

PC
MAGAZINE

PICK A COLOR



iPhone 5s:

Golden Apple

iPhone 5c:

The \$99 iPhone Arrives

iOS 7:

The Hottest New Features





COVER STORY **HEADLINE** **IPHONE 5S**

From new colors to new materials to a new operating system, Apple is trying to redefine the way you think about its popular iPhone.



REVIEWS

CONSUMER ELECTRONICS

iPhone 5s: Hands on

iPhone 5c: Hands on

**Bose QuietComfort
20/20i**

**Lego Mindstorms
EV3**

**Sony Cyber-shot
RX100 II**

**Samsung Galaxy
Mega (AT&T)**

HARDWARE

MSI GX70 3Be-007US

**Acer Aspire
AZ3-605-UR23**

Acer Aspire S7

SOFTWARE

Apple's iOS 7

Saints Row IV



FEATURES

THE BEST HDTV FOR YOU

Whatever your needs and whatever your budget, you can find an HDTV that will deliver exactly the features, pictures, and price you're looking for.

PRO TIPS FOR MADDEN NFL 25

Supercharge your game with these ten tips for making the most of the latest chapter in the groundbreaking NFL video-game series.



Samsung PN60F8500

Madden 25



WHAT'S NEW NOW



Gadget Lust: Moverio

HOW DO ASTRONAUTS EXERCISE IN SPACE?

NASA has devised some ingenious ways to stay fit in zero gravity.

WHAT WILL THE HYPERLOOP LOOK LIKE?

Elon Musk's latest invention could revolutionize transportation.

THE INS AND OUTS OF FILE RECOVERY

A behind-the-scenes look at how data is rescued from dead drives.

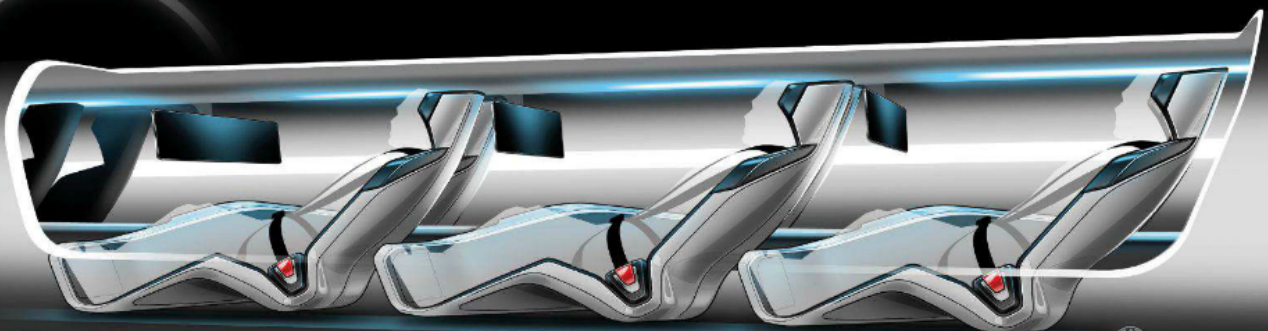
CHAT

Justine Bateman goes back to school.

TOP GEAR

GADGET LUST

The Hyperloop



PATRICK GRIMMEL 08/13

OPINIONS

DAN COSTA

First Word

SASCHA SEGAN

Microsoft Finally Commits
to a Path

SEBASTIAN ANTHONY

Give Steve Ballmer the
Credit He Deserves

SAMARA LYNN

There Are Plenty of
Women in Tech

“
We still treat
phones as if
they were
a random
peripheral.”

JOHN C. DVORAK

Last Word

DIGITAL LIFE



GET ORGANIZED

Hold more productive meetings.

GAMING

How to Mod Minecraft

APPSCOUT

Our Favorite Apps for October





Hold the Presses

As I write this at 3:34 p.m. on September 10, there are large portions of the October issue of *PC Magazine* that are completely unfinished. Ordinarily the entire issue would be done and laid out at this point. Managing Editor Matthew Murray would be reading articles for the seventh time looking for typos, mistakes, or other errata that may have crept into the issue. It should be clean-up time. Instead, a good chunk of the book is undone. We did this intentionally, because a little over five hours ago Apple unveiled the iPhone 5s, iPhone 5c, and a slew of iOS 7 improvements in its bid to dominate the smartphone market.

The very idea of “holding” an issue for a news event has come to seem quaint when it comes to technology coverage. Just a few hours ago, Lead Mobile Analyst Sascha Segan and I were live-blogging the announcement on Twitter. We transmitted nearly every sentence uttered on stage and posted images of almost every slide. As of this moment PCMag.com has a dozen related stories posted. But we didn’t want you, our most loyal readers, to be left out. So the whole team is working overtime.

In this issue, you will find out Sascha’s first impressions after using both the iPhone 5s and the 5c. Sure there are new colors, but there are also important feature upgrades that will be difficult for vendors such as Samsung and Motorola to match. We also explore the new offerings in iOS 7, which I think will have an even greater market impact than the new handsets.



There are also important feature upgrades that will be difficult for vendors such as Samsung and Motorola to match.



Not interested in iPhone coverage? Not to worry, this issue has plenty of useful and enlightening information for non-Apple users. Sebastian Anthony comes to the defense of the embattled and beaten-down Steve Ballmer, Samara Lynn explains where all the women in technology are, and Will Greenwald helps you pick out the best HDTV for you.

Finally, I want to thank our designer Jackie Smith for taking our decision to push the close in stride, and for making such a great product month in and month out. As I write this, I have no idea what the final cover will look like. But with Jackie designing it I'm not the least bit worried.

Jackie, we will be on time with copy next month. I promise. Although, last October Apple did make some iPad announcements...

dan_costa@pcmag.com

What's New Now

**HOW ASTRONAUTS
EXERCISE IN SPACE**

**WHAT WILL THE
HYPERLOOP LOOK LIKE?**

**THE INS AND OUTS
OF FILE RECOVERY**

TOP GEAR

GADGET LUST

CHAT: JUSTINE BATEMAN

How Do Astronauts Exercise in Space?

BY MEREDITH POPOLO 



Right now your muscles and bones are working against gravity. Even if you don't exercise as much as you should, you're still pushing against the force just to stay upright. But when you get to space, your body is relieved of the effort—and quickly starts turning into a noodle.

So how do astronauts stay fit in space? They can't simply lift some dumbbells. To minimize the physiological effects of microgravity, NASA has equipped the International Space Station (ISS) with some fancy fitness equipment. There's a space treadmill named COLBERT; CEVIS, a stationary bike; and ARED, a device that simulates weightlifting.

Even with the intensive fitness regime they must follow while working aboard the ISS, however, those who spend long durations in space return to Earth with muscular atrophy, cardiovascular deconditioning, and bone loss that can be difficult to reverse. In fact, after 180 days in space muscular strength can decrease by anywhere from 11 to 17 percent, muscular endurance by about 10 percent, and bone mineral density by 2 to 7 percent, according to NASA. (Conversely, Countermeasures System Instructor Robert Tweedy noted that recovery can be faster in space thanks to less lactic acid buildup.)

Astronauts' fitness could once only be measured before and after ISS missions, said Lori Ploutz-Snyder, lead exercise physiology scientist at NASA. But new ultrasound and panoramic imaging technologies make it possible for crew members to take their own in-flight muscle measurements, letting their terrestrial trainers better monitor their fitness and alter personalized workout plans.

Currently a study called Sprint is evaluating the effectiveness of alternating between days of high-intensity, low-volume exercising, and days of continuous aerobic exercise. Although individual data cannot be discussed, Sprint is proving to be more successful than anticipated in minimizing the loss of bone, muscle, and cardiovascular function, says Ploutz-Snyder.

The data could help develop

FAST FACT

To maintain basic health, astronauts work out for up to two and a half hours every day while on the International Space Station.

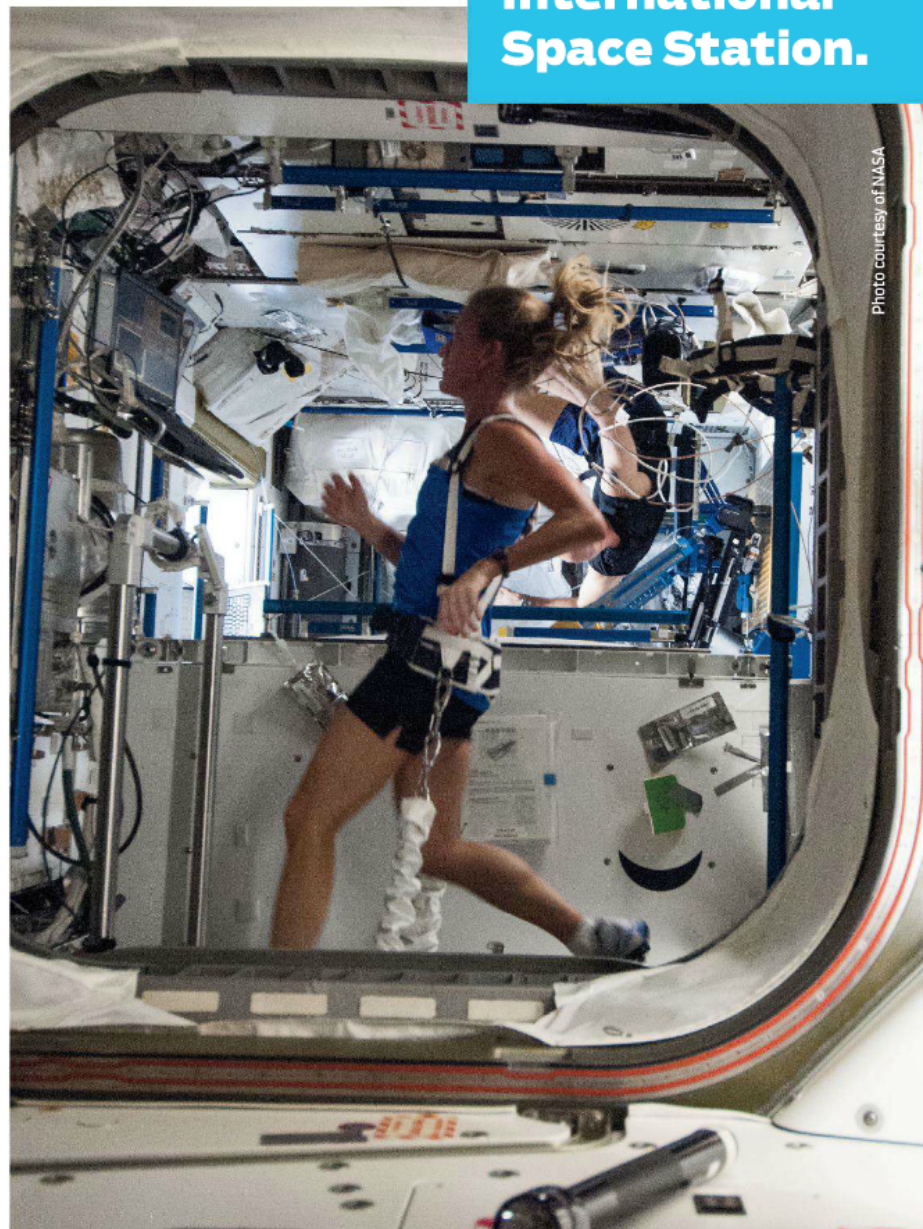
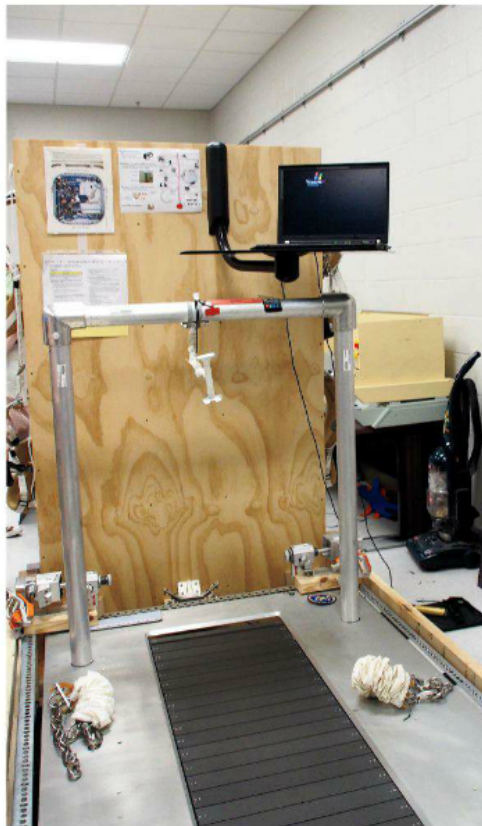


Photo courtesy of NASA

and optimize exercise countermeasures to prevent fitness deterioration when humans embark on longer-duration missions to the moon or Mars, the latter requiring at least six months in transit. It could also help earthbound humans improve exercise practices to advance muscle, bone, and cardiovascular health, particularly in bedridden patients and elders. *PC Magazine* flew to Johnson Space Center in Houston, Texas, and got a close-up look at the three pieces of equipment astronauts use to stay fit on board the ISS.

ARED

ARED (Advanced Resistive Exercise Device) was delivered to the ISS by Space Shuttle mission STS-126 in November 2008. Designed for weightlifting in a weightless environment, it consists of two evacuated, pistol-driven canisters with a flywheel mechanism. Astronauts can configure the machine to perform exercises like dead lifts, squats, biceps curls, and calf raises. An astronaut meets resistance as he or she pulls the rods, similar to pulling back a syringe. The angle of the piston determines the length of the rod and thus the weight of the load, up to 600 pounds. The constant load more closely resembles free weights than the curved load of NASA's older band resistance weightlifting machines did. There are, however, "no spotters in space," Tweedy added.



A HOME GYM, NASA STYLE

Three different solutions for exercising in space. Counterclockwise from top left: CEVIS, a seatless version of a stationary bike; COLBERT, a zero-gravity treadmill; and ARED, a system of free weights that works in a weightless environment.



TREADMILL 2 (T2)/COLBERT

In 2009 when NASA launched a contest to name Node 3, an ISS module, political satirist Stephen Colbert lobbied viewers of his Colbert Report show to nominate the name Colbert—which won. NASA overruled the poll, however, and chose Tranquility. As a consolation NASA named the treadmill COLBERT (Combined Operational Load Bearing External Resistance Treadmill), and a picture of its namesake is mounted in front of the ISS treadmill. It sits on a vibration isolation system designed to let astronauts run without vibrating delicate microgravity science experiments in adjacent labs. The treadmill is tightly incorporated into astronauts' workout regimens but in order to use it, they must be harnessed in place.

In April 2007, Expedition 14 flight engineer Sunita “Suni” Williams was issued bib number 14,000 by the Boston Athletic Association and ran the Boston Marathon in orbit, 210 miles above her fellow runners. Williams finished in 4:23:10 and circled the Earth twice while running as fast as 8 mph and flying more than 5 miles per second.

BAD VIBRATIONS

The COLBERT was designed with a special support structure that stops it from shaking the rest of the International Space Station when it's being used.



CEVIS

CEVIS (Cycle Ergometer with Vibration Isolations and Stabilization System) is the closest thing you'll get to a stationary bike in space. CEVIS doesn't have a seat because astronauts can't sit in zero gravity. (The bike in the image has a seat for training on Earth.) Instead, astronauts snap their shoes to the pedals and tether themselves to the bike with a seatbelt in order to cycle upright and obtain the aerobic and cardiovascular benefits. They can adjust the workload and change speeds to hit their target heart rates. Astronaut Doug Wheelock explained that it can take weeks to get used to cycling in a microgravity environment. CEVIS also sits on a vibration isolation system to reduce the vibrations on the structure of the ISS.



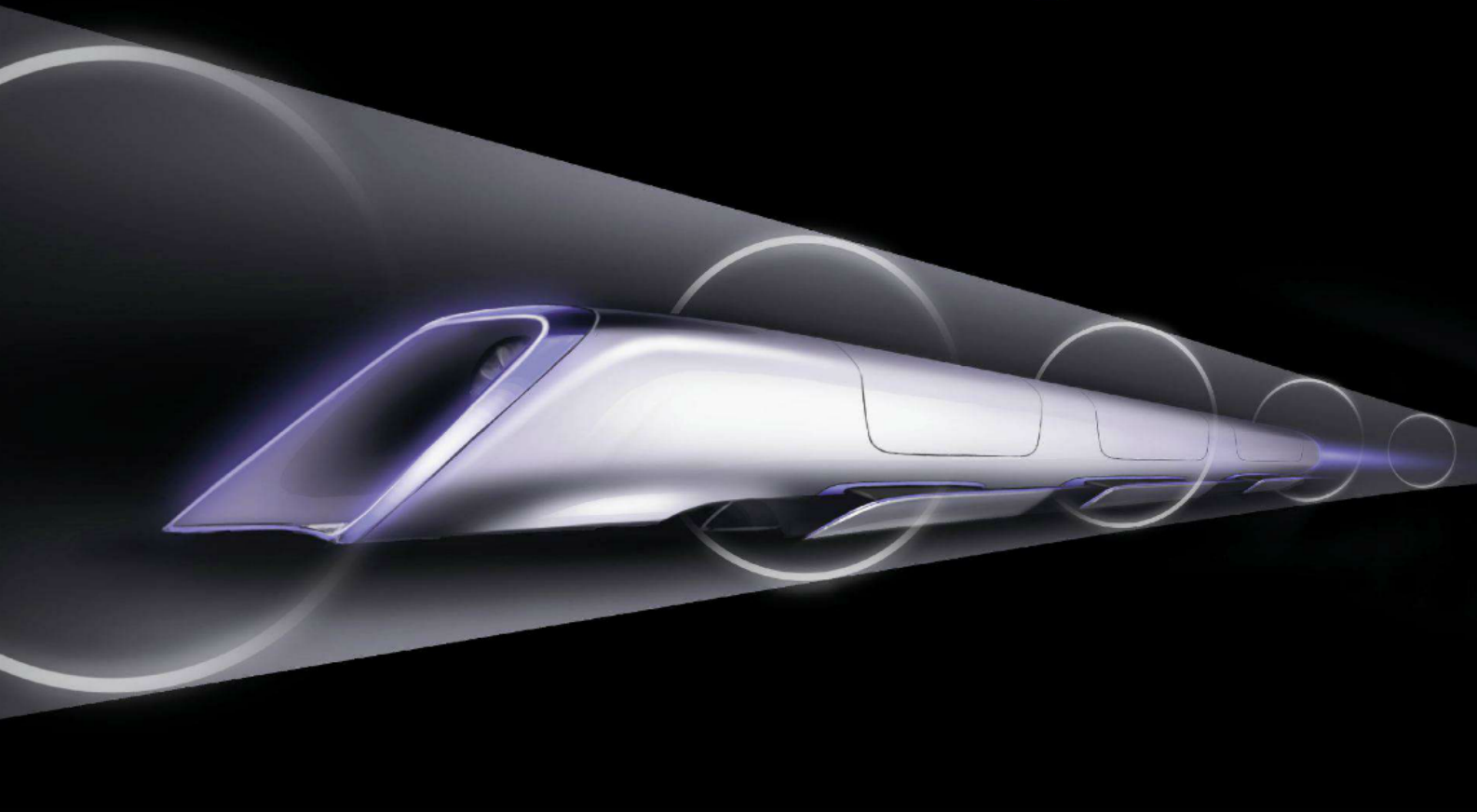
SPACE CYCLE

CEVIS, a modified recumbent bicycle, is used weekly by ISS crew members to provide necessary aerobic and cardiovascular conditioning.

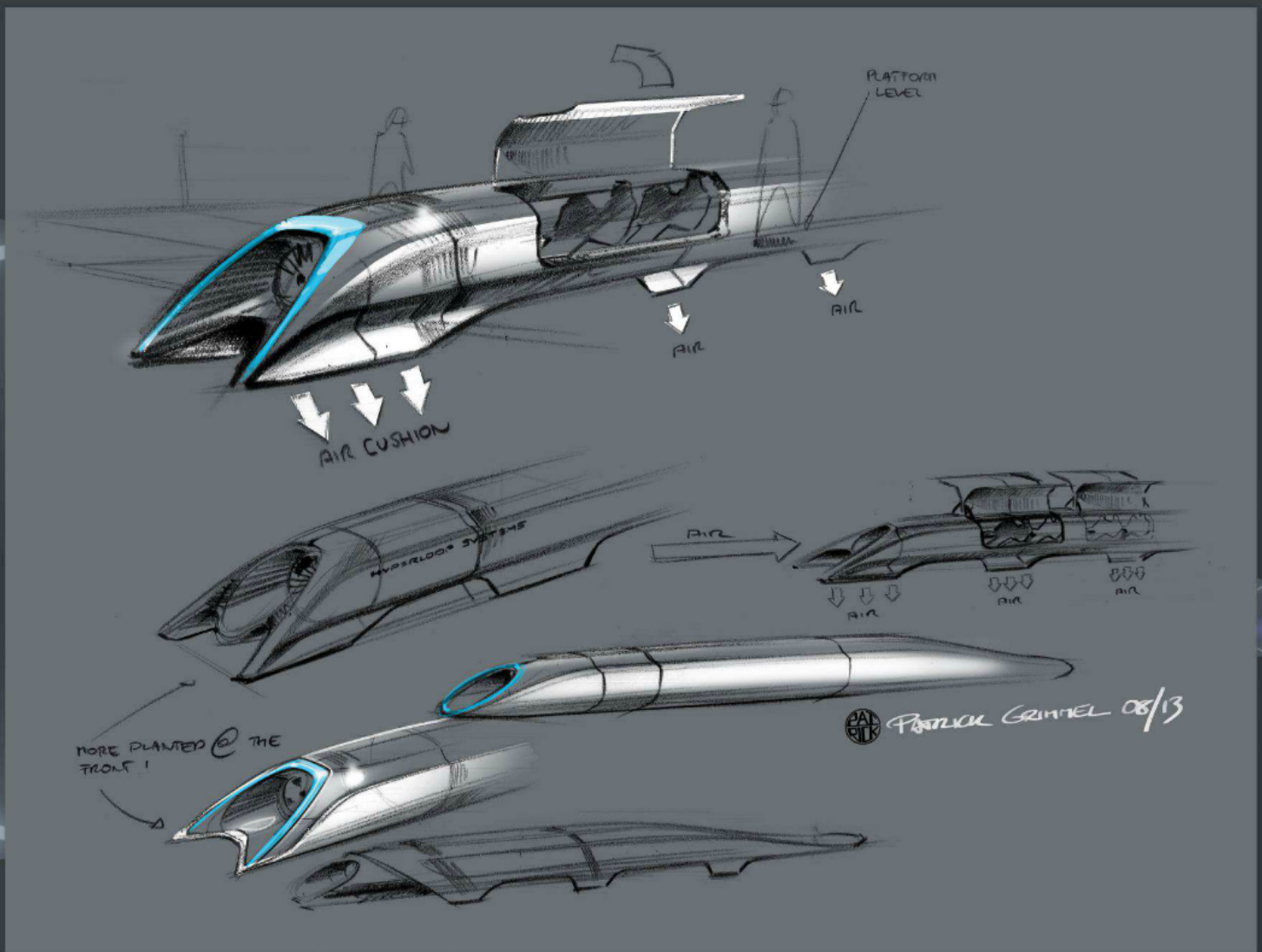
Photos courtesy of NASA

What Will the Hyperloop Look Like?

BY CHLOE ALBANESIU 

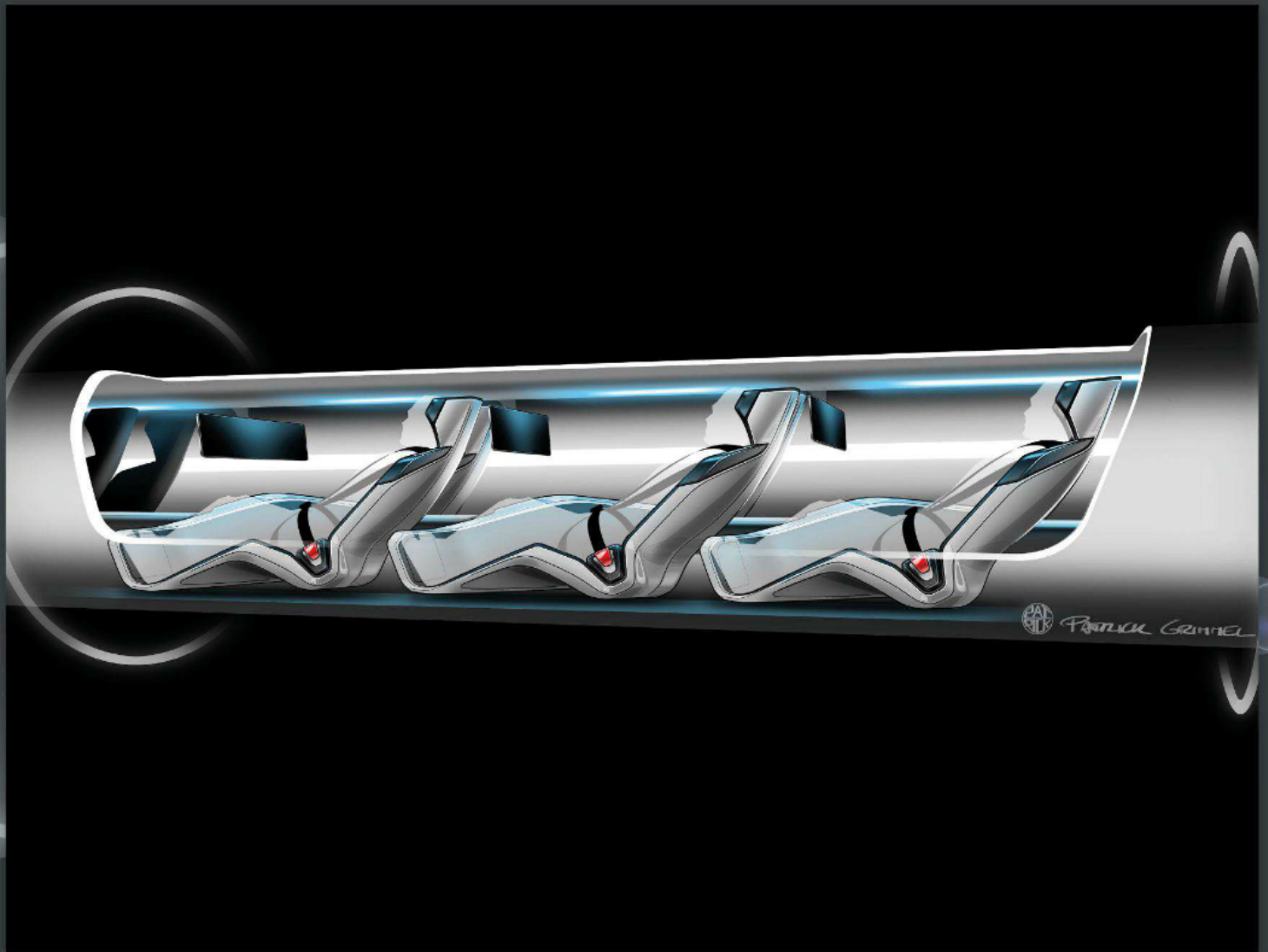


Entrepreneur Elon Musk (SpaceX, Tesla Motors, PayPal) recently unveiled his plans for a \$6 billion, super-fast “Hyperloop,” which would ideally be able to transport travelers between Los Angeles and San Francisco in 30 minutes. Musk envisions the solar-powered Hyperloop as housing “an electric compressor fan on the nose of the pod that actively transfers high pressure air from the front to the rear of the vessel. This is like having a pump in the head of the syringe actively relieving pressure.” That would in turn “create a low-friction suspension system” for high speeds. (Musk describes this “air bearings” system as based on the same principles as an air hockey table.) What might the Hyperloop look like when it’s completed in about ten years? Here’s a glimpse at what the future of travel may have in store.



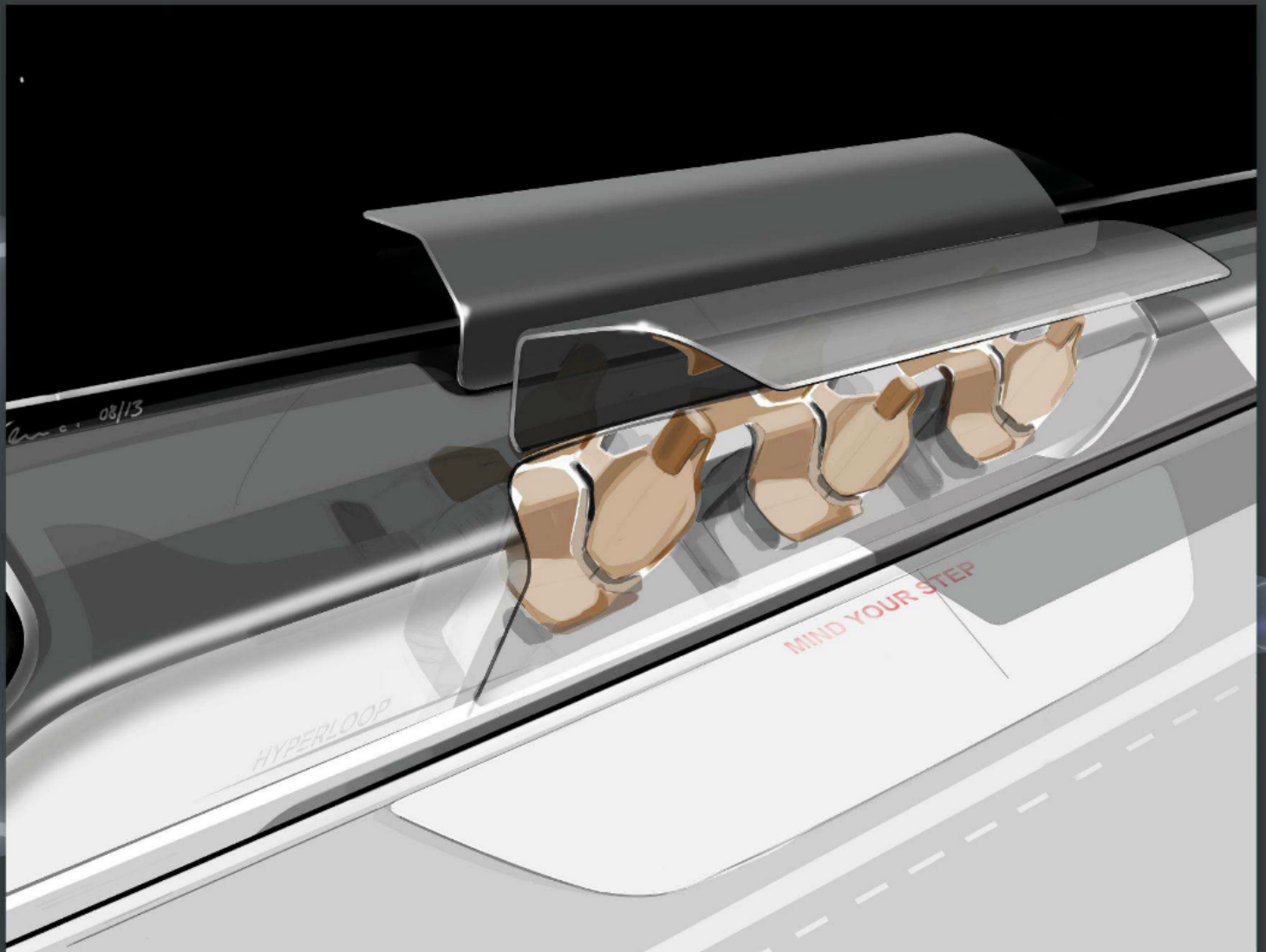
Hyperloop Capsule Concept Design

“Wheels don’t work very well, at high speeds,” Musk said, “but a cushion of air does.” With the Hyperloop, the pod would create an air cushion rather than the tube, “as it is important to make the tube as low cost and simple as possible.” In describing the design, Musk also said, “In order to optimize the capsule speed and performance, the frontal area has been minimized for size while maintaining passenger comfort.”



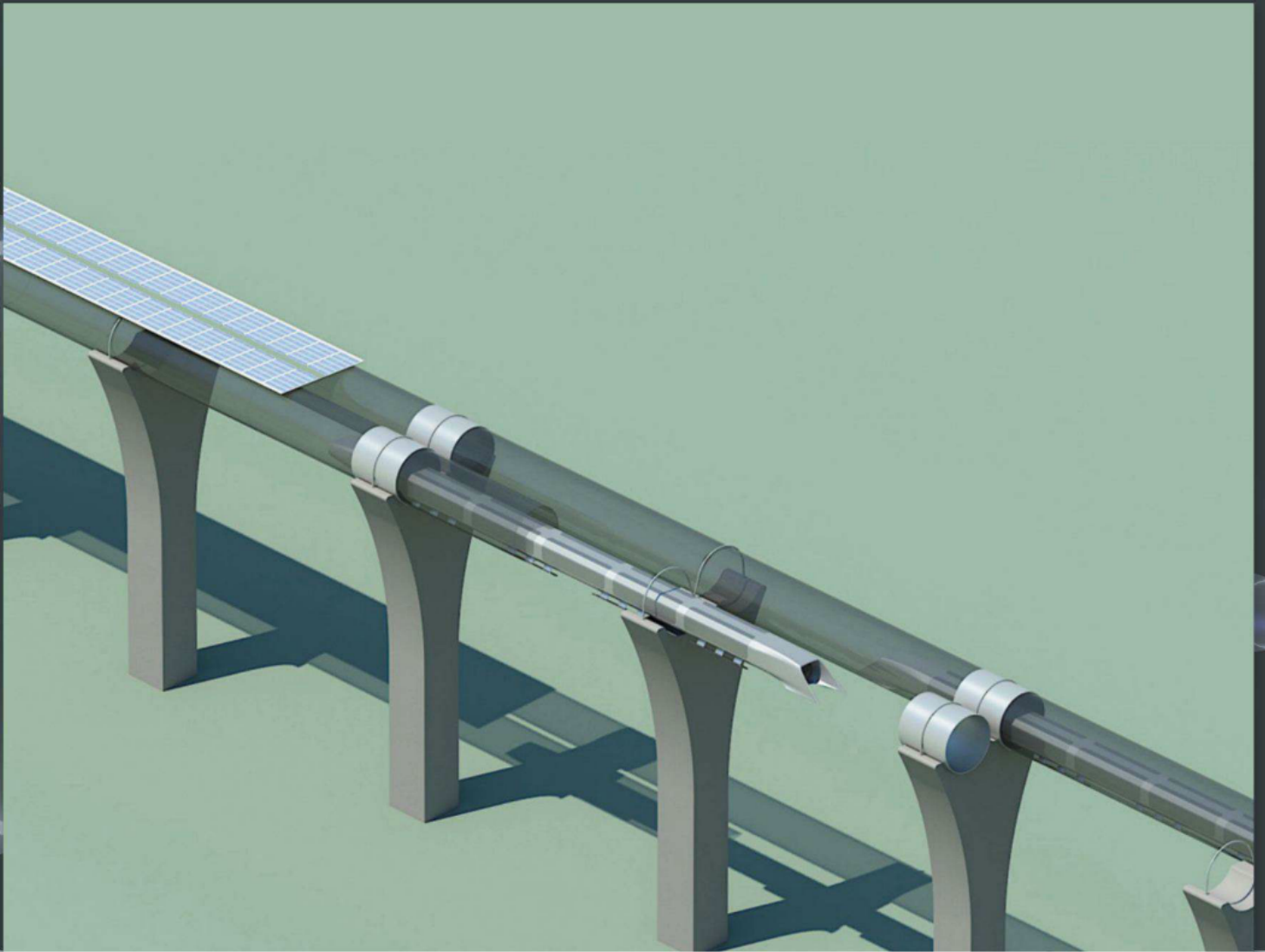
Hyperloop Capsule Interior

“The interior of the capsule is specifically designed with passenger safety and comfort in mind,” Musk said. “The seats conform well to the body to maintain comfort during the high-speed accelerations experienced during travel. Beautiful landscape will be displayed in the cabin and each passenger will have access their own personal entertainment system.”



Hyperloop Capsule at Station

The interior of the Hyperloop passenger capsule would weigh about 5,500 pounds with the seats, restraint systems, interior and door panels, luggage compartments, and entertainment displays. “The overall cost of the interior components is targeted to be no more than \$255,000,” Musk said.



Tubes and Pylons

According to Musk, a tube approach is better than a traditional railway because it can be built on above-ground pylons that can simply be “dropped in place and joined with an orbital seam welder.” Also, with pylons, “the tube is not rigidly fixed at any point,” which would be helpful in an earthquake. Each pylon would have two adjustable lateral (XY) dampers and one vertical (Z) damper. “As land slowly settles to a new position over time, the damper neutral position can be adjusted accordingly,” Musk said.



Los Angeles to San Francisco

According to Musk, the Hyperloop would be ideal for cities that are less than 900 miles apart. On the West Coast, the Hyperloop could follow California's Interstate 5 between Los Angeles and San Francisco, "with only minor deviations when the highway makes a sharp turn," Musk said. In that case, he said disruption to surrounding land would be minimal, likening it to the addition of a telephone poll or tree, "which farmers deal with all the time."

Photos courtesy of Tesla Motors

The Ins and Outs of File Recovery

Ever wonder how files can be rescued from dead hard drives? We went behind the scenes with Flashback Data to find out. BY MATTHEW MURRAY [✉](#)



If you've been lucky enough to never have a hard drive (or USB key or SSD) fail on you, congratulations—but don't expect that to be true forever. Storage problems can happen to anyone at any time, and for a variety of reasons ranging from old age to accidents—and unless you've backed up your data religiously, what seems like five seconds of annoyance could really be catastrophic loss. Sure, you've heard of data restoration services that can rescue your valuable files from dead drives, but what's involved in using one, and how well do they work?

BEHIND THE SCENES

Left: A Flashback Data computer scans a hard drive.
Below: Russell Chozick, Flashback's cofounder. [ine ni](#)

To find out, we spoke to Russell Chozick, who cofounded (with Michael O'Connell) the Houston-based data recovery and forensics service Flashback Data in 2004. Chozick explained how Flashback diagnoses and repairs drives, assists law enforcement in solving cases, and why he once received a hard drive covered in blood.

HOW DOES DATA RECOVERY WORK?

Before Flashback techs can do anything else, Chozick told us, they first need to figure out what went wrong. Once a drive arrives, it's checked in, run through an inventory system to ensure its owner's anonymity, and then taken to the lab. The tech first verifies the drive is working electronically, and if it is, diagnostics are run on the firmware or servo area. (Flashback's high-end computers, which run with their cases open and cables hanging out for quick swapping, can test drives at what Chozick calls "many non-user-accessible levels.") The drive is then scanned for bad sectors. If everything checks out, it's checked logically for problems with the structure of the data.

"Some of the technicians can almost smell a drive and know what's wrong with it," Chozick said. Diagnostics usually take about a day; once the tech has determined the problem and the cost for recovery, the customer must approve the process before it can continue.

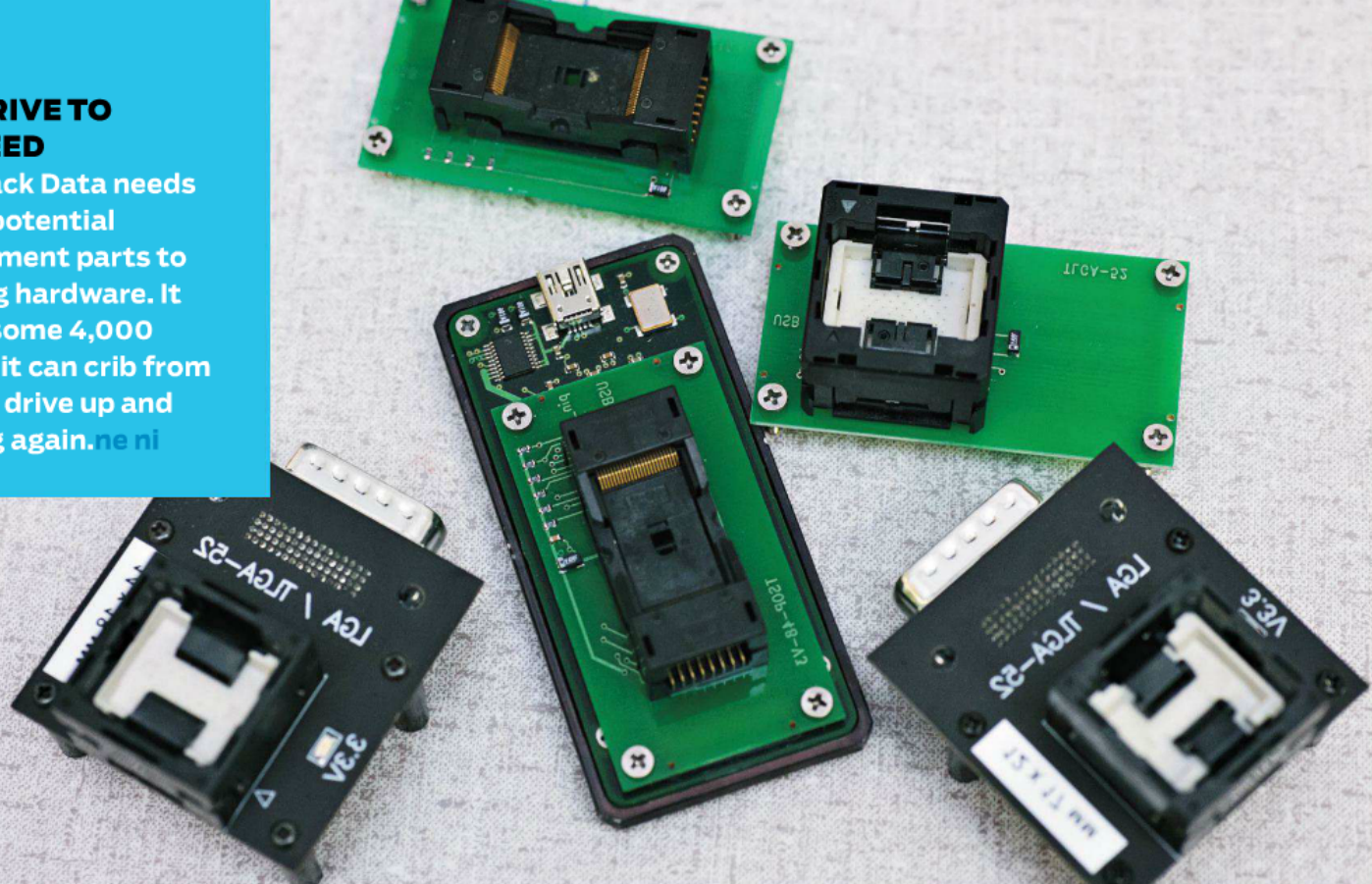
Once that approval is given the drive is imaged ("so we're not working off the one that's kind of flaky at this point") using specialized software that can send ATA commands directly to the drive, move forwards or backwards between sectors, and spend longer on any trouble areas. Then reconstruction begins.

"If it's a hard drive," Chozick said, "any hardware or electronic or mechanical parts need to be repaired or replaced before we go to the next step." Where does



THE DRIVE TO SUCCEED

Flashback Data needs lots of potential replacement parts to fix ailing hardware. It stores some 4,000 models it can crib from to get a drive up and working again.[ne ni](#)



the replacement hardware come from, especially for older or unusual hardware? Chozick estimates that Flashback has 3,000-4,000 drives and a “big rack of circuit boards” in its storage room from which to draw replacements, though sometimes buying or otherwise sourcing parts is required.

Recovering data usually requires three or four days for average-size drives (1TB or less), but can take longer for larger or more complex storage. Once recovery is completed, the customer gets a complete file listing and must give final approval. Once that’s received, the files are extracted and returned to the customer on new, working media (either a hard drive or a flash drive).

Chozick says that Flashback techs use an internal wiki to track and record their research, so they can solve problems more easily in the future.

HOW IS THE PROCESS DIFFERENT FOR FLASH MEMORY?

Because SSDs and USB keys have no moving parts, they require electronic repair. The tech removes the memory chip from the drive, and reads it directly into the computer. But because this data is independent from the flash controller chip, which addresses wear leveling, algorithms, and other issues, Chozick says the data can be “all jumbled up.” The technician takes that raw data and, using known data structures, reconstructs it in the correct order. (Techs use the same general process with RAID setups that link multiple drives together: “It’s kind of like putting a puzzle back together,” says Chozick.)

One special problem with flash drives is encryption. Hard drives can be restored with a good image and the encryption key (“If we don’t have the AES key, we’ll obviously be able to crack the data in a few hundred years when we get the password”), but with flash drives that encrypt data at the controller level, there are no data structures to use.

WHAT’S THE LAB LIKE?

Chozick says that Flashback’s lab occupies about 2,500 square feet of the company’s 5,000-square-foot office, and that security is a top concern. Everyone is required to enter the lab with a fingerprint scan, and not everyone who works there is able to access every area—and you can’t even open the lab door if the door to the rest of the building is open. The entire lab is monitored with video cameras around the clock.



WHAT ARE THE MOST COMMON WAYS DRIVES ARE DAMAGED?

Most of the problems on drives sent to Flashback are caused by people trying to back up their files to an external drive, and then losing their data during the transfer (such as when animals or children yank out a cable). In terms of physical problems, Chozick says drops that damage the read-write heads are common, and power surges or just plain old age are frequent as well. (“With any hard drive,” Chozick said, “the failure rate is eventually 100 percent.”) For SSDs, firmware bugs and controller failures often cause data loss. And for thumb drives, the USB connections most regularly get snapped off.

WHAT ARE SOME OF THE STRANGER PROBLEMS?

“We actually got a package not that long ago where someone actually sent us just the platters of the hard drive—they took the drive apart,” Chozick said. “No one in the world is pretty much going to be able to recover that.” Another particular oddity: a drive that arrived at Flashback covered with blood—someone apparently tried to open it with a screwdriver, and stabbed themselves in the process.



THE BEST WAYS TO PROTECT YOUR DATA

Want to keep your data secure so you never have to worry about recovering it? Here are our recommended methods.

WHAT'S INVOLVED IN DATA FORENSICS?

When law enforcement officials and attorneys need to get evidence from electronic devices such as computers or phones, they turn to companies like Flashback. Though there is some crossover in technique (all drives are imaged, for example) with the regular data recovery side, data forensics frequently requires a different time frame—the slow process of litigation means drives can be needed years after they arrive at Flashback—and a different set of human skills.

“We’re looking at Registry hives,” Chozick explains. “Is there evidence of plugging in USB drives? What were they viewing on each type of browser? What documents were opened, and on what dates?” Most of the forensics investigators have experience in military intelligence or law enforcement, so they know exactly what they’re looking for and why it’s important.

There are some additional wrinkles, as well. “Working on the original evidence is almost the same thing as walking into a crime scene,” Chozick says, so a lot of tracking and work with legal types is required—Flashback even hires attorneys specifically for the purpose of dealing with other attorneys. Still, Flashback has had a lot of success working on everything from family law cases to fraud and murder investigations, and even kidnappings.

External Hard Drive

Seagate Backup Plus

\$139.99

This 1TB drive offers a killer combination of speed, ease of use, and versatility, and lets you share your data on social networks.

Local Backup Software

Acronis Backup & Recovery

\$89.00

This amazingly thorough backup application stores and recovers drives, partitions, folders, and files, and can back up to any imaginable location.

Online Backup Software

SOS Online Backup

\$9.99 per month (100GB)

With an intuitive interface, speedy operation, and extensive search and sharing features, this may be the very best way to protect your precious personal data.

What We Love Most This Month

BY MEREDITH POPOLO 

GARMIN HEADS-UP DISPLAY

Reduce driver distractions and keep your eyes on the road with this heads-up display that pairs with your Bluetooth-enabled smartphone. Apply the small film and the Garmin HUD will project directions and data such as the speed limit and your current speed onto your windshield. Keep in mind that you'll need Garmin's accompanying Navion (available for Android, iOS, and Windows Phone) or StreetPilot (iOS) app to get moving.

\$129.99 buy.garmin.com



What We Love Most This Month

BY MEREDITH POPOLO 

CANON VIXIA MINI T

Lights, camera, action! This 5.6-ounce personal camcorder features a Canon f/2.8 fisheye lens to capture ultra-wide scenes and a close-up mode to record detail in 1,920-by-1,440 resolution. You can easily switch between the two by touching the 2.7-inch capacitive-tilt touch LCD display. After you've nailed your shots, built-in Wi-Fi helps you easily share them to your favorite sites, such as YouTube and Facebook. You can even live stream on your Android or iOS device and control the camera remotely.

\$299 canon.com



What We Love Most This Month

BY MEREDITH POPOLO 

BRANDO USB CHILLER AND WARMER

When you're working at your computer into the wee hours of the morning, you rely on coffee to get you through. And on those frustrating Friday afternoons, a beer helps you persevere. But if that java or brew turns lukewarm, you're on your own. Lucky for you, this genius USB gadget combines both chilling and warming technologies to keep any beverage palatable. After 10 minutes the warmer heats it by 29 degrees or the cooler chills it by 13 degrees.

\$24 usb.brando.com



What We Love Most This Month

BY MEREDITH POPOLO 

SPHERO 2.0

Who needs a dog when you've got this little robotic ball? Drive Sphero using your iOS or Android device and play with more than 25 compatible apps, including The Rolling Dead, an augmented-reality zombie game, and Sphero Chromo, a multiplayer memory tabletop game. Version 2.0 is faster (it rolls at speeds of up to 7 feet per second), brighter, and smarter than the original, making nighttime and team play more interactive. The Sphero also comes with ramps and a textured cover.

\$129.99 gosphero.com



Moving Image

BY CHANDRA STEELE ✉

EPSON MOVERIO BT-100

You don't need to invest in a larger monitor or HDTV to enjoy big-screen content. These glasses will bring the movie theater right into your living room—or anywhere else.

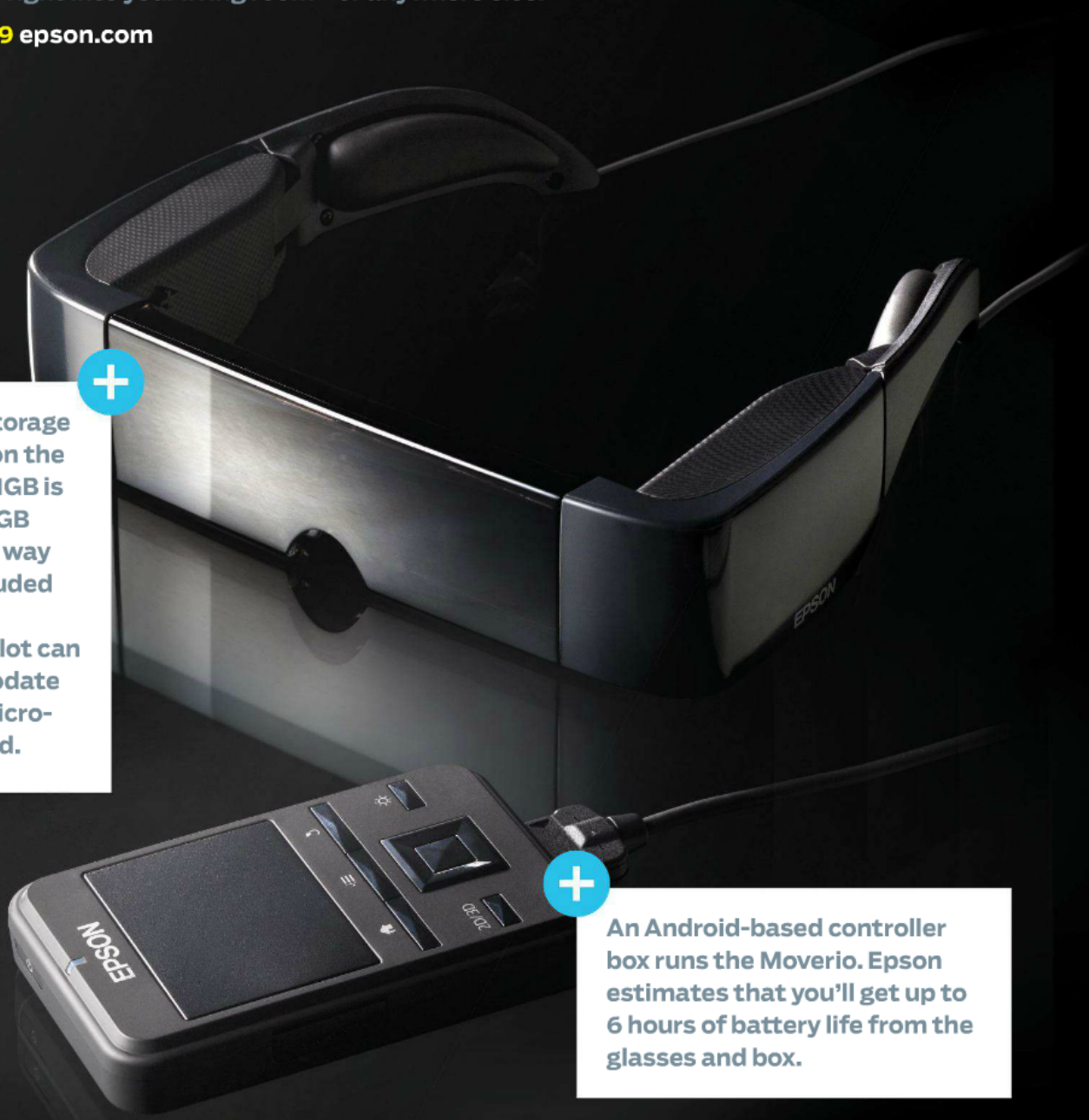
\$699.99 epson.com



There's storage to spare on the Moverio: 1GB is built in, 4GB comes by way of an included card, and another slot can accommodate a 32GB micro-SDHC card.



An Android-based controller box runs the Moverio. Epson estimates that you'll get up to 6 hours of battery life from the glasses and box.



Moving Image

BY CHANDRA STEELE ✉

EPSON MOVERIO BT-100

You don't need to invest in a larger monitor or HDTV to enjoy big-screen content. These glasses will bring the movie theater right into your living room—or anywhere else.

\$699.99 epson.com



The Moverio projects an image that appears to be 80 inches in size, and can screen in 3D. Dolby Mobile surround sound comes through included earbuds, and Wi-Fi is supported for browsing online content.

Justine Bateman Goes Back to School

The *Family Ties* star wants to reinvigorate Tinseltown with what she's learning about tech in college.

BY CHANDRA STEELE ✉



Family Ties



Being an intern is a hard slog, usually borne by those young enough to cheerfully endure low (or nonexistent) pay for entry-level, tedious work. So when you've been successfully working for nearly 30 years and just begun interning, you could be forgiven if you have slightly less enthusiasm when you're suddenly starting over at the bottom.

But a true joy of discovery is what Justine Bateman—you probably know her best as Mallory Keaton from the 1980s sitcom *Family Ties*, but more recently she's appeared on *Modern Family*, *Desperate Housewives*, *Californication*, and many others—brought to her summer internship at Symantec. At 46 Bateman became a college student for the first time, enrolling at UCLA last fall in pursuit of a computer science degree. Bateman had been running her digital media production company FM78.tv, which eventually grew into a consulting company called Section 5, when she decided to get a deeper understanding of the technology behind the entertainment business. She's been blogging about her college life (at getacollegelife.tumblr.com) ever since.

"[B]ottom line is I just want to know as much as I [can] about computers, about the network, the systems, the language—all of it," she explained in an interview with *PC Magazine*. Bateman's course load for her first



THE OLD COLLEGE TRY

Justine Bateman captures scenes from student life at UCLA in photos and writing on her blog, *College Life*, pictured below.

COLLEGE LIFE

I'M JUSTINE BATEMAN. I'M 47. I'M A COLLEGE SOPHOMORE AT UCLA.

[INSIDER INFORMATION](#) [SMARTY-PANTS WOMEN](#) [GREAT LINKS](#) [CHEAT SHEETS](#)



So this weekend, I went to [Defcon](#), the "Hacker Convention", with some of the other interns at Symantec.

I was definitely not over this bad cold of mine, so I had no business being there, but I didn't want to miss it.

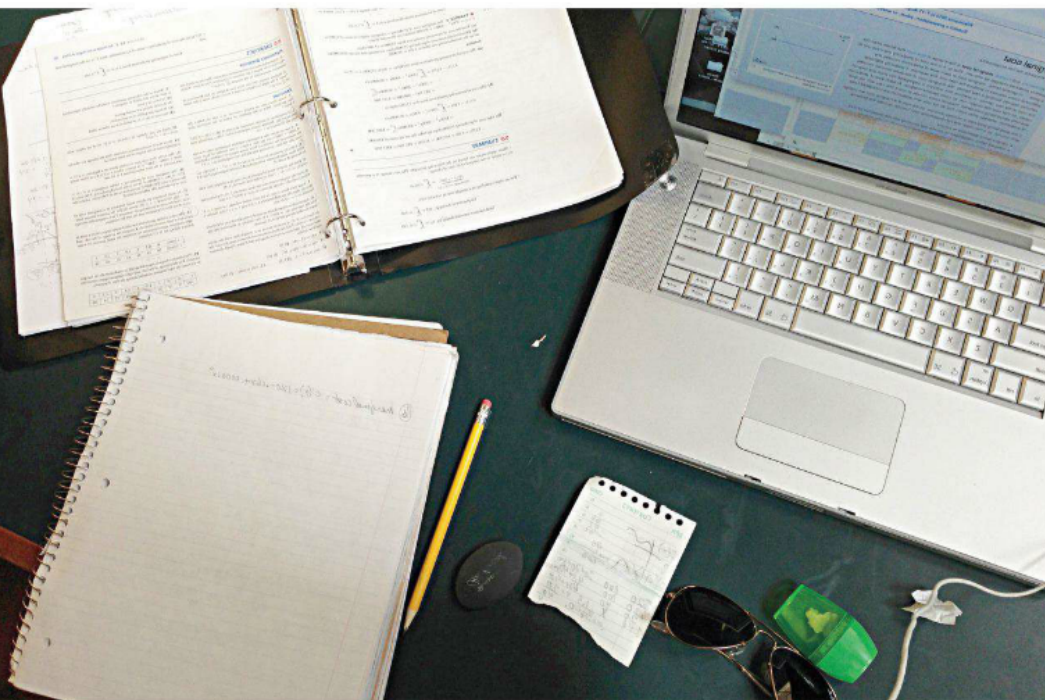
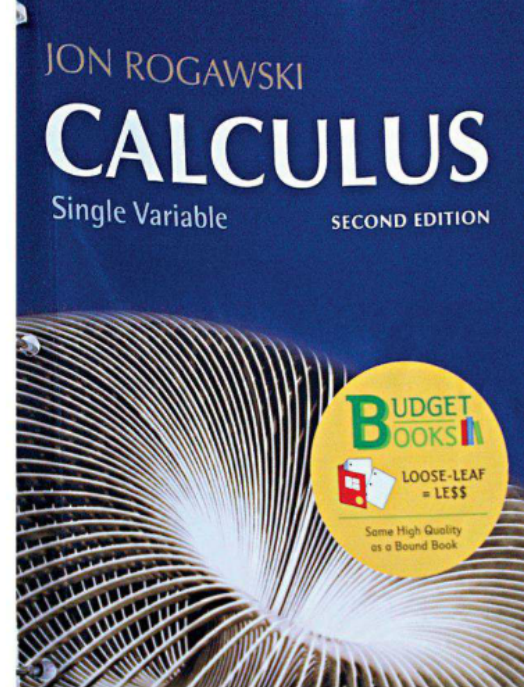
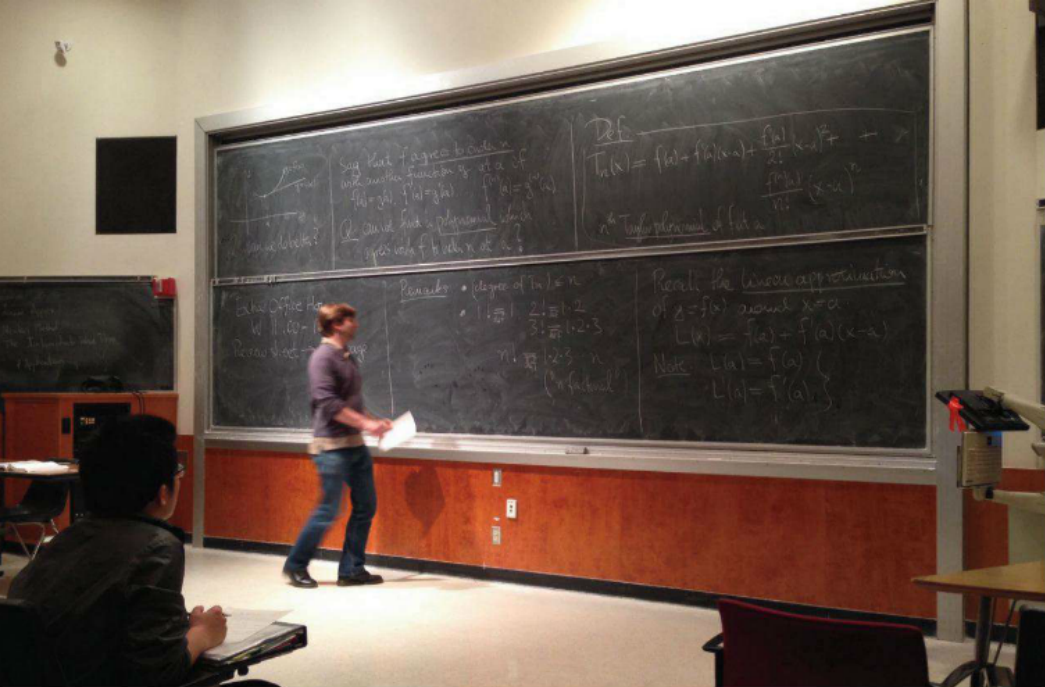
My favorite panel was the ACLU talk about the



Another SPW! Jeanine Guldry is a 46-year old PhD student.

I live in Richmond VA, was born and raised in the Netherlands (so English is still my second language), and am starting my doctoral program in Media, Art, and Text at Virginia Commonwealth University in two weeks (it's August 3, 2013 as I write this). Just writing that I am starting my PhD still sounds.... unreal.





Working at It
 Top left and top right: Bateman's freshman calculus class, and a book she was assigned for it. Left: Note-taking equipment, old and new, that Bateman uses to get through her courses.

year included Introduction to Computer Science I and II, Engineering and Society, and a math class called Integration and Infinite Series.

One of the toughest parts about going back to school for Bateman was not so much the transition from an entertainment environment to an academic one per se, but increasing the shortened attention span she'd become accustomed to in her life after schooling. "I think as we get older, as we get more mature and more experienced, we do realize it's like, blah, blah, blah, oh there's the information I need, and then blah, blah, blah, right?" she said. "So we do this triage, I feel like, of what people say to us." That life skill can be a handicap in the classroom. "[T]hat was an adjustment, too, because I couldn't sit in a lecture hall and listen to the professor and decide which piece of information was really

relevant.... All of it potentially was going to be on the test. So I had to start listening differently.”

Bateman has also learned to think differently, something she'd like to help the rest of Hollywood do. She feels that technology in entertainment is limited to 3D and has stagnated; Netflix, Amazon Instant Prime, and Hulu Plus all share the same business model. “It seems to me so much technology could be applied to entertainment,” she argues. “Augmented reality, and even just the iPad—touch-screen technology, it was, you know

it still is, extremely underused by entertainment.” The lack of imagination in applying technology that already exists to the medium is a missed opportunity, she believes. “It would be the equivalent of the birth of television for all these radio-show producers to say, ‘Wow this is great, let’s put our radio shows on TV,’ and [then] put the audio on with no visual.”

Immersive environments are essentially what consumers want from entertainment in all forms, Bateman says, but they're not getting the technological equivalent of the most absorbing of them all: Disneyland. “The place is packed every single day,” she said. “Why? Why are there people that are just committed to Disneyland? They want to live there; they want to be there.”

As for what she'll do with her degrees, that's still to be decided, but it will probably involve delving deeper into her dual background. So what can Bateman do now that she couldn't two years ago? She didn't have trouble coming up with an answer: “If I need to put a team together of software and hardware engineers, I could.”



It seems to me so much technology could be applied to entertainment.



Opinions

SASCHA SEGAN

SEBASTIAN ANTHONY

SAMARA LYNN

**Microsoft
should have
bought
Nokia on
day one.**

SASCHA SEGAN

MICROSOFT FINALLY COMMITS
TO A PATH

Microsoft Finally Commits to a Path

The slowest major merger in tech history has taken more than two years. Back when Nokia replaced a bunch of its top management with ex-Microsoft executives and committed to use Windows Phone in 2011, writer Matt Drance quipped, “Microsoft Buys Nokia for \$0B.” Now Microsoft has finally bought Nokia’s device business, albeit for a few dollars more.

Microsoft should have bought Nokia on day one rather than bleeding out two years with a muddy, confusing launch plan for Windows Phone. The day it installed Stephen Elop at the head of Nokia, Microsoft made itself neither an end-to-end platform provider nor a licensor, and really, you have to pick one or the other.

TWO WAYS THAT WORK, AND A THIRD WAY THAT DOESN'T

There are two successful OS business models. End-to-end platform providers control their hardware and software. That worked well for BlackBerry and Apple. The danger in this business model is that your one company needs to be on top of industry trends, because there’s no spreading of risk. That’s part of what ultimately sank BlackBerry.

You can also flog your OS out to hardware licensees, which has been Google’s plan and which Mozilla seems to be doing as well. That way, you lose some control over your hardware



Sascha Segan is the lead mobile analyst for *PC Magazine*. His commentary has also appeared on Fox News, CNBC, CNN, and various radio stations and newspapers around the world.

experience but get the benefit of widely distributed risk and a broad, competitive ecosystem of partners constantly pushing each other forward.

Microsoft used the licensing model with Windows Mobile, and it worked; for a few years, Windows Mobile was a very popular smartphone platform. But after the company seemed disappointed by the first round of Windows Phone 7 phones, it pivoted to integrate more and more closely with Nokia.

That produced a hybrid business model that pleased nobody. Microsoft and Nokia couldn't really integrate, because Microsoft had to pretend to its other licensees that it wasn't treating Nokia as a special friend. But the clearly close relationship between Nokia and Microsoft alienated Samsung, LG, and HTC, to the point where LG abandoned the platform entirely and the other two OEMs' Windows Phone efforts have become rather desultory (to wit: the HTC 8XT is no HTC One).

There have been a few other examples of the hybrid business model. Palm tried it for a while and then split into two companies, one for hardware and one for software. A few other phone makers licensed Nokia's S60 software, but the devices sold were always a tiny percentage of overall S60 sales. I'm not going to even start on Windows RT, because Windows RT is an example of how not to do everything.

It's clear that in mobile, at least, you have to go one way or the other: either not compete with your OEM partners, or not have any OEM partners. Windows Phone chief Terry Meyerson's public optimism aside, I'm pretty sure this is the end of HTC and Samsung Windows Phones, if not immediately, then within 12 months.



**It's clear that
in mobile, at
least, you have
to go one way
or the other.**



It will be very interesting to see how Google manages its ownership of Motorola in light of this history. I'd bet that Motorola will release relatively few products and keep lots of markets open for third parties. The existence of the Moto X is already raising speculation about Samsung turning to its own Tizen OS in the future.

SUCCESS NOT GUARANTEED

Microsoft has a clearer path to success now, but it's far from guaranteed. The company's success with Windows Phone relies even more on Steve Ballmer's "One Microsoft" initiative than on the Nokia buy.

Years ago, in reaction to a Justice Department antitrust probe, Microsoft began to wall off its various divisions so that they rarely spoke and often appeared to compete with each other. Microsoft's biggest problem in mobile has been its inability to leverage the company's huge ecosystem in full support of Windows Phone. Xbox, Office, and Skype integration have all come slowly, unenthusiastically, and rather piecemeal. Money, time, and people were wasted turning mobile company Danger into the unsuccessful Kin phone, running on an entirely different OS than Windows Phone.

In the new mobile world, Microsoft is fighting Google and Apple, well-integrated companies that bring all of their resources to bear with every product. Figuring out how to do that—how to make every Windows Phone the sum total of everything great Microsoft has to offer—is the real path to success.

sascha_segan@pcmag.com



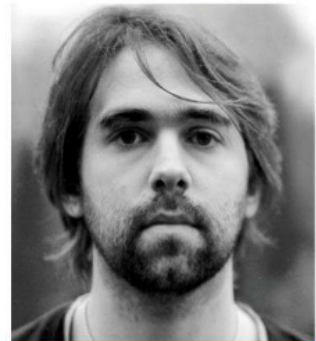
In the new mobile world, Microsoft is fighting Google and Apple, well-integrated companies that bring all of their resources to bear with every product.



Give Steve Ballmer the Credit He Deserves

After 13 long, hard years as the CEO of Microsoft, Steve Ballmer has announced that he will step down as soon as a replacement is found. During Ballmer's tenure, Microsoft's market capitalization plummeted from a heady \$600 billion—realized by Bill Gates' massively successful reign—down to just \$270 billion the day before Ballmer announced his imminent resignation. More important than the stock value, however, and perhaps the main cause of the devaluation, is Microsoft's slow swan dive into consumer computing obscurity. This is the main reason that Ballmer is being ousted by Bill Gates and other members of the Microsoft board: With the landscape of the consumer computing market rapidly shifting away from the desktop PC, Microsoft's helmsmanship simply hasn't been quick enough to keep up.

This is evident in every single one of Microsoft's major, recently released, consumer-oriented products. Windows 8, Windows Phone 8, the Surface tablets, the Xbox One—each of them, through some unfortunate combination of poor timing and/or execution, has been widely panned. Windows Phone 8 was on the mark, and widely praised by reviewers, but it was two years too late (and still lacks some killer apps). Windows 8, too, would have been good if it had arrived soon after iOS and wasn't bogged down by its vestigial Desktop wing—but alas, as it



Sebastian Anthony is the senior editor of ExtremeTech.com, where he regularly writes stories about computing, space, and emerging technologies.

stands, Microsoft has somehow managed to produce an OS that's awful for both tablet and desktop/laptop users. The Surface RT, as you may already know, sold like the opposite of hot cakes (cold stones?), resulting in a \$900 million write-down for Microsoft last quarter due to millions of unsold tablets. And the Xbox One, despite not even being released yet, has received so much hate from gamers and tech pundits alike that Microsoft has reneged on almost every feature that set it apart from the PlayStation 4. It seems that Microsoft got the timing and execution wrong when it came to always-on Internet connectivity, non-tradable game discs, and a Kinect that watches you even when the console is turned off.

BALLMER'S ACCOMPLISHMENTS

Despite all this, Ballmer still deserves a lot more credit than he is usually awarded by the press and Wall Street. As is customary of the tech press, almost all of the negative reporting of Ballmer and Microsoft has been as a result of a very narrow focus on specific, highly visible parts of the company—such as Windows 8, Windows Phone 8, Surface, and the Xbox One. What if I told you that, under Ballmer's reign, Microsoft had more than tripled its yearly revenue (from \$23 billion to \$78 billion), and more than doubled its annual profits (\$9.4 billion to \$21.9 billion)? Likewise, Ballmer has done very well in comparison to other CEOs and tech companies in similar sectors.

It's important to remember that the dot-com bubble peaked just two months after Ballmer took over in 2000. Almost every tech company was massively overvalued in 2000, and almost every tech company's stock took a swan dive when the



Almost all of the negative reporting of Ballmer and Microsoft has been as a result of a very narrow focus on specific, highly visible parts of the company.



bubble popped. Ever since the market stabilized a year or so later, almost all of Microsoft's contemporaries have had virtually flat or negative growth. Since 2001, in fact, Microsoft's stock value is up 40 percent; Intel, Dell, and HP are all down 20 to 30 percent.

WHERE MICROSOFT WENT RIGHT (AND WRONG)

For the most part, Microsoft's successes in the last decade have been in the much less visible but still very lucrative enterprise market. Where the Windows division has been mostly static, the Business and Server and Tools divisions have enjoyed huge growth over the last 13 years. The Entertainment and Devices division, thanks to the massive success of the Xbox 360, is now generating billions of dollars of revenue per year. Azure, which didn't exist at the turn of the century, is now one of the biggest players in cloud computing. Exchange Server is now in a near-monopoly position. You could probably even correlate Ballmer's success in the business and enterprise arenas with the downfall of HP and Sun, and the withdrawal of IBM from everything except the biggest iron mainframes.

There have been some missteps, but by most metrics Microsoft's growth under Steve Ballmer has actually been quite good—just not as good as during the Gates era, and certainly not as good (or as exciting) as Apple and Google. Really, that's what this all comes down to: Objectively, Microsoft has done well with Ballmer on the throne; subjectively, as we watch Microsoft pathetically stumble over itself as it tries to keep up with Apple and Google, it feels as though Ballmer simply hasn't got a clue. Irrespective of whether Microsoft's profits are growing healthily,



By most metrics Microsoft's growth under Steve Ballmer has actually been quite good.



it's impossible for the press and Wall Street to ignore the long litany of highly visible screw-ups.

Ultimately, if Microsoft wants to compete against Apple and Google, then Ballmer must be replaced by a CEO with better *vision*—a CEO who can blaze trails with new and exciting products, rather than following in its competitors' footsteps. If Microsoft had released Windows Phone 8 in 2007 (the year the iPhone was released) and Surface RT in 2010 (iPad), rather than the Zune and Kin, then we'd be living in a very different world indeed—one where Ballmer is still reigning and revered, rather than retired and reviled.

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**Ballmer must
be replaced by
a CEO with
better *vision*.**



There Are Plenty of Women in Tech

I recently read yet another article about the lack of women in tech. It was written by a male tech journalist, and contained the predictable, clichéd reasons: they don't find tech interesting, they don't want to work alongside people they don't feel comfortable with (intrepretation: male geeks), there's a lack of female role models, blah, blah, blah.

I read these articles and always think, "What about the number of women I know or follow online with hard technical skills?" There seems to be an awful lot of them out there.

The reason most people don't know there are many women who sleep, eat, and breathe tech is because these aren't the women most acknowledged in and by the tech industry—especially the men.

The bottom line is that most women recognized in the tech industry are: actresses or spokesmodels who know how to use an iPhone or may play a round or two of Halo; tech company CEOs or executives who command salaries and power enough to attract male notice (positions that typically do not require tech skills—with apologies to Marissa Mayer); or the perky, young, girl next door whom the average nerd may have a shot with, and who finds tech journalism more lucrative than reporting on politics or social issues or writing a sex column. Actual techie women aren't getting as much public love as their



PC Magazine lead networking analyst Samara Lynn has served as IT director at a major New York healthcare facility and as a technology editor for the CRN Test Center.

often middle-aged, balding, sometimes pudgy male counterparts. Yes, even in the tech media.

Proof? Well, two of my favorite technical women are Laura Chappell and Deb Shinder. Chappell, a Wireshark evangelist, is one of the most definitive authorities on networking packet analysis. By evangelist, I don't mean a cheerleader. She is the co-founder of Wireshark University. You want to know why your network is bottlenecking? Laura can put a network tap on that thing and give you back a spot-on analysis so fast your head would spin.

Deb Shinder is my go-to source when I need hard answers to Windows Server and security questions. She's authored more than 20 books on technology and can expound on any topic from Active Directory to Remote Access.

Yet seemingly every time I come across one of those "Top Women in Tech" lists that appear every so often online, it's usually filled with bloggers, celebrities, or PR and marketing executives with ambiguous titles such as Director of Citizen Participation. Where are the programmers, system administrators, storage gurus, and networking engineers?

They *are* out there. At least among the women I follow. One such woman is another of my go-to experts on all things related to SANs (Storage Area Networks); another is a Microsoft Exchange administrator who has excellent email server chops. There's also a female developer I follow on Twitter with cold coding skills, a fierce pink mohawk, and a wicked sense of humor.

These are just the women I follow online. In my previous life as an IT professional I had on my staff and as friends women ranging from .NET programmers to healthcare systems analysts. Surely, we weren't such a unique bunch?



**Where are the
programmers,
storage gurus,
and networking
engineers?
They are out
there. At least
among the
women I
follow.**



Yet there are few times I've seen any of the aforementioned women and other women with traditional tech skills on any of the "Top Most [pick which ever superlative] Women in Tech" lists. They just don't seem to attract the same social media following frenzy and male approval of women who I consider to be more steeped in the soft-skilled side of technology: marketing, PR, and social media. Nor do they have the legions of followers of women entertainers who game, Instagram, Vine, or wield an iPhone, or of men with whom they share equal techie knowledge. When women delve into areas of technology outside the soft skills and get into more hard, hands-on areas, some men may find that more threatening to their own worth and skill set. Thus, these women don't get as much buzz online.

So yes, there are women in tech. And there are many—though still not enough who can help build a cloud or virtualized network infrastructure. Or at least those who have other hands-on technical abilities but are often placed in the shadows by the same men who lament that "there aren't enough women in tech," while giving techie accolades to some entertainer who looks cute in a "I Can Kick Your Ass in Halo" T-shirt.

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Yes, there are women in tech. And there are many—though still not enough who can help build a cloud or virtualized network infrastructure.



Reviews

CONSUMER ELECTRONICS

[Preview: Apple iPhone 5s](#)

[Preview: Apple iPhone 5c](#)

[Bose QuietComfort 20/20i](#)

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HARDWARE

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[Acer Aspire AZ3-605-UR23](#)

[Acer Aspire S7-391-6411](#)

SOFTWARE

[The Most Exciting Features in Apple iOS 7](#)

[Saints Row IV](#)



Semiprecious Metal: The New High-End iPhone

The gold iPhone 5s is the most luxurious mainstream phone on the market, make no mistake. It's practically a Vertu, at a very sub-Vertu price; for a mere \$199 with contract, you can have a phone that represents truly conspicuous consumption.

To some extent, the 5s is the easier of Apple's two new phones to get right. After all, Apple isn't doing badly at all with high-end phone buyers and folks in countries such as the U.S. where subsidies hide the true cost of smartphones. Apple just needs to defend a little and

PREVIEW: **Apple iPhone 5s**

\$199 (with contract);
\$649 and up without
contract

Not yet rated

extend a little, emphasizing how cheap Samsung's highest-end devices can feel. Even the expensive Samsung phones feel cheap, Apple says here. The 5s doesn't feel cheap.

What it feels like, of course, is an iPhone 5, kicked up a relatively small notch with the classy silver, gold, and gray metal backs. The biggest immediately visible difference is that new "Touch ID" fingerprint sensor, which is one of the two biggest advances on the 5s when it comes to opening up new possibilities. The sensor makes it easier to unlock your phone, sure, but it also makes it much easier to buy things from the iTunes store (no thinking while you enter your password), and it opens up a lot of possibilities for secure enterprise applications. Apple so far won't allow the fingerprint data to be uploaded or shared with third parties, though, which limits those possibilities—for now.

Because it's Apple, the sensor is ridiculously easy to use: You unlock your phone by pressing down on the home button and letting your finger rest there. It's much, much less fidgety than the swipe-type fingerprint sensors I've used on laptops, for instance. It just works.

The second possible game-changer is the M7 coprocessor, which collects sensor data without waking the power-hungry A7 chip. Apple has led so far in fitness apps, and this could really help with always-on fitness tracking. The demo units didn't have any apps that use the M7, though, or for that matter apps that even used the A7 heavily.

Here's where I get to a concern about the iPhone 5s: The 4-inch screen is now officially holding it back. Yeah, sure, the new chip allows for amazingly cinematic graphics, but those visions are going to look cramped on that little screen. I expect the A7's 64-bit nature and graphics performance to play a much bigger

“
**The
iPhone 5s
doesn't
feel
cheap.**
”



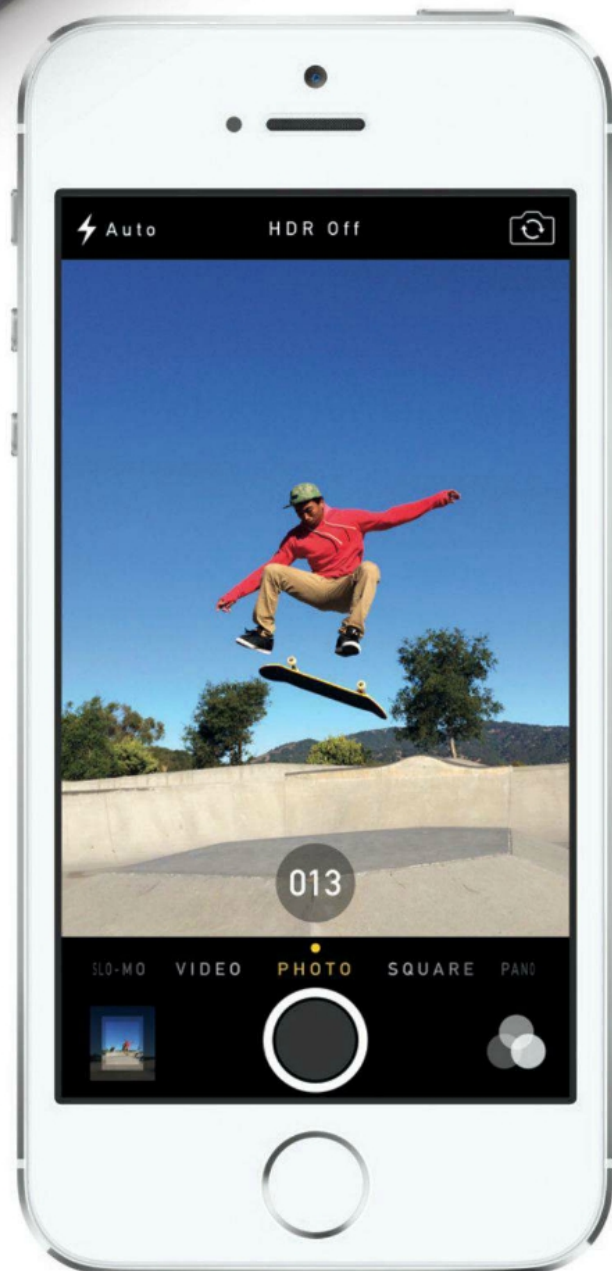


role in the new iPads we're almost certain to see next month—those are, after all, Apple's low-end laptops.

Back to the third spotlighted feature: the new camera, and new camera tricks. The only ones I could really try in the Cupertino demo hall were the slow-motion camera, which was more usable than any other slow-mo camera mode I've ever seen because of the live editing; and burst mode, which was also absolutely terrific. The iPhone has been renowned as a camera for a while, and this new iPhone covers a good middle ground between the HTC One's very large pixels and the Samsung Galaxy S4's higher pixel count. It'll take excellent photos.

Should you buy an iPhone 5s? Though there are a lot good things about it, I don't see a compelling reason for iPhone 5 users to jump. It's time for heavy 4S users to upgrade, because after three or four months they'll start seeing high-end games that won't run well on their phones. Otherwise, the 5s is a flashy-looking phone that takes outstanding photos. That doesn't shift the balance of power in a grand way, but it'll let the 5s gain some ground on similarly priced, but more plasticky Android devices.

SASCHA SEGAN ✉



CAMERA? READY

The new camera on the iPhone 5s blends larger pixels with a selection of new features to help you take terrific photos in a number of exciting new ways.



New Plastic iPhone Is Cute, Colorful, Too Expensive

The iPhone 5c is a missed opportunity. It's not the low-cost iPhone we were expecting; in fact, it's not "low-cost" at all. Its \$99 on-contract price presages a \$549 off-contract price, which is still really expensive for people in unsubsidized markets.

That said, it's cute. It's basically an iPhone 5 in a brightly colored, glossy plastic case. The five colors are cheery, aggressive, and very young; there isn't a subdued earth tone in the bunch. Of course, it's well

PREVIEW: **Apple iPhone 5c**

\$99 (with contract);
\$549 without
contract

Not yet rated

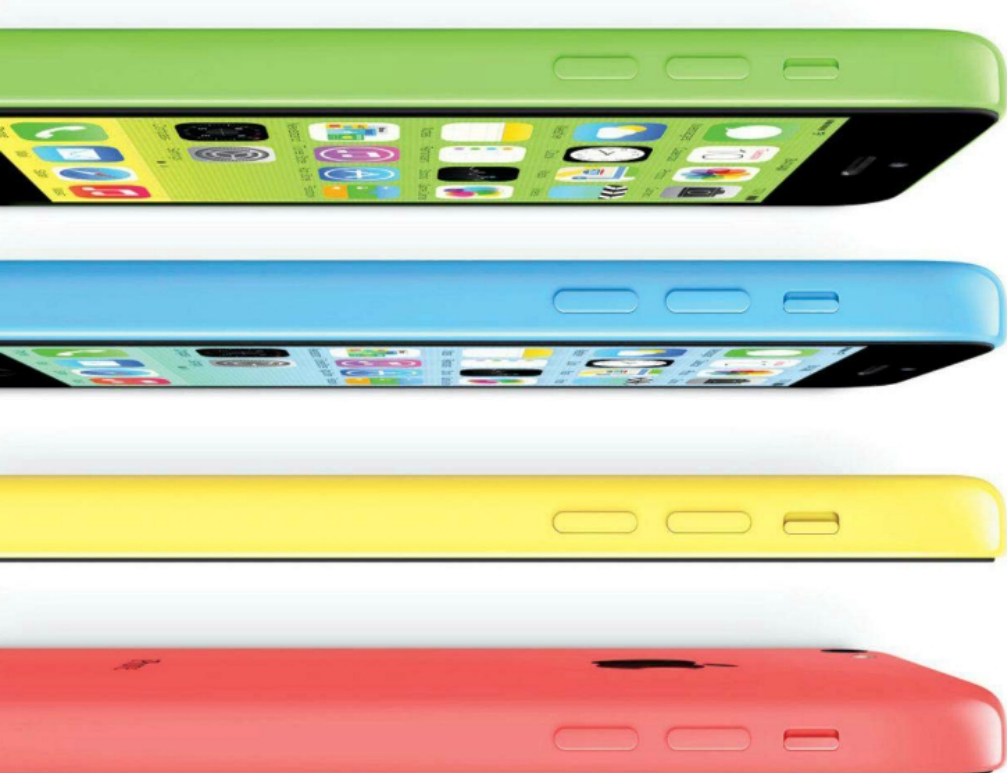
built, very smooth and with no apparent seams. The 5c is as shiny as bubblegum lip gloss and looks like a candy, a pill, or a pair of vinyl boots worn by a club kid. (Yes, my idea of nightclubs is locked in 1997. Sue me.)

The colors go well with thoughtfully color-matched wallpapers. Otherwise: iPhone 5! Same screen, and as far as I could tell, pretty much the same performance. When I asked the Apple demo guy how the 5c was different from the 5 I was holding, he called out the new front-facing camera, but that's a pretty subtle upgrade; ditto for the new battery, which has been improved by an unspecified but presumably small amount. (If it was a lot better, they'd tell us.)

That leaves the 5c as the worst nightmare of the Apple-haters: an expensive, mostly non-upgrade whose major selling point is that it looks like a Sour Patch Kid. It's going to sell really well in the U.S. on the back of Apple's cultural cachet, terrific games, and ability to market attractively designed products.

**The 5c is
as shiny as
bubblegum
lip gloss.**





RIPE FOR THE PICKING

The iPhone 5c comes in four bright candy colors, plus white (not shown). Or devise your own color combos with a new case (below).

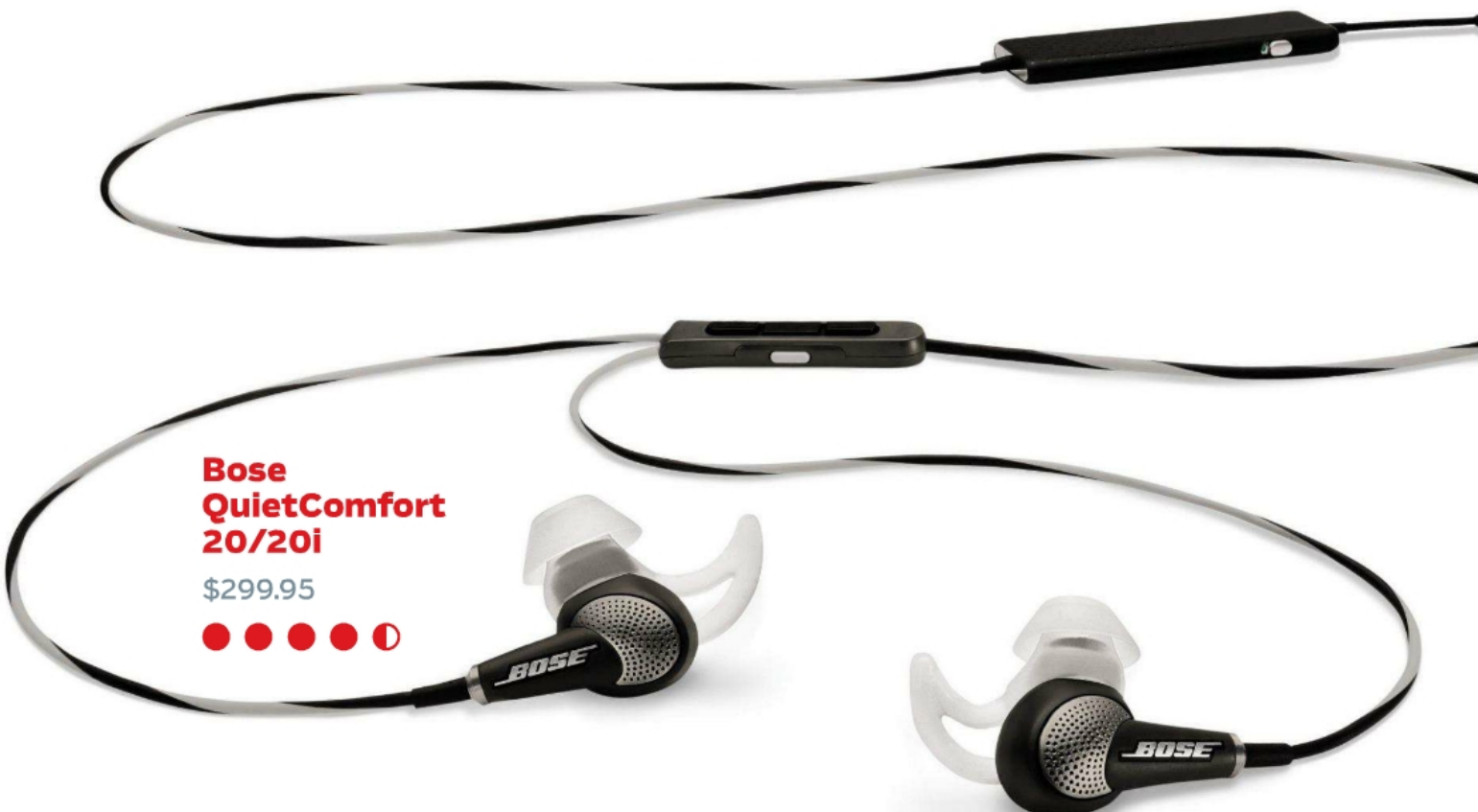
But I feel like I must be missing something huge, because the iPhone 5c was supposed to be Apple's big China play. This was supposed to be Apple's phone to fend off the Xiaomis and Meizus of the world, which are very quickly raising their game. Instead, it's the same price that the iPhone 5 would be at this stage of the game (although presumably with a bigger profit margin, just because it's cheaper to make things out of polycarbonate than out of glass and metal).

Handling the pink iPhone 5c, I was very much of two minds, thinking of some teenagers I know. As a techie and a market analyst, there just isn't much to say here. It's an iPhone 5, made a little cheaper but not sold for less. It doesn't add anything new to the market. It doesn't fulfill any new niches, it doesn't push into any new spaces. It doesn't do a single unexpected thing.

Except it's pink. I wouldn't underestimate how many North American kids would save up for that. But without a huge surprise in Beijing, I can't really picture the 5c opening up new markets for Apple—\$549 just won't do it.

SASCHA SEGAN ✉



A pair of Bose QuietComfort 20/20i noise-cancelling earphones. The earbuds are black with white ear hooks and a silver mesh grille. They are connected by a black cable that features two inline controls: a larger one with three buttons and a smaller one with two buttons. The Bose logo is visible on the side of each earbud.

**Bose
QuietComfort
20/20i**

\$299.95



Noise-Cancelling Earphones You Have to Hear to Believe



Noise-cancelling in-canal earphones have been far less popular and common than the full-size, on- and over-ear varieties, such as Bose's QuietComfort 15. With the QuietComfort 20 (for Android, BlackBerry, and Windows phones) and 20i (for iOS devices), Bose aims to change this. Bose hasn't eliminated the in-line battery and circuitry

compartment that is essential to an in-ear noise cancelling pair, but it is now quite thin and far less cumbersome. The real victory here, however, is the noise cancellation itself—it's by the far the most advanced and flexible we've ever experienced. The audio performance isn't for audiophiles seeking flat response, but the QC 20 packs a full, rich low-end and crisp highs that work well with pop, rock, and most other genres.

DESIGN

Bose earphones are rarely visually flashy affairs, and the muted, dark and light gray tones of the QuietComfort 20 family continue this tradition. The silicone eartips seal off the canal comfortably and securely, and have an extra fin-like piece that presses lightly against the ear for added stability.

Along the cable, there's an inline remote control and microphone—Bose makes both a one-button version for Android, Windows, and Blackberry, and an iPhone-compatible three-button model, as mentioned above. The compartment also houses a talk-through “Aware Mode” button that quiets your music and uses the noise cancellation microphones to let you hear what's happening in your environment without having to pull out the earphones and pause your music.

Further along the cable, we have the noise cancellation control and battery compartment. It has green status LEDs to let you know what modes you're in—when the noise cancellation is activated, for instance, a green indicator appears; if you press the Aware Mode button, the indicator vanishes; and if you're listening in passive mode, there are no indicators at all.

And yes, you read that correctly: Bose has finally created a noise-cancelling model that outputs audio without using battery power, so you don't have to activate the noise cancellation in order to listen to music. Other than a very slight increase in volume, there's little discernible difference between the audio performance in passive and active modes.

The problem with in-ear noise cancellation earphones has always been the cumbersome, annoying inline battery/circuitry compartment. Nobody wants to wear a big, chunky box that dangles from their ears as they walk. Bose attempts to remedy this by making the compartment for the QC 20 very slim and narrow, and locating the box at the very end of the audio cable. It's a

Bose QuietComfort 20/20i

PROS The best noise cancellation circuitry on the market. Rich bass response, crisp highs. Comfortable, secure fit. Works in passive mode.

CONS Sound signature is very sculpted—not for purists. Light on accessories like extra eartips.





bit cumbersome, but a big improvement. The only in-ear pair we've tested to ever feature noise cancellation circuitry without the compartment was Sony's XBA-NC85D, an overpriced underperformer.

We tested the QC 20i version with an iPhone 4S. Call clarity through the inline mic is about what you'd expect—your call partner will understand you just fine, but with cellular fidelity, you're not exactly going to hear a pin drop.

Bose claims the rechargeable battery lasts about 16 hours on a full charge, and takes about two hours to fully charge via the included USB charging cable. Only two eartip pairs are included—a little stingy on Bose's part, even if the company is convinced that at least one of the pairs will fit everyone. A soft, zip-up carrying pouch also comes with the QC 20, along with a removable shirt-clip that comes fastened to the cable.

PERFORMANCE

Bose's QuietComfort series has always been at the top of the noise cancellation category, but the QC 20 feels like it's about five steps ahead of the competition. The silicone eartips that, on other in-ear noise cancelling



YOU'RE IN CONTROL
The in-line remote control and microphone let you enter Aware mode and answer or end phone calls.

pairs, often passively block out much of the sound on their own actually block out very little noise on the QC 20. They don't intentionally let sound in, but they also don't isolate noise to augment the active noise cancellation; all of the QC 20's work in keeping outside noise out is done through the microphones and audio circuitry. The fact that the eartips are responsible for almost none of the actual noise reduction makes the QC 20's performance all the more impressive.

Simply put, this is by far the best noise cancellation we've ever heard. Like previous models from Bose and a variety of competitors, the QC 20 blocks out wide swaths of ambient noise, whether the whirr of an air conditioning unit or the drones and hums of trains and planes. But the QC 20 does something no previous pair has managed: It actually blocks out the human voice.

I tested these in a room with my back to someone who I didn't realize was on the phone. Then I heard what sounded like whispers. Frankly, it creeped me out at first—I turned around and watched this person speak into the phone, and it seemed like she was whispering still, which remained creepy. Once I deactivated the noise cancellation, it became clear she was actually speaking fairly loudly—and all I could hear was the envelope of her voice, not the actual body or pitch. I've never experienced noise cancellation like this. Also shocking was that the QC 20 nearly completely blocked out a car alarm going off outside.

It's worth noting that the circuitry, at times, seems to produce the slightest high-frequency hiss. This is common in cheaper noise cancellation circuitry, and it is usually louder and more obvious. Even then, on those pairs, it's rarely a deal-breaker. Here, not only is it barely noticeable, but the trade-off—the true elimination of chatty coworkers' voices, construction sounds out on the street, car alarms—makes it hardly worth mentioning.

On tracks with deep bass, like The Knife's "Silent Shout," the QC 20 produces a very healthy low-end thump. The bulk of its bass response actually resides a



GET A CHARGE

Bose claims the QuietComfort 20's battery lasts 16 hours—but for the first time you can listen to music with the power off.

little higher up the frequency chain, in the lows and low-mids, where we hear lower-register stringed instruments, lower brass instruments, and kick drums. The pulsing, intense sub-bass content of “Silent Shout” is a bit lower than the range the QC 20 focuses on, which is only to say that bass lovers have probably heard deeper lows before. Regardless, there’s plenty of low end, and even at top volumes it doesn’t distort.

A focus on the lows and low-mids can potentially make things sound muddy, but that is remedied by the QC 20’s equal focus on high-mids. On Bill Callahan’s “Drover,” his baritone vocal delivery possesses both a pleasant richness and a nice treble edge. But make no mistake: This is a highly sculpted sound. The QC 20 is no different than previous Bose models in this regard. I think the typical listener won’t mind the audio performance and might even really enjoy it (it lends itself quite well to pop and rock music, in particular), but it’s not for purists. As with most Bose products, the real feat here is the technology (in this case, superb noise cancellation), and not breathtaking, perfectly neutral audio.

It’s hard to recommend any other in-ear noise cancellation pair after testing the QC 20, but both the AKG K391 NC and the Phiaton PS 20 NC are solid options. What they lack in noise cancelling firepower, they make up for in audio performance or lower pricing. There are also plenty of quality on- and around-ear noise cancelling headphone options, such as the aforementioned QuietComfort 15, as well as the AKG K490 NC, which is possibly one of the best-sounding pairs that also offers quality noise reduction. But there’s no denying that Bose has hit a grand slam with the QuietComfort 20’s noise cancellation circuitry, however—it easily earns our Editors’ Choice award.

TIM GIDEON ✉

“
There’s no denying that Bose has hit a grand slam with the QuietComfort 20’s noise-cancellation circuitry.
”



**Lego Mindstorms
EV3**

\$349.99



Build Working Robots, Brick by Brick



Robots are difficult to build from scratch unless you have degrees in engineering and programming. That's what makes Lego's Mindstorms sets so amazing. These kits combine sensors, motors, and an electronic brain with Lego Technic components so that anyone can build any robots they can dream. Lego has stepped up its game with

its newest Mindstorms product: The Mindstorms EV3 is faster, smarter, and more flexible than the previous Mindstorms NXT 2.0 kit, and stands as one of the best ways to dabble in robotics without investing in tools. Its high price might seem like a lot to pay for a toy, but Lego Mindstorms EV3 is a remarkably powerful and functional way for people of any age to create some impressive and complicated projects.

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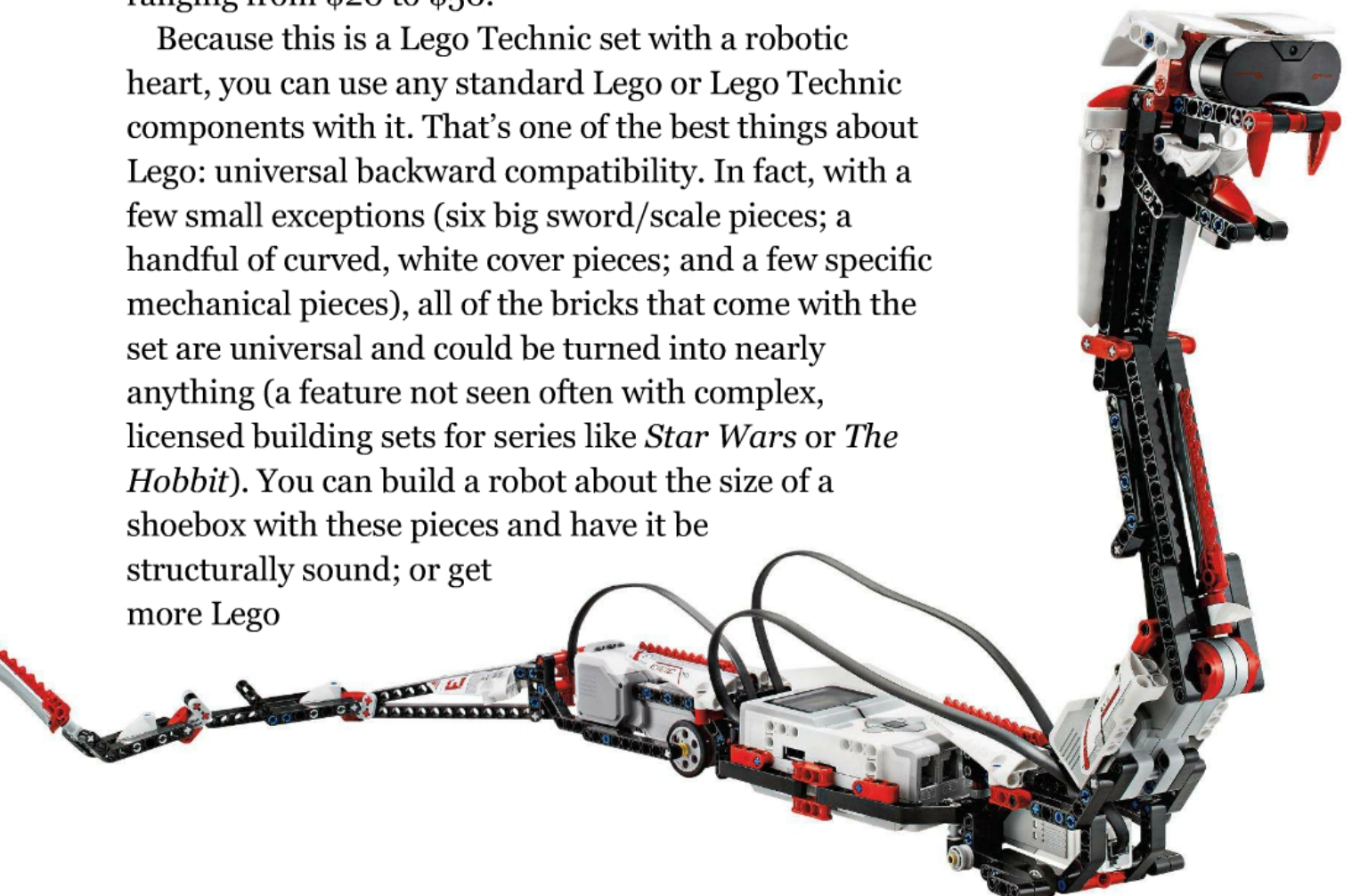
For your \$350, you get the Mindstorms EV3 Intelligent Brick (the “brain” of the set), an infrared remote control, three servo motors, a color sensor, a touch sensor, an infrared sensor, and 550 Lego Technic pieces. The 550 bricks and other building components might not seem like a lot, but you’re mostly paying for the robotic parts. In fact, the Intelligent Brick itself would cost \$150 separately, and the other robotic components can be purchased individually at prices ranging from \$20 to \$50.

Because this is a Lego Technic set with a robotic heart, you can use any standard Lego or Lego Technic components with it. That’s one of the best things about Lego: universal backward compatibility. In fact, with a few small exceptions (six big sword/scale pieces; a handful of curved, white cover pieces; and a few specific mechanical pieces), all of the bricks that come with the set are universal and could be turned into nearly anything (a feature not seen often with complex, licensed building sets for series like *Star Wars* or *The Hobbit*). You can build a robot about the size of a shoebox with these pieces and have it be structurally sound; or get more Lego

Lego Mindstorms EV3

PROS Remarkably flexible and powerful. Expanded memory, Bluetooth control are welcome upgrades. Accessible to people of all ages.

CONS Expensive. Small number of included servos, sensors mean projects may be limited or require additional investment.



parts and build a robot as large as you'd like, as long as the moving parts are still light enough and have enough leverage for the servos to move them.

THE INTELLIGENT BRICK

As the brain of the kit, the Mindstorms EV3 Intelligent Brick features a ton of connection features. It has eight Mindstorms connection cable ports (modified RJ-12 ports with the plastic tab on the right side of the jack), a microSD card slot for expanding storage, a mini USB port for connecting to your computer, and a full-size USB port for an optional Wi-Fi dongle or daisy-chaining up to three additional Mindstorms EV3 Intelligent Bricks for a total of 32 connection ports—useful if you want to build a more complicated and expensive robot than the kit allows on its own. The Intelligent Brick also features built-in Bluetooth for directly controlling your robot with your mobile device and the Mindstorms iOS or Android app. On the brick are a monochrome LCD display, four direction buttons, a back button, and a confirmation button; and the right side of the brick holds a small speaker for playing sound files.

The Mindstorms EV3 Intelligent Brick uses an ARM9-based processor with 16MB of memory. This is a massive leap in power from the ARM7-based Mindstorms NXT 2.0 Intelligent Brick, which only had 256KB of memory and no microSD card slot. The NXT 2.0 Intelligent Brick had Bluetooth, but it was only Bluetooth 2.0 compared to the EV3 Intelligent Brick's Bluetooth 4.0, and couldn't be used to directly control your creations.

The sensors have also gotten a power upgrade, and are able to send new values to the EV3 Intelligent Brick 1,000 times per second, three times more often than the NXT 2.0 sensors. The color sensor can also now detect seven colors instead of

“As the brain of the kit, the Mindstorms EV3 Intelligent Brick features a ton of connection features.”



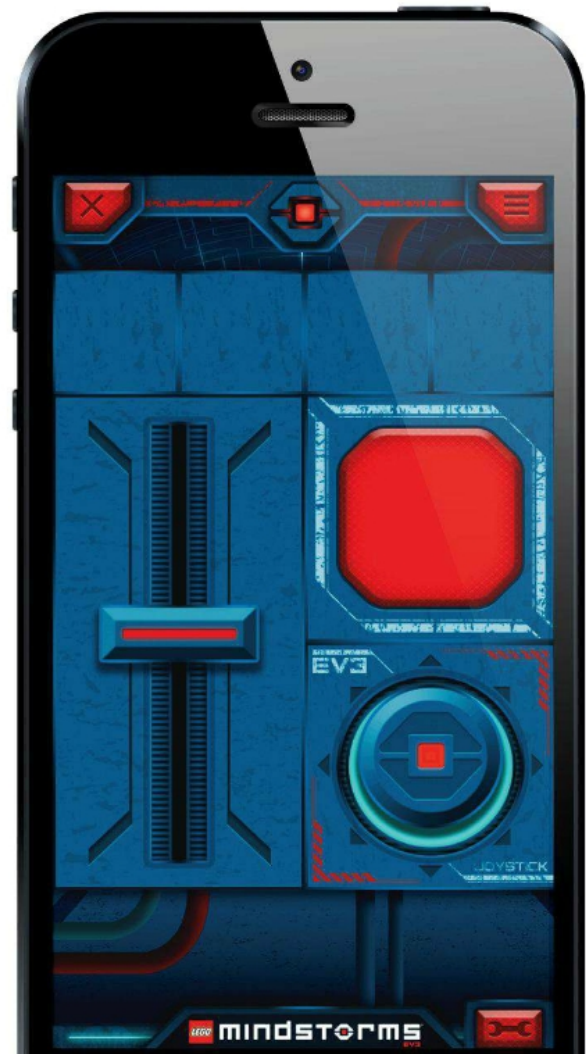


six and has a Reflected Light mode that removes background light. All of these upgrades mean your robots can be more complex than ever before.

One of the biggest additions to Mindstorms EV3, thanks to the more advanced Intelligent Brick, is Bluetooth control from your mobile device. The Lego Mindstorms Commander app for iOS and Android includes preset control panels for all five robots you can build in the 3D Builder app. More importantly, it lets you create manual control panels for your own creations, with different buttons, switches, and displays available to control motors and check sensor inputs. The Bluetooth control works directly with the Intelligent Brick without requiring you to program anything, so it can work both as a remote control and a test bench for seeing if your mechanisms function during construction. It's an extremely useful feature.

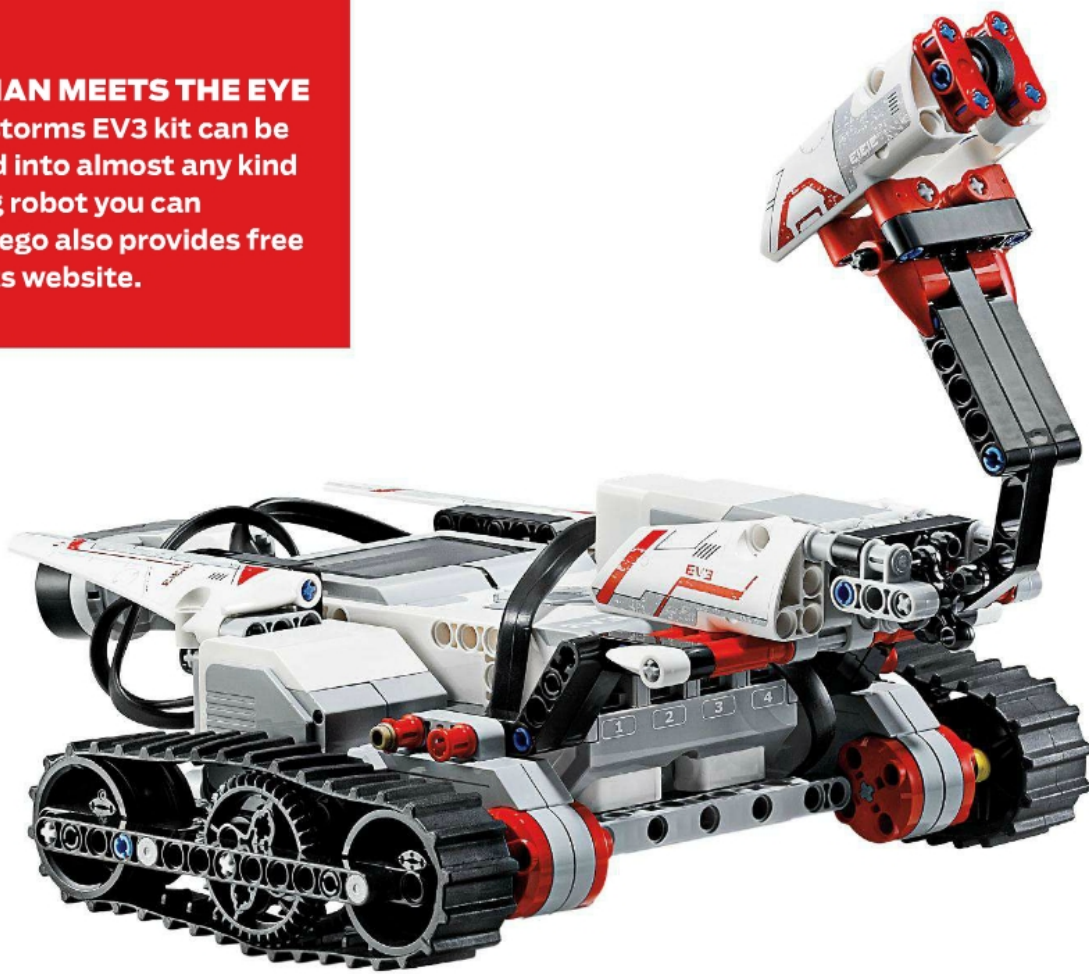
BUILDING AND PROGRAMMING

The set only comes with the printed instructions and on-board programming to make the most basic demo robot, the Track3R, which has tank treads and a spinning claw on the front. Fortunately, Lego offers free plans for several other Mindstorms robots both created by the company and designed by the community on its Web site. The free



MORE THAN MEETS THE EYE

The Mindstorms EV3 kit can be configured into almost any kind of working robot you can imagine. Lego also provides free plans on its website.



Lego 3D Builder iOS and Android app provides direct instructions with animated construction diagrams for building different robots like the Spik3R walking mech and the R3ptar snake.

You can program the Mindstorms EV3 Intelligent Brick through your computer, using a USB connection and Lego's Mindstorms EV3 software. The software includes building instructions for several robots, along with programming files for each robot (only the Track3R's file is preinstalled on the brick). Loading the R3ptar's files to the brick was as easy as opening the R3ptar project file and clicking the transfer button. But these are only the most basic, educational functions of the software and the Mindstorms EV3 set.

After you've gotten the hang of the set by building a few robots and looking at their programming files, you can start your own programming project from scratch. This can be daunting when you realize just how much you can do with it, but the software does everything it can to make the process more accessible. The Mindstorms EV3 programming language is a modified version of National Instruments' LabView software used for programming measurement and control systems. Every motor, sensor, and logic operation is represented by a colored icon, and the entire process is essentially one large, complex if-then chart. You can build chains and loops of predetermined actions based on direct

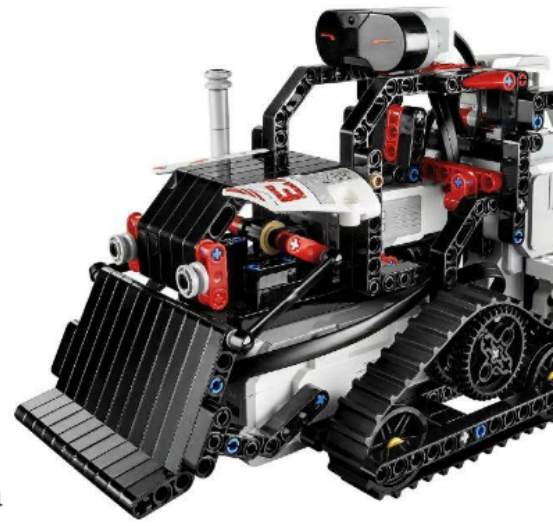
input from you or the input of any connected sensors. Each icon has numerous options to tweak, and the entire system is surprisingly powerful. You can even program your robot to send manual data values between bricks for more complicated actions.

PROJECTS AND CONCLUSION

I built the Track3R tank robot in about an hour, and after that I built the R3ptar robot in about two hours (a two-“mission” process to build the slithering body and then the biting head). Both worked perfectly; the built-in program on the Intelligent Brick let the Track3R run automatically and respond to the infrared remote, and the R3ptar functioned and responded to my remote commands as soon as I uploaded and ran the premade program files from the Mindstorms software. In both cases, the instructions were simple and direct, and demonstrated just a few of the very clever mechanical and programming things you can do with the set.

The Mindstorms EV3 continues Lego’s trend of making accessible, functional robotics kits for beginners who have already spent years playing with Lego bricks. The new upgrades add new communications functionality and vastly expanded memory and processing power, and the direct Bluetooth control adds a new way to direct your robots besides the small infrared remote and programming actions. The \$350 price might seem like a lot, but when you consider what it can do and what it can help teach your kids, it well earns its keep. Whether you’re an amateur roboticist yourself or want to give your children a chance to be high-tech prodigies with their building blocks, Lego Mindstorms EV3 is a fantastic kit.

WILL GREENWALD ✉





Find Top Features In Sony's Best-in-Class Compact



In the year since its release, the Sony Cyber-shot DSC-RX100 has stood alone in the compact market as the only camera with a 1-inch image sensor. The new RX100 II joins it; it's priced \$100 higher, but offers a

backside-illuminated CMOS-design image sensor, which gives it a one-stop advantage in noise control; built-in Wi-Fi; a tilting rear screen; and support for Sony's add-on EVF. If you own an RX100 and are happy with its performance, there isn't enough here to justify an upgrade; but if you're in the market for a compact with best-in-class image quality, the premium that the RX100 II commands is worth it.

**Sony Cyber-shot
DSC-RX100 II**

\$749.99



DESIGN AND FEATURES

The RX100 II measures just 2.3 by 4 by 1.5 inches (HWD) and weighs a mere 9.9 ounces. Like its predecessor, the RX100 II is able to slide into your jeans pocket; you'll be hard pressed to find another camera with a similar feature set and a larger image sensor that is.

The lens is identical to the RX100's. It's a Carl Zeiss Vario-Sonnar T* design that covers a 35mm-equivalent focal range of 28-100mm (3.6x zoom). At its widest angle the aperture opens to f/1.8, but it does narrow all the way to f/4.9 as you zoom. I was pretty happy with the control over depth of field that the camera was able to muster. There are few compacts that are able to accomplish this without resorting to some serious macro shooting.

The RX100 II doesn't have a built-in viewfinder, but unlike its predecessor you can opt to add one. It's an expensive (\$450) accessory, but it's an excellent EVF. The 3-inch rear LCD is hinged so that you can view it from above or below, and its 1,229k-dot resolution is among the best you'll find. The extra dots on the Sony represent a layer of white pixels that combat glare from the sun, but sometimes there's no substitute for putting a viewfinder up to your eye.

Sony Cyber-shot DSC-RX100 II

PROS Excellent high-ISO performance. Big image sensor. Wide aperture lens. Customizable controls. Large, tilting LCD. Minimal shutter lag. Raw image capture. Wi-Fi. Hot shoe with EVF support.

CONS Very expensive. Limited zoom range. In-camera battery charging only. Could be sharper at the edges of the frame at

HOT SHOE

Don't like using the rear LCD screen for framing your shots with the Cyber-shot DSC-RX100 II? No problem: You can easily add an EVF.



Save for the shutter release, zoom rocker, mode dial, menu, playback, on/off, display, EV compensation, and help buttons, the RX100 II's physical controls are largely customizable via its software menu. You can choose up to seven items that can be adjusted via the Function button; and the ring around the lens, the self-timer/drive mode button, the flash button, and the rear center button can be configured to your liking, with some limitations. Be aware that when you're adjusting settings on the RX100 II, as with its predecessor, the dials' directional behavior can change based on the way they're presented on the screen.

The camera's flash hides inside the body when not in use, popping up at the half press of the shutter button once it's been enabled. It sits on a hinged neck, which makes it possible to tilt it back with your left index finger and to bounce light off of a ceiling. It's not powerful enough to act in this capacity in, say, a ballroom, but for snaps around the house using this method will help to soften the light. Of course, there's also Flash Compensation available.

Wi-Fi is a new addition to the RX100 II. You'll be able to transfer photos directly from the camera to your iOS or Android device using the free Sony PlayMemories Mobile app. Note that Raw images are converted to JPEGs and videos only transfer if you shoot them as MP4s. In addition to copying files, you can use your phone or tablet as a remote viewfinder and control, though you're limited to choosing from still or video capture, firing the shutter, adjusting the zoom or flash, and activating the self-timer. A full-size copy

FLEXIBLE FLASH

You can tilt the retractable flash on the RX100 II to soften the light in certain situations.



Carl Zeiss

SONY

3 6



ZOOM ZOOM ZOOM

The Carl Zeiss lens on the RX100 II has a wide aperture, but offers a limited zoom range of only 3.6x.

of the image is saved to your memory card, and a scaled-down version (1.7 megapixels) is automatically saved to your phone's camera roll.

PERFORMANCE AND CONCLUSIONS

Like the RX100 before it, the RX100 II is a bit slow at starting up and capturing a photo. The 2.1-second startup time isn't that bad for cameras this size, but you can purchase a fast-shooting D-SLR for the same amount of money. Burst shooting speed varies upon file format, but you can rattle off nine JPEGs at 10 frames per second (fps) in the special Speed Priority mode. Raw bursts of nine shots are also possible, but only at 5fps. There is a delay as all of the images are written to a SanDisk 95MBps memory card; a full JPEG burst requires 5.8 seconds, a Raw burst about 9.3 seconds. Shutter lag is almost zero; we clocked it at 0.05 second, and low light focus is pretty quick at just about 1 second.

As measured with Imatest, the RX100 II's lens manages an impressive 2,048 lines per picture height at 28mm f/1.8, a bit better than the 1,800 lines we require to call a photo sharp. Edges are a little bit soft (1,447 lines), but stopping down to f/2.8 improves the overall score to 2,277 lines with edges that approach 1,900. Resolution is best at f/4 and f/5.6 where it hovers around 2,440 lines.

Stopping down further isn't advised, as image quality starts to degrade due to diffraction through the minimum aperture of f/11.

Zooming to 50mm narrows the maximum aperture to f/3.2, but the lens is still impressively sharp. It manages 2,053 lines here, and again does its best work when stopped down a bit. At f/4 the resolution improves to 2,278 lines, and it peaks at f/5.6 at 2,368 lines. At the maximum 100mm zoom the maximum aperture is f/4.9. Sharpness is still impressive at 2,269 lines, just about the same as it is at the f/5.6 setting.

Out-of-camera JPEGs and Raw images are basically distortion free, though some automatic correction is definitely being applied. If you use a Raw converter that doesn't support this correction you'll be greeted with some near-fisheye images at the widest angle (11.6 percent barrel distortion), but it's a nonissue for the vast majority.

The RX100 II keeps noise under 1.5 percent through its top ISO setting of 12800, but JPEG detail at that setting is downright muddy. Images look a lot better at ISO 6400, though they're nowhere near as defined as they are at lower ISOs. Overall the RX100 II provides a

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FROM ANY ANGLE

The LCD screen on the back of the RX100 II is hinged for easy viewing at almost any angle, and its density (1,229k dots) makes it among the sharpest you'll see anywhere.



Sony advertises. JPEGs are quite impressive through ISO 1600, and shooting one at 3200 is fine if you aren't looking to make a huge print. You can eke a bit more detail out of photos by opting to shoot in Raw. I would not hesitate to do so at up to ISO 6400; just be prepared for an image that has a grainy look.

Video is recorded in up to 1080p60 quality in the AVCHD format; 1080i60 and 1080p24 are also supported, and you have the option of recording in MP4 format. The quality is generally very good, with accurate colors and crisp details. The lens zooms in and out when recording, but doesn't add a lot of noise to the soundtrack. There's a digital zoom available to extend the camera's reach, but using it does detract from quality. The micro USB port doubles as a charging mechanism for the battery—there's no external charger included—and there's also a micro HDMI port for connecting to an HDTV. In addition to standard SD, SDHC, and SDXC memory cards, Sony also supports its proprietary Memory Stick PRO Duo and Memory Stick Pro-HG Duo formats.

At \$750 this camera is priced above many entry-level mirrorless cameras and D-SLRs. The RX100 II can't keep up with an SLR in terms of pure image quality or versatility, but its portability, Wi-Fi, tilting LCD, and support for Sony's add-on OLED EVF are excellent premiums. If you're willing to sacrifice image quality and portability, cameras such as the Canon PowerShot G15 and Fujifilm XF1 are good options, and both are available for considerably less (about \$500). But if you want a pocketable camera with a zooming lens and don't want to settle for second best, the RX100 II is sure to tickle your fancy.

JIM FISHER ✉



The Galaxy Goes Mega



The Samsung Galaxy Mega is more than a bit ridiculous, thanks to its massive 6.3-inch screen—larger than you'll find on any phone released in the U.S. Yet the sheer absurdity of this phone is kind of awesome, and it's a lot of

fun to use. As a result, it's our new Editors' Choice for phablets on AT&T—bypassing the slightly more-powerful, but twice-the-price Galaxy Note II, thanks to the Mega's lower price, larger size, and little in the way of compromises otherwise. It's more phablet for less money. How can you go wrong?

Samsung Galaxy Mega
(AT&T)

\$149.99 with contract



DESIGN, CONNECTIVITY, AND CALL QUALITY

Surprise! The Galaxy Mega is huge. It measures 6.6 by 3.46 by 0.31 inches (HWD) and weighs 7.02 ounces—though it's still a little lighter and thinner than the Galaxy Note II. The body is large enough that it completely fills my front jeans pocket, and even sticks out a bit. I'm not going to rehash the whole plastic-versus-aluminum build, because everyone already knows where they stand on it. If an aluminum body is important to you, buy an HTC One or an iPhone 5; otherwise, this plastic-and-glass Samsung phone feels just fine, and the metallic gray pattern on the back lends some extra class to the design.

The 6.3-inch display is only 720p, which is a small disappointment considering its size. But even so, text and graphics still look good at 233ppi, if not as sharp as on the Galaxy Note II, which has a tighter pixel density thanks to its smaller panel. You'll notice the difference most when reading full desktop websites zoomed out, where text can be slightly fuzzy, and when reading magazines or ebooks with a small font. Even in those cases, though, the 6.3-inch panel covers for a lot of sins, and makes all sorts of activities more fun than they are on a smaller phone.

Below the screen is a physical Home button, with a Menu and Back capacitive buttons to the left and right, respectively. Typing on the on-screen keyboard is super-easy in both portrait and landscape modes, and the extra row of number keys along the top is a big help.

The Galaxy Mega is a quad-band EDGE (850/900/1,800/1,900MHz), quad-band HSPA+ 21 (850/900/1,900/2,100MHz), and single-band 4G LTE device with 802.11ac Wi-Fi on both the 2.4GHz and 5GHz bands. There's an accelerometer, gyroscope,

Samsung Galaxy Mega (AT&T)

PROS Mega-size screen. Not-so-mega-size price. Slim design. Tons of software features. Stellar battery life.

CONS Display isn't full HD. Not the fastest gaming performance. No stereo speakers.





magnetic compass, luminance sensor, magnetometer, and proximity sensor built-in, and you also get NFC and Bluetooth 4.0. In midtown New York City, I saw LTE speeds of 9-11Mbps down and 7-10Mbps up, which is pretty standard given that AT&T's network is becoming more crowded these days.

Aside from the sheer difficulty in holding it up to your ear and getting your fingers around the width of the frame, the Galaxy Mega is a solid voice phone. Callers sounded clear and rich through the earpiece, and I didn't have to position my head just so to hear the caller, either. My own voice sounded clear if somewhat computerized through the mic, and moving the handset up or down a bit to get the mic closer to my mouth didn't change the sound. Reception seemed fine.

Calls sounded clear through a Jawbone Era Bluetooth headset. Samsung's voice recognition software works well; I had no problem dialing calls over Bluetooth. The mono speakerphone sounds loud and clear, and is powerful

enough to use outdoors. The huge 3,200mAh battery was good for a stellar 21 hours 27 minutes of talk time.

HARDWARE, OS, AND APPS

The Galaxy Mega runs Android 4.2.2 Jelly Bean out of the box, and packs a 1.7GHz dual-core Qualcomm Snapdragon 400 processor and 1.5GB RAM. That's down a bit from the Galaxy Note II's quad-core Samsung Exynos processor and 2GB RAM. The difference isn't noticeable in day-to-day usage, as the Galaxy Mega feels fast. But it shows up in synthetic benchmarks, particularly those (such as integer performance) that hit the processor directly; 3D performance also trails the Galaxy Note II. For example, Asphalt 7: Heat became choppy when multiple computer-controlled cars were on the screen.

Interestingly, the home screen supports both portrait and landscape modes. You can tilt any other Android phone in specific apps, but the Galaxy Mega is the first one I've tested to present a landscape home screen, just like a tablet would. (The iPhone doesn't do it either.) You get three custom home screens to start with and can easily add more.

This being a Samsung phone, there is an unbelievable amount of extra preloaded software. Some of it is actually quite good, though. You get S Memo, S Translator, and S Voice, plus portals to the redundant Samsung Hub media store, Samsung Apps, and Samsung Link. AT&T also preloads its own bloatware, including Code Scanner, DriveMode, FamilyMap, Locker, Navigator, Ready2Go, and Smart Wi-Fi. None of the installed bloatware can be deleted,



unfortunately. You don't get S Health or Air View, but you do get Multiple Window mode. I tried installing Google Wallet, but no dice.

For reading, Amazon Kindle and Google Play Books apps both work well, although Play Books stutters when loading pages in H.G. Wells' *The Time Machine*, thanks to its complex font formatting. Because the Galaxy Mega has a bigger display than the Kindle and Nook, you won't need a dedicated ebook reader; just note that the Mega is taller and thinner, thanks to its theater aspect ratio, and it's not as good in sunlight.

Google Play now contains over a million third-party apps by some counts. It's still not quite at virtual parity with Apple's App Store, in terms of big-name titles, and it lags considerably on drawing and music creation software. But Android phones are as customizable as ever, and if you're willing to root your device, you can run all kinds of emulators and other hacks.

MULTIMEDIA, CAMERA, AND CONCLUSIONS

There's 16GB of onboard storage, with 11.06GB free for user apps and media, plus a microSD card slot underneath the battery cover that accepts 64GB cards. AAC, MP3, FLAC, and WAV music tracks sound clear through both wired and Plantronics BackBeat Go stereo Bluetooth earphones. You can also buy or stream files through Google Music or listen to a number of streamed services.

On the video side, I streamed scenes from *Transformers: Dark of the Moon* and *Underworld: Awakening*. Both movies looked and played smoothly in full-screen mode, Standalone videos did well, too, except for DivX files, which won't play; odd, as the Galaxy S4 plays them. The display has Standard, Dynamic, and

FINE PHOTOS

The 8-megapixel rear-facing camera takes good pictures overall, though indoor shots can look a bit grainy.



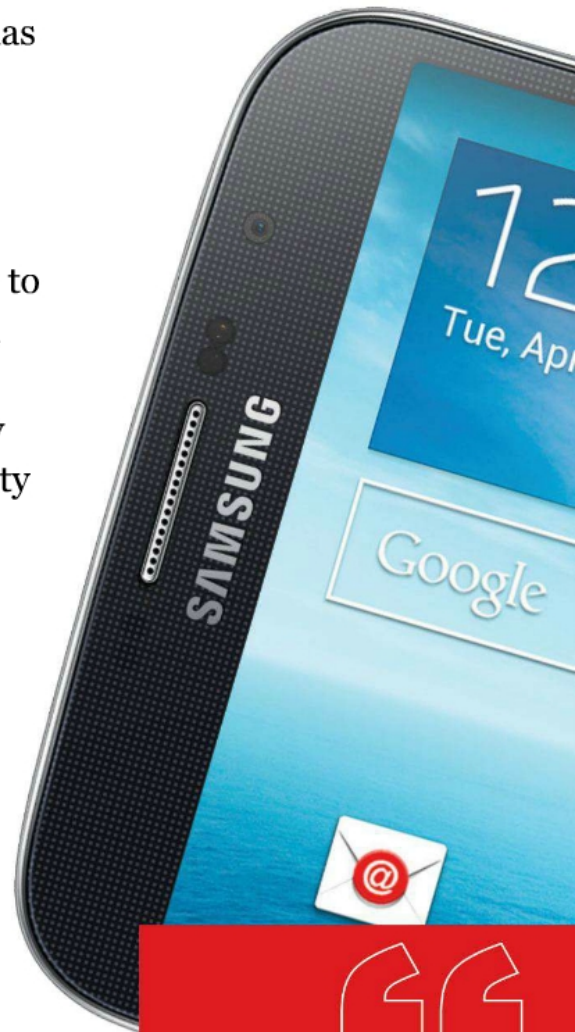
Movie modes just like a Samsung HDTV, and it also has an Adapt mode as default that interprets whatever you're doing and adjusts the display settings accordingly. The mono speaker isn't the best we've heard, but use a pair of earphones and you've got a miniature private home theater. For streaming media to a larger external screen, you get DLNA, MHL 1.0, and HDMI 2 support.

The 8-megapixel rear-facing camera supports many of Samsung's trademark enhancements, such as Beauty Face, Best Photo, and Panorama. Photos look good overall, with sharp, clear snapshots outdoors and indoor photos that are a little grainy but still usable. Recorded 1080p (1,920-by-1,080-pixel) videos play smoothly at 30 frames per second both indoors and out, and the image stabilization helps a bit to smooth out jitters. The video files themselves are impressively detailed, and the camcorder adjusts well to changing light conditions on the fly. There's also a front-facing 1.9-megapixel camera for video chats and easy selfies.

There's no direct competition for the Galaxy Mega, because no one has made a phone this large yet, but the Google Nexus 7 tablet comes close: It's only seven-tenths of an inch larger, but has no voice call or texting capability, and the LTE-compatible version isn't out yet.

A Galaxy Note III is reportedly just around the corner, so if you're not pressed for time, you may want to wait for that model. But even more so than with the Galaxy Note series, I can imagine carrying the Galaxy Mega and not needing a separate tablet—which is the real point of this device. Just use a Bluetooth headset (or stereo Bluetooth headphones, for less of a dorky look) for the occasional voice call. The Galaxy Mega is hilariously supersized, but it's also quite compelling.

JAMIE LENDINO ✉



“
**The Galaxy
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”



The Best Laptop for Budget Gaming on the Go



The MSI GX70 3Be-007 gaming laptop costs a little more than the Editors' Choice MSI GX60 1AC-021US, but it is money well spent. It adds a backlit keyboard and larger screen, and it edged the GX60 in our gaming-centric tests, running 3D games at playable frame rates even at 1080p resolution. Although it isn't as well rounded performance-wise as the Editors' Choice CyberPower FangBook X7-200, the GX70 delivers where it counts for budding gamers on a budget. Like the GX60 1AC-

**MSI GX70
3Be-007US**

\$1,399



021US, the GX70 earns its 3D gaming chops largely at the expense of multimedia creation. If you aspire to be the next Steven Spielberg, this is not the laptop for you. On the other hand, it's a terrific choice if you're laser-focused on getting the most out of your gaming but have limited funds to spare.

DESIGN AND FEATURES

The GX70 measures 2.2 by 18.8 by 11.3 inches (HWD) and weighs 8.6 pounds. Although you wouldn't want to travel with it regularly, it isn't too heavy to lug to LAN parties. This black laptop has a handsome brushed aluminum frame. It sports a 17-inch screen with native 1,920-by-1,080 resolution. Though it's similar in price to the Maingear Pulse 11, our gaming ultraportable Editors' Choice, the GX70 3Be-007US's screen dwarfs that system's 11-inch, 1,366-by-768 screen.

Under the hood, you'll find an AMD A10-5750 quad-core processor, AMD Radeon HD 8970M video card, a 750GB (7,200rpm) hard drive, and a Blu-ray reader. Hi-def video looked sharp on screen, and the sound is loud and of good quality. The laptop has an ample supply of ports, including VGA, three USB 3.0 and two

MSI GX70 3Be-007US

PROS Can play 3D games at 1080p native resolution. Backlit keyboard. Good battery life for a gaming laptop. Lots of connectivity options.

CONS Lagged at media creation, general performance tests. Heavy. No touch screen.





USB 2.0, one Mini DisplayPort, and one HDMI 1.4.

The keyboard is comfortable and responsive. Its layout has a few unusual flourishes: The Windows key is to the right of the spacebar, a numeric keypad is to the far right, and there are a few extra keys and duplicates. The backlighting is a nice addition; the keys to the left are red, those in the middle green, and the ones to the right are blue, creating a pleasant rainbow effect. Through the Keyboard LED Manager, you can change these colors, add pulsing lights, or even just use an all-white backlighting scheme.

As is the case with most current non-business Windows laptops, the GX70 3Be-007US runs Windows 8. Using this operating system, which was designed primarily for tablets, without a touch screen can be awkward, even with its gesture-based touchpad control enabled. That said, most other Windows 8 gaming systems are in the same boat.

PERFORMANCE

The GX70 3Be-007US's solid processor and discrete graphics proved to be a potent combination for 3D gaming, if a bit anemic for multimedia tasks and overall performance. When I tested Heaven at medium detail

COLORFUL KEYBOARD

Don't like the color scheme of the keyboard's backlight? You can change it with the included utility.



settings and 1,366-by-768 resolution, it turned in an average rate of 79 frames per second (fps), and at 1,920 by 1,080 with high detail enabled, a playable 36fps. It did even better at Aliens vs. Predator at 1080p (43fps).

These scores bested both the CyberPower X7-200 (61fps at medium resolution and 2fps at 1080p for Heaven, and 29fps for Aliens vs. Predator at high resolution) and the MSI GX60 1AC-021US (39fps for Heaven and 35fps for AvP, both at 1080p resolution). They also surpassed the Editors' Choice Asus G75VW-DH72, which turned in scores on Heaven of 70fps at 1,366 by 768 and 28fps at 1,920 by 1,080, and a mere 18fps in Aliens vs. Predator at 1080p.

Though the other machines can play these games, on the GX70 3Be-007US you won't have to dial down the eye candy, a rarity for a sub-\$2,000 laptop. Some higher-end models turn in massive scores—the Origin EON17-SLX, which uses twin graphics cards in an SLI configuration, played Heaven at 178fps at mid-level quality and 71fps at 1080p, and Aliens vs. Predator at 75fps at high resolution. They provide smoother gameplay, but they also cost a lot more.

In our multimedia testing, it took the GX70 3Be-007US a ponderous 6 minutes 21 seconds to crawl through our Photoshop CS6 test, and 1:46 to finish the Handbrake video transcoding test. Both of these are far slower than the

FangBook's times (3:45 and 37 seconds, respectively).

In PCMark 7, which measures overall system performance in a variety of tasks, the GX70 3Be-007US scored 1,680, lagging the MSI GX60 1AC-021US (1,852) and far short of the CyberPower X7-200 (5,884).

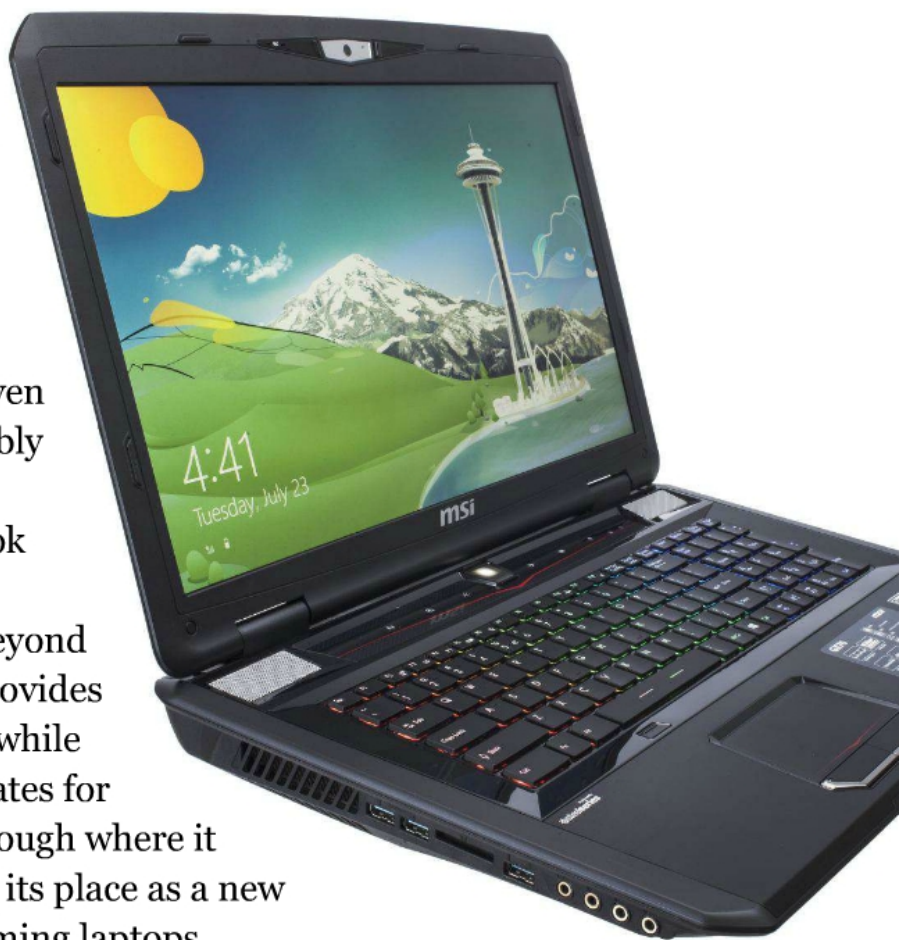
Likewise, its score of 2.07 points on CineBench, which tests a system's 3D rendering ability, was far lower than the FangBook's 6.38.

In our battery rundown test, the GX70 3Be-007US played video and its audio track for 4 hours 16 minutes before shutting down, a respectable time for a gaming laptop. The MSI GX60 1AC-021US managed 3:51, the Asus G75VW-DH72 eked out 3:02, and the CyberPower FangBook X7-200 lasted just 2:12. Chances are that you won't be spending much (if any) time using this behemoth away from an outlet, but it's good to know that the GX70 3Be-007US can operate on battery power in a pinch.

The MSI GX70 3Be-007US put up splendid scores for 3D hi-res gaming for a laptop of its price, even when pitted against two comparably priced Editors' Choice gaming laptops, the CyberPower FangBook X7-200 and the MSI GX60 1AC-021US. If your interests extend beyond gaming, the FangBook X7-200 provides more well-rounded performance while still putting up very good frame rates for its price. But the GX70 comes through where it matters most for gamers, earning its place as a new Editors' Choice for entry-level gaming laptops.

TONY HOFFMAN ✉

“
**The GX70
comes
through
where it
matters
most for
gamers.**
”





This All-in-One Desktop Was Made for Media

The Acer Aspire AZ3-605-UR23 is a refined, yet simple version of the all-in-one desktop PC that has evolved over the past few years. It has most of the features we look for in a modern all-in-one PC, including a moderate price. It's a more-than-competent system for purposes of media consumption, though media creators (videographers, photographers, and the like) may want to look elsewhere.

**Acer Aspire
AZ3-605-UR23**

\$999.99



DESIGN AND FEATURES

The Acer Aspire AZ3-605-UR23 bucks the trend of aluminum and glass with its black polycarbonate construction. That said, it's no slouch in the design department. Although not flashy, its chassis is attractive and looks a little more purposeful than a plain monitor. It's built into an easel and stand design, where a tilting back leg governs the tilt of the screen. It doesn't have height adjustment, but very few all-in-one systems have that feature these days (a major, expensive exception is our Editors' Choice high-end all-in-one desktop, the Dell XPS 27 Touch All-in-One). The front is notable for having conveniently placed I/O ports that don't look out of place. The front left of the system has a USB 3.0 port, headset jack, and SD card reader on a "capsule" built into the front speaker grille. We prefer this to having the ports on the back of the system, as is the case with Apple's iMac, or on the side, as with the Dell XPS 18.

This is a system you should consider if you still have a large active optical disc collection. You can view your DVD movies and listen or rip your CDs using the built-in tray loading DVD burner. The system doesn't support Blu-ray, however. Speaking of movies, online streaming titles look good on the AZ3-605-UR23's 23-inch, 1,920-by-1,080 resolution (full 1080p) display with capacitive ten-point touch. The ten-point touch is important, as it lets you either use both hands on the screen or share it with a person sitting next to you. Contrast this with the infrared five-point touch screen on some competitors, such as the HP Pavilion TouchSmart 23-F260XT AIO.

In addition to the front I/O ports, the AZ3-605-UR23 has two USB 2.0 ports in the back along with audio, Ethernet, HDMI in, and

Acer Aspire AZ3-605-UR23

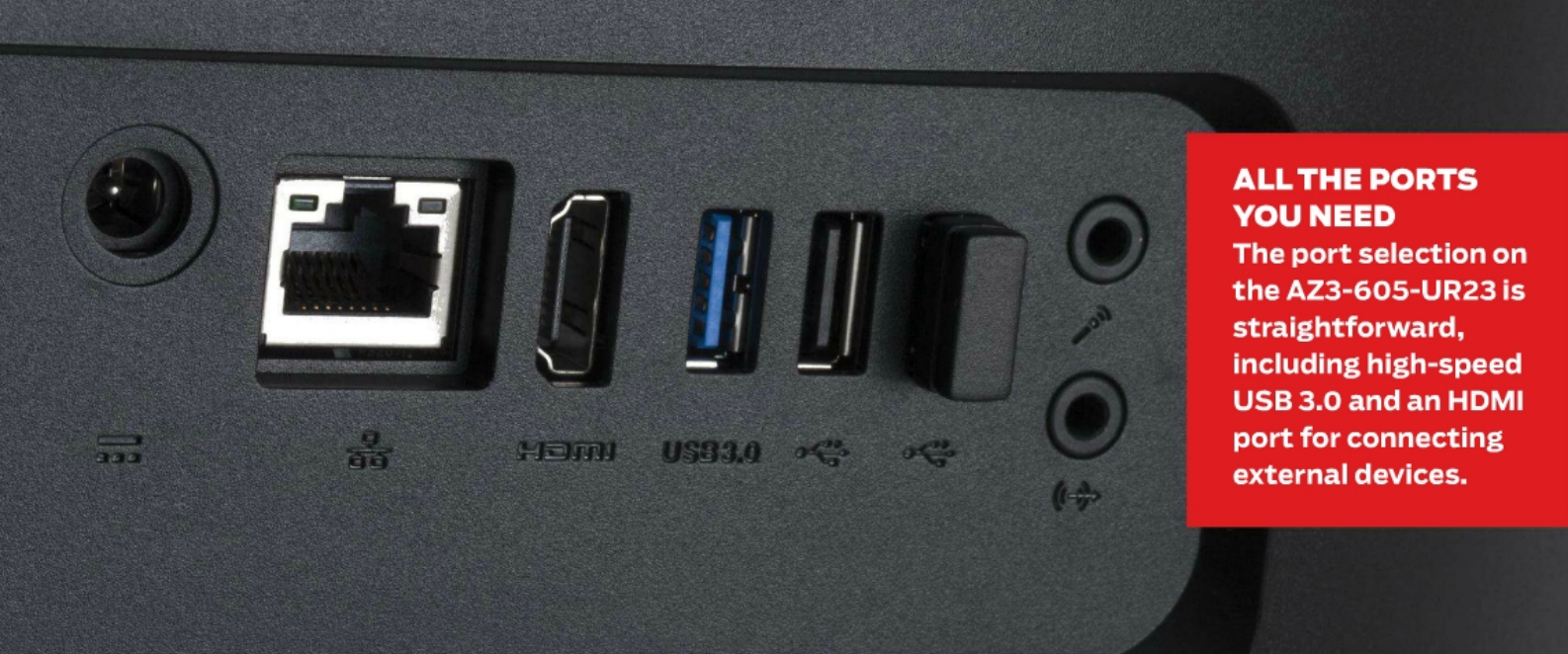
PROS Front-mounted I/O ports. Ten-point touch screen. HDMI-in. Spacious hard drive.

CONS No Blu-ray. Some added software/bloatware. Wonky gesture control.

SHARP SCREEN

The 23-inch touch screen on the AZ3-605-UR23 is capable of displaying full HD (1080p) resolution.





ALL THE PORTS YOU NEED

The port selection on the AZ3-605-UR23 is straightforward, including high-speed USB 3.0 and an HDMI port for connecting external devices.

another USB 3.0 port. The HDMI-in port is useful if you want to play a console game on the same screen as your PC. It can also accommodate a future laptop or desktop PC, extending the display's life past when the system's Intel Core i5-3337U processor becomes obsolete. The system comes with a 1TB 7,200rpm SATA hard drive, which is slower but much more spacious than the solid-state drives found in some recent systems. For a media consumption device, the trade-off is welcome.

The front-facing camera can be used with an included gesture control system. But like the ones we've seen on Lenovo IdeaCentre desktops, Acer's system is just a bit too annoying to use full time. Waving your arms in front of you can get tiring, and there is still a bit of lag between you moving a limb and the cursor following on the screen. (We're not yet at the point where we can emulate the UI in the movie *Minority Report*.)

The AZ3-605-UR23 does have quite a few preloaded apps, including 7digital, didlr, Kindle, eBay, Zinio, Netflix, iCookbook, Amazon, Tuneinradio, Chacha, Hulu Plus, Wild Tangent Games, Xbox Games, Stumbleupon, Skype, NewsXpresso, Spotify, McAfee Internet Security, and an ad for Microsoft Office. These are cumbersome if you don't use them, but they are moderately easy to remove. The AZ3-605-UR23 comes with a one-year warranty.



PERFORMANCE

Its speedy processor, 8GB of RAM, and integrated Intel HD Graphics 4000 provide the user with decent, but undistinguished performance. The system is certainly enough for the media consumer in your family, with enough speed to display 1080p HD content smoothly on the bright, clear screen. But if you are planning on creating videos or editing photos, make sure you keep in mind that it isn't a powerhouse system. If you want multimedia performance, going with the Editors' Choice-winning 21.5-inch iMac is a better bet.

The Acer Aspire AZ3-605-UR23 is a solid media consumption device. It looks nice, has well-thought-out features, and is definitely affordable. If you need a moderately large screen to view online videos in a bedroom or a dorm room, this is your system. But as far as price, features, and performance, Apple's 21.5-inch iMac is still the all-in-one desktop to beat.

JOEL SANTO DOMINGO ✉



If you need a moderately large screen to view online videos in a bedroom or a dorm room, this is your system.





Acer's Ultrapowerful, Ultrathin Ultrabook



The Acer Aspire S7-391-6411 is half an inch thick and worth every penny you pay for it. It is a premium high-end ultrabook that adds performance and battery life to one of the thinnest laptops we've ever reviewed. It has a bright, clear 1080p HD display, instant wake from sleep, ten-point touch screen, and looks nice from the moment you pull it out of your commute bag to the second you put it away for the day. It has eight and a half hours of battery life along with high-end performance thanks to a fourth generation Intel Core

**Acer Aspire
S7-391-6411**

\$1,449.99



processor, plus durable and quick solid-state storage. It's one of the best examples of what corporate system builders can devise when Intel pushes harder and more stringent standards for its ultrabook initiative.

DESIGN AND FEATURES

The S7-391-6411 has essentially the same chassis as last year's introductory model, the Acer Aspire S7-391-9886. It's only about 0.51 by 12.75 by 9 inches (HWD), and it weighs in at 2.87 pounds, which makes it one of the thinnest and lightest touch screen laptops on the scene. It's imperceptibly lighter than the 13-inch Apple MacBook Air (2.91 pounds) and unnoticeably heavier than the recently released Sony Vaio Pro 13 (2.3 pounds). That said, the S7-391-6411 is measurably thinner than either of these laptops. This is due to Acer's use of Gorilla Glass on both the inner and outer surface of the lid, which gives the screen rigid strength in a thinner package.

Speaking of the lid, it has a dual-friction hinge. This requires more force to move the lid beyond the 100-degree mark or so, which is just a little beyond vertical. This means that the S7-391-6411 has a rock-solid screen during touch operations, without the bounce you'll see in some other touch ultrabooks such as the Vizio 15.6-inch Thin + Light Touch. If you know you're going to be using the touch interface for Windows 8 apps often, then the Aspire S7-391-9886 should be on your short list. Though the system is thin, Acer managed to include an efficient and silent cooling system. Its cooling fans are quieter than those on the VAIO Pro 13, plus it channels the heat from the CPU away from the keyboard, palm rest, and the bottom of

Acer Aspire S7-391-6411

PROS Strong performance. Excellent battery life. Thin and light. Strong build quality. Dual-friction hinge. Speedy wake times. Supports 2.4GHz, 5GHz Wi-Fi. No bloatware.

CONS On the pricey side. Odd keyboard layout. Somewhat skimpy storage.

THINKING THIN

At its thickest point, the Acer Aspire S7-391-6411 measures just over a half-inch. It weighs less than 3 pounds, too.





the laptop, which used to be common hot spots on older performance-oriented systems

Otherwise, the system is a really well-put-together ultrabook. It comes with an Intel Core i5-4200U processor with Intel HD Graphics 4400, 8GB of memory, and two 64GB SSDs linked together in a RAID Level 0 array to give the user a total of 128GB of space. You'll certainly want to use one of the two USB 3.0 ports for an external drive if you need space for videos, but 128GB is enough for thousands of photos, Office documents, and music files. The S7-391-6411 also has a full-size HDMI port, a vast improvement over last year's S7-391-9886, which needed an adapter for HDMI. There's also a headset jack, SD card reader, and what Acer calls an Acer Converter Port. It physically looks like a Mini DisplayPort jack, but it's designed for a future dongle that will give users Ethernet, VGA, and USB. Together with the built-in display and HDMI port, this means that the S7-391-6411 supports up to three simultaneous displays.

About the only nits we could find are related to the keyboard. The electroluminescent backlit keyboard is comfortable to use and has better key feel than the

PORTS, ON DISPLAY

Ports include an Acer Converter port, an adaptation of the Mini DisplayPort jack. With it, you can connect up to three displays at once.

optional Type Cover on the Microsoft Surface Windows 8 Pro. But the S7-391-6411 does have a slightly odd placement of the accent/tilde key: right next to the Caps Lock key instead of next to the Esc key. The system lacks a dedicated row of F1-F12 keys, so multimedia and screen brightness controls are interspersed and shared with some of the keys around the rest of the keyboard. This means you'll have to learn a few important Fn-key combos, but this is more of an annoying nit than a serious drawback.

Because the S7-391-6411 has Microsoft's Signature prep on it, it doesn't come with any additional software aside from Skype and an ad for Microsoft Office. The S7-391-6411 comes with an 802.11a/b/g/n WiFi adapter, so it works well on both 2.4GHz and 5GHz networks. The system's speakers are loud and clear, even at full volume. The screen doesn't flip all the way around, like the one on the Lenovo IdeaPad Yoga 13, but it does fold all the way over 180 degrees, so it can lie flat on your work surface for drawing on the touch screen or sharing the screen across the table. The system comes with a standard one-year warranty.

PERFORMANCE

The S7-391-6411 is one of the higher performers among systems with a Core i5 processor. Its PCMark 7 scores are top marks and the system only takes a minute to complete our HandBrake video test. The system's 3D scores are improved over systems with last-generation Intel HD Graphics, though for hardcore gaming you'll want a specialized gaming rig that trades everyday speed for gaming prowess. This system should last you the three to five years.



Speaking of lasting, the S7-391-6411 offers 8 hours 27 minutes of battery life, enough to get you through a transcontinental flight and then some. As long as you let the system sleep when you're not using it, the S7-391-6411 should last the entire day. (Last year's model managed only 4:45.) The S7-391-6411 outlasts its closest rival in features and thinness, the Sony VAIO Pro 13, by 2 hours.

The Acer Aspire S7-391-6411's performance punctuates the system's excellent feature set, thinness, design, build quality, low weight, and general excellence. It is more than a worthy replacement for the Asus Zenbook Prime Touch UX31A-BH15T as our new Editors' Choice for high-end ultrabooks. Sure, you're paying a bit more for the thin chassis and sturdy build materials, but unlike the VAIO Pro 13, the S7-391-6411 doesn't skimp on battery life in its quest to be the thinnest, lightest laptop around. The Acer Aspire S7-391-6411 therefore gains one of our highest overall scores and our Editors' Choice award.

JOEL SANTO DOMINGO ✉

The S7-391-6411 doesn't skimp on battery life in its quest to be the thinnest, lightest laptop around.





The Most Exciting Features In Apple iOS 7

Apple CEO Time Cook has called iOS 7 “the biggest change to iOS since the iPhone.” And with the imminent availability of the newest iPhone, iOS 7 will soon be arriving at a device near you. Here’s a look at some of the best of what you can expect from the revamped mobile operating system.

CONTROL CENTER

If you’re like us, you’ve long wanted it to be even easier to reach and adjust common settings such as airplane mode. That wish comes true with Control Center, which provides quick access to airplane mode, flashlight, screen brightness, and more. Just swipe up from the bottom.

NOTIFICATION CENTER

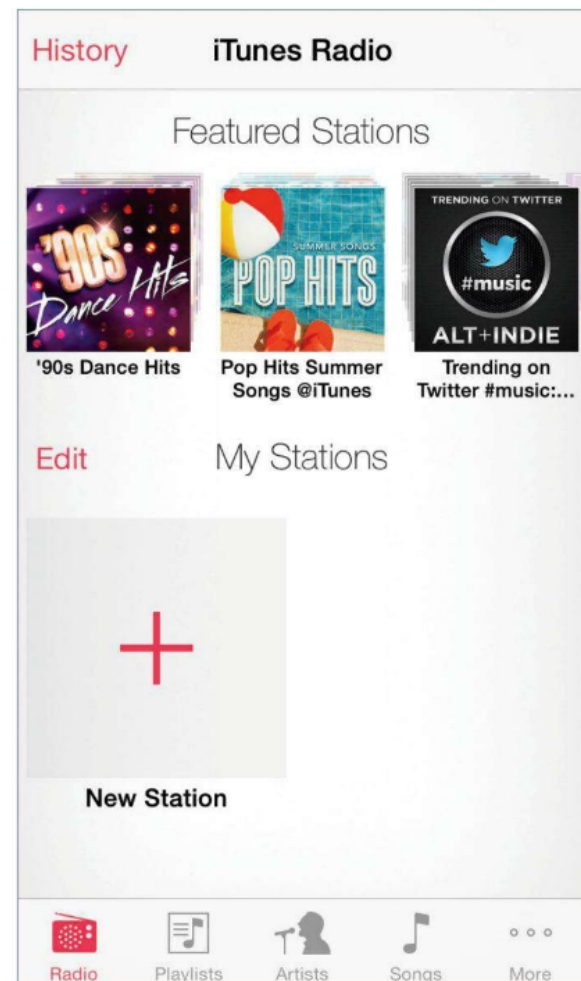
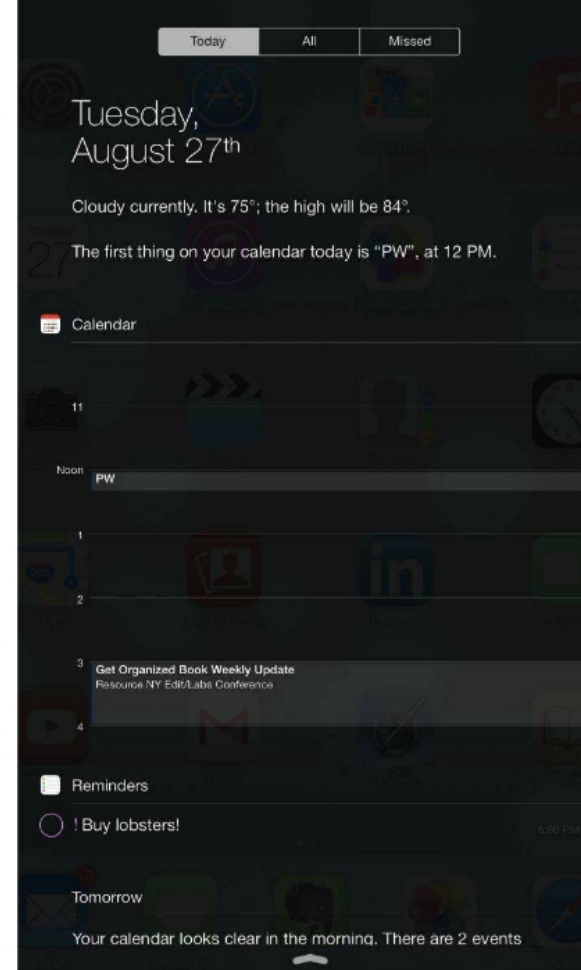
Swipe from the top to view a completely refreshed Notification Center, which in iOS 7 will also be accessible from the lock screen. A new feature called Today provides an overview of your day at a glance—all the information you need is here, from the weather report to birthday reminders.

ITUNES RADIO

It might not be as full-featured as people had hoped, but iTunes Radio embraces the Pandora model—providing users with ad-supported Internet radio. There's music from the big three labels, and iTunes Match subscribers can listen without ads. Create your own stations, purchases songs via iTunes, and peruse songs you listened to in the past via the history section. It'll be available on iOS devices via the music app in iOS 7, via iTunes on the PC and Mac, and via Apple TV. Apple says iTunes Radio will only roll out in the United States this fall, but promised other markets in the future.

MULTITASKING

With iOS 7 Apple revamps multitasking, providing a more full-featured look at the apps you have open when you double tap the home button. Scroll through active apps, and—similar to WebOS—dismiss with a swipe up. Apple also promised “smarter” multitasking, like making sure frequently used apps are open and ready to go when you normally log in (such as Facebook at 9 a.m. on weekdays). Updates will also happen automatically during convenient times, for example when you're connected to Wi-Fi or plugged in.





SIRI

Siri is getting a voice makeover in iOS 7. The female version of Siri will sound a bit less robotic, and users can opt for a male Siri. Apple also promised an improved experience on Siri for French and German speakers, with more language improvements coming soon. Meanwhile, Siri on iOS 7 will tap into Bing search rather than Google.

IOS 7 SECURITY

With “Apple picking” robberies making headlines, Apple is giving security a boost in iOS 7. Now, if someone steals your device and turns off “Find My iPhone” or wipes your device, it will not reactivate unless that person enters your Apple ID.

ICLOUD KEYCHAIN

With iCloud Keychain, iCloud will remember your passwords and credit card numbers. Safari can also enter them automatically when you make a purchase on iOS 7 or OS X Mavericks. “Every time you create an account, you can have Safari generate a unique, hard-to-guess password. And remember it for you,” according to Apple, which insisted that 256-bit encryption will make iCloud Keychain “highly secure.”

MESSAGES

The main update with Messages concerns the look and feel of things. In iOS 7, Messages embraces the “flat” design; gone are the familiar bubbled messages. You can also swipe right to view all messages.

SAFARI

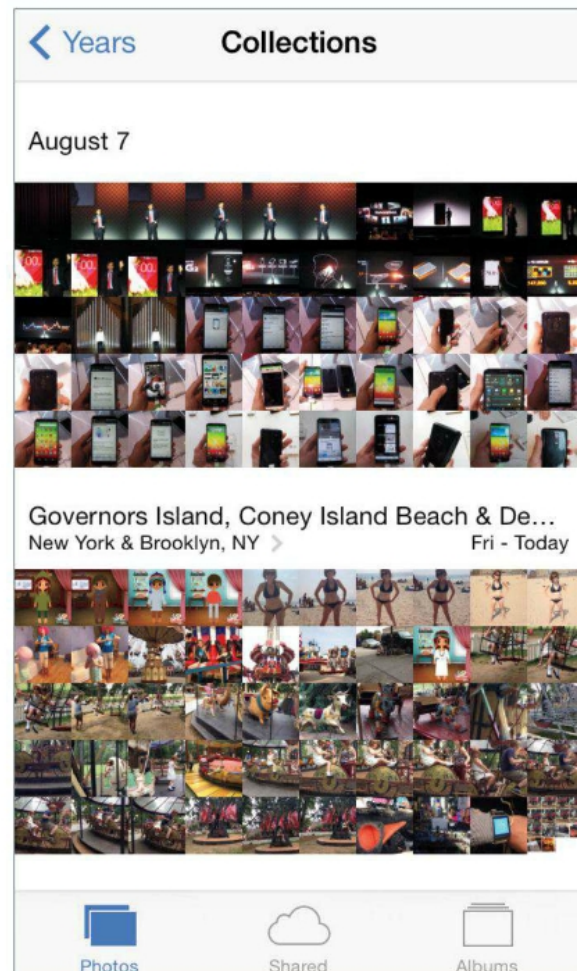
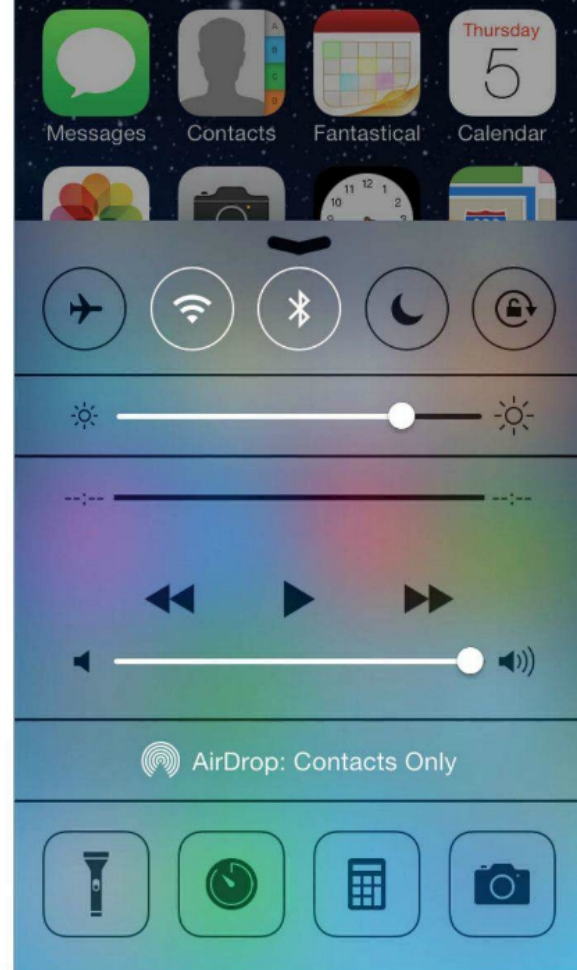
Apple describes browsing on iOS 7 as “bigger, better, and more beautiful.” That includes full-screen browsing and a new tab view, which you can use to scroll through open tabs—and dismiss with a swipe. There’s also a unified search/URL bar, which will auto-suggest websites and search terms. The “Shared Links” view shows a list of shared URLs from your Twitter timeline, while the Reading List section lets you scroll through saved items.

AIRDROP

AirDrop is a not-quite-NFC tool that lets you share photos, videos, contacts, or other items with people nearby. Hit the “Share” button, select the people with whom you want to share, and hit send. It will be available via Wi-Fi and Bluetooth for iPhone 5, iPad (fourth generation), iPad mini, and iPod touch (fifth generation), and requires an iCloud account.

PHOTOS

To help you organize your photos, iOS 7 will group photos that were taken around the same time into separate folders, or Collections, for easier access. Using iCloud, iOS 7 will also allow for shared photo streams, so you can add one of your photos to a friend’s collection. Apple has also added filters.





IOS IN THE CAR

You might want to hold off on using Apple Maps for your in-car driving directions, but other iOS features—such as Siri—will be coming to a number of cars in 2014. With iOS in the Car, in-car dashboards will adopt the iOS interface to safely make phone calls, access your music, send and receive messages, get directions, and more.

WEATHER APP

With Yahoo releasing a Flickr-enhanced iOS app that recently won an Apple Design Award, Apple really needed to step up its game with the pre-loaded weather app on iOS. In iOS 7, the weather app will include more animation and easier access to the various cities on which you want to keep tabs.

CHLOE ALBANESIOUS ✉

AUTO MOBILE

In 2014, cars will start integrating iOS 7 features to make it easier for you to call, access music, get directions, and more.



Mindless Action At Its Juvenile, Entertaining Best



Instead of searching for a few good concepts against a creeping wall of you-can't-make-it-any-crazier in the Saints Row series, the folks at Volition made an unusual move with Saints Row IV: They put in every idea they had, including the stupid ones. The result is a game that comes across as both a sick parody of and a warped commentary on the series, and an incredibly fun sequel to games like Crackdown and Infamous. It's juvenile, stupid, scattershot, self-aware, and incredibly fun because of the balance it somehow finds.

Saints Row IV

\$59.99 (Xbox 360, PlayStation 3);
\$49.99 (PC)



YES, THIS IS THE STORY

You play the leader of the Saints, working with MI6 to take down a crazed terrorist general and blow up a nuke in the air before it can hit Washington, and are elected the president of the United States with Keith David (yes, Goliath/Spawn/street fight with Rowdy Roddy Piper/Navy commercials Keith David) as your vice president until aliens invade and put you and your gang in a virtual simulation of your old city where you get superpowers and have to fight the system while your space ship prepares to attack the evil emperor's fleet.

Like I said: *Every* idea.

Most of the game takes place in the virtual city of Steelport, which itself is taken over by aliens who give it

Saints Row IV

PROS Crazy, mindless fun. Satisfying superpowers. Tons of activities. Full of amusing references and dialog.

CONS Dramatically lightweight. Offers shallow interaction with the world and other characters.



a thoroughly *They Live* makeover and add glowing neon spaceships menacing the skies to boot. The aliens have wiped out all evidence of the Saints' existence, so you have to build up your gang up from nothing again. This time, however, you do that through disrupting the system to free your friends and unlock superpowers instead of performing increasingly criminal acts.

PANTHEON OF SAINTS

A wide variety of fully customizable characters gives you lots of ways to play Saints Row IV.

Instead of bank heists and drug deals, you're blowing up alien strongholds and causing havoc. The mechanics of the game aren't that different from those of previous Saints Row games or any other open-world crime game, but the missions are more gleefully violent.

COMBAT

The controls are basic, with standard third-person running, jumping, shooting, and driving controls that let you navigate the city and kill people. This is shaken up with the addition of superpowers that you unlock as you play. Holding the left trigger activates your super speed and glide powers, for example, and holding the X button charges your super jump, letting you leap over buildings in a single bound and run through the streets faster than any car. The right trigger activates offensive powers, such as blasting waves of ice and fire, throwing things around with telekinesis, and slamming into the ground with an earth-shaking stomp.

You'll also use plenty of guns against cops, aliens, and glitches, softening them up with elemental attacks or flinging them around in between shooting at them. As you upgrade your sprint and jump powers you'll find yourself using them as the main way of getting around, but that won't stop you from summoning tanks and UFOs to help clear out enemy strongholds, and there's still plenty of fun to be had customizing and driving cars. The enemies get tougher as you go, but the later missions in particular are usually satisfyingly difficult—not frustrating.



LIGHT ON YOUR FEET

With super-speed, you can run faster than cars and throw them off the road with impunity before leaping halfway across the city.



BE WHO YOU WANT

Customization and character growth are the two biggest pillars of Saints Row IV's game play and personality outside of cut scenes. You can start by customizing the Saints' leader with a wide variety of body types, skin colors, facial structures, and a handful of voices. You can buy new suits and costumes, each of which can be customized with different colors. I ended up playing a cockney ginger crime boss with a goatee who dressed like the Riddler, in a neon green trench coat, jetpack, and bowler hat. Plastic surgery and tattoo parlors offer even more ways to let you look like anyone.

You upgrade your powers by collecting blue data packets scattered through the city like orbs from Crackdown. There are over a thousand, and they're so common that you can easily find yourself distracted by data-packet hunting when running to your next objective. The data packets are used as currency to upgrade your dash, jump, blast, telekinetic, and stomp

SAINTS BE PRAISED

Check out these shots of the absurdly entertaining Saints Row IV.



SO YOU THINK THEY CAN DANCE?

The Dubstep gun, which causes its targets to dance before they expire, is just one of Saints Row IV's zany weapons.

powers. Outside of the powers, you can also upgrade yourself with health, damage, and stamina bonuses, and even equip your gang with increasingly powerful weapons by spending regular money (called “cache”).

You can customize and upgrade your vehicles and weapons as well. Any vehicle you drive can be instantly saved and summoned again, and most of them can be repainted and upgraded at a body shop. Guns can be upgraded at gun shops, with four different types of upgrades (damage, recoil, clip size, and reload speed) and a special feature such as explosive rounds for the heavy pistol or increased toughness when using the machine gun. Weapons can also be re-skinned: You can turn the heavy pistol into Mal Reynold’s pistol, the quick-shot pistol into Han Solo’s blaster or Deckard’s revolver, the submachine gun into *Robocop*’s machine pistol, the assault rifle into a super soaker or the plasma rifle from *Aliens*, and the machine gun into the railgun from *Eraser*. Yes, a game made in 2013 references *Eraser*.

As in previous Saints Row games, there are a ton of diversions to play to get money and experience (which unlocks new upgrades as you play). There are foot races, superpowered street brawls, virus injection missions where you fight off waves of aliens and glitched enemies, rifts where you run and jump through *Tron*-like neon environments, game shows where you fling people and vehicles through glowing hoops, tile-placing hacking minigames, the classic rag-doll physics minigame Insurance Fraud (made even more painful with the addition of super powers), and, of course, plenty of mayhem missions where you need to destroy as much as you can with a designated heavy weapon, super power, vehicle, or mech suit. You can easily forget about the main plot and just enjoy the game as a giant playground.



WARPED FUN

Saints Row IV gleefully makes pop culture and obscure references in weapon choices, mission names, and tons of smaller details (I counted three references to *Hackers* alone); it even pokes fun at itself in multiple plot points. If you know Saints Row and the genre, all this is especially entertaining.

The game's voice acting is roundly excellent, with perpetual voice actors Troy Baker and Yuri Lowenthal complementing David, Terry Crews, and Natalie Lander's excellent Kinzie. J.B. Blanc stands out as Emperor Zinyak, the most amiable and friendly alien tyrant you ever met. Musical choices are delightful, too, with the series' (and genre's) signature radio stations letting you kill aliens while listening to 1980s pop, 1990s rock, classical music, reggae, and more.

A co-op multiplayer mode lets you work with other players online for both regular action and special cooperative events that require two players.

THE BEATIFICATION OF SAINTS ROW

Saints Row IV never takes itself seriously, and that lets it really work as the sort of catch-all super-powered playground Volition intended it to be. It never reaches the tension or emotional weight of Saints Row 2, it doesn't try to be deep in story or mechanics, and it focuses entirely on letting you wreak havoc. Volition has reveled in making Saints Row IV as goofy, crazy, and blindly enjoyable as possible. And it really works.

WILL GREENWALD ✉

Features

**THE BEST HDTV
FOR YOU**

**PRO TIPS FOR
MADDEN NFL 25**

THE BEST FOR YOU

HD TV



Remember when buying a TV was easy? All you needed to know was how big you wanted it, and you were set. Those days are long gone. Now, in addition to screen size, you need to worry about screen types (plasma, LCD, or LED), resolution, refresh rate, and lots of other things that have made pictures look fantastic—but have led to even more headaches. Rather than get bogged down in details, why not just ask yourself one question: What do you want from your HDTV? Once you know how you'll plan to watch it, both now and in the years to come, everything else will fall into place. Our guide to the best HDTVs on the market will help you find the set that best matches your specific needs—so the picture of what you want to buy is as crisp as the one you'll eventually see on the screen. **BY WILL GREENWALD** ✉

IF YOU'RE ON A TIGHT BUDGET

RCA LED42C45RQ

Wanting to save a few bucks on an HDTV doesn't mean you have to live with a set that looks cheap and delivers subpar picture quality. The RCA LEDC45RQ series is an LED-backlit LCD HDTV line that delivers full 1080p HD and rich colors. This 42-inch model provides an excellent balance of size and price, and offers wide viewing angles and conveniently placed I/O ports. You do only get two HDMI ports, and its 60Hz panel produces a bit of motion lag, but it's tough to do better without spending more than \$500.

\$449.99 | rca.com



Strong Angles

You'll notice only a bit of luminance when you view the screen from the extreme sides.

SPEC Highlights

Good Ports

The set's limited selection of ports are handily located on the left side.

A 1.5-inch bezel on all sides and a 3.6-inch thickness keep this from being the sveltest HDTV out there, but you won't find a more budget-friendly balance of price and performance.



IF YOU'RE AN AUDIOPHILE

Bose VideoWave Entertainment System II

With the VideoWave II Entertainment System, the folks at Bose took the unique 16-speaker subsystem and audio processing technology of the original VideoWave and paired it with a crisp 55-inch Samsung LCD panel with LED backlighting. Black levels aren't quite as dark as they could be, there's still no Web connectivity, and the price is undoubtedly imposing. But the VideoWave II is literally the best sounding TV you can buy, and one where you don't need a separate home theater speaker system.

\$5,999 | bose.com



The clickpad remote has only eight buttons.



SPEC Highlights

A unique remote control simplifies interaction with the VideoWave, and an iPod/iPhone dock is also included to help you make the most of your music.



IF YOU WANT AFFORDABLE ULTRA HD

Seiki SE50UY04

Just as when we moved to HDTV a decade ago, most of the sets we've seen so far using 4K (aka Ultra HD) have been prohibitively expensive. Seiki is challenging the status quo with its 50-inch SE50UY04, an LED-backlit set that costs less than \$1,500. Color issues and light bloom prevent the SE50UY04 from being ideal, but this is the most reasonable set we've yet seen for those who need (or want) to get their Ultra HD fix right now.

\$1,499.99 | seiki.com



**4K for
\$1,500!**

SPEC Highlights

**3,840 by
2,160**

This set's incredible resolution guarantees you'll see unique details--if you can find something to watch.

Ultra HD video contains about four times as much information as traditional 1080p, but content that takes full advantage of it is scant right now. Early adopters only need apply.

IF YOU WANT TO WATCH OUTDOORS

Sunbrite Signature Series 4660 HD All-Weather Outdoor Television

Feel like watching TV outside? Sunbrite's Signature Series of LCD HDTVs are built to withstand rain, wind, sleet, snow, and bugs, and temperatures ranging from 122° to -24° F. You don't get much in the way of extra features for the price (this recommended 46-inch model runs nearly \$2,800), and you'll have to shell out even more for a stand. Still, that money nets you a bright, highly detailed picture with accurate colors, and you can install the set just about anywhere—and leave it there all year round.

\$2,795 | sunbrite.tv



SPEC Highlights

Made for the Shade

Avoid direct sunlight with the Sunbrite—the picture will still wash out.

The fully weatherproofed Sunbrite houses four cooling fans, and is extra large (6.7 inches deep) to maximize airflow. All the ports are safely hidden beneath enclosures. Even the remote is water-resistant.

IF YOU WANT A BIG SCREEN FOR A LITTLE MONEY

Vizio E6011-A3

When an HDTV's price rolls over to four digits, it can be a lot harder to swallow than a set just brushing against costing a Cleveland. The Vizio E6011-A3 offers a pretty compelling case to spend just that much on a big-screen HDTV. As a 60-inch LED set, the E6011 offers a big, bright picture and built-in Wi-Fi to access plenty of online services. It doesn't include 3D support and its colors could be more accurate, but it's a terrific choice for a budget-friendly big HDTV.

\$999.99 | vizio.com



**Less than
\$1,000**

**60 inches
of football!**

SPEC Highlights

In our tests, the E6011 reached a peak brightness of 250.88cd/m² and a black level of 0.05cd/m²; its overall contrast ratio is 1:5,017—fine for a budget TV.

IF YOU WANT THE BEST OVERALL TV

Samsung PN60F8500

If plasma technology is on the way out, someone forgot to tell the folks at Samsung. It's easy to see why the company's 8500 series of HDTVs represent its flagship line: These sets are aesthetically pleasing and deliver beautiful colors, inky blacks, and amazing image detail in both 2D and 3D modes. This 60-inch model is definitely pricey and a bit of a power hog, and its unique remote can be tricky to master. All things considered, however, this set is deservedly at the top of its class.

\$2,799.99 | samsung.com



**Features
the Real
Black Pro
Panel!**

SPEC Highlights

3D Ready!

A pair of lightweight active shutter 3D glasses are included. You'll want them: 3D video is deep and exciting.



Outstanding picture quality, including top-flight blacks and vibrant colors, help ensure that this feature-rich TV also looks the part.

IF YOU'D PREFER A PROJECTOR

Epson PowerLite Home Cinema 3020e

Though HDTVs are lighter and thinner than ever before, they're still limited in terms of convenience and portability. Want more flexibility than you can get with a traditional stay-in-place set? The Epson PowerLite Home Cinema 3020e can project excellent-looking full 1080p content (of either the 2D or 3D variety) in almost any lighting scenario, and supports WirelessHD signal transmission. Considering the high image quality and all the additional features you get with it, this projector is one of the best performers and one of the best bargains you can find.

\$1,899 | epson.com



It's wireless:
Project from your
Blu-ray player,
Apple TV, or Roku
Streaming Box.

SPEC Highlights

Five Inputs:
Project from
all your
devices

In addition to taking advantage of WirelessHD, a transmitter is included: Plug it into HDMI sources to send content directly to the projector.



PRO TIPS FOR MADDEN NFL 25

BY MATTHEW D. SARREL



Every year since its 1988 debut, the football video-game franchise bearing esteemed player and coach John Madden's name has gotten more realistic, complex, and exciting. For the 25th anniversary edition Electronic Arts has pulled out all the stops, introducing tons of new and improved game-play mechanics and more than 300 new plays. Whether you're a veteran quarterback or never before stepped onto the e-field, Madden NFL 25 is a terrific way to satisfy your hunger for football all year round. This list of tips will help you get the most out of the game, and don't be afraid to get rough if you have to: In the immortal words of Madden himself, "The road to Easy Street goes through the sewer."

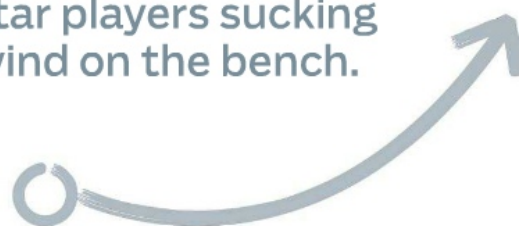




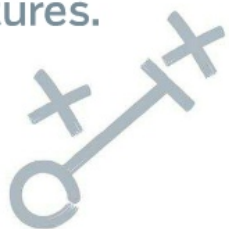
Enable the Ball Hawk option to automatically switch to the defender closest to the intended receiver while the ball is in the air. This makes interceptions much easier to achieve.



Turbo may be the most important button in your repertoire, but make sure not to abuse it or you'll find your star players sucking wind on the bench.



It's worth it to run the Skills Drill in order to learn how to precisely control offensive and defensive players. This also provides a quick way to understand what's changed and how you can best utilize new features.





4

The Standard camera angle feels pretty far away from the field. Go to Settings, Game Options and change the camera angle to Zoom for a more intimate feel.



When you need a big play, you need the Precision Modifier button. It makes the ball carrier juke a little further, spin a little faster, or jump a little higher. All these modifications jack your repertoire of moves from eight to over 30. Be careful: This comes at the expense of speed.



5



ONLINE SEASONS



RANK	GAMERTAG
2	Xefabf23e2AGE
2	MOOOONDA

6

Want to use Internet features? Set up your online accounts (with EA, Sony, Microsoft, etc.) first thing to ensure you don't miss any action.

LEVEL BREAKDOWN

HISTORY



**PLANNING ON
UPGRADING YOUR
CONSOLE TO THE XBOX
ONE OR PLAYSTATION 4?
EA WILL RELEASE
VERSIONS OF MADDEN
NFL 25 FOR BOTH LATER
THIS YEAR.**



7

Learn to love the stiff-arm. You can execute a quick pop of a stiff-arm that knocks opponents off balance. Hold that button to “wall-off” the defense, which keeps them from getting close enough to grab you. Players with a strength rating over 90 can flat-out lay a defender on his back.

Facing down two defenders? Push the Precision button, move quickly to the left then the right, and watch your player shake and shimmy his way through the defense.



8



**PC MAGAZINE
EDITOR-IN-CHIEF
(AND LIFELONG
PATRIOTS FAN)
DAN COSTA SITS
DOWN WITH MATT
SARREL AND
MADDEN NFL 25.**

Similarly, perform a juke-spin combo by holding Precision, pushing the movement control to the right, and then pushing it down. Your player will perform a quick cut to the right then spin back to the left.



Madden Share is a free service that lets more compulsive players to create and upload their own rosters, playbooks, and settings to share with the Madden community (and your friends).

**GET
ORGANIZED**

**Make Meetings More
Productive**

GAMING

**How to Mod
Minecraft**

APPSCOUT

**Our Favorite Apps
for October**

Digital Life

Make Meetings More Productive

Hold the right kind of meeting, and chances are you'll make it more useful for everyone. Here are some pointers. BY JILL DUFFY ✉



Jeff Weiner, CEO of LinkedIn, published an article recently with his one rule to eliminate useless meetings: no presentations. I get where he's going with that idea, but it's an absolutist statement and I can't say I agree with it in all circumstances.

The way to hold better meetings, I believe, is to first understand what kind of meeting you intend to hold, and then organize yourself and prepare for it accordingly. Taking a few simple steps in the planning phase of a meeting goes a long way toward making it something that benefits everyone.



1. Schedule quickly

Except in the case of managing an ongoing or long-term project, I hate meetings that are scheduled more than two or three weeks out. Often before scheduling a meeting, there are conversations among all the parties, by email, phone, or in person, and I much prefer to have those conversations fresh in my mind before the meeting. Schedule too far ahead, and the pertinent info will be long gone from my head.

When trying to find a time that's suitable for a number of people who don't make their calendars publicly available, you can use a free site called Doodle, which lets you create a poll people can use to indicate the times they're free.

2. Use a clear subject line

In an emailed meeting invitation, having a clear subject line is key to everyone's productivity. The subject line should indicate in a few words the general purpose of the meeting. It helps people know before they show up or dial in what they should expect, or what they may need to prepare ahead of time.



FOUR KINDS OF MEETINGS

If you've never thought about the kind of meeting you intend to hold, that could be half your problem. Most meetings fall into one of four categories.



Informational meeting

An informational meeting is exactly that, a meeting used to disseminate information. Usually, only one party has information to share. The attendees are there to absorb it. Semiannual town hall meetings are typically informational, as are PR briefings.

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Discussion/collaboration meeting

In a discussion or collaboration meeting, one or more of the parties involved might work on the agenda. Information is meant to come from multiple people. Collaborative meetings are often also problem-solving meetings. A brainstorming session is one common example of this type of meeting.

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Check-in meeting

The check-in is a regularly scheduled meeting, usually around a particular project that's either ongoing or has an anticipated completion date. This kind of meeting is good for making sure that all the involved parties are up to date on problems, solutions, changes, progress, and so on. One benefit of regular check-in meetings is that they can often be very short. A daily scrum is one major type of check-ins.

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Working meeting

Working meetings are a personal favorite of mine: In them, you do work that needs to be completed. These reduce procrastination, and are often collaborative. One example of what can be accomplished in a working meeting would be programmers and stakeholders getting together to implement changes in code (say, to a website or other interactive product).

3. Have an agenda or goals.

Every meeting needs an agenda or a list of goals. Depending on the complexity of the meeting, the agenda might not need to be explicit, in which case it should be implicitly stated in the subject line. An example is “Subject: Set lineup for October issue of magazine”—the goal is to complete that task in a working meeting.

The purpose of a check-in meeting is to check in, review progress, and raise concerns, so you likely won’t need an explicit agenda for that kind of meeting.

Discussion meetings really benefit from having an agenda. Everyone should receive the agenda in advance of the meeting. I recommend including it in the notes field of the meeting request.

When the meeting leader takes the time to write an agenda or basic list of goals, it also helps her solidify in her own mind the purpose of the meeting and how she will direct it.

4. Define the meeting leader

Every meeting needs a leader or co-leaders. In most cases, the meeting leader is implicitly known: It’s whoever called the meeting or has something to share, in the case of an informational meeting. In phone and video-chat meetings (e.g., WebEx), it’s often the person who initiates the call.

The absolute worst meeting I ever attended had no leader, and about halfway through the meeting, I realized several parties involved thought I was supposed to be driving the meeting. It was at once infuriating and mortifying, not to mention completely unproductive. In another reckless scene, I once called a meeting,



“
**Every
meeting
needs an
agenda or
a list of
goals.**
”



scheduled it, and fully intended to run it, only to have another colleague completely take it over—also irritating.

5. Lose the technology, but do the demo.

Yes, I'm telling you to lose at least some of your technology in order to hold more productive meetings. Before you waste a lot of time creating a PowerPoint deck, ask yourself, "Do I really need a presentation at all?" If the answer is yes, remember that slides should be used to keep people engaged and reinforce your points—not make them for you. No one is impressed by star wipes, and no one wants to watch a video when they've come to hear you speak or have a discussion with you.

If you have a product or service to show off, demonstrate how it works! Don't show pictures or videos of it. Give them the real McCoy.

If you want to give certain information to every attendee of a meeting, including photos and videos, send it to them before the meeting so they can familiarize themselves with the material, which will be more productive for everyone anyway. Then you can spend your time getting to the heart of the matter, and probably do so in much less time, too.



Block Party

With a bit of know-how and the right downloads, there are lots of ways to make Minecraft yours.

BY MAX EDDY ✉



Minecraft is a game that attracts both the creative and the meticulous, which quickly led to numerous player-made modifications. These mods can completely change how you play Minecraft, by doing something as simple as creating a new type of block or introducing entirely new game mechanics. I highly recommend modding



your game if for no other reason than to see the imaginative creations of people who love this game enough to expand upon it.

This article covers just the broad basics of tweaking Minecraft, but the process involves diving into the game's folder structure and system files (for Windows—mods will work in OS X and other platforms, but the folder locations are different). Doing this can be scary, but there's no better way to make Minecraft exactly the kind of game you want to play.

WHAT YOU'LL NEED

All the Minecraft files you need are located in C:\Users\[username, if applicable]\AppData\Roaming\.minecraft. You can also type %appdata% into the



MINECRAFT MODDING TIPS

BACK UP ANY DATA YOU DON'T WANT TO LOSE—LIKE SAVE FILES. THESE ARE STORED IN \APPDATA\ROAMING\.MINECRAFT\SAVES. YOU SHOULD ALSO FAMILIARIZE YOURSELF WITH MOJANG'S WEBSITE, SO YOU CAN DOWNLOAD A CLEAN COPY OF MINECRAFT JUST IN CASE.





search box in the Start menu. You'll spend most of your time in the Versions folder, so I recommend creating a shortcut to that or to the .minecraft folder.

You'll have to use an archiving application such as WinRAR or 7-Zip to access the mod files and modify the Minecraft game files. Don't worry, it's as easy as dragging and dropping.

Lastly, you'll need to be familiar with Forge and ModLoader. These are mods in their own right, but they don't affect your game by themselves. Instead, they do some of the heavy lifting for other mods, and make the process of installing and uninstalling mods much, much easier. The latest version of Forge comes with an automatic installer, but older versions will require you to copy and paste into Minecraft game files. ModLoader isn't as popular as Forge, and will always require you to directly manipulate game files.

LEARN TO LOVE THE LAUNCHER

With Minecraft's new launcher (introduced in version 1.6) you can create multiple profiles with different settings for whichever version of the game you want to use. This is also extremely valuable for connecting to multiplayer servers that aren't running the most current version of Minecraft.

To create a new profile, just click the New Profile button on the bottom right-hand side of the Launcher.

TANGLED WEB

Get lost frequently in the Minecraft world? Install the Magic Yarn mod to create a trail wherever you walk, then return back to your starting point with a single click.



MORE MODDING TIPS

YOU'LL NEED TO DOWNLOAD JAVA FILES AND OTHER ODDS AND ENDS, SO BE SURE YOU TRUST THE SOURCE OF THESE DOWNLOADS, LEST YOU ACCIDENTALLY INSTALL SOME NASTY MALWARE. FOR INSIGHTS ABOUT THIS, CHECK OUT THE MOD SECTION OF THE MINECRAFT FORUMS, OR THE MINECRAFT WIKI.



You can also edit an existing profile by hitting the Edit Profile button. The most important part of the dialog window that appears is the Use Version pull-down menu, which lets you select the version of the game you'd like to play. Once you start modding the game, your modified game files will appear here.

I recommend creating at least two profiles: one for mods and one that is just a vanilla installation. Also, using your vanilla profile, launch the game using each of the available versions. This will force the Launcher to download each version of the game and place them in your Versions folder. You'll need these later.



INSTALLING YOUR MODS WITH FORGE

For mods that require Forge, visit the forums at minecraftforge.net and go to the Releases section. Download the version of Forge appropriate for the mod you want to install. The latest version of Forge, version 9, will do all of the heavy lifting for you and even create a new Forge profile in the launcher. Run the Forge JAR file, select Install client, confirm that Forge has the correct path to your Minecraft installation, and press "OK." A confirmation window should appear.

MORE MODDING TIPS

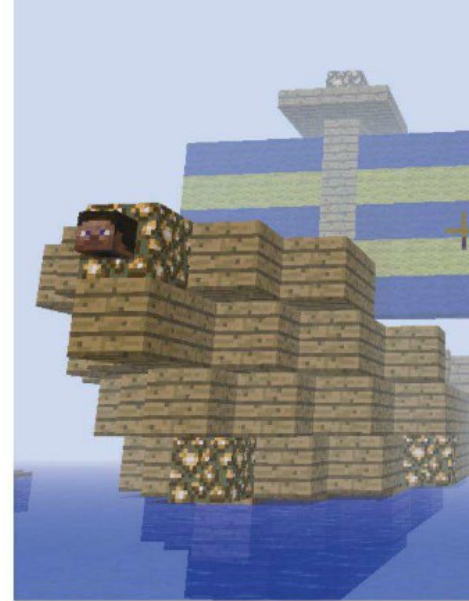
BECAUSE MODS ARE MADE BY HOBBYISTS, COMPATIBILITY ISSUES CAN ARISE. MANY MODS WILL REQUIRE A SPECIFIC VERSION OF MINECRAFT, FORGE, OR MODLOADER, AND MAY HAVE INCOMPLETE OR NONEXISTENT DOCUMENTATION. READ THE INSTRUCTIONS CAREFULLY AND MAKE SURE YOU HAVE EVERYTHING YOU NEED BEFORE TRYING TO INSTALL A NEW MOD IN THE GAME.

Now open the Minecraft launcher, select the newly created Forge profile, log in if you haven't already, and launch the game. Note that the Minecraft game selection screen now includes a Mods button, and Forge version information in the bottom left-hand corner. You should see that three mods are installed—don't worry, these are tools installed by Forge to help run other mods.

If the mod you want to run requires an older version of Forge, you'll have to use a more hands-on installation process. First, download the appropriate version of Forge. Then go into the versions folder inside .minecraft and locate the version of the game you need. Each folder is labeled by version number. If you don't see the version you're looking for, go back to the launcher, click "Edit Profile," select the appropriate version, and launch the game. The launcher will download the version from Mojang and place it in the versions folder.

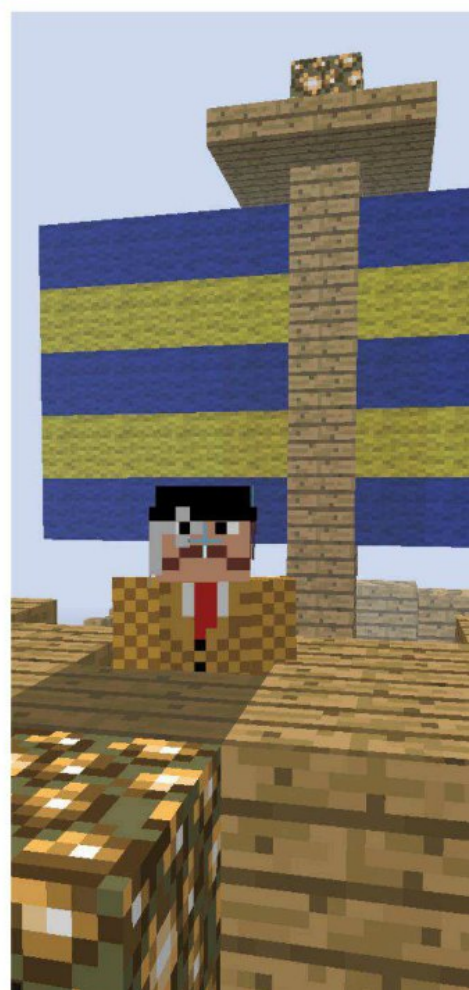
Once you've found the correct version, copy the folder and paste it into the versions folder. This way, you'll have clean copies of the Minecraft game files.

Rename the folder something you'll recognize, copy the name of the folder you just created, and then open it. Inside are two files—a JAR and a JSON. Rename both so



I'D RATHER BE SAILING

Looking to spend more time on the water? The Archimedes Ship mod lets you design any kind of ship you want and take to the high seas.





that they match the folder which contains them.

Next, open the JSON file in Notepad. The first line should read “id: ‘1.5.2.’” Paste over the version number (in this example 1.5.2) with the name you gave the folder.

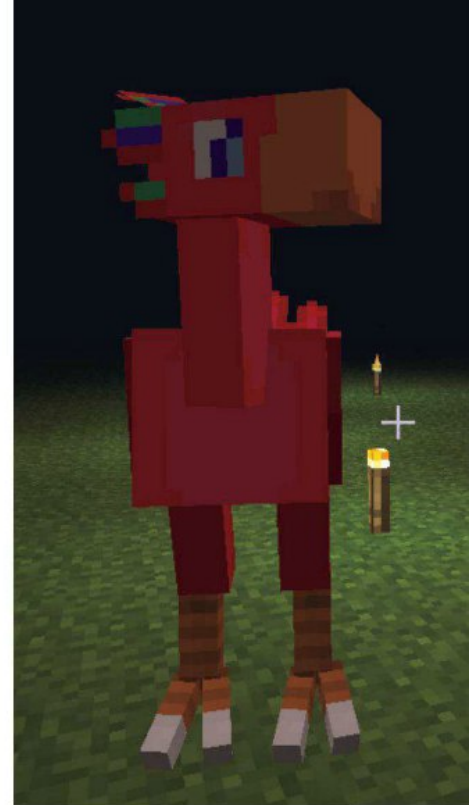
Next, open the Forge ZIP file you downloaded and the JAR file you just renamed; leave both windows open. Copy all the files in the Forge window and drag them into the JAR, then select the META-INF folder and delete it. Fire up the Minecraft launcher, create a new profile, select the version of Minecraft you created from the pull-down menu, and start the game. If you don’t see Forge’s version information on the Minecraft start screen, try installing it again.

The first time it launches, Forge creates new folders for various mod components. The most important one is .minecraft/mods, which is where you place the mod folders you download. Once in the mods folder, the mods will appear in the Mods section of Minecraft Forge. Unfortunately, you cannot toggle mods on and off from within the game; if you want to deactivate a mod, you’ll have to remove it from the mods folder.

Sometimes, mods will require additional libraries or specific files in order to operate properly. Follow the instructions provided by the mod’s creators and you’ll be up and running in no time.

INSTALLING MODS WITH MODLOADER

As with older versions of Forge, you’re going to manually change the game’s JAR file to install ModLoader. Follow the steps above for the older version of



Minecraft, creating a copy of the appropriate version folder, change the JSON and JAR filenames, and modifying the JSON file. (To avoid conflict issues, try installing ModLoader and Forge on separate versions of Minecraft.)

Now, right-click on the freshly modified JAR folder and open it. Do the same with your downloaded copy of ModLoader. Copy all the ModLoader files into the Minecraft JAR file, then delete the META-INF folder.

If you've also installed Forge, then you already have a mods folder. If not, then you'll have to create one for ModLoader in the .minecraft folder. Place whatever mods you want to use into this folder.

In the Minecraft launcher, create a new profile, select the modified version of Minecraft from the pull-down menu, and start the game. Unfortunately, you won't know that ModLoader has loaded successfully until start playing the game.

ANIMAL PLANET

The Mo' Creatures mod adds dozens of new animals to Minecraft: snails, raccoons, elephants, dragons, and lots more.

Our Favorite Apps



Android, iOS



Android, iOS



Android, iOS



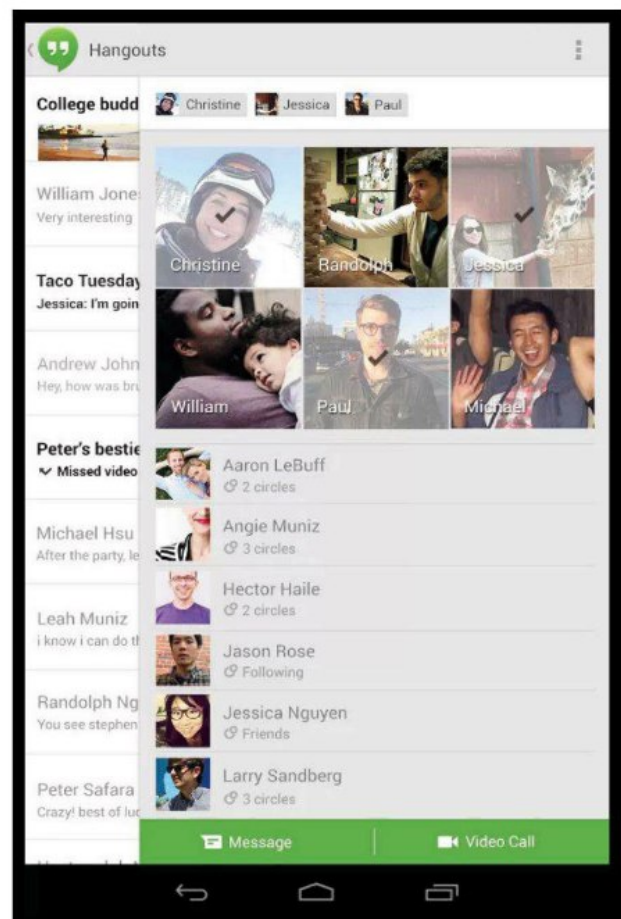
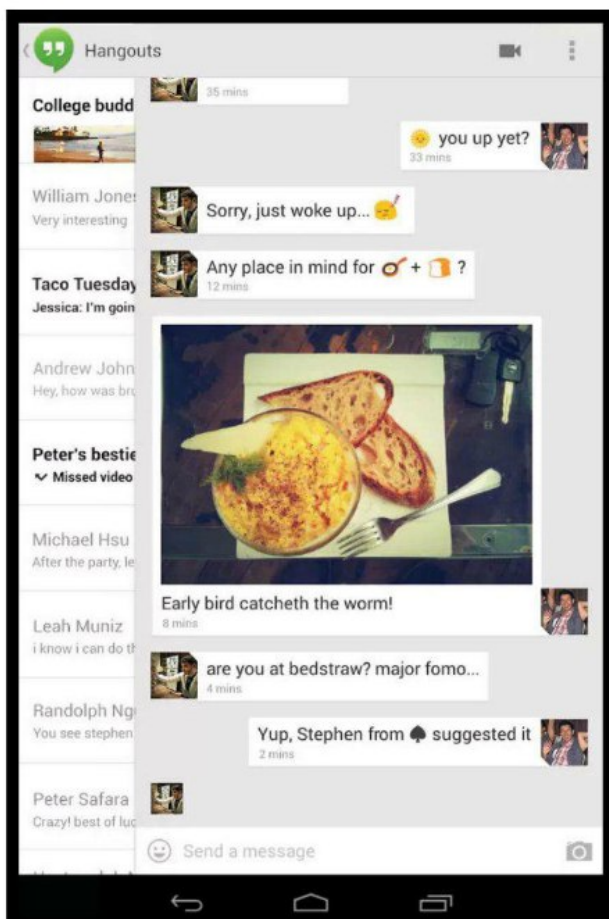
Multi

Hangouts

Free



Apple's FaceTime feature is handy, but it works only for and with iOS devices. The free Hangouts app is a simple, comprehensive way to communicate over all of Google's services, giving you the ability to easily video chat, share pictures, and more. A Google+ account is required for more advanced capabilities, you won't find some traditional chat features such as statuses and buddy lists, and the notifications are a bit intrusive, but Hangouts makes it a snap to stay connected just about wherever you are.



Our Favorite Apps



Android, iOS



Android, iOS



Android, iOS



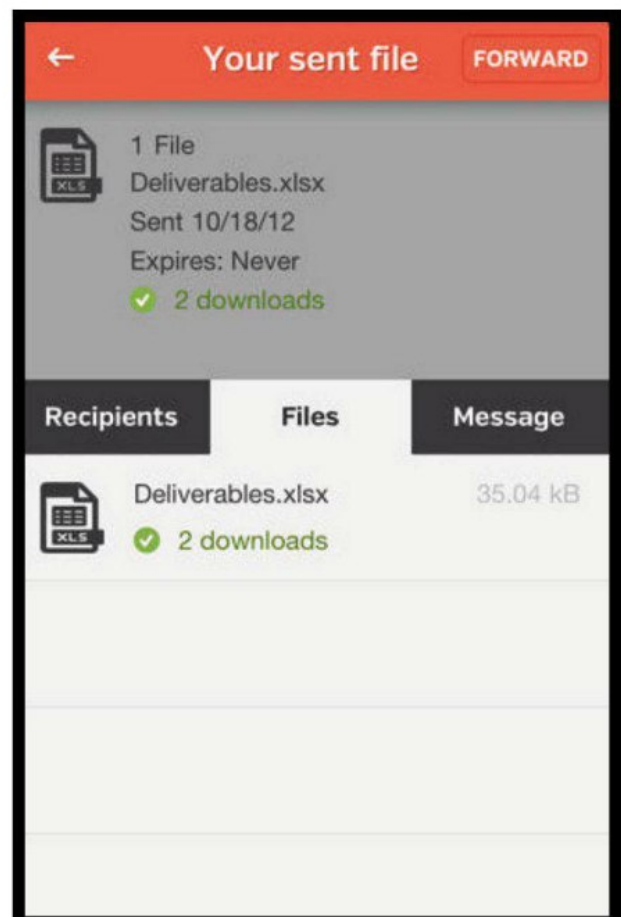
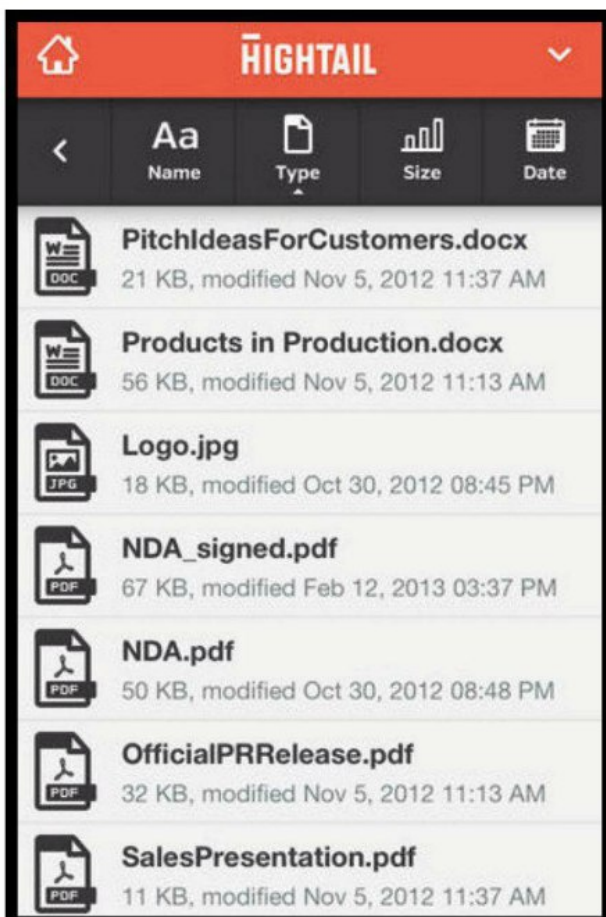
Multi

Hightail

Free



Don't let mammoth file attachments keep your emails from their intended recipients. Hightail (formerly known as YouSendIt) lets users upload large files to its servers and then share links to them with others. With the revamped iPhone and Android apps you can also digitally sign documents, upload from an SD card, store things in the cloud, and sync across multiple devices including your PC. If you need to send oversize files regularly, Hightail is definitely worth a download.



Our Favorite Apps



Android, iOS



Android, iOS



Android, iOS



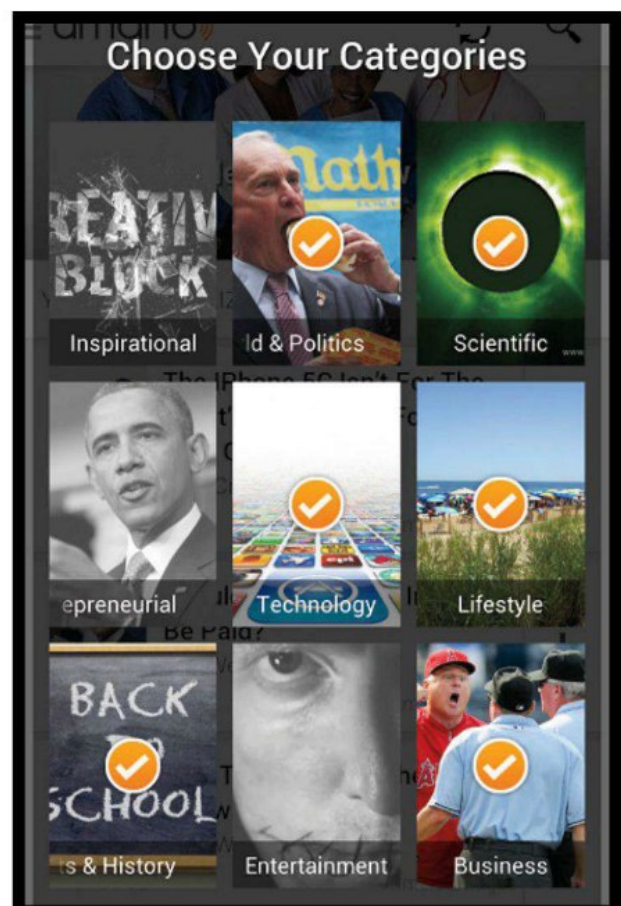
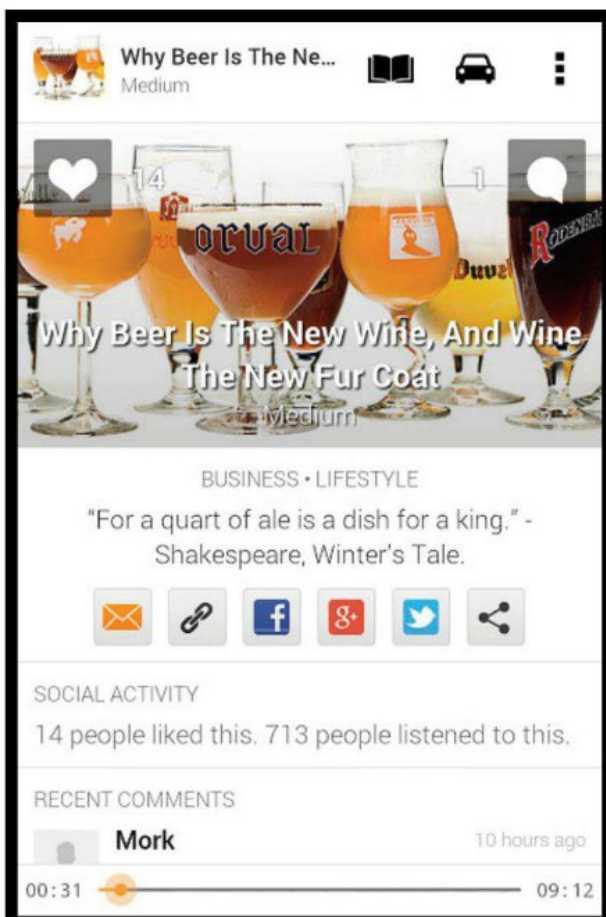
Multi

Umano

Free



Have you ever wanted to read a long-form article while at work, but knew that your boss wouldn't be keen on the idea? With the free Umano app you can instead listen to articles from the likes of *The Atlantic*, *BusinessWeek*, *The New York Times*, NPR, Salon, and Vice—yes, listen. Umano hosts audio versions of news and opinion pieces read by professional voice actors. The result is an informative and entertaining way to dive into written content in a fresh (and work-friendly) way.



Our Favorite Apps



Android, iOS



Android, iOS



Android, iOS



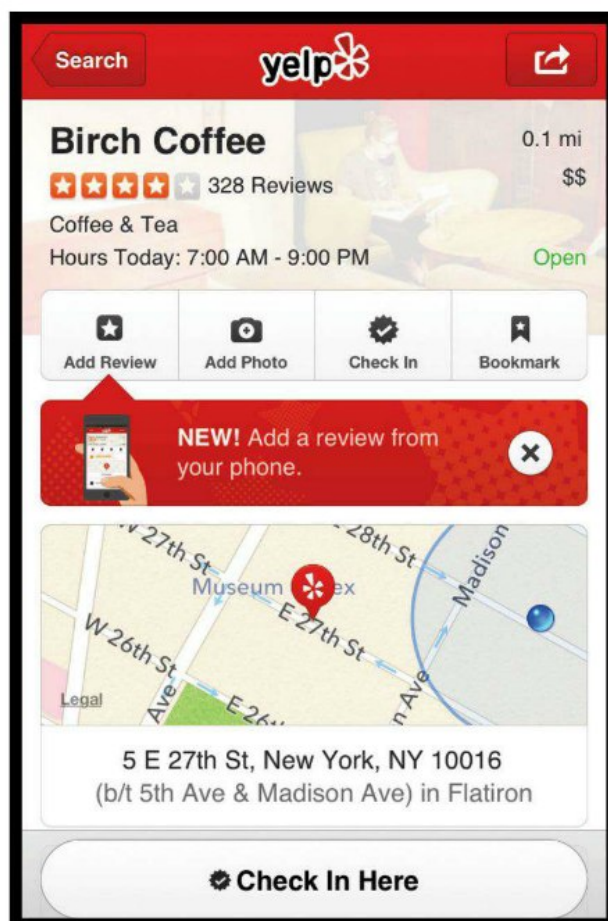
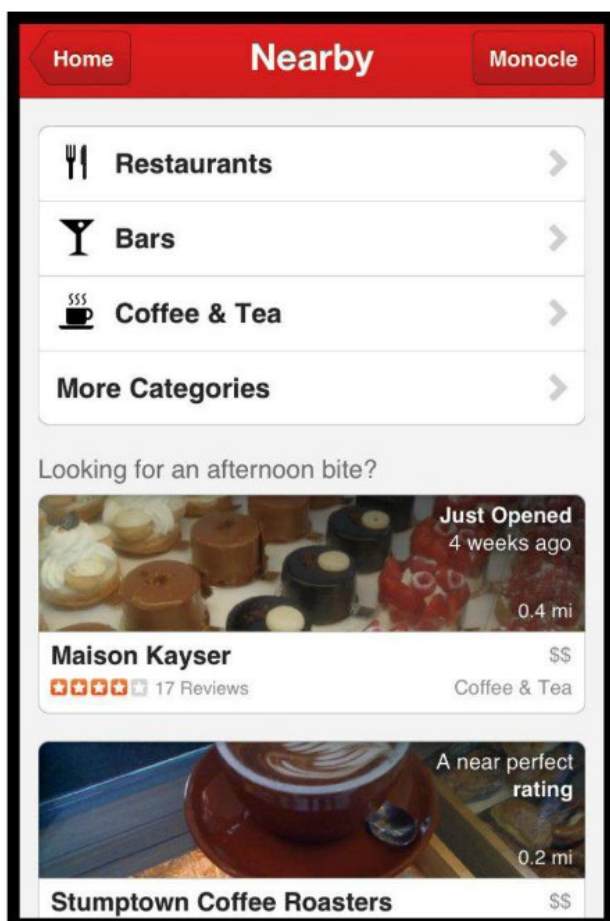
Multi

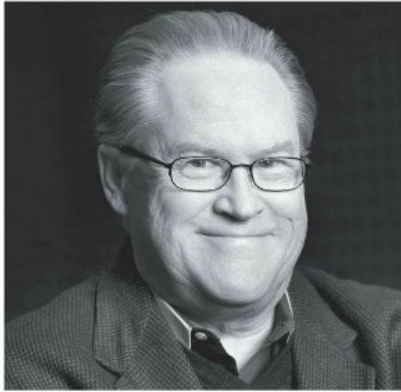
Yelp

Free



We've long admired Yelp for its detailed information about shops and businesses, but its free mobile apps have had limited functionality—until now. The new versions not only let you quickly search, get directions and operating hours, see photos, and read reviews and tips, but also write your own reviews. The iOS version has the best navigation and the Windows Phone—optimized one uses Microsoft's handsome Start design, but you'll find deliciously useful information in each app.





Redefine Personal Computing? Not Yet

The term PC was originally short for “personal computing” (ignoring the “politically correct” redefinition as best we can). But today one could say it means “phone-centric computing,” or even just “phone computing”—if one were to look at the magazines and webpages that used to concentrate on desktop PCs and their matching software systems.

This is a final and permanent shift in focus, though everyone predicted it as far back as the 1980s. Its failure to appear earlier was the result of a conceptual gap that existed between the inventors of the first smartphones, ironically led by Microsoft, and the actual simplistic needs of the users. This meant two things had to change.

The first was that the stylus, which was inconvenient and easily lost, had to go. The second was that the process of magnification had to be simplified; this happened when the two-finger squeeze and expand process came around.

Once these concepts were established, everyone flocked to them. Steve Jobs and his team cried foul, but there was no possibility that the iPhone was not going to be copied. It was a genuine breakthrough and no one was going to wait around while Apple took over the place. If this was the way people acted towards technology we’d all be using the MOSAIC browser.

Ultimately, however, “personal computing” hasn’t changed much. Phones are pocket computers that, when used casually, do much of what desktop computers can do. They can search for information using the Internet. They can do

“

**Have you ever
run into a
phone whose
processor
means any-
thing to you
the way it does
with desktop
machines?**

”

calculations. They can run programs. The only difference is the name of the device that everyone now wants to talk about.

Even the coverage of smartphones tends to reflect old-fashioned coverage of computers. Someone will complain about the phone being no good because there are not enough cores in the CPU, for example. But have you ever run into a phone whose processor means anything to you the way it does with desktop machines, where the OS overhead needs real power? I haven't.

Smartphones may have revolutionized the way we converse or debate with friends, and led us to spend more time communicating with others than sitting by ourselves while arguing in chat rooms, editing photos or videos, or really digging through email. But we have not seen a revolutionary new way to look at and evaluate these devices and their software that reflects the changes in the personal computing landscape.

We still see the same sort of feature-comparison reviews that we have with video cards since the 1980s. I have yet to see anyone actually compare speaker systems or microphone specifications, let alone the radio wattages of various phones. When it comes down to it, we still treat them as if they were a random peripheral such as a monitor.

Only when all that changes will the real meaning of personal computing in the 21st century finally become apparent.



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