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QUANTIFIES YOUR  
HEALTH

SIR RICHARD BRANSON  
ON SPACESHIP TWO  
AND GALACTIC TOURISM

THE FIT 15  
SHAPES UP SONY'S  
VAIO LINE

# DISTRO

051013 #90

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## The iTunes Store @ 10

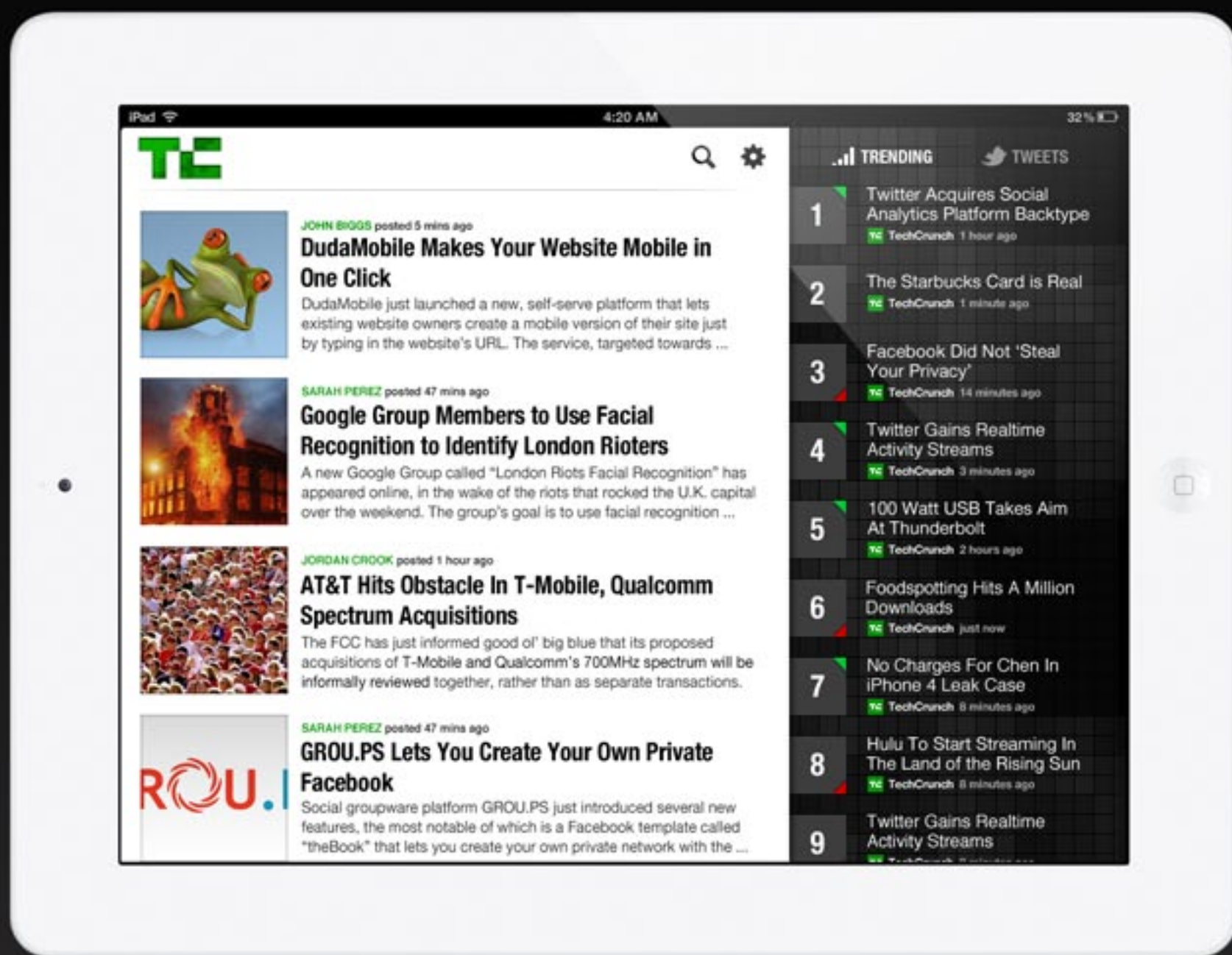
A DECADE AGO, APPLE LAUNCHED A MUSIC MARKETPLACE AND CHANGED THE FACE OF THE INDUSTRY, BUT COULD THE RISE OF STREAMING SERVICES SIGNAL THE END OF ITS SWEET SUCCESS?





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# ISSUE 90

DISTRO

05.10.13

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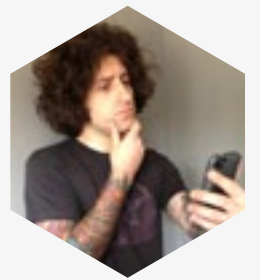
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**VISUALIZED**  
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*On the Cover:*  
Cake by Amelia Halverson; Photo Illustration by Troy Dunham; Photograph by Wendy George; Grace Clementine/Getty Images (Plate)



# 3D PRINTING GROWS UP

DISTRO  
05.10.13

EDITOR'S  
LETTER

**A**nother week with Google Glass and, as I grow more accustomed to having it in my life, I find myself struggling more and more to come up with reasons to wear the thing. I'm still very happy to stop on the street and give people a demo, but if I'm honest, I don't need that much attention from strangers in my life. Don't get me wrong, I'm still very excited about the potential here, but it's safe to say the novelty is running out.

Still, this week Glass did get a nice improvement. The XE5 update was released late Tuesday night and shipped with a series of small, but important niceties, like notifications from Google+ and the ability to do a search from anywhere in the UI. Unfortunately, this update also changes things such that uploads will only occur from the headset when it's plugged in and on WiFi. That'll help battery life — at a somewhat unfortunate cost to wireless functionality.

The world of 3D printing got a lot more notorious this week thanks to the firing of what appears to be the first entirely 3D-printed handgun. It's called the Liberator and it was demonstrated to Forbes over the weekend by Defense Distributed founder Cody Wilson. We've

seen plenty of weapon componentry come out of deposition printers over the years, but never a complete weapon. Well, nearly complete: it requires a single, metal nail as a striking pin — and a bullet, of course.

That nail is also the only component that could be picked up by a metal detector, though it's small enough that it's not likely to be. That's a point that raised the ire of many, including Senator Charles Schumer, who discussed the scary prospect of legislation relating to 3D printing. It's the very beginning of this debate, one that will almost surely rage on this year. As someone who enjoys firing handguns, but does not enjoy being fired at, I confess I'm of mixed feelings about this. The small caliber and short barrel on the Liberator are likely to result in a combination that's more of a nuisance than a lethal threat, but I still can't say that I want everyone walking around with one in their pockets.

We saw more indications that the not-quite-bulletproof-but-close BlackBerry Q10 will be receiving a lower-cost QWERTY cousin soon, and some more information to boot. The R10 looks to share plenty of DNA with its recently reviewed





“Sony’s surely hoping its PS4 doesn’t prove to be quite the burden its predecessor turned out to be.”

portrait predecessor, but with half the storage, a poorer camera and what looks to be a less-sophisticated chassis.

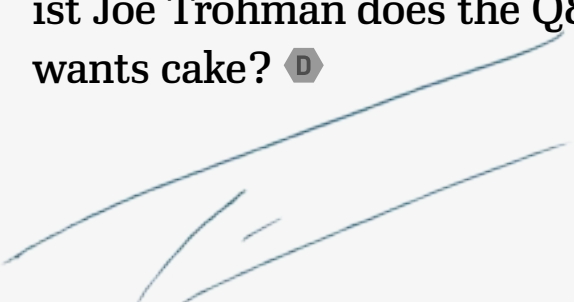
Ouya’s Julie Uhrman indicated it’s delaying the retail release of its little, boxy Android gaming console by a few weeks. June 25th is the new shipping date for those who didn’t get in on the Kickstarter edition, but those who already have theirs shouldn’t get too cocky. The retail version will be receiving at least one significant upgrade: buttons that don’t stick! Yes, Ouya is working on revising the controller faceplates to fix one of the most annoying issues with that edition, and we’re hoping the company does something to help out those early backers with sticky inputs. Ouya also picked up an additional \$15 million in funding and a new board member: former EA exec Bing Gordon. What exactly it’s going to do with all that cash remains to be seen.

Meanwhile, Gordon’s previous employer gave Nintendo another kick while it’s down. EA announced this week that games made using its next-gen Frostbite engine will not be coming to the Wii U. Game devs at the company tested the

engine on Nintendo’s latest and found the results to be unsatisfactory. This means major titles like *Battlefield 4* and *Madden NFL*, along with 13 others, will not be ported here, putting a significant damper on the system’s credentials as a general-purpose gaming machine.

Things are looking better at Sony, for a change, with the company posting its first profits since 2008 — that’s nearly as long as the PlayStation 3 has existed, if you’re keeping count. Hirai’s house managed \$458 million in profits despite sagging TV sales. But, smartphone sales are starting to show some growth, and software revenue is increasing as well, helping to swell that bottom line. Sony’s surely hoping its PS4 doesn’t prove to be quite the burden its predecessor turned out to be.

In this week’s Distro we’re looking back at 10 years of the iTunes Store, a service that started off as an annoying music player and ultimately reshaped the industry. We also have reviews of the new Fitbit Flex and the purely coincidentally named Sony VAIO Fit 15. We have an interview with the recently knighted and soon-to-be astronaut Sir Richard Branson, Ross Rubin talks about the challenges of not being able to wear Google Glass, Joshua Fruhlinger relives a high-tech childhood rivalry and Fall Out Boy guitarist Joe Trohman does the Q&A. Now, who wants cake? 



TIM STEVENS  
EDITOR-IN-CHIEF,  
ENGADGET



# EMINEM AUDIO, TERMINATOR EYES AND SCOURGE OF THE GENIUS BAR



Touch article names to read full threads

DISTRO  
05.10.13

INBOX



MARSHALL MONITOR HEADPHONES

ISSUE 89,  
MAY 3RD, 2013

“But do they go to 11?”  
— JADEDF\*\*K

“I’d rather [get] Marshall Mathers approved headphones.”  
— MILLSPECDROID

WHY DON’T I CRASH  
ISSUE 89,  
MAY 3RD, 2013

“Ehhhhhhhh I wish my mother would follow

ON iOS, NOW IS GOOGLE’S TIME

ISSUE 89,  
MAY 3RD, 2013

“I love Google because they are all about cross platform support for all the popular platforms. You cannot say the same thing about competing companies. Apple does not have any support on Android. MS apps are pure trash on iOS and Android. Google’s YouTube, Maps, Mail and Search have excellent cross-platform support.”

— SHAZTHASL

these directions. I’ve told her the same stuff for years but she never listens and has to take monthly trips to the genius bar. They literally

run to the back of the store when she walks in now. Maybe she will listen to me if I show her this ... No, no she won’t.”

— KYWAGNER





**LENOVO IDEAPAD YOGA 11**  
ISSUE 89,  
MAY 3RD, 2013

“Wait, did you say 16hrs?  
That’s downright  
impressive.”

— **JEREMIAHWHITE**

**LIVING WITH GOOGLE  
GLASS**  
ISSUE 89,  
MAY 3RD, 2013

“I’m throwing money at  
the screen but nothing  
is happening...”

— **CHIYIN2456**

“I thought dogs are sup-  
posed to bark when the  
Terminator approaches.”

— **THEUBI**

“The airports I’ve been  
to clearly state that video  
capturing and taking pic-  
tures around the security  
check are forbidden.”

— **ANDREWANALYST**

**GOOGLE GLASS  
(EXPLORER EDITION)**  
ISSUE 89,  
MAY 3RD, 2013

“I love the future.”

— **RVPIOSUCKS**

**BLACKBERRY Q10**  
ISSUE 89,  
MAY 3RD, 2013

“Also why has no  
company produced  
a phone with this  
exact form factor and  
better specs running  
Android? Seems like  
a no-brainer.”

— **PISTOCK42**

“Definitely will be in-  
teresting to see the  
Smartwatch and Glasses  
wars go head-to-head in  
multiple aspects. Many  
consumers will most  
likely only find a need  
for one external display  
on their person, besides  
their smartphone, to  
provide them with criti-  
cal information. While,  
the devices are of a very  
different nature, their  
competition and user  
base will be compet-

ing in the same user  
group more than likely.  
Concerns about privacy  
when it comes to Glass  
are definitely legitimate,  
as discomfort will arise  
between people in face-  
to-face interactions.

That said, with Google  
showing their cards now  
with what they have to  
offer, the ball is in Ap-  
ple’s court to wow us  
with something new, and  
dare I say, innovative.”

— **PKMAXIMUM**



# ENTER

EYES-ON

DISTRO  
05.10.13

## ULTIMATE EARS PERSONAL REFERENCE MONITORS

### SOPHISTICATED IN-EARS

Ultimate Ears has been cranking out custom in-ear monitors for musicians and the pro audio crowd for over a decade and a half. The company recently stepped up its efforts to outfit each user with a line of tuned devices that offer a cozy fit and carefully tweaked sound. With wood accents and clear shells, the Personal Reference Monitors garner up-close inspection.



Tap for  
detail

WOOD  
VENEERS

CLEAR  
VIEW

ULTRA  
CUSTOM

PHOTOGRAPHS BY WILL LIPMAN

**THE DAMAGE: \$1,999**





# ENTER

EYES-ON

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## ULTIMATE EARS PERSONAL REFERENCE MONITORS



### WOOD VENEERS

Instead of plastic coverings, the Personal Reference Monitors have wood veneers stuck on their faces in one of four options, including Walnut Burl.

PHOTOGRAPHS BY WILL LIPMAN





# ENTER

EYES-ON

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## ULTIMATE EARS PERSONAL REFERENCE MONITORS



### CLEAR VIEW

Like a few of UE's other in-ear offerings, these monitors include clear shells to house the components, allowing users to ogle all the hi-tech innards.

PHOTOGRAPHS BY WILL LIPMAN





# ENTER

EYES-ON

DISTRO  
05.10.13

## ULTIMATE EARS PERSONAL REFERENCE MONITORS



### ULTRA CUSTOM

Custom in-ear monitors usually mean that the shells are molded for a personal, unique fit. Here, the sound is also specifically tuned for individual sensibilities.

PHOTOGRAPHS BY WILL LIPMAN





# 3D SYSTEMS STAR TREK FIGURES

When the company that helped invent 3D printing asks you if you want to be turned into a *Star Trek* statue, the only right answer is: “How soon?” Naturally, we immediately shot off a couple of selfies (front-facing and profile) and ticked off a couple of options like clothing, weapons and inscriptions. Once you send in two photos, fill out the specifics and pay the \$70, someone at 3D Systems will convert your image into a 3D model, import it into the company’s software and then print it out using the ProJet



660Pro. It’s a rebrand of the high-end device we saw at work at Laika’s Portland studios, printing out faces for the then-forthcoming stop-motion feature *ParaNorman*.

It can also print in full color, thanks to jets that spray a bed of drywall-like gypsum plaster, utilizing off-the-shelf HP ink cartridges. The whole process takes around three hours to complete a figure. Once printing is done, you excavate the models from the powder bed and then clean the excess powder off using a jet of high-pressure air. Even after running it through the air blast, the figure still looks a bit ghostly, so a Super Glue-like substance gets squirted over each output. The final step both enhances the color of the statue and adds a bit more strength to its fragile structure.

As far as accuracy goes, Ben’s figure, which was the first one out of the box, was probably the least convincing of the three. Tim’s beard, on the other hand, was fairly spot-on and the hair was rendered impressively on all of ours. Brian’s figure also turned out pretty well, and while he

**PRICE: \$70**

**AVAILABILITY:**  
NOW AVAILABLE

**THE  
BREAKDOWN:**  
THE 3D-PRINTING  
OUTFIT TURNS  
TWO SNAPSHOTS  
INTO A CUSTOM  
STAR TREK  
ACTION FIGURE.

wishes he could claim that those were his pecs, they’re actually the same ones that everyone gets. The powder still leaves things a little rough to the touch, with a slightly sandpaper-like surface.



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# LG OPTIMUS G PRO

**AT&T has made** the Optimus G Pro official as an exclusive on its network, giving subs an alternative to that other 5.5-inch handset, the Galaxy Note II. To LG's and AT&T's credit, the G Pro's remained mostly unchanged in its transition to the US market, retaining the same 1080p HD IPS display, 1.7GHz Snapdragon 600 processor, 2GB RAM, 2.1-megapixel / 13-megapixel camera setup and 3,140mAh battery of the Korean-only model. The only major changes to the handset's internals are in its LTE bands and inbuilt wireless charging.

Fans of the glossy white G Pro will be disappointed to know that the AT&T

**PRICE: \$200 (ON CONTRACT)**

**AVAILABILITY: NOW AVAILABLE**

**THE BREAKDOWN: LG'S 5.5-INCHER GETS A BLACK COAT OF PAINT, BUT REMAINS MOSTLY UNCHANGED INSIDE.**

variant will only ship in black. It still evokes a sense of solid craftsmanship, despite the overall use of plastics. We'll leave the true test of its final production merits to our forthcoming review, but from the brief time we spent deming the device, the performance boost to regular navigation and casual browsing is immediately noticeable.

On the software front, AT&T's pre-loaded a bunch of its own apps onto the Android 4.1.2 device, but apart from that you won't find much else mucking up your app drawer. LG hasn't crammed many third-party apps onto the G Pro, but it has ported over some unique features. Prospective G Pro users looking for a true multitasking tool can use the updated QSlide 2.0 for multi-window application functionality, or take advantage of the VuTalk screen-sharing feature.



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**PRICE: \$999****AVAILABILITY:  
MAY 17TH****THE BREAKDOWN:  
THE R7 WIELDS A  
DISPLAY HINGE  
THAT ALLOWS  
FOR AN ALL-IN-  
ONE DESKTOP  
CONFIGURATION.**Click on  
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# ACER ASPIRE R7

**At Acer's recent** global press event, the company announced the Aspire R7, a 15-inch laptop whose display sits on a flexible "Ezel" hinge. This allows it to be pushed up and back so that it lies nearly flat — just like an all-in-one desktop. Similar to the Lenovo IdeaPad Yoga line, too, you can flip the screen all the way back so that it faces away from the keyboard, a feature that seems especially well-suited for giving presentations. In terms of specs, Acer is being a little cagey, but we have learned the R7 has a 15.6-inch, 1080p display with a choice of Core i5 and i7 processors. Pen input is possible, too, and the whole thing weighs in the neighborhood of five

and a half pounds.

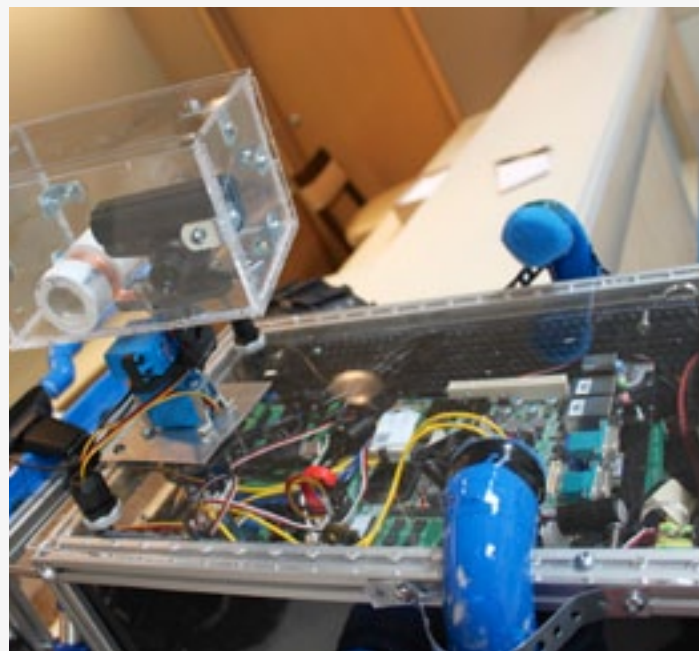
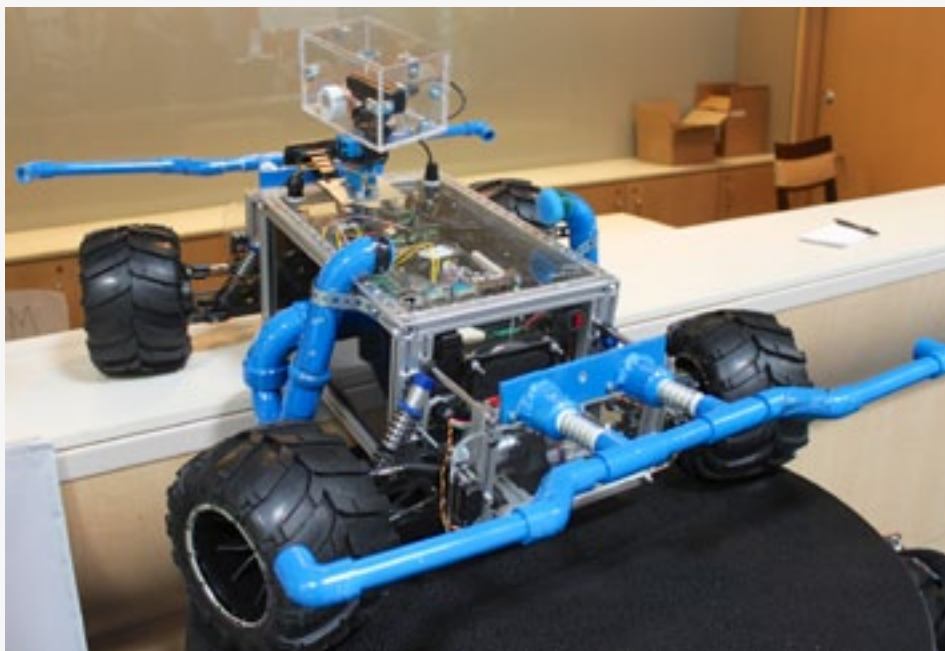
As weird as the R7 looks, it's in many ways just another Windows 8 slider —

just bigger with a hinge design we haven't really seen used on a notebook before. Still, the R7 appears to present many of the same advantages and disadvantages as other sliders we've seen: despite being a reasonably large machine, its keyboard is about as cramped as what you'd find on a much smaller PC. That's because when the display is propped up, it eats up at least half the available deck space.

Giving credit where it's due, though, the backlit keys at least have a pleasantly soft finish, and feel nice to type on. But all these things are trade-offs, right? In exchange for the squat keyboard you get a display with truly adjustable screen angles — something we can't say about other sliders we've tested. Also, we'll go on record saying that this is one of the smoothest, most controlled hinges we've ever encountered — not just on slider convertibles, but on desktops, too.







# CORNELL UNIVERSITY'S LASER TAG DUNEBOOTS



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**Cornell University** may be the host of the Cornell Cup competition, but that doesn't mean it can't bring its own robots to join in on the fun. This year, students brought along a few bots, dubbed dunebots, outfitted with all-terrain wheels and equipped with laser tag turrets. The rugged rig features a pair of cameras, a dustproof and water-resistant chassis, air intakes capped with filters and other custom components for suspension and steering. Not only does the team plan on releasing

**PRICE: TBD**

**AVAILABILITY: SOURCE MATERIALS COMING SOON**

**THE BREAKDOWN: THESE LASER-WELDING BOTS NEED TWO DRIVERS ARMED WITH XBOX 360 CONTROLLERS FOR BATTLE.**

code and documentation for the project, but also the hardware was designed with modularity in mind, so others can build their own modified versions.

Taking the robot into battle requires two pilots armed with Xbox 360 controllers: one directing where it travels, and another aiming the turret and firing. Driving the buggy over the web is also possible, though it takes a few seconds for it to react. The group also baked in voice controls, to boot. If you're not watching the car duke it out in person, you can even tune in over the web and watch a live video stream from one of its onboard cams. Top speeds haven't been firmly nailed down, but the team says the bot was running at approximately 35 percent of its full potential, since it was deemed too fast for conference attendees. 



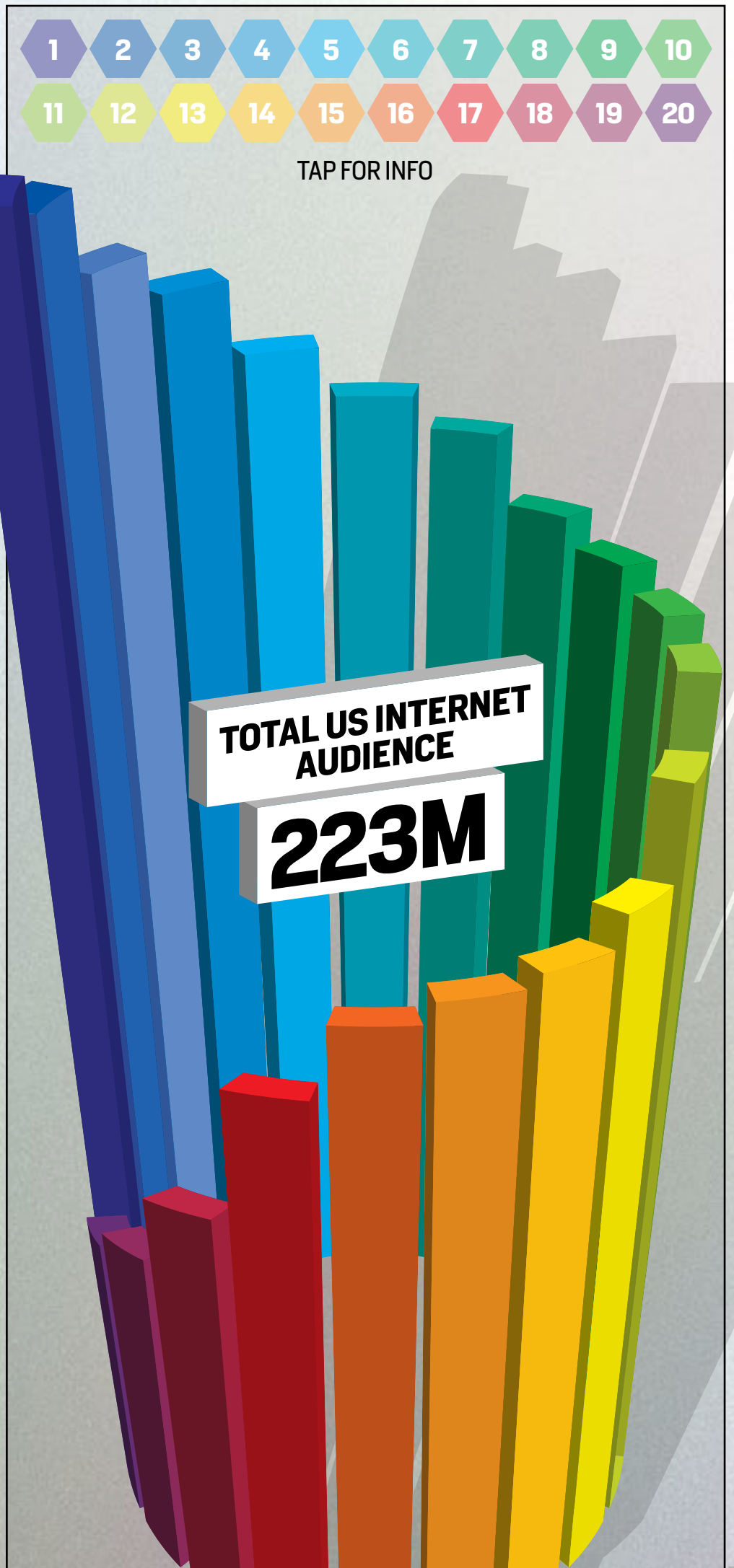


TOP 20 US WEB PROPERTIES FOR MARCH 2013

# View Masters of the Web

**It's a popularity contest.** Websites want your views — purchases and a little bit of ad revenue wouldn't hurt either. Well, the folks at comScore have been keeping tabs and recently revealed their top 50 US web properties for March 2013. It's likely no surprise that Google locked in the top spot garnering 192 million unique visitors, closely followed by Yahoo with 191 million, and Microsoft sites in a not-too-distant third with 166 million. Social media juggernaut Facebook took fourth with 148 million and Apple Inc. laid its claim to number 11 with 79 million unique visitors, keeping those iDevice sales rolling. Viacom Digital clocked in at 13th overall with strong brands like *The Daily Show* and MTV counted among its stable of sites. Filling the 20th spot on the list are the meteorological prognosticators at The Weather Company, helping us keep our special edition Adidas trainers safe and sound on potentially inclement days. — *Jon Turi*

SOURCE: COMSCORE MEDIA METRIX



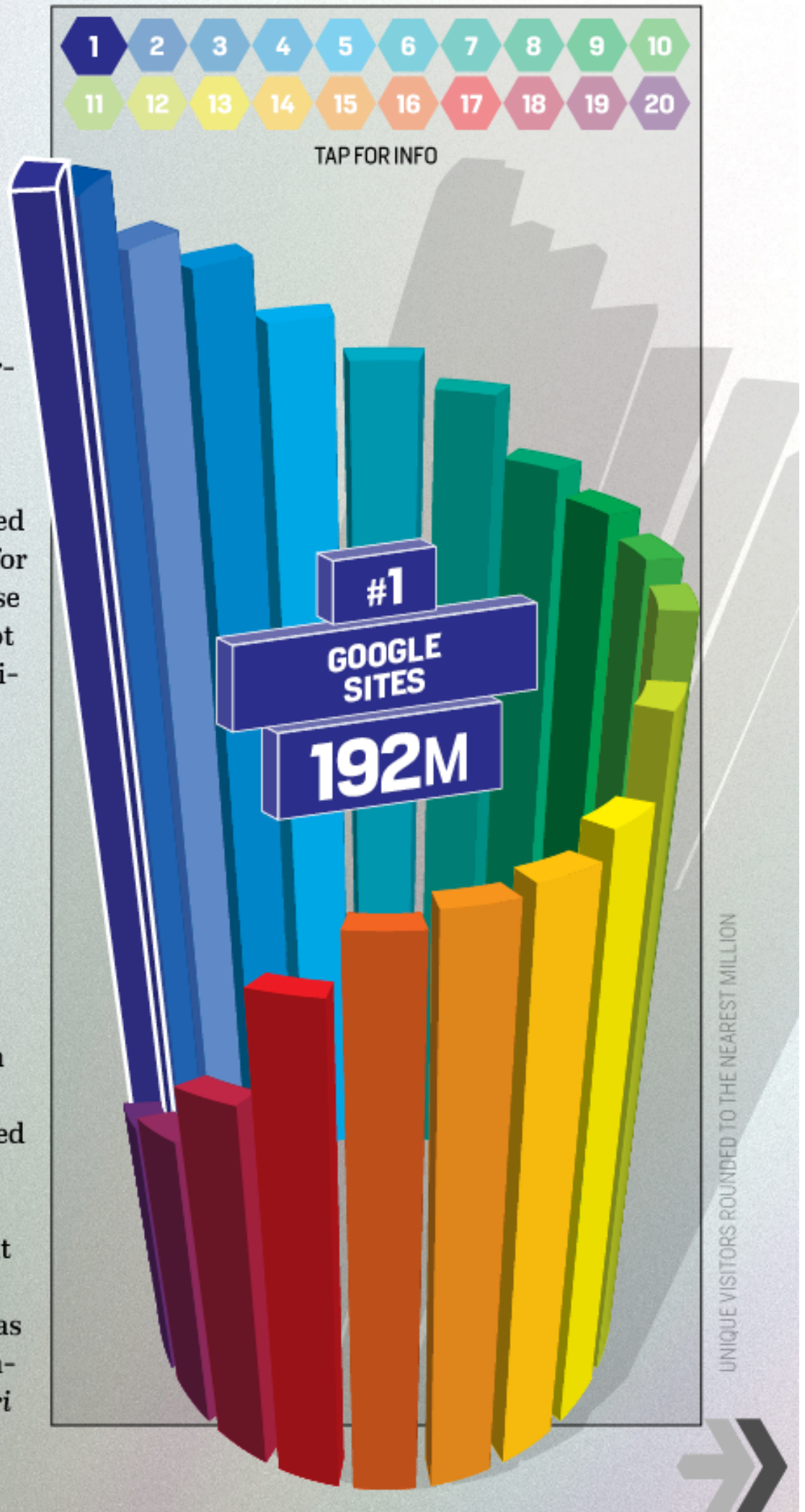


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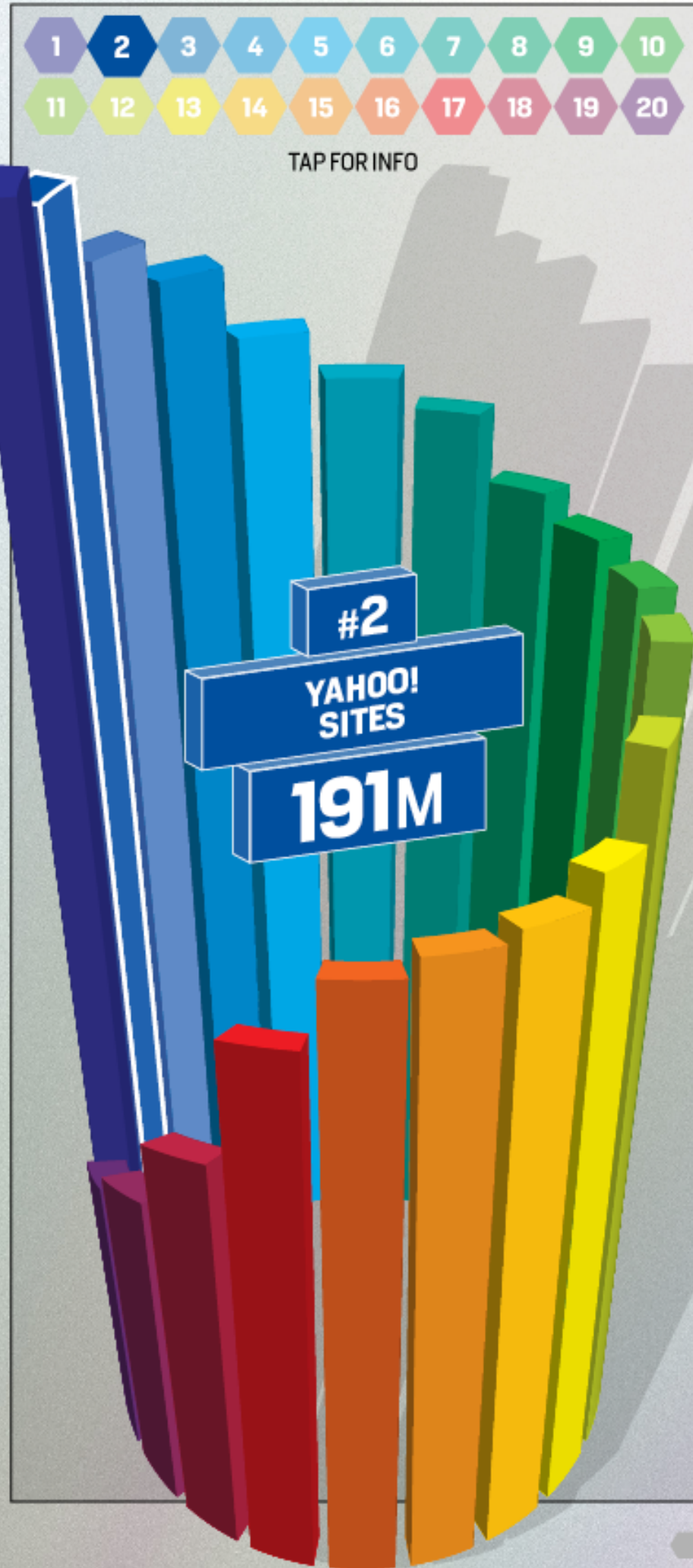


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UNIQUE VISITORS ROUNDED TO THE NEAREST MILLION





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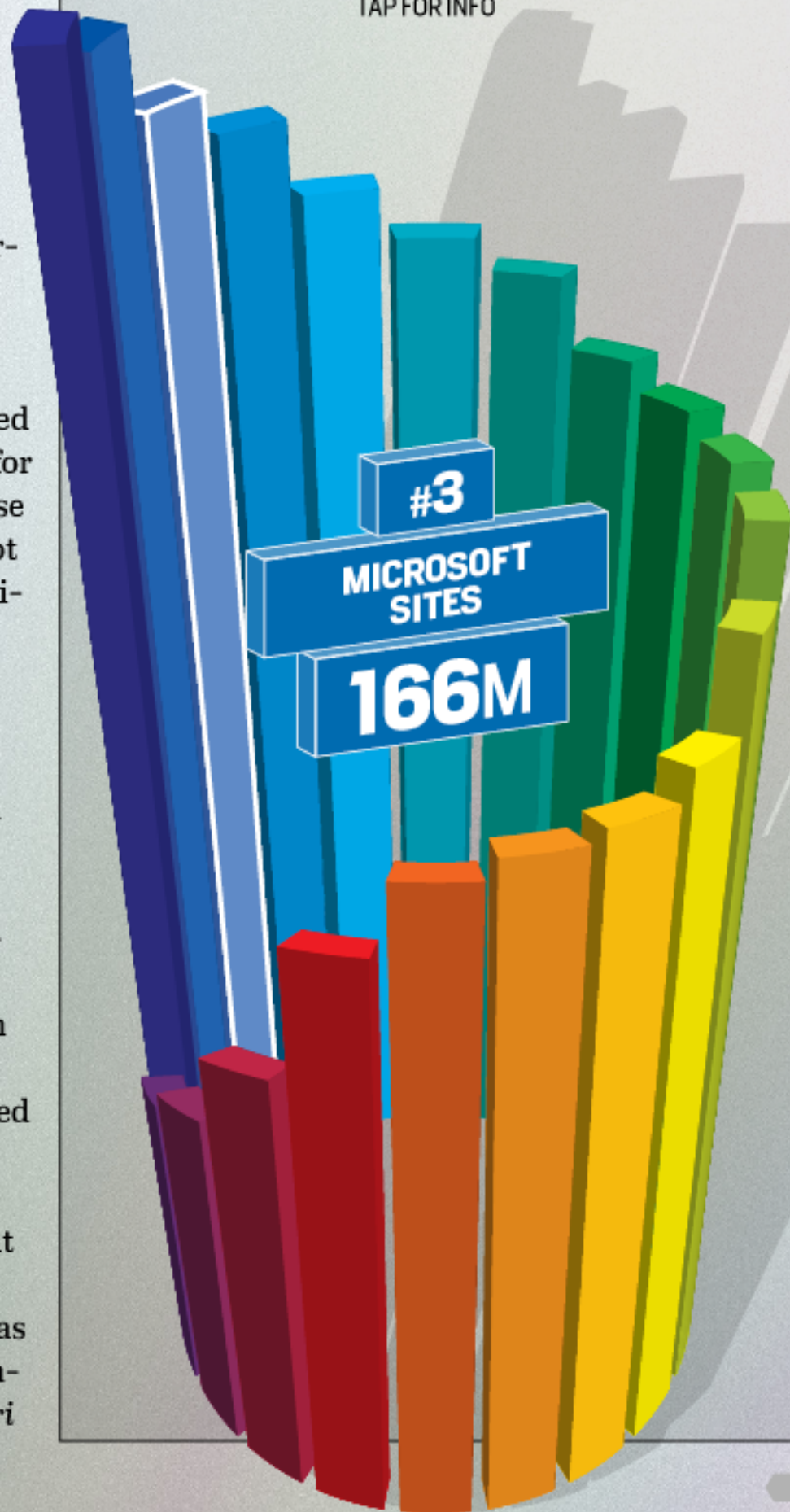
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TAP FOR INFO



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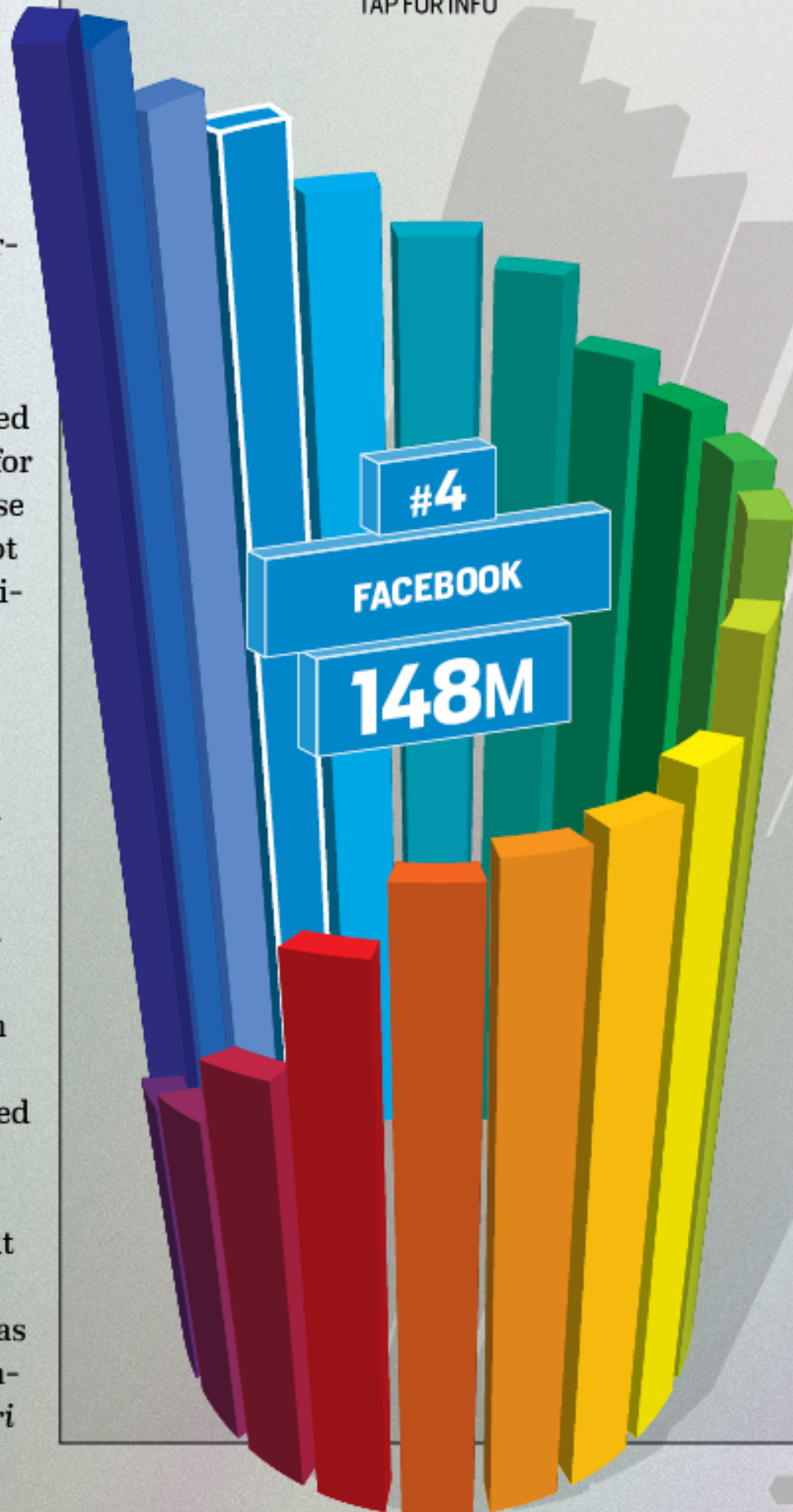
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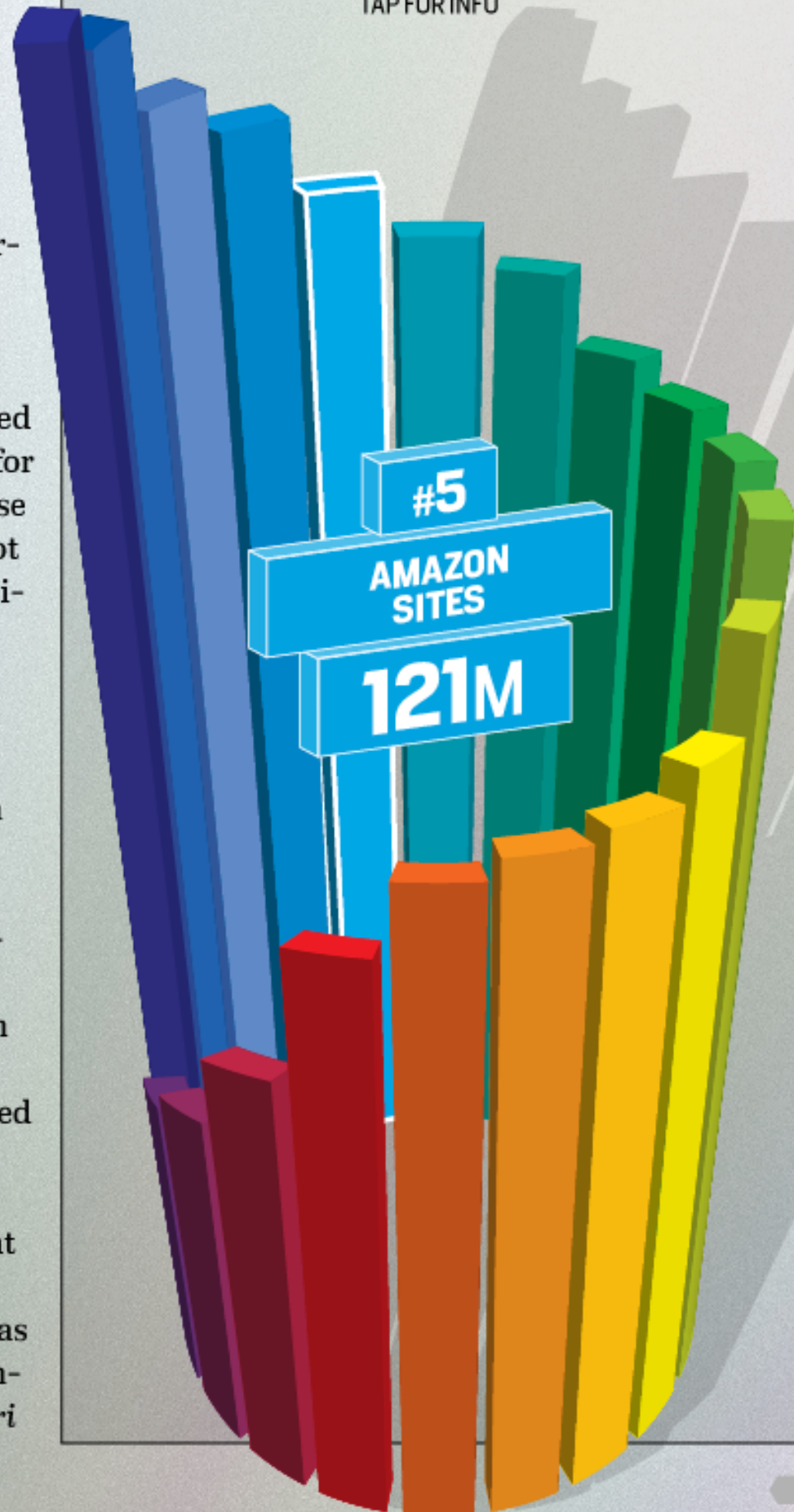
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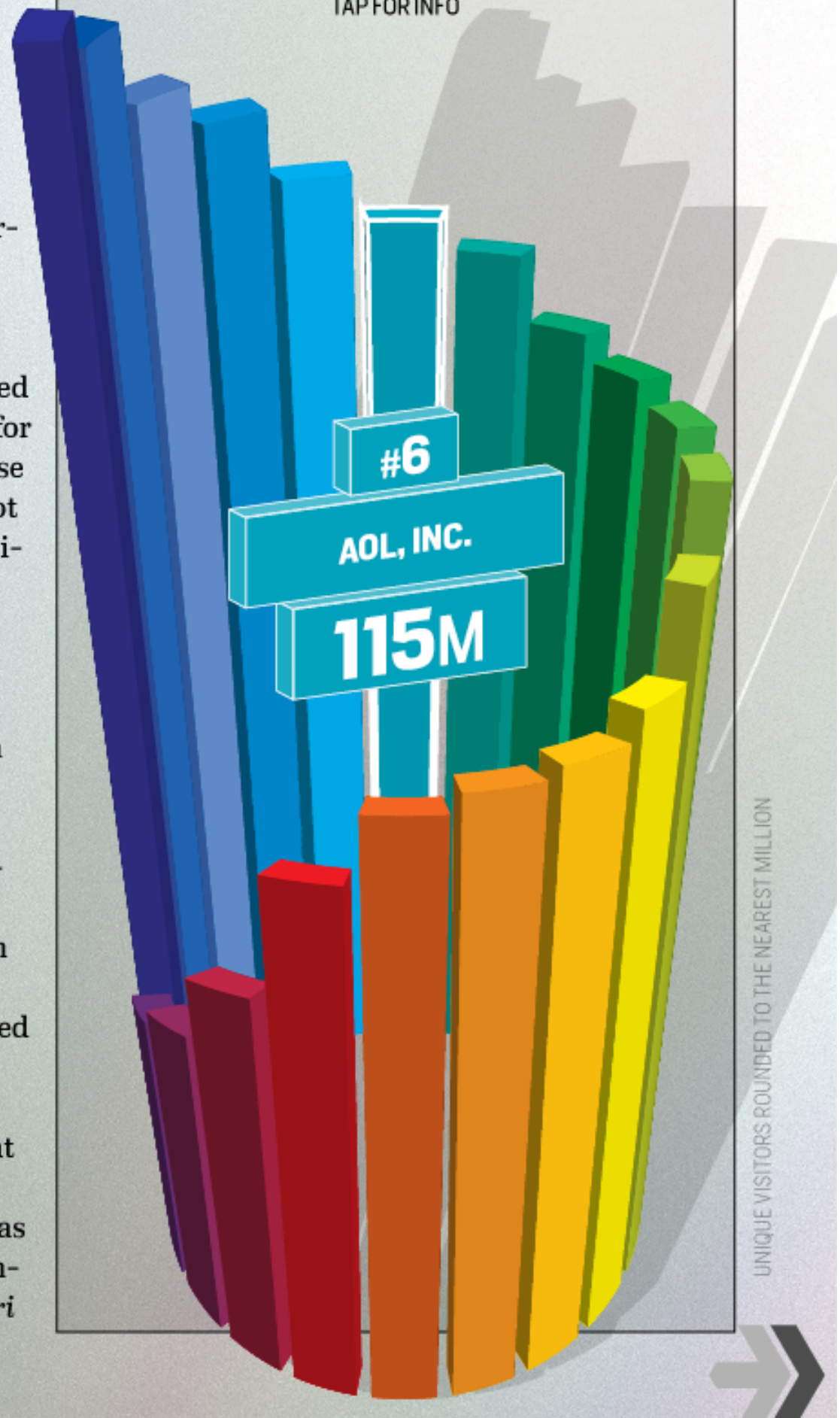


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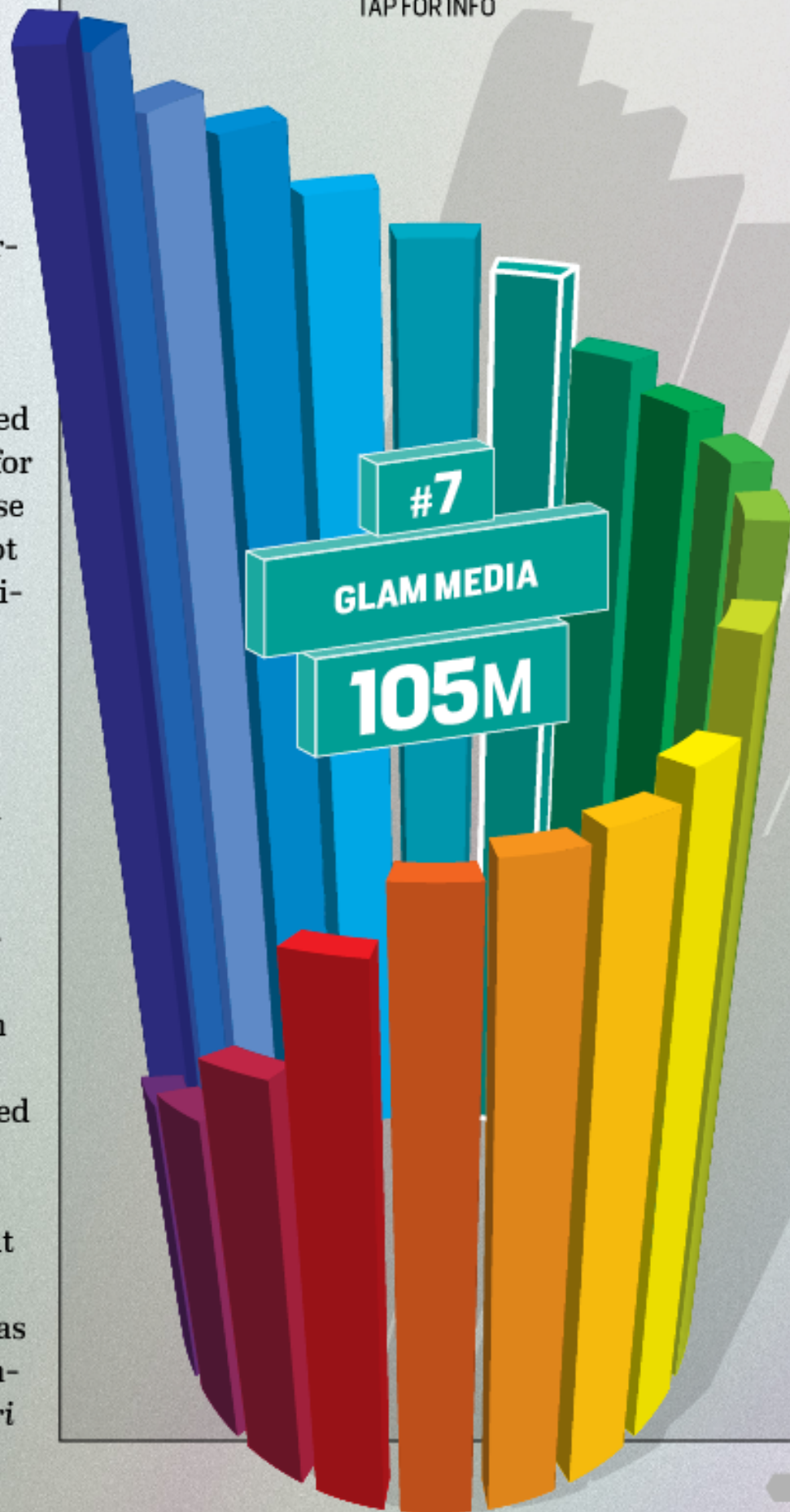
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### TOP 20 US WEB PROPERTIES FOR MARCH 2013



TAP FOR INFO



UNIQUE VISITORS ROUNDED TO THE NEAREST MILLION





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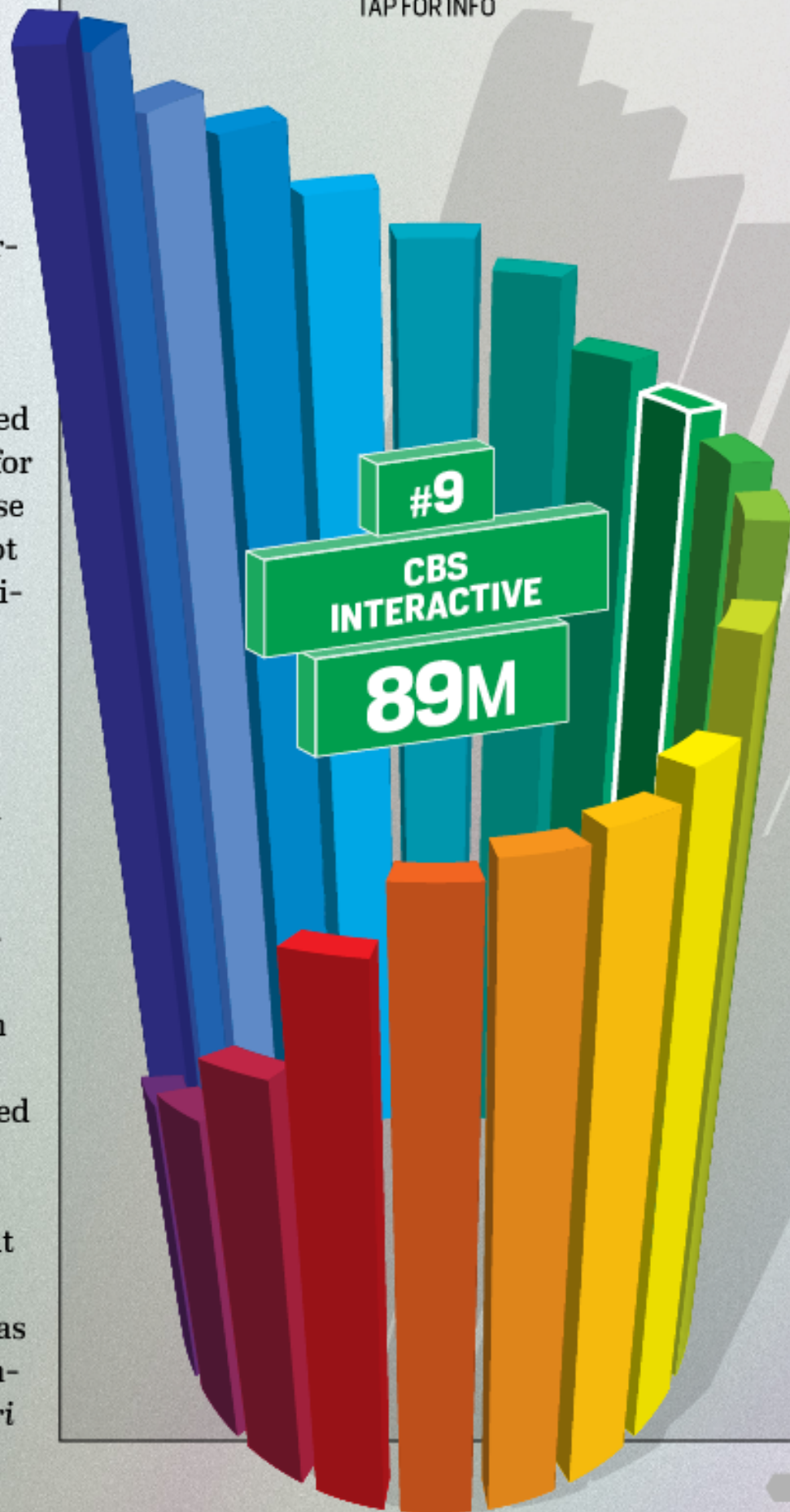
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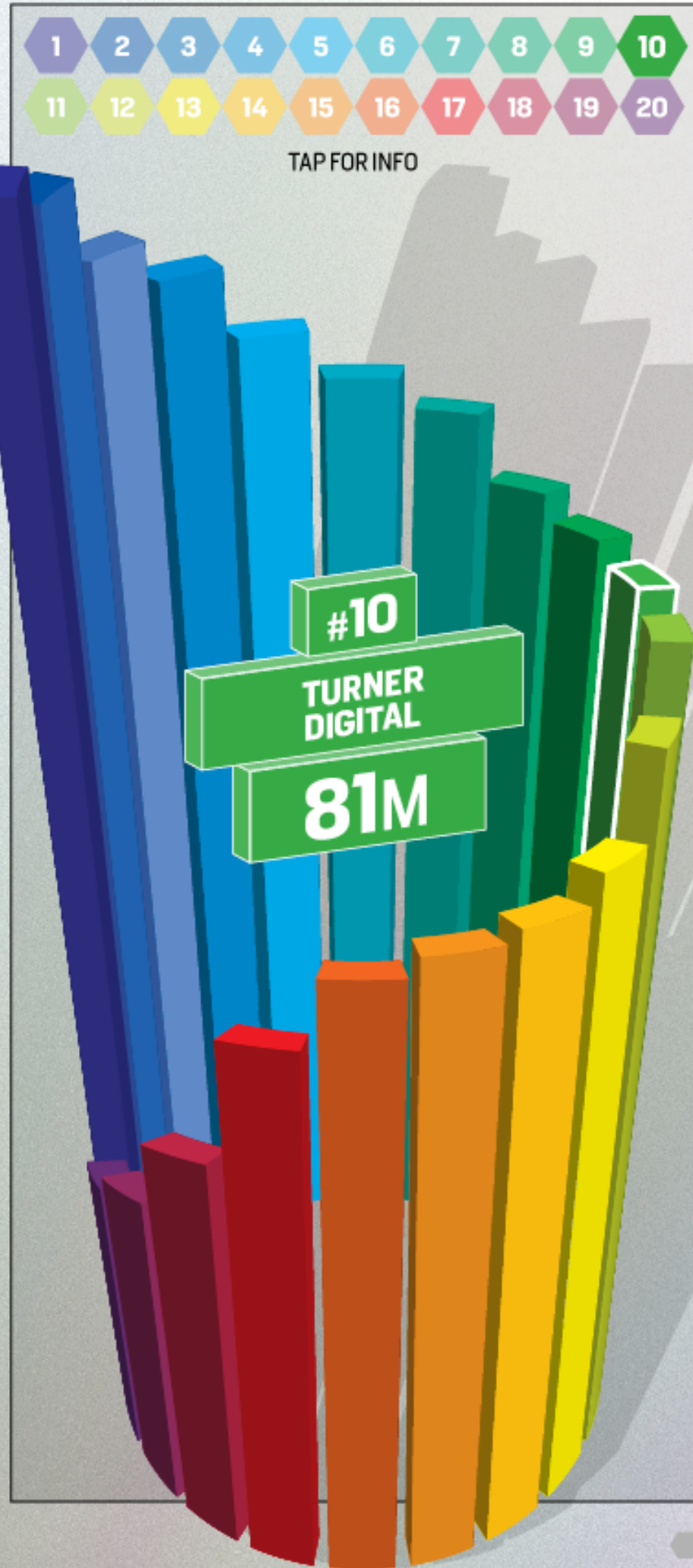


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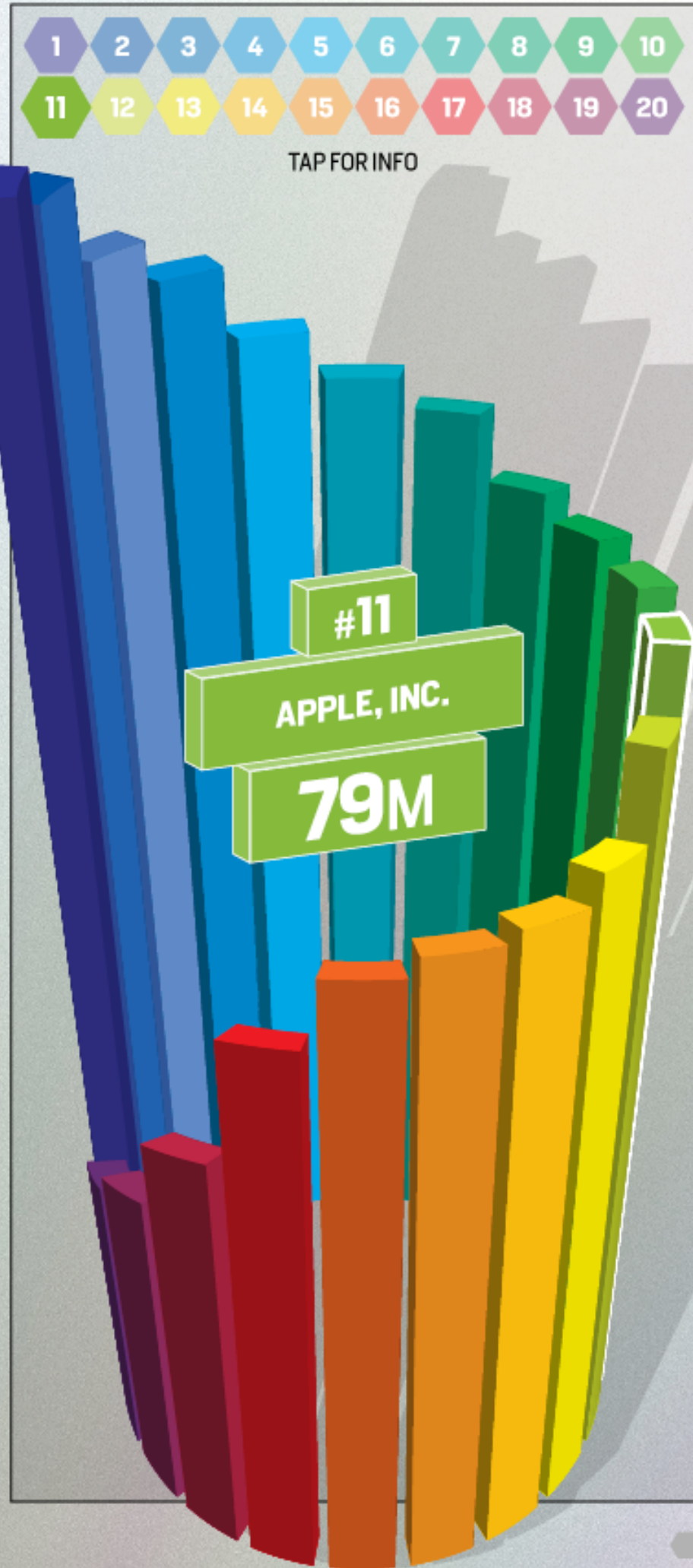


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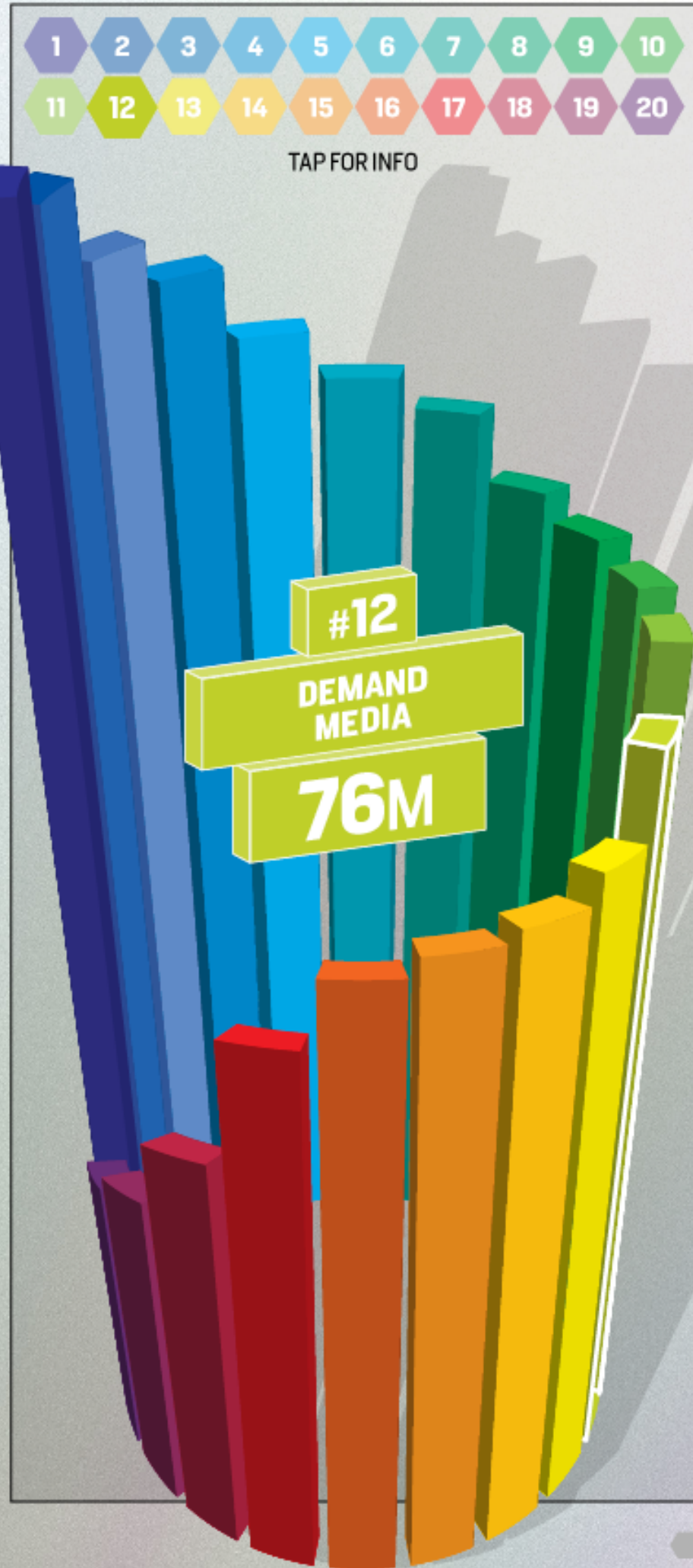




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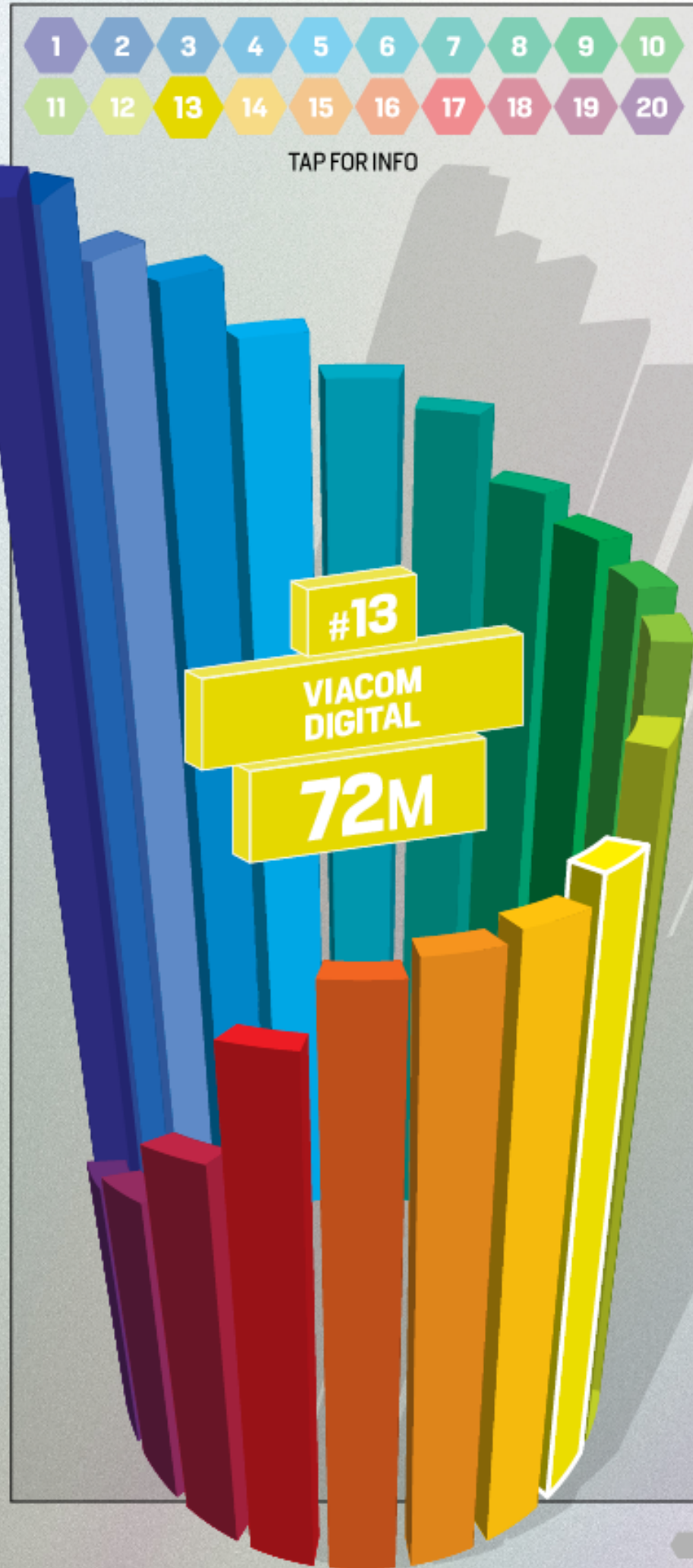


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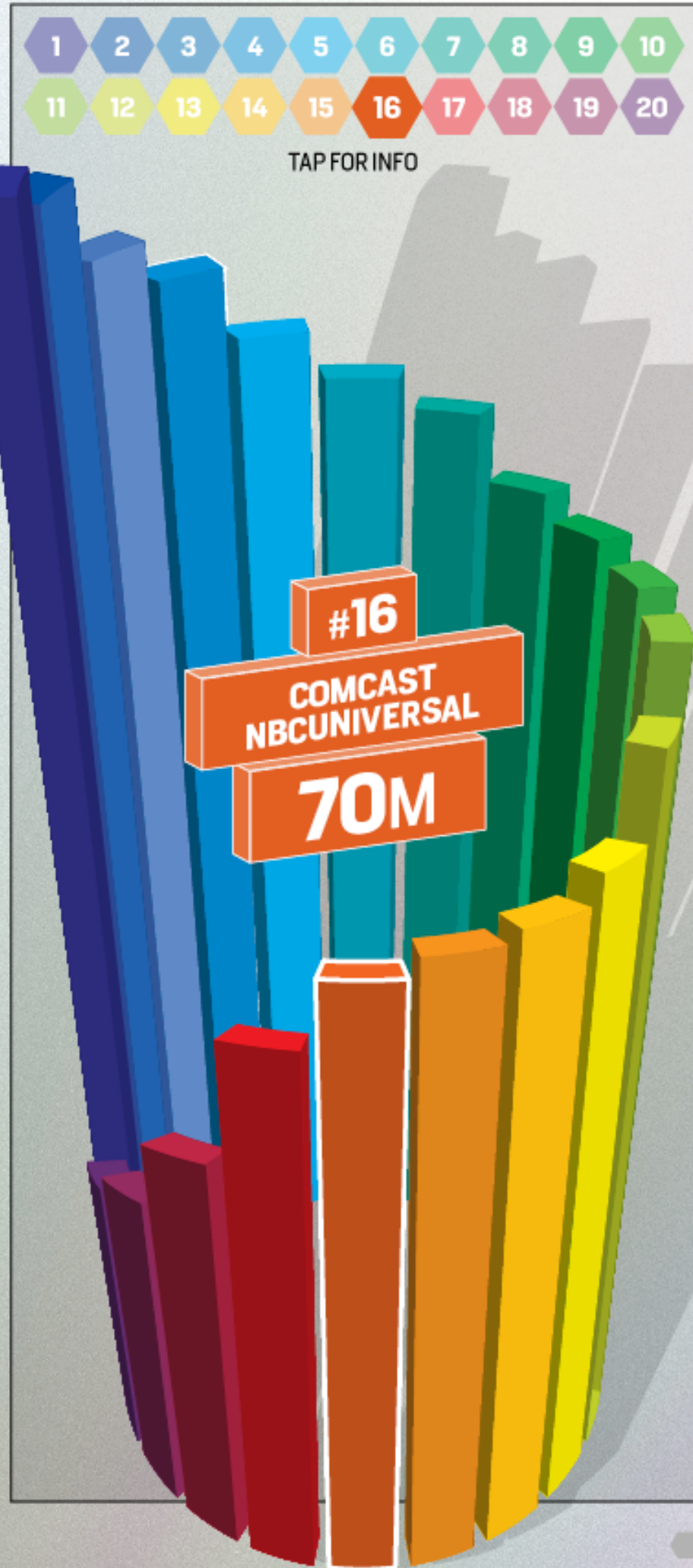


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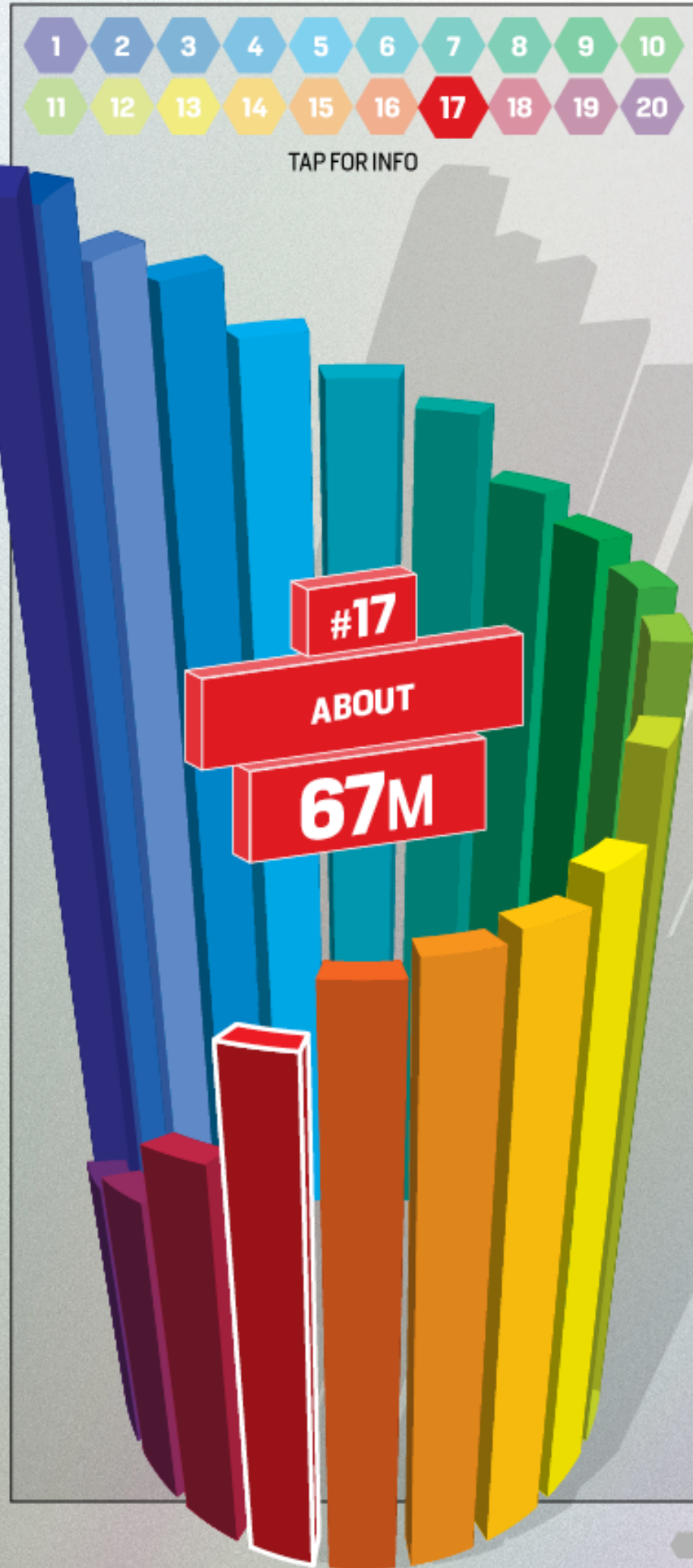


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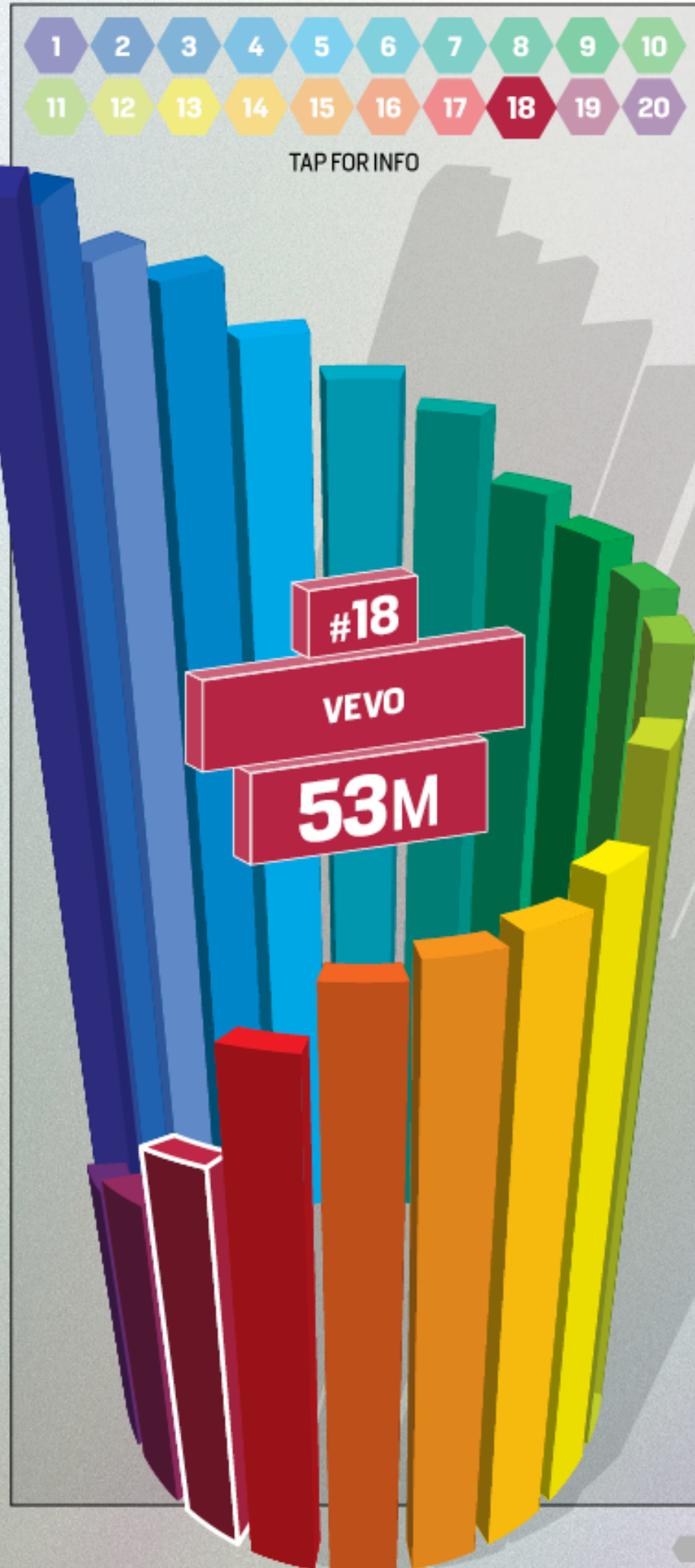
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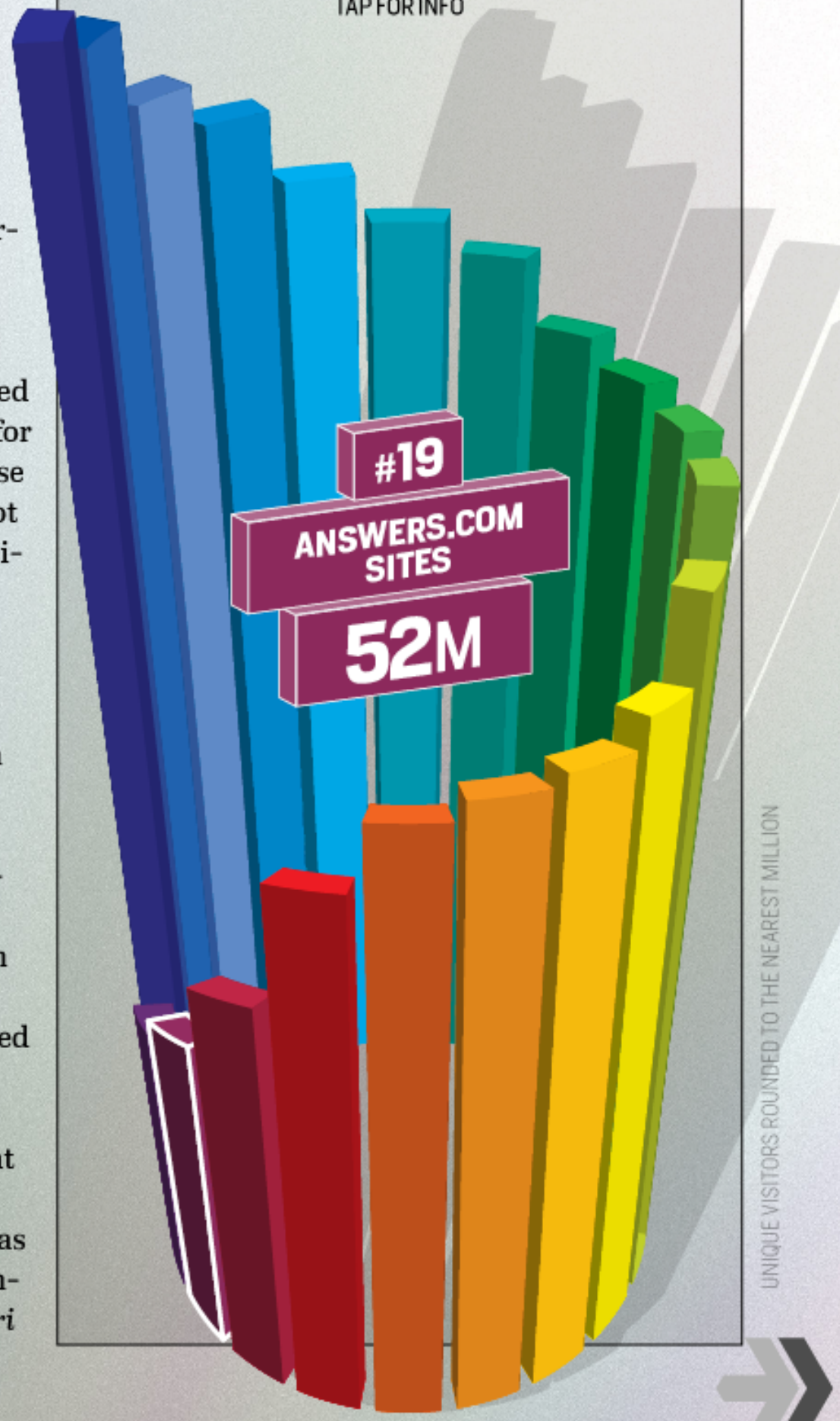


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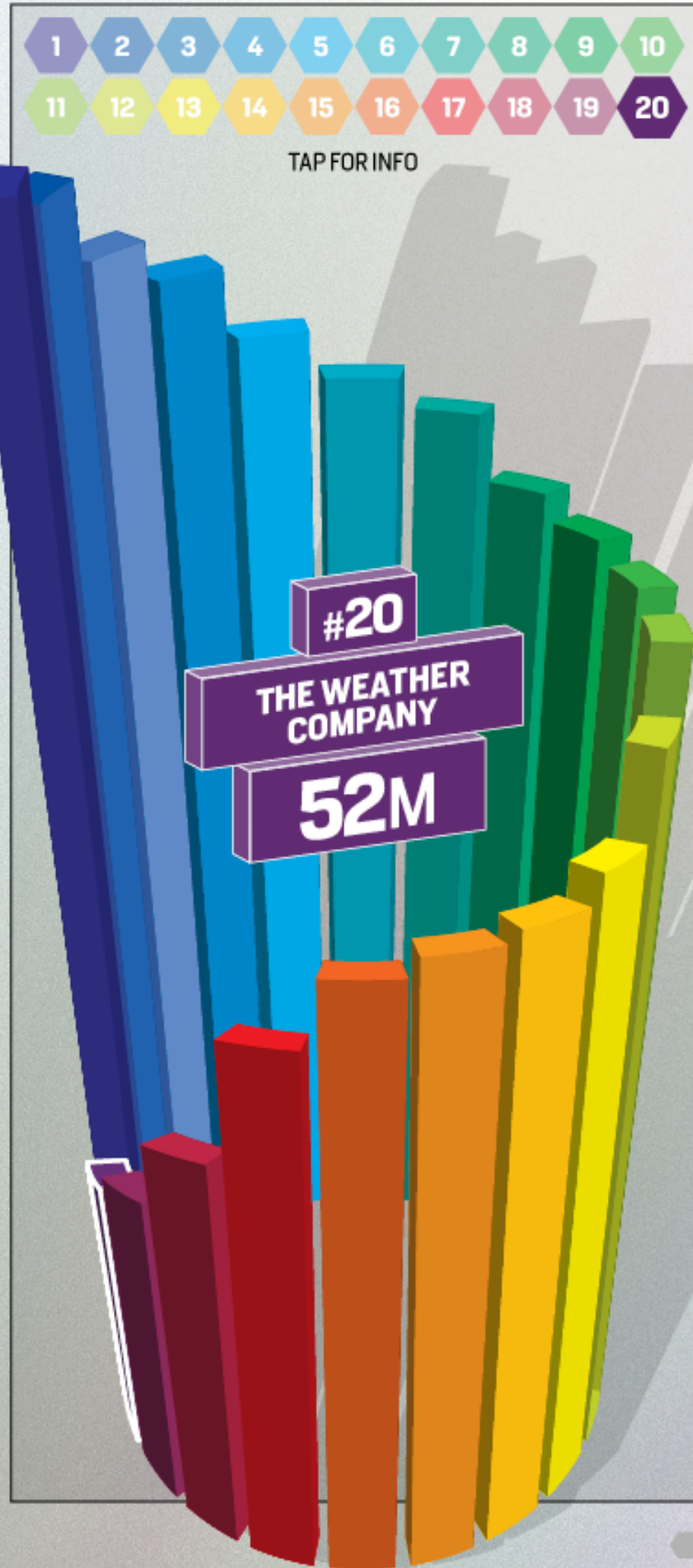
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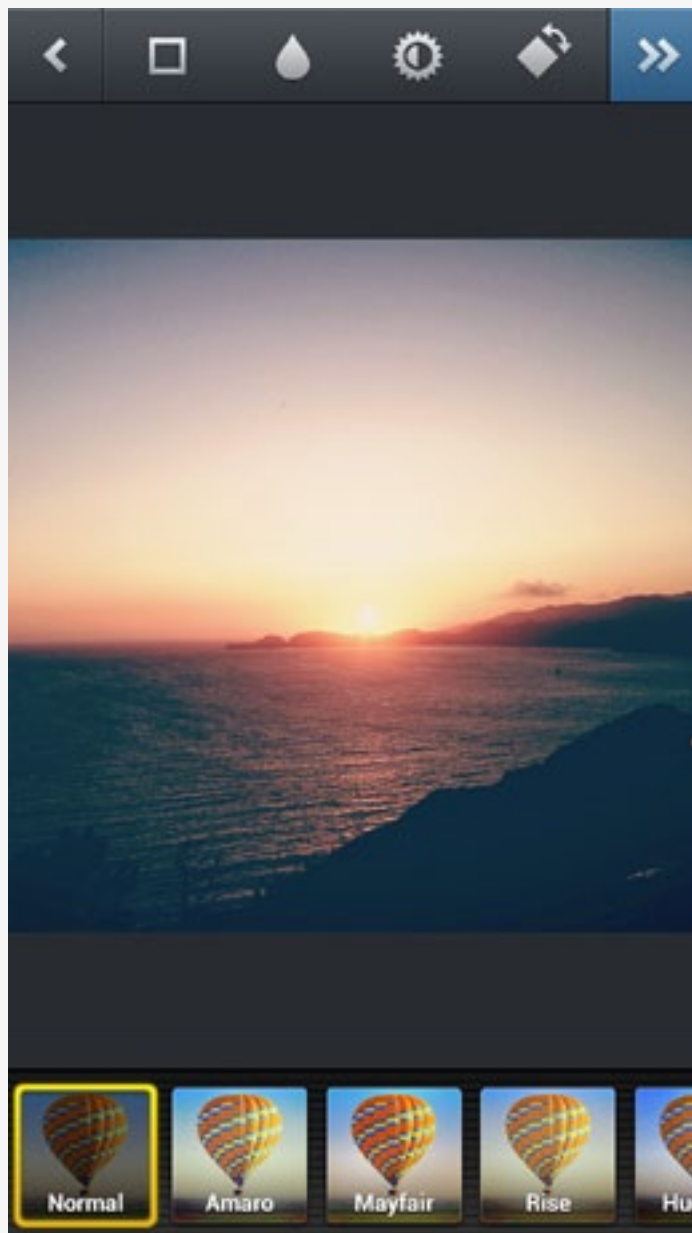


# The Money Shot: Mark Zuckerberg and Kevin Systrom on What Really Happened When Facebook Bought Instagram

By Kara Swisher  
*Vanity Fair*

There hasn't exactly been any shortage of talk or writing about Facebook's acquisition of Instagram, but this new feature-length piece from Kara Swisher for *Vanity Fair* offers what's surely the most authoritative history of how that deal went down to date. It includes interviews with the two CEOs who ultimately made it happen, Facebook's Mark Zuckerberg and Instagram's Kevin Systrom, and with others who were also in the mix — namely, Twitter's Jack Dorsey, who says he was “heart-broken” when he learned Systrom had accepted Facebook's offer.

COURTESY OF INSTAGRAM



## Stewart Brand's Whole Earth Catalog, The Book That Changed the World

By Carole Cadwalladr  
*The Observer*

Carole Cadwalladr talks to Stewart Brand and many who know him for this *Observer* profile, looking at the influence of the *Whole Earth Catalog* and how, as Cadwalladr notes, Brand himself was something of the West Coast's answer to Woody Allen's *Zelig*, finding himself at one key event after another from the 1960s to now.



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stories

## The Quest for Shadow of the Colossus' Last Big Secret

By Craig Owens, *Eurogamer*

It's rare enough for a video game to keep players' interest eight years after its release, and rarer still for one to still have players trying to explore every last bit of it. That's the case with Team Ico's PS2 classic *Shadow of the Colossus*, though, as Craig Owens explains in this in-depth look at some of the players continuing to seek out what they hope are more secrets yet to be uncovered.

## How Facebook Designs the 'Perfect Empty Vessel' for Your Mind

By Alexis Madrigal, *The Atlantic*

A look at another part of Facebook, this piece from *The Atlantic's* Alexis Madrigal delves into the social network's design ethos — what it describes as “social design” — an approach that, as you can probably guess, is focused on getting you to share as much as possible, by getting in the way as little as possible.

## A History of the Amiga, Part 8: The Demo Scene

By Jeremy Reimer, *Ars Technica*

It may have taken a few years for *Ars* to resume its ongoing, multi-part history of the Amiga, but it's back with one particularly key bit of history. Part eight looks at the demo scene, which saw coders pushing the limits of the hardware and producing what were simply some of the most impressive things available on a personal computer at the time.





# THREE DAYS WITHOUT GOOGLE GLASS



DISTRO  
05.10.13

FORUM

SWITCHED  
ON

BY ROSS RUBIN

## THE TELEVISION. THE PC. THE CELLPHONE.

We take the things in these sentence fragments for granted today, but they took many years to enter the mainstream. Could Google Glass herald the next great product that we will one day wonder how we lived without?

Based on three days of not using the product, you may want to ask someone else.

### DAY ONE

I visit my optometrist, who confirms that I still need an eyeglass prescription and therefore cannot effectively try the Explorer Edition of Google Glass. Maybe I can roll my own. I head down to the local Toys R Us and pick up a Disney Princess tiara that I sand down to its bare headband structure. I glue a Looxcie HD to the band along with a small ice cube in front of my eye. Alas, the prototype is a failure; every time I look toward the heavens expecting to see Google Glass users skydiving toward the Earth, as they are

wont to do, the ice cube melts onto the Looxcie, ruining the shot.

### DAY TWO

I've begun to notice people treating me exactly the same as they did before I made the bold decision to forego Google Glass. Testing a hypothesis that we overestimate our need for the latest technology, I begin to try out the impact of a wink gesture in public. This results in my getting slapped a lot even though I am not covertly recording anyone.

I've also become conscious of the number of times per day I must reach





# “And unlike today’s Explorer Edition, the consumer version of Glass will not grow hair on the lips of women who wear it.”

into my pocket to access my smartphone, only to suffer through the emasculation of swiping gestures, each unlock draining further testosterone from my being. Strangers on the subway approach me, inquiring, “Hey, did that smartphone you’re using come with a matching dress?”


In contrast, few are aware of Google Glass’ steroid-like effect on its wearers. The high-tech brow appendage not only helps you identify the market value of any vehicle you see on the street; it can also actually help you lift it. And unlike today’s Explorer Edition, the consumer version of Glass will not grow hair on the lips of women who wear it.

## DAY THREE

It’s been a rough few days adjusting to life without Google Glass. I might pour myself a stiff beverage #ifihadaglass, but instead I’ve decided to cope with some retail therapy. It turns out that the \$1,500 that wasn’t spent on augmented reality eyewear can be applied to a pretty tantalizing array of options, such as:

- Two unlocked, top-of-the-line smartphones to provide virtually all of Glass’ functionality for you and a prescription glasses-wearing friend.
- A MacBook Air, iPad mini with Smart Cover and Apple TV.
- An HP Envy x2, Sony NEX-3N, Roku 3 and Pebble watch.
- A Surface Pro, Samsung Galaxy S 4 on contract, Kindle Fire HD and non-prescription magnifying glasses from Walgreens.

## CONCLUSIONS

My three days without Google Glass left many unanswered questions. What is the social price for having technology at the ready and the compromises we are willing to make for it? Can we move beyond the stigmas that have limited the usage of Bluetooth headsets? How do you keep an ice cube frozen all day long? And would Tim Stevens’ dogs be willing to play fetch with me? Sadly, for the time being, I must now resume my Google Glass-free life. Please join me on my next great adventure as I spend a year on the internet. 





# THE GREAT COMPUTER COLD WAR OF 1982



DISTRO  
05.10.13

FORUM

THIS IS THE  
MODEM WORLD

BY JOSHUA FRUHLINGER

**I'VE KNOWN MY FRIEND JEFF SINCE I WAS 2** years old. He was one year ahead of me in school, but in everything else — little league, girls — we were extremely competitive. We both had two sisters and looked to one another as brothers and yardsticks for prepubescent success. He was better at baseball and I usually had better luck with the ladies. Being better at baseball helped him with the ladies and having a way with the girls made the baseball thing kind of irrelevant. In short, I was better.

I saw Jeff last week, and as we reminisced about the good old days of baseball and babes, he reminded me of what he called the Great Computer Cold War of 1982.

“The great what?” I asked him.

“Sit down, my old friend,” he commanded. I reminded him that he was older than me before I sat.

It was a Saturday night in late 1981 when we spotted the Timex Sinclair 1000 advertisement on the back of a magazine stolen from his father's special drawer. “The power is within your reach,” it promised. Pictured was a computer, about the size of a notepad, that could be had for \$99. At the time, the Texas Instruments TI99/4A and







The Franklin Ace 1000 and its useful numeric keypad.

Commodore VIC-20, the only personal computers within mortals' reach and way out of the reach of a couple 11-year-olds, were hundreds more.

Ninety-nine dollars! We could make this happen. Our dreams of making our own Atari games and programming robots to take out the trash were finally, as Timex promised, in our reach. We both vowed to acquire the Timex Sinclair. We'd mow lawns, wash cars and deliver papers, whatever it took to get our hands on digital power.

Jeff took the easy road and talked his parents into ponying up the money. Thing is, he didn't reveal this to me until one day after school when he casually asked if I wanted to see his new

computer. For whatever reason, he was somewhat reluctant to turn the thing on, and I soon learned why.

The thing sucked. The keyboard was a tiny mess of membrane macro buttons, the computer displayed in blurry black and white on an old CRT TV and, well, it didn't really do much more than 10 PRINT "HELLO" without bugging out. It was, in every way — even to a couple preteen nerds — a terrible computer. Jeff passed it off as efficient and experimental. I tried to be nice and feigned agreement.

But that's when it happened — the Great Computer Cold War of 1982 had begun. I realized that I could one up Jeff with a better computer. That evening, I





# “I soon had a shiny new VIC-20 complete with a full-color 13-inch TV bought at a garage sale...”

declared to my parents that I no longer wanted a Timex, and that the Commodore VIC-20 was the right computer for my future plans of destruction. Luckily for me — and my parents — Commodore soon offered a price-match program to remain competitive. I soon had a shiny new VIC-20 complete with a full-color 13-inch TV bought at a garage sale, a real keyboard and a text-based adventure game on a cartridge.

This tore up Jeff emotionally and most likely physically. He saw me writing complex BASIC programs in color and quietly plotted his next move like Mikhail Gorbachev in some hidden back room of the Kremlin. Or in a backyard in Anaheim. Either way.

Within months, Jeff proudly unveiled his Franklin Ace 1000 Apple II clone computer of destruction. I was absolutely crushed. The machine sported dual drives, a big monitor, a 300-baud modem and access to thousands of games. It played *Choplifter*, people.


My Bar Mitzvah was coming up in a few months, and I announced to my parents that I would be taking the gift money to buy a new computer rather

than use it for a trip to Israel as my sisters had done. Once the blasphemy and shame session ended, I had my way and eventually scored a solid Apple //e. Like Jeff's machine, I had dual drives, but I also rocked it with dual monitors, a 1200-baud modem and a printer. A dot-matrix printer.

Jeff defended the Franklin, arguing that his numeric keypad meant that he'd be entering lines of code much quicker than I would be with my silly row of numbers. He also explained that his Franklin was specially designed to work with VisiCalc, because of course he, as a 13-year-old, was working on tons of spreadsheets.

But last week, Jeff finally admitted that the Apple //e was the superior computer, and I believe we have finally achieved some sense of closure to the Great Computer Cold War of 1982. We're withdrawing our fanboy weapons, putting the missiles back in their silos and moving on. We're good.

And besides, my Apple iPhone runs circles around his Samsung Galaxy. I told him as much last week, too.

Bring it on, Jeff. 





# REVIEW

CONTENTS

DISTRO  
05.10.13



**Fitbit  
Flex**



**Sony  
VAIO Fit 15**





FITBIT FLEX



Does the **Fitbit Flex** offer more than a tempting price tag to the activity-tracking gadget geek?  
By **Terrence O'Brien**

**We have truly** entered the era of the quantified self. Editorials are shouting it from the rooftops, technologists are snickering “I told you so” and you, dear consumers, are just eating it up. If there’s some sort of personal metric you’d like to monitor and view in a pretty little chart, there’s a product out there to help you do it. Now, that doesn’t necessarily reflect a mature market rather than a fleeting fad. But we’ll say this: companies both big and small are offering a number of products for this growing niche and some have built their entire portfolio around a lineup of





personal tracking devices. Fitbit is obviously one of those companies and, with the One, Zip and Aria WiFi scale already on the shelves, it's got a pretty robust set of options for those looking to turn their entire lives into a collection of infographics. With the Flex, though, it truly rounds out its offerings with a wearable band in the style of the Jawbone Up and Nike FuelBand.

There are, of course, a number of differences between all of these products — not the least of which is price. At \$100, the Flex undercuts its most direct competitors by at least \$30. There's also support for Bluetooth 4.0, which delivers wireless syncing on both Android and iOS. The question is, does the Flex deliver enough at that price point to make it a clear choice?

## HARDWARE

The design of the Fitbit Flex is the very definition of simplicity. And we don't mean that in a bad way. Some might say it's bland, but we like to think of it as tasteful. Understated. There's a bit of retro-futurism to the aesthetics here. In fact, it looks like something Dr. Frank Poole might have worn while jogging around the Discovery One.

Flex employs simple aesthetics for a quite cozy fit.



The design of the Fitbit Flex is the very definition of simplicity. And we don't mean that in a bad way.

The entire band is made of matte plastic, in this case a gray-blue the company calls "Slate." The only interruptions along the sleek and simple body are the brushed-metal squircle you press to close it around your wrist and the thin, dark plastic window that exposes the lights on the tracker piece. It's quite a bit bulkier than the Up and there's a slight taper to the body, with it getting a bit thicker where the window is. But, the more watch-like design actually makes it more comfortable to wear than the Up, which constantly gets caught on





things and scrapes against your laptop. If the Flex didn't need to be charged every few days, you could almost forget you were wearing it.

The band itself is just that: a band. The tracker is actually a removable piece that slips inside the rubber strap. It's small, black and completely inconspicuous. One side has a sharp slope and a lightly etched Fitbit logo and the opposite end has three metal contacts used with the charging dongle. The only other external features are the five white lights along one edge, which shine through the window on top of the band. Unless you want to constantly have the app fired up, these will be your primary way of interacting with the Flex.

The tracker and the wrist strap are actually two pieces.

The accelerometer inside, meanwhile, doesn't just count your steps or measure how restless your sleep was; it also provides a way of controlling the device. Tap the module twice and the lights will tell you how close you are to your step goal; tap it five times to tell it when you're putting your head down to catch some shut-eye (and five times again when it's time to start your day).

It's a bit tricky to get the Fitbit to register five taps in a row to take it in and out of sleep mode — especially first thing in the morning, when you're bleary-eyed and desperately want the silent alarm to stop vibrating. And, yes, there is an alarm on board, but unlike the one on the Up, it simply goes off at a predetermined time. Meaning, it





## The convenience of being able to track your progress towards a step goal on the band itself can't be overstated.

doesn't actually wait until you're in a lighter stage of sleep. While the accelerometer is a bit fickle when it comes to controlling the Flex, we can't overstate the convenience of being able to glance at the band to track your progress towards a step goal. Each of the five lights represents 20 percent of your target number of steps (by default it's 10,000). When you reach that goal, the band vibrates and the LEDs do a little happy dance to congratulate you — it's much more satisfying than plugging into a phone and waiting for it to sync.

It's impressive enough that there's a battery able to get you an estimated five to seven days of use inside, along with the accelerometer, LEDs, motor and necessary processing power. But there's also a Bluetooth 4.0 radio and NFC hiding in this tiny wonder. Combine that with the included USB dongle or the updated mobile app and you can sync your activity, sleep and change your alarms without having to physically connect the Flex. It's one of our favorite features, especially on the few compatible Android handsets, which

let you tap the phone on the wristband and automatically launch the Fitbit app and initiate a sync using NFC. Even if your phone isn't one of the currently compatible models (the Galaxy S III, S4 and Note II), the inclusion of NFC lets you quickly launch the app with a tap, though there will be no ability to sync.

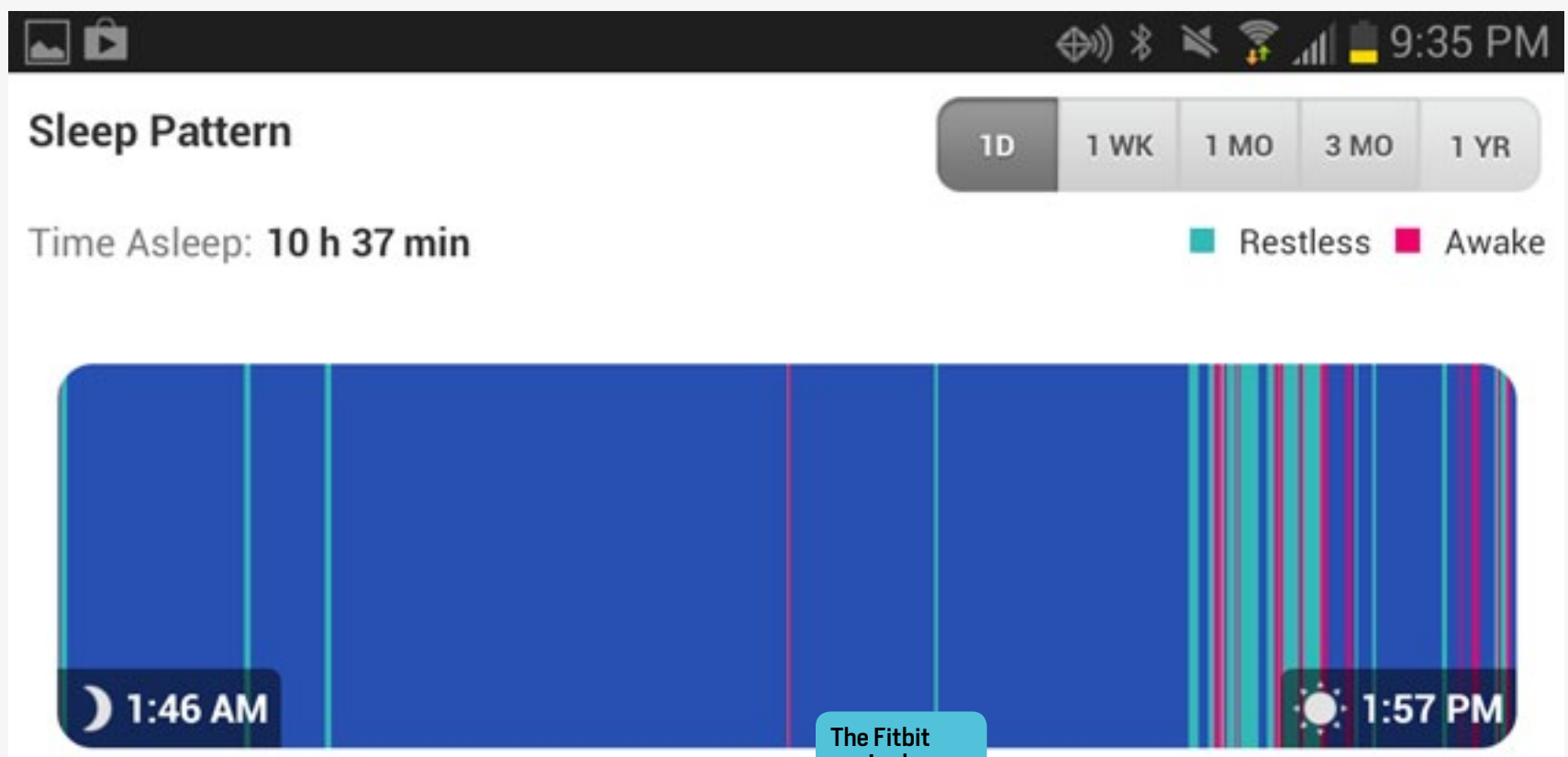
As you'd expect, the Flex is also built to be quite indestructible. Fitbit bills it as water-resistant, not water-proof, so we wouldn't suggest you take it for a long dip in the ocean. That said, it survived plenty of showers and dish-washing sessions. While the tracker is rated to survive up to seven days of such abuse, we usually needed to give it a charge every five. Still, that's better than the FuelBand.

### SOFTWARE

Like the Flex itself, Fitbit's mobile app is clean and simple. There are no extraneous colorful graphics or smiley-face avatars here — just numbers, graphs and a few helpful icons on a gray background. Not much has changed since the update, delivered back in February. You navigate between sections from a drop-down in the upper-left-hand corner and can swipe through a few different panels on the various summary cards on the home screen. The dashboard gives you quick access to your alarms and food plan, while showing your progress towards various goals such as calories burned. Unfortunately there are a few features that would







seem like a natural fit for simple-to-tap shortcuts, such as the ability to add to your food log, that are sadly missing.

The app's two major shortcomings are sleep and food tracking. Various updates we downloaded during our review helped improve the sleep tracking, but even now it's inconsistent. It does provide a general sense of how long you slept, and how well, but you need to keep your expectations in check. For instance, I tend to be a very rest-

**We're used to being disappointed by the sleep tracking on activity trackers — consumer-grade actigraphy just hasn't proven very accurate.**

less sleeper who wakes up multiple times during the night, but the Flex often failed to register my tossing and turning as "restless" sleep. In fact, on multiple occasions it failed to recognize that I was out of bed and active as being awake. One morning, it registered an extra four hours of sleep after I forgot to explicitly tell it I was awake, using that five-tap gesture. During those hours, I showered, made coffee, ate breakfast and worked on this review — the Flex was none the wiser.

We're used to being disappointed by the sleep tracking on activity trackers — consumer-grade actigraphy just hasn't proven very accurate. A bigger surprise is the calorie-tracking portion of the equation, which pulls from a rather weak food database. Fitbit simply can't compete with services like FatSecret and MyPlate from Livestrong in this field. Even Jawbone's slightly





disappointing repository of nutritional data leaves Fitbit in the dust. More often than not, you'll have to select a generic option or settle on a brand that comes closest to the one you're looking for. Some major brands, like Goya, seem completely unrepresented. The lack of a quick shortcut for adding food to your log also means you're always at least three taps away from the meal search. You'll first have to open the drop-down menu in the app, select food and then tap the plus

Flex offers desirable features in an attractive package.

icon in the upper-right-hand corner. And there's no barcode scanner for simplifying the process of pulling up various pre-packaged products.

To go along with the debut of the Flex, Fitbit has also given its web interface a dramatic overhaul. The new dashboard is a series of customizable tiles that you can rearrange or remove to provide the information you want. Clicking on each tile pops up a card with more detailed information and an arrow at the bottom-right-hand corner takes you





to the individual panes for each metric. Those dedicated panes still have the old design for the time being, but Fitbit says they'll soon be updated to match the almost Metro-like aesthetic.

## WRAP-UP

The Flex is entering an increasingly crowded marketplace. Wrist-worn fitness trackers are a hot commodity right now and making your mark in the field is becoming quite difficult. But Fitbit might just have struck the right balance between price, convenience and simplicity. Some of its competitors certainly hold advantages over it in particular categories. For example, the Jawbone app, despite all of its half-baked features, certainly outclasses Fitbit's — especially in the calorie-tracking department. And Nike's more robust display puts a lot more data at your fingertips. But the Flex manages to pack more fea-

tures than the FuelBand, more convenience than the Up and undercuts both on price.

What Fitbit seems to have done is look at the rest of the fitness-tracking field, figure out what features have proven most successful and essential and then pack them in a surprisingly stylish and affordable package. At \$100, the Flex isn't an impulse purchase considering its relatively niche appeal, but for those looking to pick up this particular type of lifestyle product, it's a solid choice. The social aspects of racking up Fuel points and Jawbone's more robust mobile app certainly have their appeal, but we'd say the Flex offers the most well-rounded experience, not to mention the best bang for your buck. **D**

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*Terrence is too complicated and multifaceted to be reduced to pithy one liners. He's also kind of a jerk.*

## BOTTOMLINE

### FITBIT FLEX

# \$100



### PROS

- Wireless syncing over Bluetooth 4.0
- Convenient, simple LED display
- Competitively priced
- Clean, attractive design with multiple color options

### CONS

- Sleep tracking is inconsistent at best
- Database of nutritional data is disappointing

### BOTTOMLINE

The Flex offers all the features you'd desire most in a fitness tracker while also being more attractive and more affordable than its competitors.





DISTRO  
05.10.13

REVIEW

## SONY VAIO FIT 15



Sony's **VAIO Fit 15** serves as a practical introduction to its Fit laptop line with refreshed hardware and a stylized design  
**By Dana Wollman**

**A** **And it begins:** back-to-school season. Even though some students are still embroiled in finals, and even though Intel has yet to formally launch Haswell, the next few weeks will see multiple PC makers unveiling their summer lineups. First up: Sony. The company just introduced some new mainstream notebooks, dubbed the “Fit” family. These laptops, which replace the current E series and most of the T line, include the lower-end Fit 14E / Fit 15E, which are made of plastic, and the Fit 14 / Fit 15, which step up to a thinner aluminum chassis and optional





SSDs. Either way, Sony is standardizing on certain specs across its entire summer lineup, including 1080p displays, backlit keyboards, NFC and Exmor R webcams for better low-light images. We've just spent a week testing the Fit 15, which will be available later in May for \$700 and up. (The rest of the Fit line starts as low as \$550.) Follow along to see if it's worth a closer look once it hits store shelves.

## LOOK AND FEEL

Given that the Fit series is the spiritual successor to the entry-level VAIO E series and the mid-range T line, it'd be reasonable to suppose it ranks somewhere in between, with a design that's a loose mash-up of the two. In fact, though, it actually consists of two very different notebooks: the Fit E, which replaces the E laptops (natch), and the Fit, whose premium stylings make it most similar to the existing T series.

We'll put the lower-end Fit E through its paces some other day, but for now, we're here to tell you the higher-end Fit is prettier than its predecessor, if not necessarily better-made. While the Fit and T series laptops both have brushed-metal lids, the Fit follows

up with a matching brushed-aluminum palm rest — a more dapper touch than the T series' plain magnesium, which could easily be mistaken for plastic. Available in black, silver and pink, it also has an extra-long lid that covers the hinge. To be honest, we're not sure unsightly hinges were really a problem that needed solving, but we dig the seamless look nonetheless.

What you might appreciate, however, are the hidden fans: they're not on the sides or even on the bottom, but tucked improbably into the area between the screen and the keyboard. You wouldn't know they were there unless you knew to look (or if you got the laptop so hot and bothered it started to spew hot air, which is also a possibility). In general, too, the Fit does away with a lot of the decorative extras used to dress up last year's T series. Gone is the shiny chrome strip along the hinge, along with the plastic band lining the lid. Even on the keyboard deck, there are noticeably fewer buttons, with the only holdovers being the glowing green power button and the VAIO Assist key. (Even that's less conspicuous, now that the lettering is white instead of red.)

As we hinted, though, a sharper design somehow doesn't equate to improved durability. One of the first things we noticed about the Fit is that its screen wobbles when you first set the machine down — something the older T15 doesn't do. There's also lots of give throughout the machine, from

**The Fit is prettier than its predecessor, if not necessarily better-made.**







The Fit 15 has a notebook's heft, but still remains fairly thin.

the lid to the hinge area, and it can be particularly tough to ignore when you're carrying the machine around in your hands.

Before we get in the weeds with our comparisons against the T15, let's make one thing perfectly clear: the T15 is an Ultrabook, and will continue to be sold for the time being. The Fit 15, meanwhile, is not an Ultrabook but rather, a full-fledged laptop — a more powerful, all-purpose sort of thing. As such, it weighs a good deal more than the T15 (5.73 pounds versus 5.18), though it's about as thin (0.89 inch, compared with 0.9 inch for the T series). So, it's a fairly stationary machine, then — the sort of thing you can shuttle from room to room, but will probably keep plugged

in most of the time. (And believe us, our battery life results are a testament to that.) Even so, it's slim enough that you can easily carry it around in the crook of your arm. We're pretty sure that hidden hinge *doesn't* have anything to do with that, but again, a pretty design never hurt.

As you'd expect, because the backside is covered by that oversized lid, all of the ports are located along the right and left edges. Actually, make that the left: the right side is home to a tray-loading DVD burner, with no other sockets or openings sitting nearby. That means the left side is pretty tightly packed. From back to front, you've got the power port, an Ethernet jack, HDMI-out, three USB 3.0 ports, a head-





phone / mic jack, a memory card reader and a Kensington lock slot. Anything else you would have wanted? Because that about checks off everything on our wish list.

## KEYBOARD AND TRACKPAD

At first glance, the six-row keyboard on the Fit is nearly identical to the one on the T15: same chiclet-style keys, same lettering on the buttons. The arrangement hasn't changed much either, except that the Function keys here are tinier, as are the arrow buttons, which now sit flush with the space bar. In general, the new layout is about as wide as the old one, but shorter, partially owing to those shrunken Function buttons. Fortunately, none of the major keys (Shift, etc.) ap-

pear to have gotten smaller.

Somehow, though, typing feels a little different, which is strange since the pitch of the keys hasn't changed, so far as we can tell. Still, Sony clearly did some re-tooling beneath the surface. The buttons here don't feel shallower, per se, but they are quieter. All told, it's a comfortable keyboard, though we sometimes found ourselves wishing for a little more travel. Depending on how accustomed you are to number pads, too, you might need some time to adjust to the off-center layout, along with the left-aligned trackpad.

It's worth repeating that the keyboard here is indeed backlit. Everything in the Fit series is, actually, even the lower-end Fit

The design refresh has a brushed-aluminum palm rest.





E models. In fact, everything in Sony's back-to-school lineup will be backlit, save for all-in-one desktops. And that makes sense: Sony doesn't dally much in budget machines, and it'd be a pretty big no-no to leave this feature out of higher-end systems.

A laptop with this big a footprint leaves room for a pretty expansive trackpad, and we're happy to report it generally works reliably. Pinch-to-zoom in the Bing Maps app feels exceptionally controlled, as does two-finger scrolling in IE10. The pad also responds smoothly to the various Windows 8 gestures, like swiping in from the right to expose the Charms Bar.

The problem, as is often the case with Windows touchpads, is that it can be awfully stubborn when it comes to single-finger tracking. Sometimes the cursor didn't go where we wanted it to, or it came to a halt while we were trying to drag it across the screen. Also, the touch button itself doesn't offer much give, so even if you do successfully move the cursor, left- and right-clicking can still feel a little labored. In any case, it's hardly a dealbreaker, especially if the touch drivers are behaving as they're supposed to.

## DISPLAY AND SOUND

If you hit Ctrl-F to zero in on mentions of "1,366 x 768," this is the only instance you'll find pertaining to the Fit series. With its new generation of laptops, Sony is more or less standard-

## 720p is a thing of the past, at least for Sony.

izing on 1,920 x 1,080 resolution, with the one exception being the Fit 14 notebooks, which start at 1,600 x 900. In any event, 720p is a thing of the past, at least for Sony.

As you might expect, the pixel density of a 15-inch display with 1080p resolution isn't quite as high as on a smaller machine — say, one with an 11- or 13-inch screen. From a desk chair's distance away, objects like desktop icons tend to look sharp on this LED panel, and videos in particular look great. In general, too, we had no problem watching movies or reading text from slightly off to the side (good news if you plan on hosting a *Game of Thrones* marathon in your dorm room). We did notice that colors start to wash out as soon as you push the lid forward, so be sure to fiddle with the angle before leaning back to watch a movie.

If you compare specs across the Fit line, you'll see one of the models has a subwoofer — a first on Sony's mainstream laptops. Oddly, though, that model is *not* the premium Fit 15 we're reviewing here, but rather, the entry-level Fit 15E. Presumably, space constraints were the deciding factor here — the Fit 15 is the one that's supposed to be slim, which means trade-offs like sound quality are almost a given. In any







Touchscreen input is an option on black Fit 15 models.

case, unless your musical tastes skew heavily toward hip-hop, you should be satisfied with the setup here. For one thing, it's loud — we fired up some big band music with the volume at 61 / 100, and actually cringed at how forceful the sound was. In quiet spaces, we tended to keep the volume around level 15 or 20, which is low compared with most notebooks we test.

Of course, loud sound doesn't necessarily equate to pleasant sound, but in this case, the quality is fairly balanced too. We enjoyed listening to everything from The Clash to the *Les Mis* soundtrack to various jazz numbers. There was one Louis Prima track where the nasal horn section slightly overpowered the other instruments, but

other than that, it was easy listening on our end.

Normally, we don't have much to say about the webcams on the laptops we test — it's not like anyone expects them to produce high-quality images. Or do they? Going forward, every new Sony PC will make use of an Exmor R CMOS sensor (yep, the same one Sony is already using in its digital cameras). In fact, the promise of brighter low-light photos is one of the laptop's bigger selling points. And to some extent, that's a gimmick: it's unlikely you'll find yourself in a situation where you have no choice but to Skype in the dark. If you do, though, you can expect results that make it appear as if you were sitting in a room with the lights on.



BENCHMARK	SONY VAIO FIT 15 (1.8GHZ CORE i5-3337U, INTEL HD 4000)	SONY VAIO T15 (1.8GHZ CORE i5-3337U, INTEL HD 4000)
QUADRANT 2.0	4,160	3,861
3DMARK06	5,222	5,050
3DMARK11	E1215 / P664 / X223	E1099 / P603
ATTO (TOP DISK SPEEDS)	151 MB/S (READS); 89 MB/S (WRITES)	114 MB/S (READS); 87 MB/S (WRITES)

## PERFORMANCE AND BATTERY LIFE

The Fit 15 starts at \$700, and goes all the way up to \$2,210, so the \$949 model we tested falls more toward the low-end range (if a nearly thousand-dollar machine can really be called low-end). For the money, you get a 1.8GHz Core i5-3337U processor (that's Ivy Bridge), along with 8GB of RAM, a 750GB hard drive and integrated Intel HD 4000 graphics. Performance is right in line with (if not slightly better than) other machines with the same or similar specs. It slightly outranks a Core i5-enabled T15 in almost every benchmark, though if you peruse our Ultrabook reviews, you'll see it keeps pace with many Windows 8 ultraportables too. (Well, in everything except disk performance, anyway — most Ultrabooks benefit from all-solid-state storage.)

Predictably, the 750GB hard drive can't compete with an SSD in either

LAPTOP	BATTERY LIFE
SONY VAIO FIT 15	3:37
ACER ICONIA W700	<b>7:13</b>
SAMSUNG SERIES 9 (13-INCH, 2012)	7:02
MACBOOK AIR (13-INCH, 2012)	6:34 (OS X) / 4:28 (WINDOWS)
DELL XPS 14	6:18
SONY VAIO T13	5:39
LENOVO IDEAPAD YOGA 13	5:32
DELL XPS 12	5:30
SAMSUNG SERIES 5 ULTRATOUCH	5:23
ASUS ZENBOOK PRIME UX31A TOUCH	5:15
ASUS ZENBOOK PRIME UX51VZ	5:15
TOSHIBA SATELLITE U845W	5:13
TOSHIBA SATELLITE U845	5:12
ACER ASPIRE TIMELINE ULTRA M3	5:11
TOSHIBA SATELLITE U925T	5:10
LENOVO THINKPAD X1 CARBON	5:07
ACER ASPIRE TIMELINE ULTRA M5	5:05
LENOVO THINKPAD X1 CARBON TOUCH	5:00
SONY VAIO DUO 11	4:47
ACER ASPIRE S5	4:35
MSI SLIDEBOOK S20	4:34





read or write speeds, but the Fit 15 at least manages to pull away from the T15, whose read speeds were, on average, almost 40 MB/s slower. Even more impressive, the Fit 15's startup times match, second for second, what we've been observing on much faster Ultrabooks — in just 11 seconds you should be fully loaded into the Start Screen. That's par for the course on a \$1,200 ultraportable, but not so on a mainstream laptop: the T15 takes closer to 20 seconds to boot up.

Sony rates the Fit 15 for up to three hours and 45 minutes, which is on the money, at least according to our tests. The unit we tested lasted through three hours and 37 minutes of video playback (that's with WiFi on and the brightness fixed at 65 percent). That's not great for a 15-inch laptop but then again, it's heavy enough that you'll likely have it plugged in at your desk most of the time anyway.

## SOFTWARE AND WARRANTY

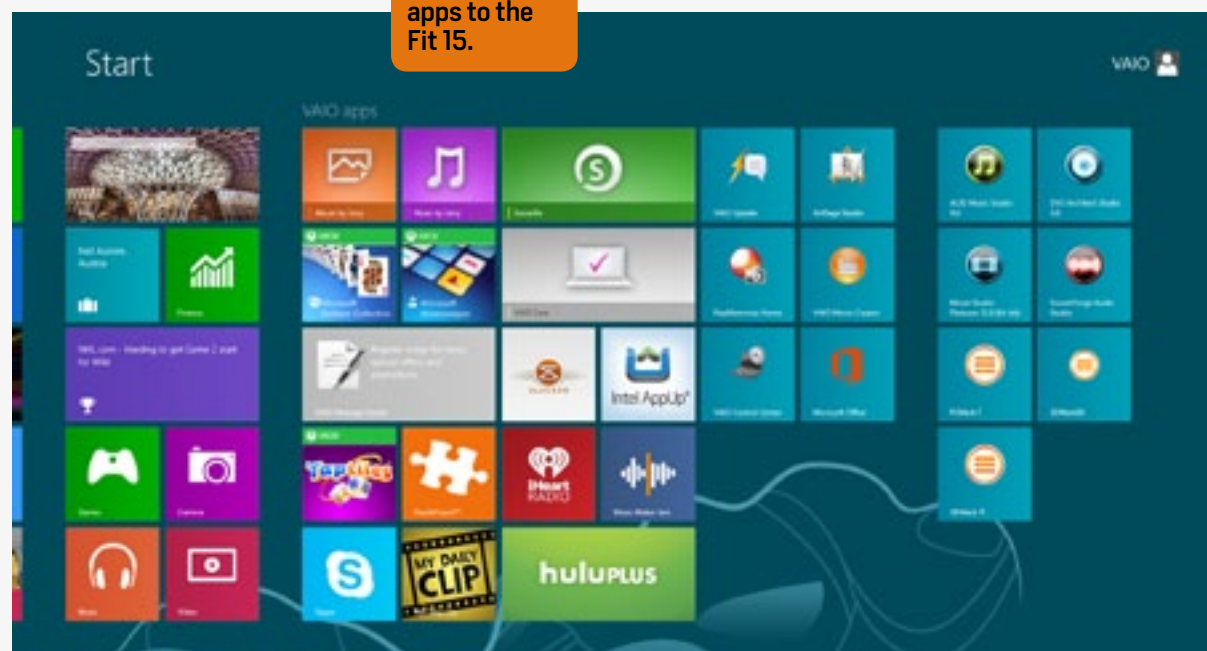
Sony's bundled apps span the equivalent of eight small tiles on the Start Menu — not exactly a small load here. As on other machines, you'll find an assortment of third-party programs like Hulu Plus, Slack-er Radio, iHeartRadio, My Daily Clip,

PuzzleTouch and Intel's AppUp store. At the same time, Sony's included a good deal of its own software, including VAIO Update, PlayMemories Home, VAIO Movie Creator, VAIO Control Center and its usual Metro-style apps built just for Windows 8 (that would be Socialife, Music and Album).

Sony also threw in its Imagination Studio package, valued at about \$200, which includes ACID Music Studio 9.0, Movie Studio Platinum 12.0, DVD Architect Studio 5.0 and Sound Forge Audio. As it happens, Sony plans to bundle that suite on every new PC it releases this summer, so file that away in the back of your head, even if you decide to hold out for a different model. Finally, wrapping things up, Sony has included ArtRage Studio, which you'll find on Sony's other touch-enabled systems too.

The Fit 15, like all Fit models (and all consumer PCs in general), comes with one year of warranty coverage, and that includes 24/7 phone support.

Sony adds a respectable bundle of apps to the Fit 15.



## CONFIGURATION OPTIONS

The Fit 15 starts at \$700 with a Core i3-3227U processor, 4GB of RAM, integrated Intel HD 4000 graphics and a 500GB 5,400RPM hard drive paired with an 8GB SSD. From there, you can upgrade to a Core i5 or i7 CPU, up to 12GB of RAM and an NVIDIA GeForce GT 735M GPU with either one or two gigs of video memory. If you want more storage space, you can get a 750GB or 1TB drive, also with an 8GB SSD. Or, you can ditch the hybrids entirely and go with a 256GB or 512GB SSD. Other adjustments you can make: getting Windows 8 Pro instead of Windows 8, or choosing a Blu-ray burner over a DVD drive. Technically, that touch-screen is optional, but only on the black

model; the pink and silver versions are touch-only.

If you're looking for something slightly more portable, the 14-inch Fit 14 offers the same specs, but starts at a slightly lower price of \$650. While we're here, it's also worth going over what the Fit E models have to offer. The two start at \$550 and \$580, respectively, with a 1,600 x 900 screen on the Fit 14E and a 1080p panel on the Fit 15E. Like the higher-end Fits, they'll be offered with Core i3, i5 and i7 Ivy Bridge processors, though in this case, there will also be a Pentium CPU offered at the lowest end.

Other specs have been downgraded too: RAM is capped at 8GB, not 12GB, and the standard hard drive offering is a 500GB HDD,

The array of ports will cover most connectivity needs.





with no SSD attached. (You can also get a 750GB or 1TB drive, or a hybrid setup.) As on the higher-end Fit notebooks, Intel HD 4000 graphics are standard, but you can upgrade to discrete (an NVIDIA GeForce GT 730M GPU with 1GB or 2GB of VRAM, in this case). Here, too, you can add a Blu-ray drive. As you'd expect, touchscreens aren't standard here either, but with these lower-end models you can get a non-touch configuration in either black or white; pink is the only color that'll be available exclusively with touch.

## THE COMPETITION

Within a matter of weeks, almost every PC maker will be refreshing its mainstream laptop lineup with Haswell, if not replacing their existing systems altogether. So, it'd be pointless to attempt a thorough comparison with other machines on the market, given that we're not quite sure which will be discontinued. That said, we can think of some other mid-range 15-inch systems that came out very recently, which gives us confidence they'll be available for at least a few months yet.

Starting with Dell, there's the Inspiron R series, with the 15R (\$550 and up) being the most relevant of the bunch.

**If other PC makers refuse to match this, they might well lose, at least in a war of spec sheets.**

Like the Fit series, it's highly configurable, with touchscreens, Core i7 processors and 1TB of storage offered at the high end. It's also significantly lighter than the Fit 15, at 5.12 pounds. Keep in mind, though, that the screen resolution is capped at 1,366 x 768, and the hard drive isn't paired with an SSD. In terms of specs, then, the Fit 15 is the clear winner, but you might want to keep the Inspiron 15R in mind anyway if you end up shifting your attention to the lower-priced Fit 15E. You can also check out the higher-end Dell XPS 15, but we're not sure how long it'll be sold, as it's already been out for quite a while.

Samsung also recently outed some new models, including the ATIV Book 6, a 15.6-inch system with a Core i7 processor, 8GB of RAM and a 1080p display. Unlike the Fit 15, though, it comes standard with discrete graphics (an AMD Radeon HD 8770M GPU, in this case). It's also lighter, at 5.18 pounds. All that said, we're not yet sure how much it will cost here in the US, so for all we know it could be priced a cut above the Fit series. Also, until we test one, we can't vouch for the claimed 4.7-hour battery life, or say how it compares to the Fit 15's runtime.

Acer's also got some hot-off-the-press machines — the new V5 and V7 laptops were unveiled just last week. The difference between the two lines mainly comes down to fit and finish, though both will be offered with 1080p screens and optional discrete graphics,



more or less matching what Sony is offering on the higher-end Fits. Keep an eye on these, too — Acer is known for setting low prices in a way that Sony perhaps isn't.

## WRAP-UP

Should you buy the VAIO Fit 15? It's tough to say conclusively, since we still don't know what other companies like HP and Toshiba are going to sell this summer. We do know this: the Fit 15 kicks off back-to-school season on a strong note. We applaud Sony for standardizing on certain specs, like backlit keyboards and higher-res screens. In fact, if other PC makers refuse to match this, they might lose, at least in a war of spec sheets.

What's more, the keyboard is a clear improvement over the one on last year's VAIOs, even if it is still a bit shallow. And hey, who can argue with that

11-second boot time? We already know the Fit 15 offers performance that's equal to or slightly better what you'll get from other machines with similar specs; we don't need to see HP's new systems to tell you that. As you can see, then, our list of complaints is short, though we do wish battery life were longer (ditto for almost every touch-screen laptop with Ivy Bridge). And the design, while pretty, also suffers from some minor flaws — a little too much give here, a little too much wobble there. Particularly since this isn't a total slam dunk, you'd be smart to wait a few weeks, if possible, and see what other companies announce. Even then, though, the Fit could be a tough act to follow. **D**

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

## BOTTOMLINE

### SONY VAIO FIT 15

**\$700+**



#### PROS

- Good performance, fast boot-up
- Improved keyboard
- Attractive design
- 1080p display and NFC come standard
- Webcam performs well in low light

#### CONS

- Short battery life
- Narrow viewing angles
- Heavy compared to some competing models

#### BOTTOMLINE

The Fit 15 combines a pretty design with impressive specs, solid performance and an improved keyboard.







# The iTunes Influence

**APPLE OPENED UP ITS DIGITAL MARKETPLACE  
10 YEARS AGO AND ITS IMPACT ON THE  
INDUSTRY STILL REVERBERATES TODAY**

**By Brad Hill**



THE iTUNES INFLUENCE, PART ONE:

# How Apple Changed the Face of the Music Marketplace

“iTunes is a stepping  
stone along the way.”

— JIM GRIFFIN, ONEHOUSE LLC

**On April 28th**, the iTunes Store basked in a milestone 10th birthday. Two years before its 2003 launch (as the iTunes Music Store), Apple introduced the iTunes client as a desktop music management program and implemented it as the device manager for the first iPod later in 2001. In those two years, Apple laid the groundwork for what





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## THE iTUNES INFLUENCE

PART ONE:  
HOW APPLE CHANGED  
THE FACE OF THE MUSIC  
MARKETPLACE

can reasonably be called the iTunes era of music.

Apple did not invent digital music, even though for many iTunes embodies 21st century music buying. However, during the past 10 years, it has become the US' top music retailer, with customers currently downloading 15,000 songs per minute from the app's library of 26 million songs, according to an Apple spokesperson. Since its launch, it has evolved into the hub of a powerhouse media / tech ecosystem that turned Apple into the world's most valuable company in 2012.

As a symbolic milestone, the iTunes anniversary encourages reflection on the past, a survey of the present and predictions of the future. Digital music continues to evolve, for businesses, consumers and musicians.

### SETTING THE STAGE FOR iTUNES

It was 1997 when I first heard a 128k MP3 song streaming through my then-new cable connection. Having lived in a low-bandwidth, silent, mainly text-based internet for five years, the moment was revelatory and was seared in my memory. My brain melted around the edges and I saw the promised land shimmering on the horizon. Music had arrived online, and it sounded pretty damn good.

Michael Robertson, early  
online MP3-sharing pioneer  
and chairman of MP3.com.



AP PHOTO/REED SAXON

The story of digital music started many years before the iTunes Store opened its doors. The overthrow of the industry's status quo began surreptitiously with the compact disc, which allowed track shuffling and, eventually, ripping and burning. Music labels have looked back regretfully on the release of unsecured music discs as a hindsight-is-20/20 moment which opened the floodgates to new consumer behaviors and demands.

But it was the MP3 file format that got the ball rolling directly toward the disruptions of the late 1990s. Like an evolutionary leap, MP3 crawled out of the water onto land (well, the web) in 1995, and served as the best marker for the start of the digital music era, which spawned



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## THE iTUNES INFLUENCE

PART ONE:  
HOW APPLE CHANGED  
THE FACE OF THE MUSIC  
MARKETPLACE

iTunes. The MP3 specification compressed fat audio files to a fractional size. Crushing them down made file transfers feasible in the low-bandwidth early web, but also reduced audio fidelity. (That was an easy trade for most people.) Over time, severely compressed song files became less necessary as the internet's pipes grew bigger, but MP3 has remained in wide use at higher bit rates that conserve more sound quality.

The MP3 spec was ready for prime time in 1992, but the technology was marketed to enterprise and remained mostly unnoticed and unused on the internet. It was the introduction of desktop MP3 players a few years later that closed the functional circle of music compression and sparked new uses. Software players like AMP and Winamp were powerful catalysts of early MP3 adoption and song-trading; when users had something they could do with an MP3 track (play it), the files started flying.

My brain melted around the edges and I saw the promised land shimmering on the horizon. Music had arrived online, and it sounded pretty damn good.

### SHARING AND THE SHERIFF

When Apple entered the field in 2001 with the iTunes program and the first iPod, digital music was a frontier being settled by adventurous pioneers fleeing analog tyrannies of tape, one-hit albums and high prices. From the industry perspective, the new landscape was populated by disreputable rogues intent on stealing music in digitally enabled ways; peer-to-peer (P2P) file-sharing was rampant.

Sharing is a natural human impulse, and sharing music happened for years before MP3 in the form of home-recorded tapes. However, small MP3 files, combined with DSL and cable bandwidth being pushed into homes, led to exuberant song-sharing via email and websites. The hunt was on for other people's tunes.





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In January 1999, “MP3” became the pre-Google internet’s top search term, overtaking “sex.” There was some primal music love going on.

P2P file-sharing made finding music a lot easier by forming a central music-specific search engine that connected directly to the songs. With the advent of Napster, the demand for MP3 music was met by a spectacularly

# In January 1999, “MP3” became the pre-Google internet’s top search term, overtaking “sex.” There was some primal music love going on.

efficient supply. The web app was created by Shawn Fanning, who dropped out of college to complete the project.

“It was something that came to me as a result of seeing sort of an unmet need and the passion people had for being able to find all this music, particularly a lot of the obscure stuff which wouldn’t be something you go to a record store and purchase,” Fanning said in a 2009 interview with the *San Francisco Chronicle*. “So it felt like a problem worth solving.”

Fanning unleashed his site in mid-1999, and it became the fastest-growing product or service in the internet’s history to that point. “I try not to think about it,” Fanning said in an MTV interview. “It’s a bit overwhelming; 20 million people have adopted it and love it.”

File-sharing is reputed to be a young person’s passion — indeed, in 2012 about half of P2P downloaders were surveyed to be 25 or younger. But in my observation during Napster’s dramatic climb, the app cut impressively across age groups. I knew parents who were more into it than their college-age kids.



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The combination of MP3 and Napster liquefied music into a mercurial stream of bits, slippery and seemingly uncontrollable, and a struggle was on to determine how freely it could flow. In 1997, five years before the iTunes store and two years before Napster, Michael Robertson founded MP3.com, an early flagship of the MP3 era. It was one of the first pay-per-download and pay-per-stream platforms for musicians, and was vigorously endorsed by Alanis Morissette and others. MP3.com developed a cloud-storage component called Beam-It that verified a user's ownership of a CD, and uploaded its tracks to an online music locker. Cloud listening is standard business modeling for the world's biggest media-tech companies today, but in 2000, it was an instant lawsuit. MP3.com lost the courtroom battle to Universal Music Group and was eventually acquired by Vivendi Universal, UMG's parent company.

"We debuted Beam-It in 1999," Robertson told me. "It is fascinating to me that it took more than a decade for the industry to embrace the concept behind Beam-It. If you have

the physical disc, you get the digital counterpart. I feel vindicated, but part of me is saddened. For more than a decade it was technically feasible, and would have given tremendous value to consumers, yet the industry didn't embrace it."

Robertson also gives a rueful nod to Apple for its reputation as the industry's sheriff, saving music from unlawful file-sharing.

"At the same time [as MP3.com], Napster came along," he said. "It had a profound impact on the industry. Many people lump them together — 'Oh yeah, you were doing copyright infringement ... and then Apple came along!'"

### LABELS VS. EVERYONE

1999 was as tumultuous in music technology as 1969 was in music sociology. It was rebellion against The Man — who in this case was the institutional power

Shawn Fanning brought Napster into existence and rocked the music industry's world.





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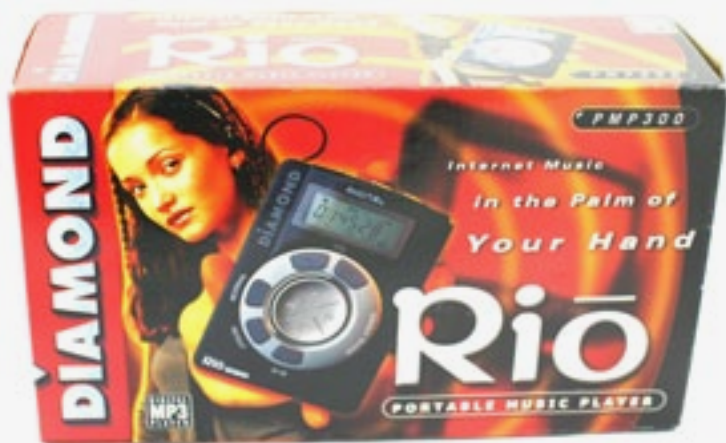
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center of major labels and their chief US lobbying group, the Recording Industry Association of America (RIAA). The RIAA engaged in front-line, hand-to-throat combat with consumers, while labels found themselves tangled in disputes with their progressive artists.

In a span of 12 months, from February 1999 through January 2000, the music industry pitched these battles (among others):

**SDMI:** The Secure Digital Music Initiative sought to roll back 15 years of CD and MP3 technology by developing a new, copy-resistant file format using digital rights management (DRM). The venture was backed by the recording industry in partnership with Microsoft and IBM. It didn't result in a marketable product, but DRM played an important role in launching the iTunes store, and in the iTunes experience for several years.

**Rogue Artist:** Tom Petty released “Free Girl Now” on MP3.com, where it was downloaded 150,000 times before Petty's label, Warner Music, removed the song.



**Diamond Rio:** The first popular MP3 player, the Rio, was released in August, only because the RIAA, which had tried to sue it into non-existence, dropped its legal action. The litigation was an early example of how the industry regarded the MP3 file format — a neutral technology spec — as an illegal enabler of copyright theft.

**RIAA vs. Napster:** Seven months after Napster launched, the RIAA filed suit against the service. The case alone was a notable benchmark, and also included a requested damage penalty of \$100,000 per song downloaded via the platform. That dazzling plea set a precedent of eye-popping and arguably unjustified damage claims that would mark RIAA lawsuits in coming years.

The years following 1999 were eventful, too. Metallica sued Napster, at the same time that Limp Bizkit embarked



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In what was a controversial PR campaign as much as a scare tactic, the RIAA sued more than 35,000 individuals from all walks of life between 2003 and 2008.

on a Napster-sponsored tour. The company lost its legal challenges, and shut down in the summer of 2001, ending two tectonic years of operation. (Napster's assets underwent a series of acquisitions, most recently by Rhapsody in 2011.) In the meantime, other file-sharing platforms emerged, including Morpheus, Grokster, Gnutella and KaZaA. Three of the major labels (Warner Music, Ber-

telsmann and EMI) launched a music subscription service called MusicNet, which was predictably ignored. The other two majors (Universal Music Group and Sony Music) started a competing service called Pressplay; it was likewise disdained.

In April 2003, mere days before the iTunes Music Store opened, the RIAA brought the downloading fight to the streets, suing four college students for building local file-sharing search engines on campus intranets. The programs enabled campus students to find and share MP3 songs, leading the RIAA to call them "local area Napster networks." (Napster's plug had been pulled two years previously, but its name was still invoked as a proxy for sharing music.) The

defendants settled their cases for amounts ranging from \$12,000 to \$17,500, in one case wiping out a student's savings from three years of work during college.

The RIAA endured some criticism for its heavy-handedness in the student ploy, but was just getting started. In what was a controversial PR campaign as much as a scare tactic, the RIAA sued more than 35,000 individuals from all walks of life between 2003 and 2008. The targets were identified by IP numbers in file-sharing apps, then traced to actual people through their internet service providers. The RIAA's method of contact, accusation and settlement





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President of RIAA Hilary Rosen [left] and RIAA attorney Russell Frackman answer questions during a press conference related to their lawsuit against Napster.

became so routine that targets were encouraged to pay a settlement fee by credit card on a special web page. It was like an expensive toll to use P2P, if you were one of the unlucky few who stumbled into a toll lane.

After 2008, the RIAA discontinued the lawsuits against individuals. The five-year campaign was widely viewed as ineffective at slowing P2P use, which had become complicated by the addition of movie, TV and software downloading. The RIAA handed off the policing role to ISPs, but it took four years before major internet providers (Comcast, Time Warner, Verizon and others) agreed to implement some kind of P2P watchdog scheme last December.

### **ITUNES: A SOLUTION**

It is fair to say that industry chaos reigned in music during the early MP3 years. Artists were conflicted; labels saw the writing on the wall and tried to erase it even as they tentatively edged into online distribution; and consumers feasted, but were concerned about legality and confused by the newness of it all.

In this low-gravity orbit in which the value of music



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seemed to be floating untethered, Apple provided ground control. Negotiating with the spooked and hesitant music labels to sell their product, Steve Jobs settled on two reassuring agreements. First, the iTunes Music Store would be open to Apple computer users only — a tiny portion of the internet population in 2003. (The store was opened to Windows users five months later, after selling 10 million songs.) Second, the store's inventory of songs would be copy-protected with DRM. That lasted for all music in the store until April 2007, when DRM was removed from songs owned by the EMI label. In January 2009, all DRM was removed from the iTunes Music Store.

Jim Griffin, a pre-eminent thought leader in digital-music solutions and former CTO at Geffen Records, assigned a sly maneuvering to Apple's label negotiations for iTunes.

“When iTunes launched, it was a bit of a feint,” Griffin said. “The assumption made by the industry was that it would be Mac-only. They really didn't picture the store quickly becoming a Windows store. That's what a lot of [industry] people used to justify dipping a toe in the water. But it was a full-fledged jump.”

Whether the labels waded in or dove in, the store was an instant hit for consumers who craved the advantages of virtual music products, but didn't want to get tangled in the file-sharing jungle where malware abounded and the RIAA was training sharpshooters. The store sold 1 million downloads in the first week, and the next month Apple sold its 1 millionth iPod. The ecosystem was up and running.

For the copyright-aware and digitally progressive music customer, iTunes offered a value chain with four

**The store sold 1 million downloads in the first week, and the next month Apple sold its 1 millionth iPod. The ecosystem was up and running.**





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Apple's revolutionary new iPod is displayed following its announcement on October 23rd, 2001.

compelling links. First, the store presented a coherent, understandable digital marketplace that was soothingly reminiscent of a record shop. In contrast to the subscription streaming services (Rhapsody launched in 2001), iTunes traded in music that you wholly owned. The model was a refreshing hybrid of newness and familiarity. Second, the pricing was attractive and, importantly, unchanging: 10 bucks for an album, one buck for a track, no retail shenanigans. The perceived value of music was reset. Labels were not thrilled with the devaluation established by this price model, but it was better than zero in KaZaA.

Perhaps the most important feature for iTunes customers was the dismantling of albums. One of the sharpest CD-era complaints was the forced purchase of a 12-song disc to acquire one radio hit.

“The labels had it pretty sweet,” Robertson told me. “You put out a CD and it’s got one, two or maybe three songs that people care about, and you convince them to give you 15 bucks.”

Music labels had manufactured and sold singles in the vinyl years. But the labels controlled what an album’s single was going to be, and it was all part of an integrated hit-making pipeline that



AP PHOTO/JULIE JACOBSON



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**STEVE JOBS MIGHT HAVE BEEN LISTENING  
TO JOHN LENNON WHEN HE WROTE THIS:**

Imagine a world where every online store sells DRM-free music encoded in open licensable formats. In such a world, any player can play music purchased from any store, and any store can sell music which is playable on all players. This is clearly the best alternative for consumers, and Apple would embrace it in a heartbeat.

included pushing the singles onto radio. Singles as physical products all but disappeared with CDs. Napster (on the shady side) and iTunes (in the bright sunlight) revived the single for digital music. Labels didn't like it, obviously, but the genie was already out of the bottle in the P2P realm.

Finally, the iTunes system simply worked for consumers. Apple already had the desktop software and portable

player in the market.

A million iPods were on the street. Apple's full-circle solution was timed perfectly to gain quick and rabid acceptance across the PC and Apple user bases. The store and the iPod fueled each other, powering one of the industry's great media-tech ecosystems.

The one sour note of the iTunes retail formula was digital rights management, which locked the music into Apple devices. Steve Jobs might have never wanted DRM; he certainly knew it was dangerously contrary to consumer needs by 2007. That year, he wrote an open letter debunking the industry rationale for copy-protected music tracks that thwarted the user's ability to freely use their purchases.





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Jobs won that argument and DRM faded out of iTunes for good in 2009. But for several years, iTunes unquestionably degraded consumer value in this regard, even as it satisfied digital needs in other ways. Never before in the history of the recording era (except for player-piano rolls) had customers been forced to slave their recordings to one brand of playback device. Because iTunes songs were watermarked with copy-protection, they could not be played in non-Apple devices. This situation was like a time bomb for users. If their iPod died, they would be forced to buy another iPod, or lose playback of all their purchased music. Imagine a label releasing CDs that only worked in Sony or Panasonic CD players. That is exactly what happened in iTunes, with Apple players.

Griffin believes it was a necessary period of label hand-holding.

“Had anyone said at the beginning, ‘Oh, by the way, we’ll drop the DRM along the way’ — that’s a road [the labels] would not have headed down,” he pointed out.

When I brought this up with MP3.com’s Robertson, he explained that other ventures had failed to acquire full label participation without DRM.

“On the DRM front, I would say that Apple was forced to do it by the industry ... and [Apple] quickly realized they could use it as a wonderful lock-in tool!” he said. “If you remember back before iTunes, there were companies that were vending digital songs for a dollar each — Liquid Audio, Nordic Music — and the problem was they could never get sizable inventory. The labels would give them one single, or a few singles from one band, and say ‘Let’s see how this sells.’ It was like opening a hardware store that sells only hammers. That’s what really stunted growth. It was Apple that said, ‘We’re just going to launch to Apple customers, and we’re going to use DRM.’ Those two decisions caused the industry to finally relent and license catalog-wide.”

### **iTUNES IN THE FUTURE**

The iTunes Store anniversary does not mark an end point, for the store or for the digital music movement. Matt Graves, a longtime internet executive who has held



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marketing and communication positions with Rhapsody, imeem and Twitter, thinks 2013 is a pivot point.

“In the same way that 2003 was a pivotal year that set forces in motion that are continuing to be felt, I look at 2013 as an equally important year,” he said. “The comet has hit, and the long-term impacts are growing more apparent as time moves on.”

The comet strikes to music were MP3 and file-sharing. Technology started the digital music revolution with MP3 and Napster, and created business out of chaos with the iTunes Music Store. Going into the next 10 years, iTunes faces challenges to its dominance on two major fronts. First, the iTunes template is now old news, and more or less replicated in all the major media-tech ecosystems (Amazon, Google, Microsoft). Apple’s innovation has gone from being the solution to being one of many choices.

“Amazon is very good,” said Griffin. “Amazon has clearly been gaining share at the expense of iTunes, because they’ve been offering people more options — selling you the disc along with the digits, side by side, or allowing you to get the digits immediately and wait for the disc.”

Second, Apple must come to grips with the emergence of streaming as a newly popular type of music consumption. Subscription streaming was established on a small scale years before iTunes opened, but was a hard sell to consumers until recently. The rise of Pandora, Rdio and Spotify during the last couple of years, and the powerful influence of YouTube, have driven interactive listening to parity with downloading. If Apple fulfills rumors of an iRadio launch, it would signal the company’s recognition that the era of iTunes dominance is, if not over, certainly more complicated.

“We’re at an interesting point now,” said Graves. “It’s 10 years since Apple launched iTunes. We are only now seeing some of the forces set in motion 10 years ago. We are still grappling with what it all means.” 

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*Brad is a writer and musician living in North Carolina. He is experimenting with the human capacity for espresso.*





## THE iTUNES INFLUENCE, PART TWO:

# Setting the Music Free

“I think the consumer is going to be driving this train for quite a long time.”

— CASEY RAE, DEPUTY DIRECTOR,  
FUTURE OF MUSIC COALITION

In 2003, iTunes Music established an environment for downloadable music at exactly the time when consumers needed a safe and stable online music store. iTunes sold a million songs in the first week, 10 million in five months and 25 million songs after eight months.

But the consumer demands of one era do not necessarily hold sway in a different cycle. iTunes is facing powerful competition from Amazon, Google and Microsoft in the pay-per-download business. Meanwhile, streaming platforms like Spotify, Rdio and YouTube are establishing a widespread attitude that music is free, and that downloading from a store isn't as compelling as accessing a service. Apple is still making plenty of sales in the music store (15,000 downloads per minute), but users are also flocking in different directions.

With the state of the music industry still in flux, 2013 could be as pivotal as 2003, and the next 10 years could be as eventful as the last 10.

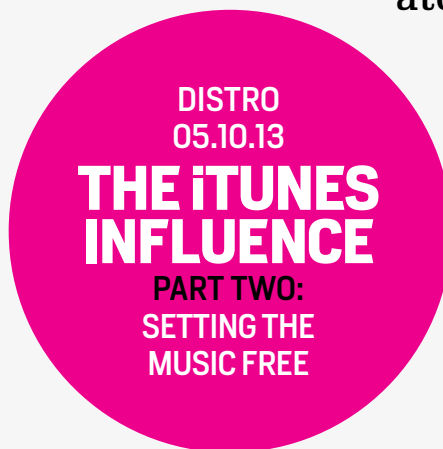




## FREE(D) MUSIC

In the five years before iTunes opened, it was widely assumed that consumers were driven to Napster by greed for free music. The wounded war cry of the major labels that had lost control of their product was, “We can’t compete with free!”

For many users, the most galvanizing appeal of Napster was not free music, but freed music.



Everyone loves a free buffet. But free-loading is not necessarily the most obvious conclusion when it comes to file-sharing. This was especially true 15 years ago when Napster offered a new kind of music experience that many users would have been glad to pay for. P2P wasn’t just a watering hole for broke college students; there was strong appeal for older demographics that had money for music and a history of buying it.

For many users, the most galvanizing appeal of Napster was not *free* music, but *freed* music. Freed music is liber-

ated from artificial lock-ups. The

two chief lock-ups of the Napster years were back catalogs of out-of-print recordings, and individual tracks of CD albums. As Napster became widely used, its tremendous user-supplied inventory of songs, spanning decades, became normal and expected. Labels didn’t accept the new normal quickly. They failed to adjust the packaging and availability of their recordings, and their resistance drove millions of users to clandestine P2P sites.

When locked-up music prevents people from finding what they want to buy, they find another way to get it. I saw this effect played out when I attended a high school reunion during Napster’s heyday. The classmate in charge of music brought a long MP3 playlist of period songs scoured from Napster. Other options, like amassing a hundred songs from original vinyl borrowed from friends, or buying CD retrospectives filled with bad





tracks, were not feasible. It was as if the industry was intentionally blocking payment for a specialized music collection. Today, of course, building a legal reunion playlist from any era would cost a few bucks for a subscription service, and could be brought to the event in a carry-on bag holding a smartphone and portable speakers.

## WHAT PEOPLE WILL PAY FOR

“You don’t have many excuses anymore,” Casey Rae, deputy director of the Future of Music Coalition told me. “For 10 dollars a month, you can have access to all the recorded music in the world, on the go, stored in a cache on your phone and synchronized. It’s pretty amazing. That’s a powerful consumer-focused music marketplace.”

Rae’s observation speaks to consumer expectations of sound tracking one’s life at an extremely low cost. In addition to cheap music, people want tremendous variety (the long tail of unlocked music). Between the listening platforms and musician hangouts like SoundCloud, there is a consumer presumption that the entire library of recorded music should be accessible.

Customization is important to users who are deep into creating playlists. Not everyone is — Pandora is popular because it effectively curates playlists for you. Spotify, by contrast, is an uncurated catalog of music through which the user is free to prowl, building lists and sharing them. In Spotify and Rdio, listening to music has become entwined

with social sharing and lifecasting. Playing a song, for example, can trigger an automatic tweet. Another aspect of social streaming — shared playlists — is an effective music-discovery feature.

Mobile music has been important to consumers since the Sony Walkman. Some digital services charge for mobile as a premium service. Michael Robertson, founder of MP3.com and current CEO of DAR.fm, criticized the industry’s separation of mobile and desktop services:

“One of the big hurdles has been the industry’s view that mobile is different than desktop. Spotify, Rdio, Xbox Music — these have most every song in the modern library. On the PC, it’s free with ads, but when it comes to mobile, you’ve got to get out your credit card. That has stunted access.”

If there was a digital music manifesto for consumers in 2013, it would be: everything, cheap, customizable, everywhere. A full realization of these priorities would be what Jim Griffin, a former executive at Geffen Records and Warner Music, called “the just-in-time delivery of customized digits.” If music is a liquefied stream of bits, the user should be able to shape its stream in any way.

## SOME PEOPLE WILL NEVER PAY FOR MUSIC

“I hate to say it, but iTunes is a very elegant tip jar.”

That’s Griffin, pointing out that even now, 10 years into the iTunes era, any connected consumer can enjoy a world of



# If music is a liquefied stream of bits, the user should be able to shape its stream in any way.

music without paying a cent.

“It has been voluntary to pay for a while now — I don’t mean legally or morally, but practically,” Griffin said. “You make a choice when you decide to pay for a song. That’s simply the way it is. That choice becomes more attractive every year, roughly twice as attractive at half the price every year. Moore’s law drives this equation.”

What stops people from paying for music (besides lack of cash)? I surveyed online forums and social media comments to find many shades of anti-payment sentiment, expressed in several common themes:

**Label hate:** “I don’t think that it’s people not wanting to support the artist; I think it’s more that people don’t want to support the record companies anymore. They are killing good music and replacing it with crap.”

**Musical class warfare:** “If stealing their music keeps Justin Bieber, Miley Cyrus and Nicki Minaj from polluting my ears with their drivel, I’m all for it. Clearly Lady Gaga is living comfortably.”

**Music isn’t a job:** “Play music for love, not for money grabbing.” “If nobody wants to buy your song, you’ll have to start WORKING!”

**Entertainment industries are bogus:** “How very sick the ‘intellectual property’ fantasies are! People lived very nicely before this show-biz industry took their brain and money.”

**Misunderstanding of copyright:** “Downloading music from the internet is not stealing. Downloading music is equivalent to having someone let you borrow their CD and you making a copy of it.”

**Music isn’t important enough to buy:** “Music is entertainment; that is all.”

**Militant entitlement:** “I will never, ever pay for music. Before music was free, I never once in my life bought a CD.”

**Occupy the labels:** “The music business is like the rest of society: the top 1 percent steals more from the majority than the ‘criminals.’ Piracy is not what is hurting the artists the most, nor has it ever been. The structure of





the music industry is the real culprit.”

**All musicians are rich:** “I agree we should pay for music, but you should know that the thousand dollars it cost to record a song is nothing compared to the millions of dollars it earns with all the people buying it.”

**File-sharing is good:** “YouTube and torrents have helped people discover new genres and bands since the day they were invented. Without torrents, the spectrum of commercially viable music wouldn’t be what it is today.”

## **STREAMING: THE NEW ITUNES?**

When Apple launched the iTunes Music Store, subscription services were already in motion. I subscribed to Rhapsody when it started in 2001 (and still do). I expected the model to catch on quickly. Was I ever wrong.

Ten years later, I am belatedly right. Streaming services like Pandora, Spotify and Rdio have evolved beyond early music-subscription efforts like Rhapsody. Furthermore, YouTube is increasingly a music powerhouse, used for discovery and general listening. Everyone I spoke to for this series mentioned YouTube.

“YouTube has every song and 37 versions of it,” Robertson said. “My kids don’t do Spotify, Rdio or Rhapsody. They live on YouTube.”

With all these wide-open listening platforms, the definition of music ownership seems to be changing. We are leaning toward a world in which

# We are leaning toward a world in which access is the new ownership.

access is the new ownership.

“Whether ownership is even necessary is a deep question,” Griffin told me. “It’s psychological. Music has always been psychological.”

In my personal psychology, the question is whether a service *feels* like ownership.

I have subscribed to Rhapsody for 12 years. Although outright song purchases are available on the platform, I rarely buy anything. But I *feel* like I own millions of tracks; I can listen to them anytime, anywhere. It’s similar to cable TV, but a heck of a lot cheaper and much more customizable.

“There are a lot of reasons why subscriptions didn’t take off,” Matt Graves, a former Rhapsody exec, told me. “It was a new model. Broadband was not available. WiFi was not widely available. You could not put music on a portable device. There were no smartphones. Nobody had apps. Also, the amount of music that is available now, millions of songs [is compelling] ... when Rhapsody was acquired by Real [in 2003], we had 320,000 songs available.”



For years, subscription services like Rhapsody were scorned as “music rental” by outspoken critics. They had a point. If your subscription lapsed, you lost access and the money you had spent on it. You didn’t wholly own music through subscription streaming services, but it *felt* like you owned it. Even so, the “celestial jukebox” concept (on-demand streaming of a huge catalog) was a hard sell to the broad market.

Unhinging the subscription piece did the trick. Cash-free, ad-supported music listening was the on-ramp that introduced the pleasure and convenience of the celestial jukebox to millions of new users. It’s a new market component for the supply side, too — the labels and musicians. The flocking of consumers onto new listen-

ing platforms encourages music creators to distribute their music on those platforms and enjoy wider exposure.

That might seem to be a win-win situation, and in some ways it is. At the same time, the structure of the music industry has become corrugated in ways that create conundrums for musicians. Access to the market, and exposure to listeners, don’t always equate to sustainable income.

“Ultimately, the consumers will get what they want,” Robertson said. “They’ll get any music they want, any time they want it, on any device.”

The question is: Can musicians survive in this universe? **D**



*Brad is a writer and musician living in North Carolina.*

*He is experimenting with the human capacity for espresso.*





THE iTUNES INFLUENCE, PART THREE:

# Art in the Age of Digital Disruption

“What happened is way worse for musicians. It has forced musicians to be marketers.”

—JOHN MCVEY, PRODUCER, COUPE STUDIOS

“I fear that in general the only musicians able to create a truly independent and successful career are those who had one before the industry changed, who had the fan base in place to enable them to continue independently of the record labels.” That’s Peter Owen, an independent composer and producer. He is one of many musicians who feel that the internet has made the business of creativity more challenging.

Parts one and two of this series surveyed how iTunes and MP3 catalyzed the digital music movement for labels



and consumers. The effect of the internet on musicians is less recognized. In one way, musicians have benefited similarly to consumers. While consumers have gained amazing access to music, musicians have acquired unprecedented access to listeners.

So it's the promised land for musicians, right? Not exactly. For many creators whose careers span the before-and-after of digital music, there is a crushing sense that the grass isn't greener after all.

## THE BEFORE AND AFTER

Michael Robertson, a serial entrepreneur in digital media, founder of MP3.com and CEO of DAR.fm, observed that the difference between a pre-MP3 musician and a post-MP3 artist is circumstantial.

"I'm not convinced that the plight of the artist has fundamentally changed much since the pre-internet era to the internet era," Robertson said. "Artists can go direct, but it also means that people have hundreds of thousands of choices. The benefit of going direct is offset by the sheer enormity of the internet."

Easy distribution into digital channels creates a cacophony of music noise, making it harder for any artist or band to be heard.

"Marketing is really the key issue," according to Eve Williams, an Irish singer and songwriter who sells her work on iTunes and CD Baby.

If Williams is correct, that brings up a question posed by John McVey, a record producer at Coupe Studios in Boulder, Colo. "Today, is the more successful musician just a better marketer, or is he a better musician?"

I asked McVey whether labels did a good job marketing their artists in the pre-MP3 years. "Hell, yes!" he said. "Even if it was a somewhat corrupt system where they used payola to buy hits, at the very least they were selling their stuff."

The popular lore of building a career as a recording artist in "the old days" (pre-MP3 and industry disruption) is infused with disreputable mythology. In a typical historical narrative, record labels were evil entities that wielded a strangling top-down influence on cultural taste, mo-

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## THE ITUNES INFLUENCE

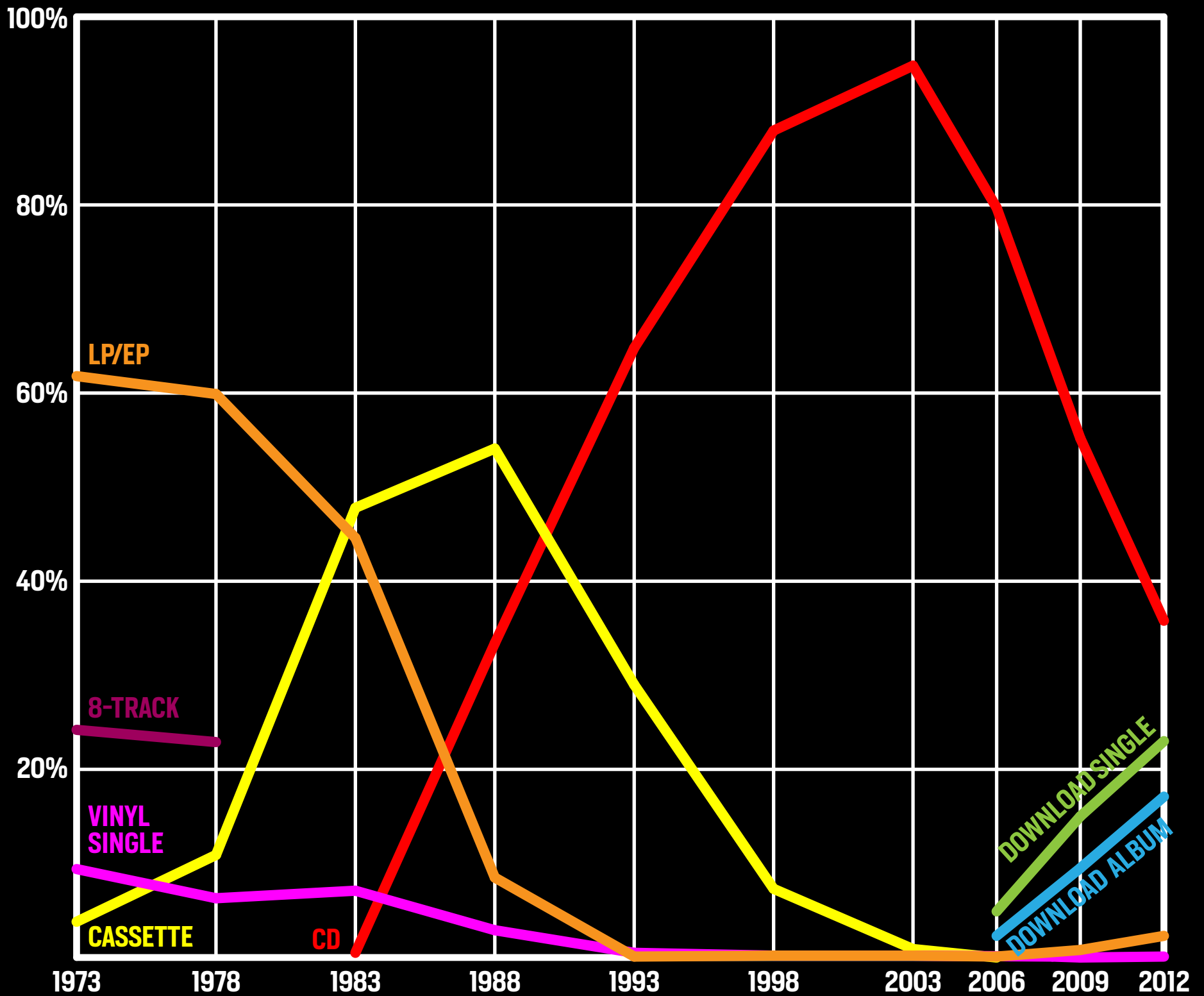
PART THREE:  
ART IN THE AGE  
OF DIGITAL  
DISRUPTION





# MUSIC INDUSTRY SHIPMENTS BY FORMAT

A look back at the rise and fall of physical music media



nopolized a corrupt star-making system and grabbed most of the money through unfavorable contracts and creative accounting. For every indictment of record-label business practices, there is probably corroborative storytelling, as in any aspect of show business. At the same time, not discounting a dark side of major-label market control, the “label system” produced most of the music beloved by millions of people spanning three generations.

The labels did exert control over the entire industry that had a smothering effect on indie musicians. Labels

SOURCE: RIAA

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For many creators whose careers span the before-and-after of digital music, there is a crushing sense that the grass isn't greener after all.

controlled distribution, for one thing. They manufactured most of the product, got it played on radio and dominated the pipeline into stores. Labels were also resolute gatekeepers that chose who could get distributed and find an audience. A&R (Artist & Repertoire) departments signed artists — they were the labels' bouncers and the gilded gates were narrow and few.

If those structural realities were discouraging to artists, the labels also provided important career assistance. They invested in new artists. Bruce Springsteen was signed to Columbia Records in 1972, but didn't break through to a large market until three years, and three albums later. Labels also provided marketing support. Some older musicians roll their eyes at that statement. Individual experiences notwithstanding, however, major labels maintained marketing, PR and design departments, lifting those as-

pects of career-building off the artists' shoulders.

It is those investments in nurturing and marketing that make Owen wonder why labels are demonized and the new audience gatekeepers (like iTunes) are not.

“At least a record company puts money into a project and risks its own money,” Owen said. “I appreciate there have been some less-than-honest dealings in the music industry. But when you look at the two business models, I do wonder why we all think of the labels as the sharks, and not iTunes and the rest of the digital-distribution crowd.”

There is really a triple layer of gatekeeping between musicians and listeners now. iTunes represents download stores that take a cut of every song or album sold. Streaming sites like Pandora, Spotify and Rdio pay artists small royalties when their songs are streamed. Then there are digital enablers like CD Baby, TuneCore, Amazon and other so-called aggregators, which charge fees for placing an artist's tracks in all the online stores and streaming services.

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These layers make it obvious that the internet has not lived up to disintermediation — its call to arms — when it comes to digital music. But the good news inherent in this digital distribution system is that bands don't need to manufacture a CD to reach listeners or sell a product in iTunes, CD Baby, Bandcamp or other outlets. A songwriter can pick up a guitar, record a few songs in his bedroom and see them in the world's largest record stores the next day.

Technology companies have made music more democratic, without question. From a distance, it looks like the hallowed “level playing field” that new media is famous for. But close up, the level field might seem like an arid desert where musicians can trudge forever without getting anywhere.

### **MEET THE NEW BOSS...**

In a well-circulated impeachment of the tech-platform takeover of music, David Lowery, a musician who founded the bands Camper Van Beethoven and Cracker, wrote, “I feel that what we artists were promised has not really panned out. Yes in many ways we have more freedom. Artistically this is certainly true. But the music business never transformed into the vibrant marketplace where small stakeholders could compete with multinational conglomerates on an even playing field.”

It's a frank truth that most indie artists will not get the high-powered management and label partnerships that are helpful in elevating a career. In those cases, it is the direct access to markets that Lowery regards as the “promise” of digital music. But it turns out that dividing up the financial pie afforded by those stores like iTunes, and streaming services like Spotify, doesn't often result in sustainable professions.

Damon Krukowski, who released his first album in 1988, revealed an underside of digital music economics by breaking out the payments he has received for digital distribution. He is not the first or last to do so, as other musicians are popping up with screenshots of their royalty statements from the use of their tracks in various apps. Each service has its own royalty scheme, but in all cases the micro-payouts for streaming are in the depressingly micro realm of penny fractions. Today's economics



Krukowski calculated that for one of his records, it would take 312,000 Pandora plays to earn one album sale.

assign a far lower value to a stream than to a download or CD sale. Krukowski calculated that for one of his records, it would take 312,000 Pandora plays to earn one album sale.

If there is a digital music “promise” to musicians, it is based on scale. Streaming services are still on a sharp growth curve. Given an immense streaming listenership, those micro-payments could add up more substantially. But the 72-point headline that musicians see is about the devaluation of music generally. The structure of the digital music industry is geared toward satisfying consumer demand for a constant stream of low-cost music, not the musician’s need to financially sustain creative careers. “Ultimately, the consumers will get what they want,” said Robertson.

Robertson.

Krukowski puts it like this: “The ways in which musicians are screwed have changed qualitatively, from individualized swindles to systemic ones.”

## NEW STRATEGIES

Coupe Studios’ McVey got his career as a musician rolling several years before MP3 triggered the tectonic disruption of music. A winner of multiple national awards for songwriting and performing, McVey self-funded three CD projects that span pre-MP3 and post-iTunes. He has written music for commercials, and is currently a full-time producer at the Boulder-based studio.

Working with many aspiring artists and bands to shape recording projects for modern industry realities, McVey’s advice has changed over the course of the iTunes decade.

“I think about what they have to do to accomplish the end result they’re trying for,” he said. “Most of my clients come in to do a whole CD. That makes sense if you’ve got 16 songs ready to go. But you should also consider that people aren’t buying albums. So what are you trying to

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Streaming services like Spotify allow you to take your playlists virtually anywhere, by simply accessing the cloud.

accomplish with this recording project? How should we shape the project? Does it need to be 16 songs right now? Fans would rather buy one song a month than wait a year to buy a whole album.”

The point about singles replacing albums as the chief product increment echoes part of the tech disruption that hit labels particularly hard. The iTunes store, and Napster before it, effectively dismantled the album, which was unbreakable during the CD era. Robertson has been a digital-music entrepreneur for 15 years, and is categorical: “Unbundling is rarely revenue-positive. The music industry figured that out.”

Indie musicians are figuring it out too, now that marketing and distribution costs are charged to their credit cards. From the supply side, if McVey and other mentors can convince their clients of it, the single-song market can be a cost-saving advantage and shortcut. Bandcamp is filled with desktop-produced music of all sizes from 24-track albums to single tunes. When you troll through there, you can’t help but trip over all the one-song pages, each selling an individual track for a dollar or a euro.

But does it work when a musician inches into the market one track at a time?



# The iTunes store, and Napster before it, effectively dismantled the album, which was unbreakable during the CD era.

## LEVERAGE IN DIGITAL MUSIC

It worked for The Lumineers, a Denver folk rock band. After playing gigs for three years, the group posted a video of its song, “Ho Hey,” on YouTube. Two execs of an entertainment management company saw the video, signed the band to a management deal and funded a full-length album. “Ho Hey” was used in a season finale of the TV show *Hart of Dixie*, which stirred up social buzz and led to radio and television appearances for the band. The Lumineers signed with Dualtone Records, licensing to Decca. The album and single climbed the charts — not just the Billboard charts, but also the Spotify “most played” lists. In the 2013 Grammy Awards, The Lumineers were nominated for Best New Artist and Best Americana Album.

There is no better or more illustrative post-MP3 success story than The Lumineers. First, the group’s saga represents an incremental crossover from the bootstrap world of indie music to the highly leveraged world of institutional media. Just as McVey counsels his clients to scale down from album projects to three-song EPs, The Lumineers minimized their output by using a single amateur video posted on YouTube as a tiny key to global success.

The Lumineers illuminate an enduring truth of “making it”: Success depends on luck and leverage. There’s no controlling luck. And there’s no denying the power of leverage. If that first Lumineers video had not been seen by the band’s future managers, the group might still be playing small clubs in Denver and shooting home videos. Their management company leveraged an album; then a record company leveraged airplay and TV placement; the TV play leveraged broad recognition on social networks; the intensifying vortex of attention led to Grammy nominations, which further leveraged the group’s brand.

Casey Rae is the deputy director of the Future of Music Coalition, and an independent musician/producer. I asked





him about whether indie musicians have the ability to build an audience that matched their ability to distribute digitally.

“We have tremendous access to audiences, but as musicians we might not have leverage in the new marketplace that’s comparable to the folks who always had leverage in the marketplace,” Rae said.

The traditional power levers still wield potent influence, and can supercharge a career that starts with a post-MP3, post-iTunes marketing tactic like putting a video on YouTube.

## In the daunting sphere of indie self-funding, Lisitsa and her husband went far out on a limb, investing hundreds of thousands of dollars to hire the London Symphony Orchestra for a recording of the Rachmaninoff piano concertos.

One of the great YouTube success stories is all the more remarkable for transpiring in the classical music realm — arguably a fading category, and certainly one with a smaller audience than many other genres.

Valentina Lisitsa is a Ukrainian concert pianist who built her reputation in social media. In the six years she has built her brand on YouTube, Lisitsa’s videos have been viewed 58 million times. She shares everything, even sometimes bootlegging her own concert performances for which she doesn’t own complete rights. (One evening she re-uploaded a banned video of her 2012 Royal Albert Hall concert and instructed her rabid Facebook followers to watch it quickly before it was taken down again.) Deeply committed to personal fan relationships, Lisitsa engages in comment threads and live-



streams her home practice marathons (her cat jumps on the keys) and studio recording sessions.

In the daunting sphere of indie self-funding, Lisitsa and her husband went far out on a limb, investing hundreds of thousands of dollars to hire the London Symphony Orchestra for a recording of the Rachmaninoff piano concertos. That project found its leverage: Lisitsa is now a Decca recording artist and tours around the world.

These stories are inspiring for their indie-artist, direct-to-the-audience, post-MP3 beginnings. But without finding industrial-strength leverage, or until it is found, digital-music realities are harsh for musicians.

## NOISE MACHINE

The downward pressure is not only about cheap music for consumers; it is about a deluge of music. Easy access has created a noisy market. Andrew Keen, author of *The Cult of the Amateur* and a blunt accuser of the web's cultural democratization, is unambiguous in his scorn of noise.

“When audience becomes artist, the result is shit,” Keen said. “New enabling technology destroys both art and art commerce. Consumers lose.”

Not many consumers, swimming in ear candy, would agree. But musicians drowning in that ocean of noise must feel some of Keen's resentment. For musicians, there is little practical difference between a suffocating pre-MP3 market controlled by a few label conglomerates, and an open market glutted with content — both are nearly impossible to break through.

Noise is one part of it — the staggering variety of a market in which the leading store, iTunes, offers 26 million tracks. Another part is human response to variety. Unlike in the supermarket, where too many products can paralyze your ability to make a single choice, musical variety incites an MP3-era style of hit-and-run consumption.

“It's more than noise,” according to Jim Griffin, general manager of OneHouse LLC and ex-CTO of Geffen Records. “What we've discovered over the years is that when you give people choice, they'll exercise it. There was a time when we got our music from relatively few companies that had a lot of market share. Now that we give people choice,





Unlike in the supermarket, where too many products can paralyze your ability to make a single choice, musical variety incites an MP3-era style of hit-and-run consumption.

and give anybody the opportunity to sell music, we see that the majors are losing a lot of market share, maybe even faster than they thought.”

Stealing market share from the majors would seem to be a happy possibility for indie artists. But the economics of an audience that samples music via streams, rather than committing to products via downloads, is not yet adding up well for independent artists. In one musician’s account, a track downloaded from iTunes or Amazon nets 64 cents. The same track, streamed on Rhapsody, earns the artist nine-tenths of a cent, and a fraction of that when streamed on Spotify.

This is where McVey expresses some degree of wist-

fulness for the clear-cut leverage of the label era.

“The noise is not necessarily good or bad stuff — it’s just stuff that reaches that listener,” McVey said. “You have to figure out how to reach a listener. Getting your stuff on ReverbNation is not enough, whereas getting your stuff to a record company was enough.”

A fundamental mind-shift challenges musicians now. Many self-produced musicians are re-thinking the product they are making and the role of their music. Until recently, “product” in music meant a discrete unit — an album or a track. The unit is either shipped on a disc or downloaded. The alternative is thinking of music as a service, just as consumers do.

On the business side this means licensing to media projects like TV shows and commercials that large numbers of people are exposed to in the normal course of a media-saturated life, rather than selling directly to the consumers. Griffin likens it to Tarzan.

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“We cling to this vine of ‘product,’” he said. “We talk about digital music product, selling songs. But the real action isn’t measured on that old vine and how well it stays up. It’s measured on a new vine of service — how well music serves as a gateway to an ever-growing crowd of people.”

Technology intermediaries are stepping into the service space, just as they have in the distribution space. SoundCloud recently cut a deal with the music-licensing division of Getty Images. Any musician, pro or amateur, who uploads to SoundCloud can automatically include their tracks in Getty’s licensing catalog, which is presumably shopped by TV, movie and commercial producers. Licensing, whether by intention or accident, is a proven jolt to a band’s career, as demonstrated by The Lumineers, The Fray and others.

## INTO THE UNCERTAIN FUTURE

Any populist would say that the opportunities of a democratized, low-barrier creative market outweigh the difficulties of chaos and noise. Keen would not agree, but when a beginning songwriter makes a bedroom recording and puts it on iTunes or Bandcamp, where it is purchased by three friends and his mother, that is a good use of technology. Multiply that by millions and the musical mindspace is filled with white noise that more accomplished, self-produced musicians must treat as legitimate competition for ears and pennies.

The best news for musicians is that love of music, and appetite for it, remain unquenchable in the iTunes era and any era. It is never a bad time to own musical property. And it is never easy to turn tunes into cash.

“We all had stars in our eyes at the beginning of this digital disruption,” Rae remembers. “The idea was that the disintermediation would allow for direct-to-fan relationships, which it has, and new opportunities for commerce, which it has. You can point to as many things which wouldn’t have been possible as you can to challenges. That’s the double-edged sword of technology.” 

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*Brad is a writer and musician living in North Carolina. He is experimenting with the human capacity for espresso.*





**THE ENGADGET INTERVIEW**

# Sir Richard Branson



**The founder and chairman on Virgin Galactic and space tourism for the everyman**

**By Michael Gorman**

**IT'S BEEN A PARTICULARLY GOOD WEEK** for Sir Richard Branson. SpaceShipTwo, Virgin Galactic's sub-orbital people carrier broke the sound barrier for the first time, and Virgin America began service into San Jose, Calif. Sir Richard was in town to welcome VA's first San Jose arrival, and we jumped at the chance to chat



with him, even if only for a few minutes.

Our conversation revolved around Virgin Galactic's latest milestone on its journey towards ferrying the masses to the stars. Naturally, we wanted to know his plan to make space travel affordable for us non-billionaires, as the current cost of a Virgin Galactic ticket is a cool \$200K quarter-million dollars. His solution? A combination of more spacecraft, more spaceports and the most prolific satellite delivery service in history.

**Now that you have SpaceShipTwo's first rocket-powered flight under your belt, how many more steps do you have to go before you're going to be taking passengers up into space?**

We'll be into space before the end of the year, and we'll be taking passengers — subject to getting, you know, FAA certification and everything — early next year. So, the day before yesterday [April 29th] was truly important and truly historic. You know it's all very well building a rocket;

Silicon Valley's SJC gets added to Virgin America's West Coast route, facilitating "nerd" air commutes to LAX.





it's all very well building a spaceship; but if the two don't work together you've got a problem. And once you've gone 1,000MPH, gone 4,000MPH or 3,000MPH, we can pretty well extrapolate it up. So, you know, it was an enormous milestone. [We] talk as if we're going to space every year for the last seven years, but now, I can properly say, "We are going to space this year."

**With such a long journey to get to this point, having overcome so many obstacles, what is the biggest hurdle left to clear?**

Look, we're building a commercial spaceship company, the first ever. A lot of businesses — let's say they mass-launch a new car, and they have a few technical problems, they can cope with that. With a spaceship company, you can't afford to have technical problems. And so we've got to get every single little thing 100 percent right, 100 percent safe. We can't afford to lose any customers, and so we've just got to do test flight, after test flight, after test flight until we really feel... until I feel comfortable enough to bring my kids up, and then we can be confident to take other people's kids up.

**Speaking of those customers, it's pretty expensive to get a seat on SpaceShipTwo right now. Will space travel ever be affordable?**

Yes. Up to our first thousand customers, the price actually is going up now to \$250,000. They help us effectively fund the program. They're the people who can afford to pay it, and we're enormously appreciative of their support. But in the years to come, we will get the price down, and our aim is to, you know, by the time you get to an age where you want to go to space, you'll be able to afford it, and by the time your children want to go to space, they'll be able to afford it. So, I don't want to forecast prices and things; we're going to try to make it as affordable to as many people as possible.

**What's the key to getting the prices down to an affordable level?**

The key to that has to be a lot more spacecraft. And there's also a new rocket we're developing which is a re-

“...By the time your children want to go to space, they'll be able to afford it.”





Virgin America's "nerdbird" makes its first touchdown at San Jose International Airport (SJC) and gets a proper welcome.

usable rocket, which is a very clean; very, very, very clean rocket. And, you know, it uses really a small amount of energy to get people up there. Also, maybe more spaceports. We've got our first spaceport in New Mexico. We may have to think of other spaceports. We're also going to be able to put more satellites in space in one month — three and a half thousand satellites in one month — than have been put up in the last 10 years. So, and I don't want to speculate what that could achieve, but if you could put your thinking hat on, it could be transformative in a whole lot of industries, and that, the economics from that will help us get the price of tickets down.

**With respect to delivering satellites into space, are you working with SpaceX and Elon Musk, or will Virgin Galactic be doing things differently?**

We're great friends. We're both doing our own thing. We will be putting low-earth orbit satellites up, which personally we think is the future; he's putting bigger satellites up further. And I think we can create a whole new







Sir Richard Branson and the team that built SpaceShipTwo and WhiteKnightTwo.

industry from the back of being able to put satellites up at a very affordable price because we can replenish those satellites within 24 hours. So, you know, if after five years one or two of them start falling out, we can just, you know, within 24 hours send up our mother ship. Send them to the specific places. That's not been possible before. People have had to wait a year in line to put satellites up. So it is going to be transformative.

**Will the satellite business help to fund the passenger business to drive the costs down?**

Yes, exactly, and vice versa.

**And you've already said that the next step for Virgin Galactic will be to build orbital spacecraft – how long before you start testing them?**

That will be about three years away.

**Thanks for chatting with us, Sir Richard!**

Thanks, thanks much. 

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*Michael Gorman is a Senior Associate Editor at Engadget, attorney, Hokie and 8-bit gaming enthusiast. He likes dogs, too.*



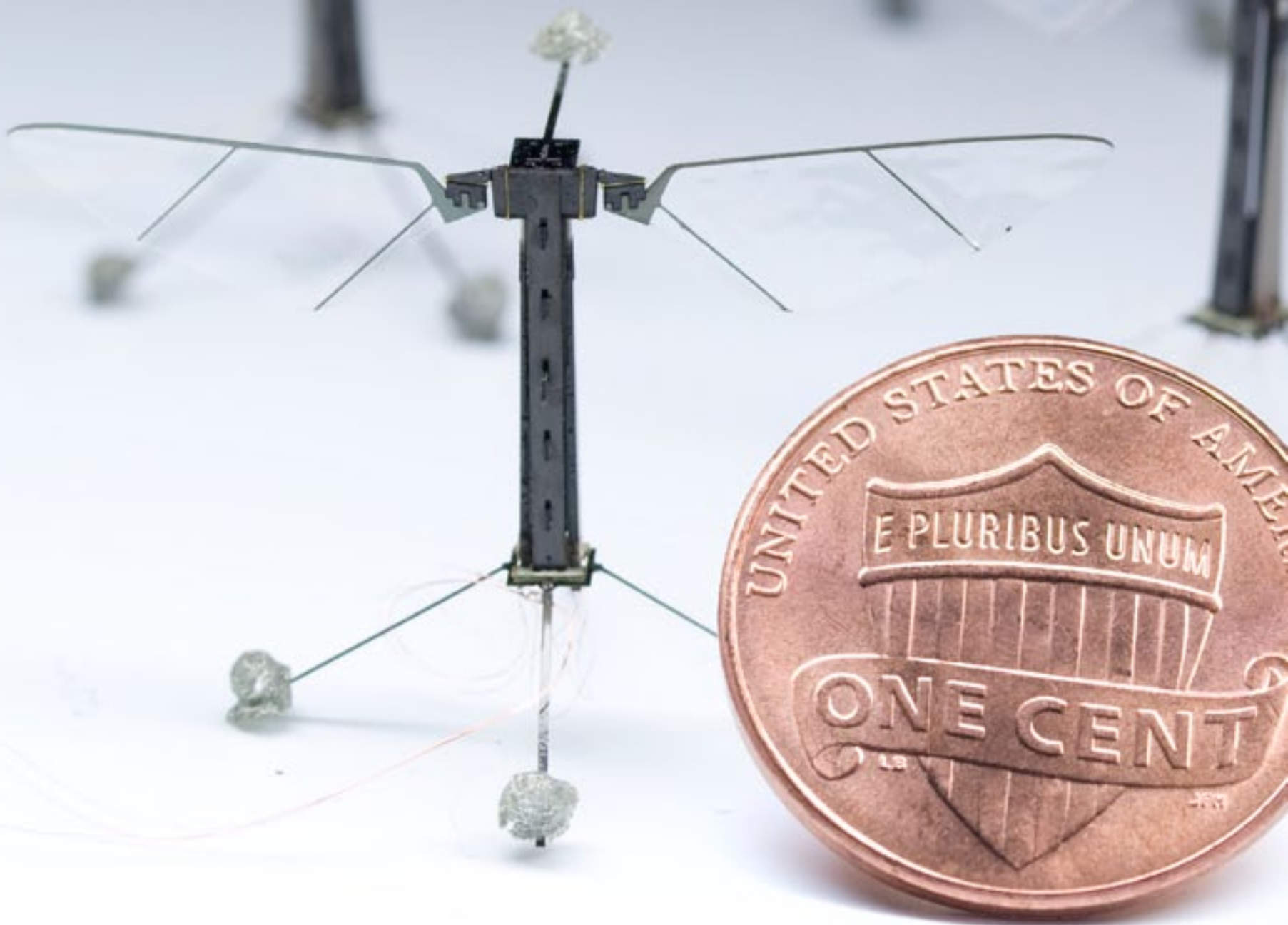
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**FLIGHT OF  
THE ROBOBEE**

 See it in  
action!



PHOTOGRAPH AND IMAGES COURTESY OF KEVIN MA AND PAKPONG CHIRARATTANANON.





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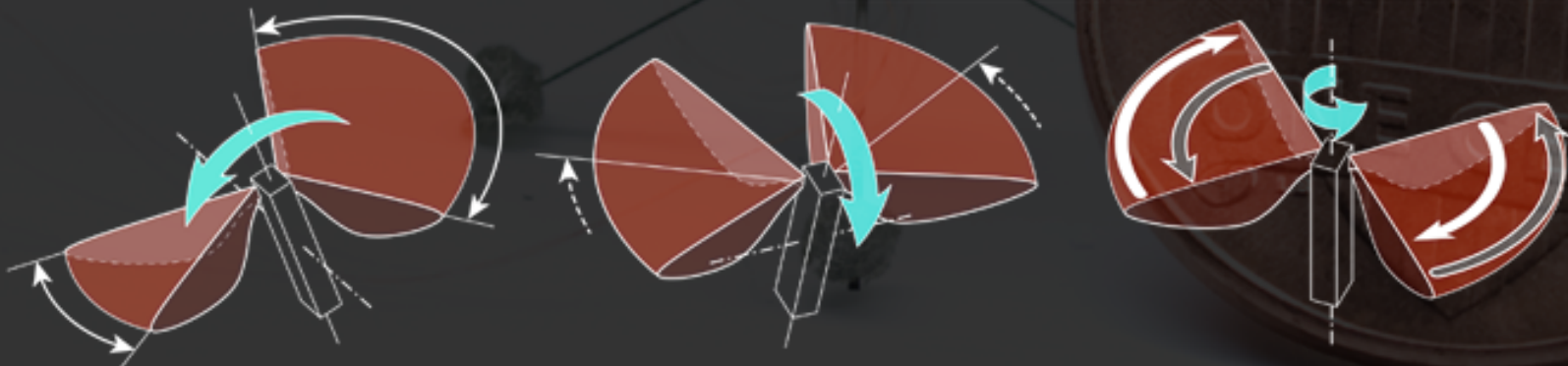
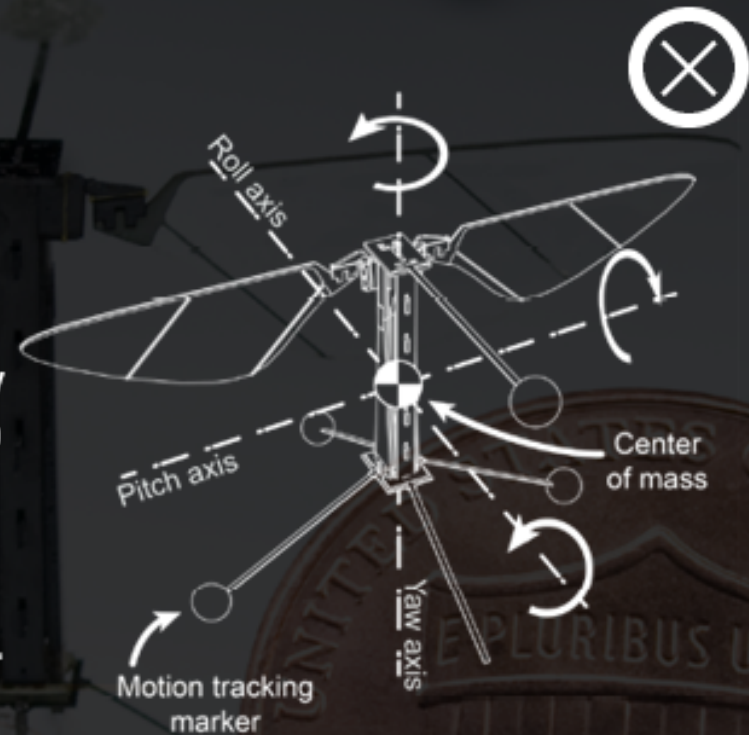
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**VISUALIZED**

## FLIGHT OF THE ROBOBEE

 See it in  
action!

After a decade's worth of work, the RoboBee project has taken flight in the public eye. *Science* magazine recently published the team's findings, and a video of the bot's stable hover and controlled-flight maneuvers is making the rounds. Inspired by the biology of a fly, this tiny bug-bot can flap its individually controlled wings 120 times per second using piezoelectric actuators. RoboBee is still tethered to a thin power cable, but the ultimate goal is full autonomy.



PHOTOGRAPH AND IMAGES COURTESY OF KEVIN MA AND PAKPONG CHIRARATTANANON.



# JOE TROHMAN



COURTESY OF FALL OUT BOY

## **THE FALL OUT BOY GUITARIST on his gear wish list and Bluetooth fashion sense.**

**What gadget do you depend on most?**  
My iPhone. I rely far too much on it... sadly.

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

Probably my NES. First serious gaming system I ever had.

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

Apple without a doubt. I feel like every new gadget that comes out is trying to compete with their products. They're always setting the bar, and then raising it.

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

OS X.

**What are your favorite gadget names?**

Put a lower-case "i" in front of it and I'll probably gravitate towards it. I also think "Clam Case" is a pretty funny name.

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

Echofon and Instagram on my iPhone are used on the daily. I also use the Korg Polysix and Figure by Reason on my iPad a fair amount.

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

I'll never like virtual keypads. Nothing can compete with an





**“I feel like touchscreen technology blows my mind still. It just makes me think of all the sci-fi films I enjoyed as a kid. It’s come to life now.”**

actual QWERTY-style keypad. That’s where you have to start debating function over form.

**Which do you most admire?**

I guess the entire idea of having a hand-held, sleek, touchscreen computer in my pocket. The all-in-one aspect is wonderful. Outside of the messy keypad of course.

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

I feel like the iPhone and iPad are incredibly close. If I run a serious DAW [digital audio workstation] with real-deal plugins on an iPad, I’d be in heaven when it comes to recording on the road. Also, if the touchscreen keypad / keyboard was more accurate.

**What is your earliest gadget memory?**

Probably an NES. Or if we’re talking accessories, the NES gun or Power Glove. If we’re talking something more “all-in-one” portable, then an Nintendo Game Boy. Computer-wise, Apple //e that my

dad brought home from work.

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

I feel like touchscreen technology blows my mind still. It just makes me think of all of the sci-fi films I enjoyed as a kid. It’s come to life now. Outside of that, when it comes to recording, I’m pretty impressed with companies like Apogee that keep making seriously powerful recording interfaces. You can record anywhere, and well.

**Which do you most despise?**

Bluetooth earpieces? I can’t tell half the time if someone is actually on the phone or actually crazy. Plus it’s just not a good look.

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

Lack of battery life. I think a lot of devices seem to suffer from that and everyone has to tolerate it on certain gadgets because it can be difficult to replace. And even if you can, the new battery sometimes ends up as bad as the last. For guys on tour, we’re always on the make for a place to charge our stuff because of poor battery life.

**Which are you most intolerant of?**

I don’t tolerate anything that runs slowly. Whether it be a phone, tablet or computer, it has to run at





Trohman [left] with the other members of Fall Out Boy.

optimum speed. Especially when it comes to internet connectivity, but even with processing, RAM, etc.

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

Directions. I've been touring a lot and I don't always know how to get around. Google Maps on the iPhone is pretty helpful with that.

**What device do you covet most?**

Probably the Apogee Symphony I/O or the UAD Satellite. Recording. Yay!

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

I'd change a lot. Maybe to have it not be made out of glass?

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

Outside of real human connection, the simple ability to reach people immediately via my smartphone. It's become a part of human existence. Without a phone that can text, email and get onto social networking, a lot of people end up feeling naked and

alone. Which is, as James Hetfield would say, "Sad, but true."

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

A really, really long email. My eyes hurt trying to read run-on sentences mashed into 12 paragraphs on a screen.

**When did you last disconnect?**

Probably the last time I left my phone in a cab. It was for two weeks. After two days, it was glorious. **D**





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

# DELL U2713H MONITOR

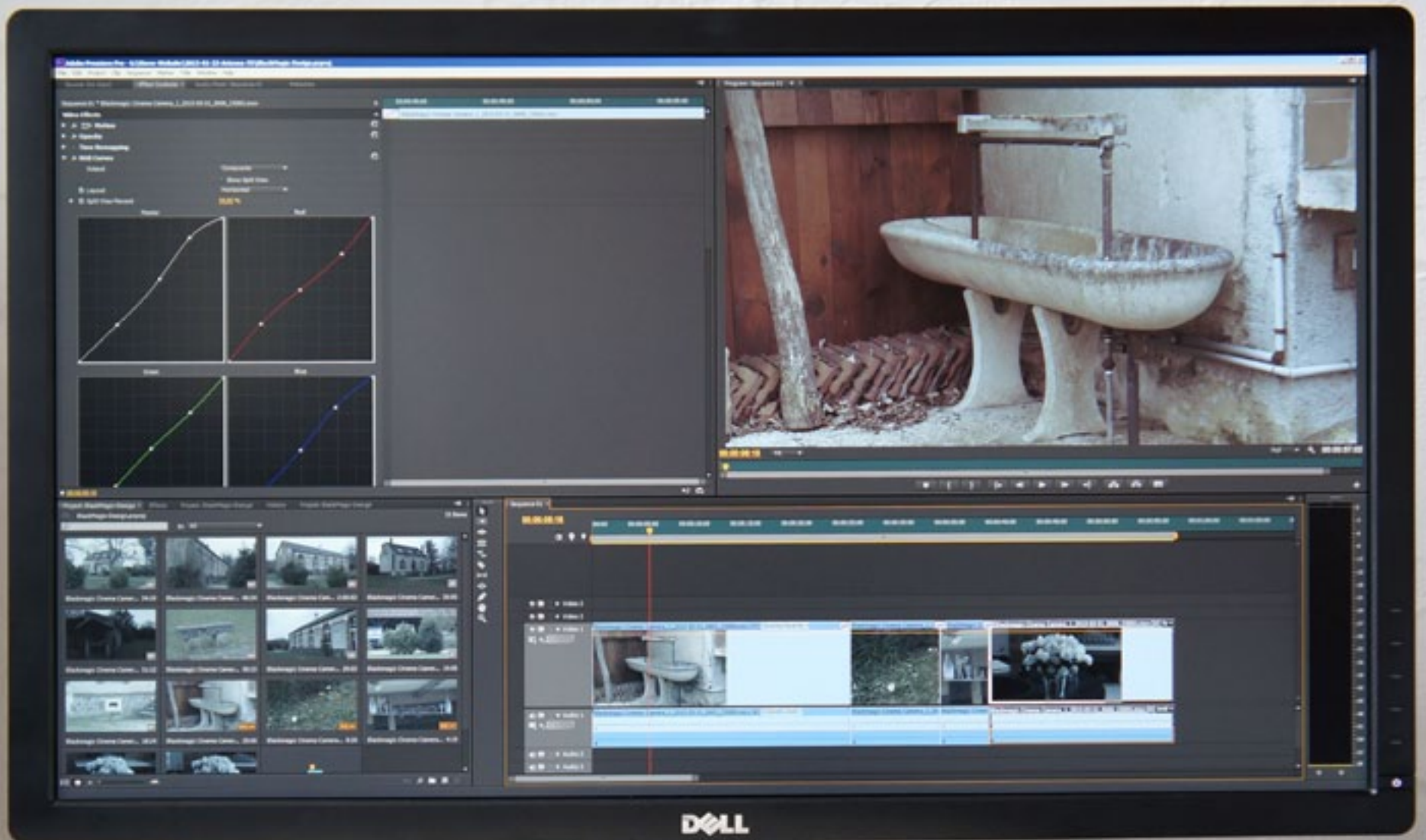
**PERFORMANCE MONITORS** aren't all about FPS. For lovers of fine color and resolution, Dell makes some of the best pro displays for budget-minded broadcast or image editors — after all, competitive models from Eizo and others can cost twice as much. The company's latest offering is the U2713H, running about \$750 on Amazon and designed to replace the U2711, which we thought highly

of when it first came out. But if you've decided to treat yourself to a high-end monitor, are a billion colors and a 2,560 x 1,440 pixel count worth double the price of a decent 8-bit-per-pixel screen?

First off, the IPS screen looks great, and the stand is amazingly ergonomic. It's widely adjustable, too, and can even be rotated 90 degrees to portrait view. As with the U2711, there's every source in-



X-Arcade  
Dual  
Joystick



“Dell strives to calibrate each screen correctly before shipping them, and mine was nearly exact out of the box.”

put imaginable, including dual-link DVI-D, DisplayPort 1.2, Mini DisplayPort 1.2 and HDMI — though the U2711 had an extra DVI-D port that is sadly missed. Image-wise, the newer model is nicer to stare at for hours than its predecessor, as it uses a less aggressive coating that eliminates the graininess many customers complained about on the U2711. As for those vaunted 10-bit-per-pixel graphics, the U2713H is actually an 8-bit + FRC and *not* a true 10-bit panel like what you’ll find on the sublime U3011 model. That lets it dither its way to a billion colors, but visually speaking the effect is nearly identical to a proper 10-bit display.

However, unless you have a graphics card that supports deep color like the NVIDIA Quadro FX 4800 I’m using, you’ll only see the usual 8-bits per color (16 million hues). On top of that, you’ll need software that supports it, like the apps in Adobe’s CS6 Creative Suite.

If you’re able to check all those boxes, what does it get you? The sRGB color range is a full 100 percent, giving you smoother transitions between black and white and color gradients, which allows for more accurate image adjustments and grading. That requires an equally accurate color setup, so Dell strives to calibrate each screen correctly before shipping them, and mine was nearly exact out of the box, with a factory report to prove it. I certainly couldn’t tune it more accurately by eye (using color bars), meaning a dead-on setup would require an external calibration device and plenty of spare time. That makes it ideal for someone like myself who needs precise, but not dead-perfect colors straight out of the box or pro colorists and graphic designers who could easily tweak it the rest of the way. As for gamers and other casual users? Response times are middling, but if you want to make sure Desmond Miles’ robe is exactly the right shade of gray, then why not, if you can afford it? — *Steve Dent*



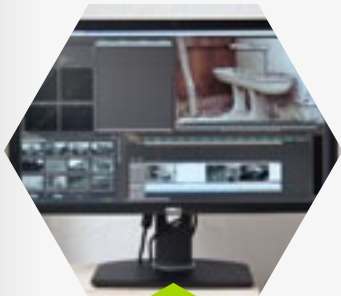


# X-ARCADE DUAL JOYSTICK

AH, THE JOYS of impulse purchasing. I've always wanted an arcade-style controller and was even considering building my own when I came across a sale on Xgaming's X-Arcade Dual Joystick. Granted, it wasn't the company's top-tier Tankstick model (which includes a trackball for games like *Tempest*), but at 40 percent off, I couldn't

complain much. It was such a deal that I didn't even have to do any "Married Math" — you know: the math where you round prices up or down to lessen your spouse's anger.

In fact, after I flipped my old single-person arcade joystick on eBay for \$45, my out-of-pocket expense dwindled to about \$30 for a controller that usually retails for



Dell  
U2713H  
Monitor





“That width feels like a good compromise, allowing enough room for two without being too ungainly.”

\$130. And what did I get for my troubles? A darn sturdy and capable plaything, that’s for certain. The X-Arcade Dual Joystick (as its name implies) features two sets of arcade-style controls and compatibility with PCs, plus many game consoles (there are even some convoluted methods for attaching it to iOS and Android devices). Each side includes an eight-way, bat-top joystick. Three rows of concave-style buttons are laid out to the right of both joysticks — the top two rows are set up in a 3 x 2, *Street Fighter*-style layout, while

two more buttons can be found on the third row below. The left and right edges of the case also have side buttons for pinball games.

The top controls are mounted on a sturdy slab of what feels like melamine board measuring two feet across at its widest. That width feels like a good compromise, allowing enough room for two without being too ungainly. Still, one could always use more elbow room — especially when *Street Fighter* bouts get a bit heated. It’s worth pointing out the various adapters for use on different game consoles are all sold separately. Only PCs, Macs and Linux machines are supported out of the box. Lastly, the joysticks can be switched from eight-way to four-way mode (for use in games that don’t need diagonal movement like *Donkey Kong* or *Pac-Man*). Unfortunately, converting from one to the other requires opening the bottom panel, which, thankfully, does not void your warranty. I would have loved a simpler procedure, but I can’t complain too much considering the price I paid. Heck, even at full retail, the X-Arcade Dual Joystick would feel like money well spent.

— Philip Palermo





The week that was in 140 characters or less

# Email Observations, Crazy Drivers and Dialing Back Windows

DISTRO  
05.10.13

ESC

REHASHED

**@ioerror**

Today I wrote the FBI about my FOIPA request. Which agent will read it first? The one I wrote the email to? Or the one that reads my email?

**@dawnstarau**

Oh look another  
“flying car” article.  
The problem isn’t  
technical, it’s we can’t  
trust you bastards  
on flat surfaces let  
alone in the air

**@harrymccracken**

If Windows Blue brings  
back the Start button  
and lets you boot to  
the desktop, maybe  
it should be named  
Windows 7.5.

**@AConnorManning**

Does anyone else absolutely hate the idea of paid subscriptions and think it will murder the YouTube community?

**@smithersd**

this online retailer sales tax bill is just another example of what a conundrum the internet is

THE STRIP

BY BOX BROWN



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05.10.13

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# TIME MACHINES

WHAT IS THIS?  
TOUCH TO FIND OUT



AP PHOTO





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05.10.13

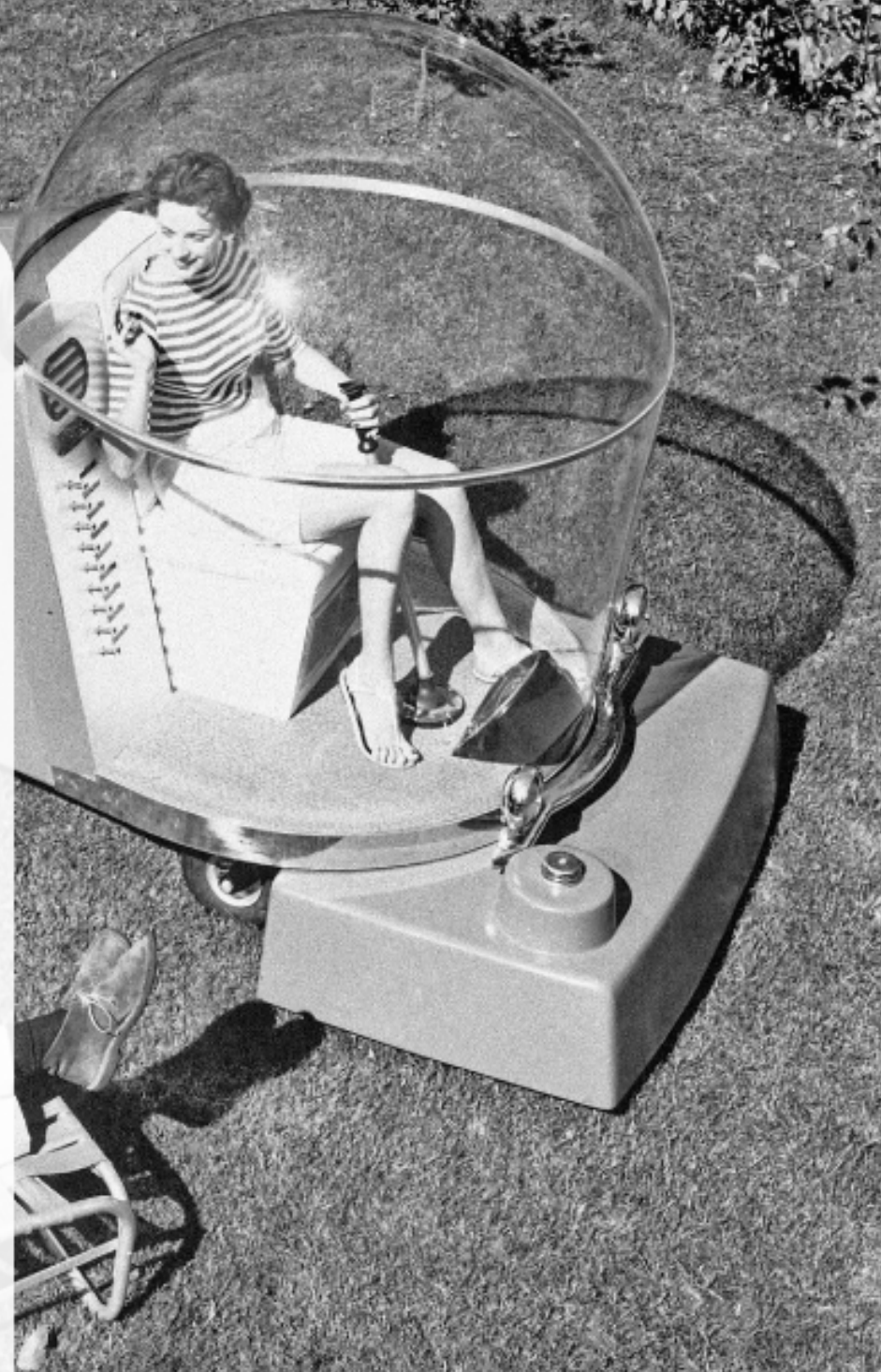
ESC

## TIME MACHINES

### WONDER-BOY X-100



So, we're still waiting for those jetpacks we were promised, and now there's another lost bit of future-tech to bemoan: the Wonder-Boy X-100. Simplicity Mfg. Co.'s dream machine of the '50s had high hopes of handling your yard's mowing, feeding, weeding, spraying and load hauling all while you're safe and sound in a 54-inch, weather-proof bubble. Once you've finished your chores, you're free to zip on over to the golf course at speeds of up to 10MPH, all while chatting on your radio-telephone in air-conditioned luxury. Still not enough? Try adding a vacuuming system for leaves or a snowplow for the off-season. Indeed, the X-100 concept was just a Jetsonian fantasy when it was unveiled at the National Hardware Show in New York back in 1957, but at least we've got our Roomba named Rosie.

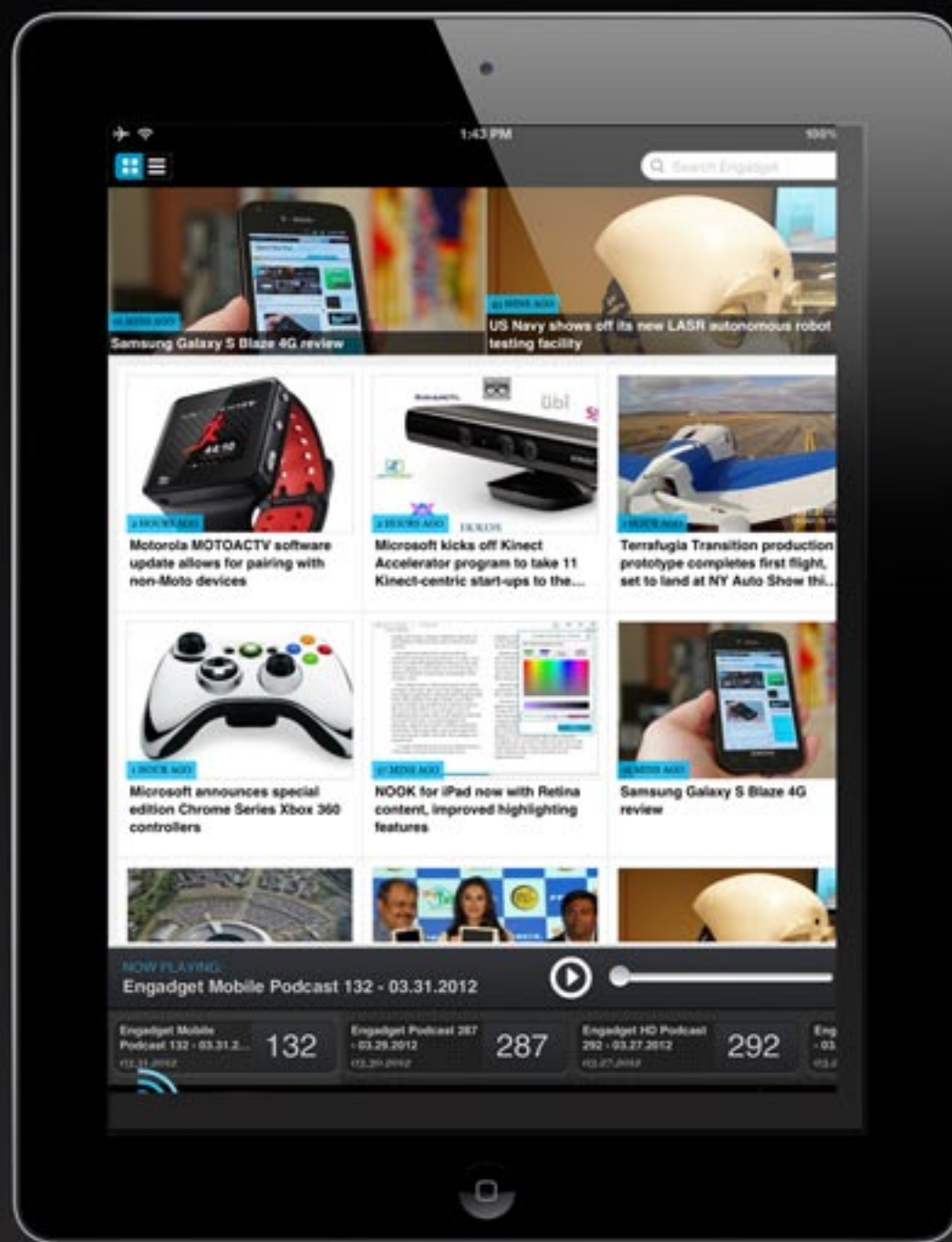


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