped crisp, albeit slightly noisy shots at night, and bright, vibrant frames under the intense, unyielding sun. The camera photographed more high-calorie meals than I care to remember without gaining an ounce. And, at the end of each day, I topped up the high-capacity battery through a simple USB connection.

Every week, I get an email from readers, friends and even colleagues asking which camera they should purchase. I don't even bother asking their budget — nobody expects to spend more than 400 bucks on a point-and-shoot, and \$650 is laughable. But I insist, regardless of how much money they've set aside, that they're gonna want to add a few more bills to the pile and pick up the RX100. I still use an NEX-5R for snapping hands-on videos, thanks to its powerful shotgun mic, but for nearly everything else, the RX100 is my go-to camera, and it should be yours, too.





# SONY CYBER-SHOT DSC-RX1

**NOW, IF YOU THOUGHT** \$650 was a ridiculous sum for a compact camera, you're really going to get a kick out of the RX1. It'll cost you — wait for it — two thousand, eight hundred dollars. That's right, \$2,800 — there's a comma in that price tag. Why in the world would any such machine run you nearly three large? The full-frame sensor's to blame.

Accommodating a 35mm sensor, the same chip that ships in Sony's a99 DSLR, in such a small housing meant going with a fixed 35mm lens. There's a maximum f/2 aperture,

which, when paired up with the giant sensor, results in some incredibly shallow depth of field.

Whereas I'd recommend the RX100 to photojournalists, pre-teens and everyone in between, the RX1 simply isn't going to cut it for the vast majority of digital shooters. So, if you have boatloads of cash to burn and you have your heart set on the best of the best, that's not reason enough

to spring for Sony's impressive engineering feat. If, however, you know exactly what you're after, this 24.7-megapixel stunner should keep your SD card, and your heart, full and warm.

Since a weekend of shooting in NYC in winter isn't much fun, regardless of the camera around your neck, the RX1 and I hitched a ride to Hawaii for a long weekend of sand, sushi and sunsets. The RX100 spent most of that time in the hands of my girlfriend, who, I must add, is also head over heels in love with that thing. Yet, despite the superior specifications of my own solid shooter, I was often quite jealous of the shots she was able to achieve, thanks in no small part to the RX100's optical zoom.

Framing with a fixed lens is incredibly challenging, and while I was up to the task, as a casual photographer, I can't say it enriched my experience enough to warrant unloading an extra two grand of hard-earned cash. Close-up shots required switching the lens to macro mode and getting incredibly close to my subject, rather than flipping the zoom toggle and maintaining a safe distance. A new



Sony  
Cyber-shot  
DSC-  
RX100





perspective at sunset meant walking hundreds of feet, often into the water, in order to avoid snagging lampposts and other unsightly elements. If you've ever shot with a prime lens, you know what to expect here.

On the other hand, the dedicated aperture ring and exposure compensation dial were incredibly useful, and, with the proper accessories, I could make very good use of the full-size hot shoe on top. Similarly, the full-frame sen-

sor enabled low-light captures that would have yielded a fair amount of noise if shot on the RX100, and much of the time, I did appreciate having such a shallow depth of field at my disposal. Still, my RX100 experience set the bar very, very high for the RX1, and as much as I may not want to admit it, I'm enthusiastically shipping this short-term loaner back off to Sony, feeling a tad bit defeated by the almighty full-frame compact.

— Zach Honig



The week that was in 140 characters or less

# Hacking Java, Spoofing Game Names and the Face of the Future

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ESC

REHASHED

@rands

I can't wait to buy real live ads at the Google retail stores.

@dkdsgn

That Java hack that compromised some Apple corporate computers? Same one that opened up Facebook's computers. Java, ladies and gentlemen.

@omarelakkad

They should have called it PlayStation 4 U, just to piss Nintendo off.

@reckless

Yahoo looks like a fake spam search page now. There, I said it.

@paleofuture

Google Glass is so futuristic it's like wearing a Segway on your face

THE STRIP

BY SHANNON WHEELER



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TIME  
MACHINES



WHAT IS THIS?   
TOUCH TO FIND OUT

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WWW.RADIOHACKCATALOGS.COM (AD)



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