

DISTRO

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NASCAR *Divided*

How one of America's most beloved sports associations has simultaneously rejected and embraced the future of racing

**LG'S POWER-PACKED
SLAB OF SMARTPHONE**

**WEEK FOUR WITH
BLACKBERRY'S Z10**

**Plus:
SPACEX TAKES
TO THE STARS**







Let's Go Places



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Places**

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ISSUE 81

DISTRO

03.08.13

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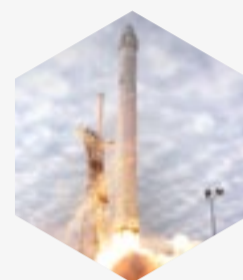
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ESC



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IRL
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REHASHED
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TIME MACHINES
Taking the High Road

On the Cover:
Photo by Jared C. Tilton/NASCAR via Getty Images



EXPAND GETS EXPANDED

DISTRO
03.08.13

EDITOR'S
LETTER



ANOTHER WEEK GONE BY and another week closer to the unveiling of the next Android superphone: the Samsung Galaxy S IV. We're less than a week away from the event where it will debut to the world and, somewhat predictably, we're starting to see some leaks of bits and pieces about the phone's functionality — though nothing as concrete as showing the thing itself just yet.

The biggest clue we have is a selection of screenshots highlighting two interesting eye-tracking additions: Smart Scroll and Smart Pause. Users of the Galaxy S III or Note II will likely be familiar with Smart Stay, which promises to keep the phone from auto-locking the screen while you're looking at it. These, then, would be logical extensions to that sort of functionality.

Smart Scroll would, we're told, automatically scroll whatever it is up or down when you look at the bottom or top of the screen. Smart Pause, meanwhile, would pause whatever current

video is playing when you look away from the screen. There's certainly the potential for these to be hugely annoying if done poorly, and indeed I haven't always been impressed with how Smart Stay works on my Note II, but I'm personally very excited to see what Samsung can do with this. I'm generally not a fan of Samsung's Android customizations, but the company deserves credit for trying to do something new on the interface side.

The big question, though, is whether Samsung will try something truly new on the hardware front, or whether it



“The big question, though, is whether Samsung will try something truly new...”

will be another light and thin, but plastic device. If the recent Note 8.0 is any indication, it'll be more of the same, but if Samsung wanted to break out of the mold, the release of what is almost guaranteed to be a worldwide sales phenomenon is a good place to start.

A job listing at Microsoft has given us a rough idea of when we might expect the next update to Windows Phone. The release is currently targeted for the “holiday of this year” — though the listing itself sadly doesn't give us any indication on whether this release will be a major retooling of the OS or just the next logical refinement. At this point we'd probably guess the latter, since we can't think of anything major Windows Phone is really lacking at this point.

The long-awaited *SimCity* reboot finally hit retail this week, though its launch was not without problems. The game requires an active internet connection to play — even though you're playing solo — and it immediately became clear that EA's servers weren't up to the task of keeping everyone merrily designing, building, growing and then ultimately destroying their virtual cities. Perhaps that's for the best, as we shudder to think

of the impact on the US economy of such an addictive game launching at the beginning of the week.

The Geneva Motor Show took place this week, and the big story was the terribly named Ferrari LaFerrari. Most of the best jokes were used on Twitter already, so I won't tire you with more about the Ferrari The-Ferrari, but there's nothing silly about a 789HP V12 paired with a 160HP electric motor, pushing the car over 60MPH in less than three seconds. Also, Ferrari's partnership with Apple (naming Eddy Cue to the board of directors) is starting to bear fruit, with the four-seater FF getting Siri voice recognition and a pair of iPad minis installed for those poor souls cramped in the back.

Finally, we've published the full agenda for our Expand event, which is just over a week away in San Francisco! We've been working our behinds off to line up a huge suite of great speakers, panelists and products for you to check out. We'll have great speakers like Kickstarter co-founder Yancey Strickler, Nest co-founder Matt Rogers, OUYA CEO Julie Uhrman and the internet's Veronica Belmont. We'll also have a Tesla Model S on the show floor, booths from companies like Nokia and Lenovo, and more robots than you can shake a looming apocalypse at. We'll be streaming it all on the site live, so if you can't make it, rest assured we'll




“Most of the best jokes were used already, so I won’t tire you with more about the Ferrari TheFerrari...”

The LaFerrari can tackle 60MPH in under three seconds.



have content for you. But, if you’re able, we’d love to see you there.

In this week’s Distro, I’m going to take you to the Daytona 500, where I spent the weekend desperately seeking tech. I came away with far more than I expected, but that doesn’t mean NASCAR doesn’t have a ways to go in many regards. We have Brad Molen’s review of the LG Optimus G Pro, which is a strong contender for king of the mega-phones. Brad also files his fourth installment on what living with the BlackBerry Z10 is like and we go eyes-on with the Wacom Intuos5 touch tablet. We also have a plethora of editorials: Terrence O’Brien wondering whether

Mozilla is about to fall in the same pitfalls as others with its Firefox OS, Ross Rubin analyzing the increasingly blurry lines between phone and tablet and Joshua Fruhlinger suggesting we may be in for some unpleasant social and behavioral implications from Google Glass. It’s all here, and while you’ll have to use your fingers to scroll and your eyes to read, we hope you’ll do it. For us. 

TIM STEVENS
EDITOR-IN-CHIEF,
ENGADGET



PHONE FREEDOM, NERD CRUSHES AND TROUBLESOME TOUCHSCREENS



Touch article names
to read full threads

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INBOX



**MAKING SENSE
OF THE US' NEW PHONE
UNLOCKING POLICY**
ISSUE 80,
MARCH 1ST, 2013

“I’m curious. The argument is made that unlocking a phone is a violation of the license agreement for the software/firmware. What if you were to wipe the phone and install your own software (e.g. Ubuntu)? Technically you’re not circumventing the lock, since you’re no longer using the carrier’s

copyrighted software.”

— TOM_K35

“That’s it! I am buying an unlocked phone. I am sick of carriers sticking it to us.”

— LANIDESTACAMENTO

**THE GALAXY NOTE 8.0
BRAND PLAY**
ISSUE 80,
MARCH 1ST, 2013

“Can’t wait till someone

else out-does Samsung by introducing a 15-inch Smartphone with a built-in physical keyboard.”

— ELLERYFAMILIA1

“Since long ago, the ‘phone’ is dead as [a] dedicated device.

Now the ‘phone’ is just an app that your favorite mobile device has or [doesn’t] have.”

— MINI_IPHART

“The next **BIG** thing is here. You are right **Samsung.**”

— ALIAS



BEN HECK Q&A
ISSUE 80,
MARCH 1ST, 2013

“Gosh, I’ve had such a total nerd crush on Ben for a very long time. It started back with the Bill Paxton pinball machine.”

– **NINJAGIN86**

**THE BRUTAL
EXAGGERATED DEATH OF
THE FORM FACTOR PHONE**
ISSUE 80,
MARCH 1ST, 2013

“The different form factors didn’t die because consumers didn’t want them, they died because manufacturers refused to release them with equivalent specs to their slab phones. Samsung’s LTE keyboard phones were gimped compared to their Galaxy S flagships. I wouldn’t mind seeing things along the lines of Nokia’s N800-N950 series coming back.”

– **JUST_ANOTHER_
ENGADGET_USER**

“I hope physical keys stick around for a while longer. Makes calling while blind easier. Also, [it’s] hard to dial a touchscreen when it’s cold, or your hands are covered in blood.”

– **TOOTREEKJENK**



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EYES-ON

WACOM INTUOS5 TOUCH

PEN
POWER

Tap for
detail

HEADS
UP

ALL BLACK
EVERYTHING

SWIPING THROUGH

When it comes to pen tablets, pen displays and styli, Wacom is an outfit that has a firm grasp on all three. The company's black-shrouded Intuos5 touch peripheral offers design and photography pros touch gestures across its active space in addition to a pressure-sensitive pen and three sizing options.

THE DAMAGE: \$229+



ENTER

EYES-ON

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WACOM INTUOS5 TOUCH



PEN POWER

If it ain't broke, don't fix it. Wacom's pen has been a reliable workhorse for a while, so the familiar soft-touch grip, click buttons and eraser tip are all back. And 2,048 levels of pressure sensitivity are up for tough tasks.



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EYES-ON

WACOM INTUOS5 TOUCH



HEADS UP

Rather than labeling the programmable on-board ExpressKeys or Touch Ring, a single LED indicates selection while on-screen reminders provide details on each toggle and keep the surface nice and tidy.



ENTER

EYES-ON

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WACOM INTUOS5 TOUCH



ALL BLACK EVERYTHING

One immediately noticeable upgrade from previous models is the Intuos5 touch's tactile rubber coating. The retooled exterior offers comfy rest areas when those fingers aren't busy swiping controls.



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ENTER

HANDS-ON

VERTU TI

PRICE:
\$9,600-\$19,900

AVAILABILITY:
NOW AVAILABLE

THE BREAKDOWN:
**VERTU'S LATEST
LUXURY HANDSET
MAKES THE JUMP
TO ANDROID WITH
A SAPPHIRE
CRYSTAL DISPLAY.**



Click on
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names to
read full
stories

As with other Vertu luxury handsets, the TI is the result of days of handcrafting inside a 1,000-strong factory based in England. Even the screen's sapphire crystal takes two to three weeks to grow from a seed crystal, and the yield is only at about 70 percent; but the result is a screen that's four times stronger than the glass used by many other smartphones. The phone's hand-polished Grade 5 titanium alloy body provides a structure that shares similar strength and feel with stainless steel, but is about 30 percent lighter and a lot more expensive. The TI carries many signature features of Vertu devices: the black ceramic ear pillow and buttons, the Vertu ruby key at the top of the left side, the ruby bearings underneath the buttons, the leather or alligator-skin accents and the watch screws dotted around the phone.

On the software side, there wasn't much to fault with the near-vanilla Android 4.0.4 — it ran smoothly on top of Qualcomm's 1.7GHz dual-core Snapdragon S4 MSM8260A. The only UI customizations from Vertu are the odd visual elements and the consistently minimalistic icons for the native apps. But there's also the Vertu services app that can be toggled using the Vertu ruby key on the left side of the phone, and here you have three options: Vertu Life (which curates articles and exclusive event suggestions based on the user's passions and location), Vertu Concierge (a 24/7 independent personal assistance service; basic level is free for the first year, £1,850 or about \$2,800 per year afterwards) and Vertu Certainty (a host of security-related services and remote technical assistance).



GREEN THROTTLE ANDROID GAMING PLATFORM



Click on product names to read full stories



Green Throttle's consumer debut is much cleaner than the developer software we saw back in November — the Arena app now features large, attractive menu tiles reminiscent of Windows 8's Start Screen, dividing its home screen into sections for recently played titles, featured games and advertisements. Green Throttle's Matt Crowley paired a Kindle Fire HD with a gamepad and plopped us down in front of an HDMI-connected display. Under the Atlas controller's thumbsticks, the Arena app did an admirable job of emulating a console environment, giving the gamepad full control of all its features. The ease of use is by design, of course: games compatible with Green Throttle's Arena app have to not only play nice with its gamepad, but need to be fully usable by controller alone.

We were a little disappointed to find that the Atlas controller hasn't changed much since we last saw it. The controller's selling point isn't form, though — it's

PRICE: STARTING AT \$39.99

AVAILABILITY: NOW AVAILABLE

THE BREAKDOWN: THE GAMING UNIT NEEDS SOFTWARE CHOPS IN ORDER TO BE A WORTHY COMPETITOR.

function. Using proprietary drivers, Green Throttle's Arena app can recognize up to four Atlas controllers at once, opening the door to local multiplayer on an Android device. It's a neat trick, but it comes at a price: the Atlas controller will only work on Green Throttle-enabled games. Unfortunately, Green Throttle's console experience falters when it comes to software. The suite's small collection of launch titles just doesn't offer much depth when it comes to gameplay. If Green Throttle can catch the attention of more developers, it could grow into a strong gaming ecosystem, and could even give OUYA a run for its money — but without software support, it might wind up as a lesson in lost potential.





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SENSOMOTORIC INSTRUMENTS TALKING PLACES

PRICE: €20,000 (\$26,070)

AVAILABILITY: TBD

THE BREAKDOWN: TALKING PLACES COMBINES GOOGLE GLASS AND GOOGLE GOGGLES-ESQUE FUNCTIONALITY IN A WEARABLE TOUR GUIDE.

SensoMotoric Instruments is a company that builds eye-tracking goggles for research and teaching projects, and the DFKI is the German center for artificial intelligence. Together, the pair has cooked up Talking Places, a Google Glass-esque concept that is designed to help people navigate unfamiliar locations. The hardware contains six infrared lights, designed to bounce invisible rays straight into your eyes. An infrared camera in each lens then picks up those signals and uses them to coordinate the location of your pupils, tracking what you're looking at. If it senses that you've fixed your gaze on a specific location for more than a few seconds, a nose bridge-mounted HD camera will

take a 50 x 50 pixel snapshot and compare it to its image database — much like Google Goggles.

After the unit had finished calibrating, it was instantly able to pick out wherever we pointed our eyes. We were a little nervous, not only in case we were caught looking at an unsuspecting member of the public — but also if we sneezed, sending the €20,000 hardware flying across the hall. We were also treated to a walking tour of the floor using the SMI goggles, which were able to show on a laptop exactly where we were pointing our eyes. While this gear is primarily used for research, there's a hope that a museum in Kaiserslauten will adopt Talking Places as a tour guide.





MSI AG2712 ALL-IN-ONE

MSI has been churning out all-in-one PCs for we don't even know how long, but until now, it hasn't marketed any of them toward gamers. The AG2712, which was announced at CeBIT, is a 27-inch desktop that generally looks and runs like any other all-in-one — you know, one not targeted at the gaming set. On the outside, it has a few too many glossy bits, with a see-through stand at the rear and a wide speaker grille sitting just below the bezel. On the inside, it runs a mobile Core i7 processor — Ivy Bridge for now, though a company rep staffing the event here didn't rule out a Haswell refresh later on. For graphics, you've got NVIDIA's 670MX, a laptop-grade GPU

PRICE: TBD

AVAILABILITY: TBD

THE BREAKDOWN: MSI TAKES AIM AT GAMERS WITH AN ALL-IN-ONE PACKING NVIDIA'S 670MX GPU AND MORE.

announced back in October.

On a cheerier note, we appreciate the 27-inch, 1080p touchscreen, which will be offered with a wide-angle matte finish, as pictured above. (OK, fine, you can get a glossy version instead, if you like.) Otherwise, the remaining specs are pretty standard: HDMI in / out, VGA, Ethernet, a multi-format memory card reader, a tray-loading optical drive, headphone / mic sockets and six USB ports (two of them USB 3.0). MSI is also showing off a 22-inch model, the AG2212, which will have optional discrete graphics and starts with a Core i3 CPU. **D**



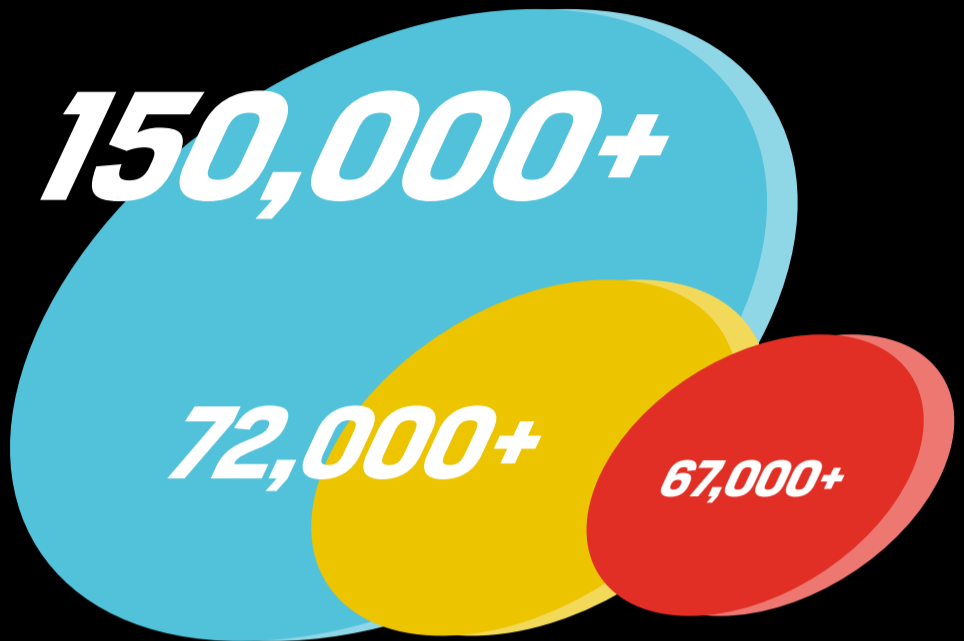
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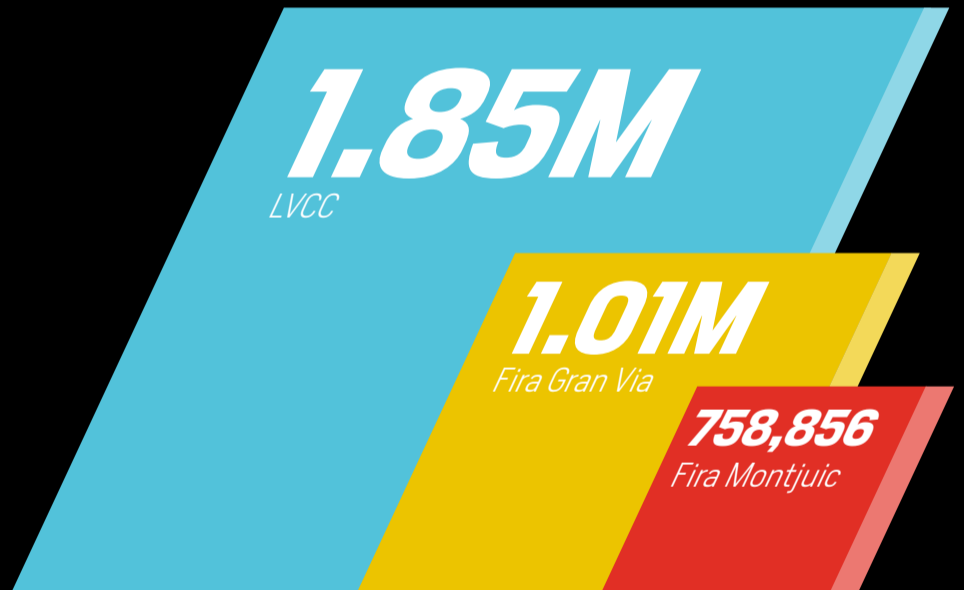
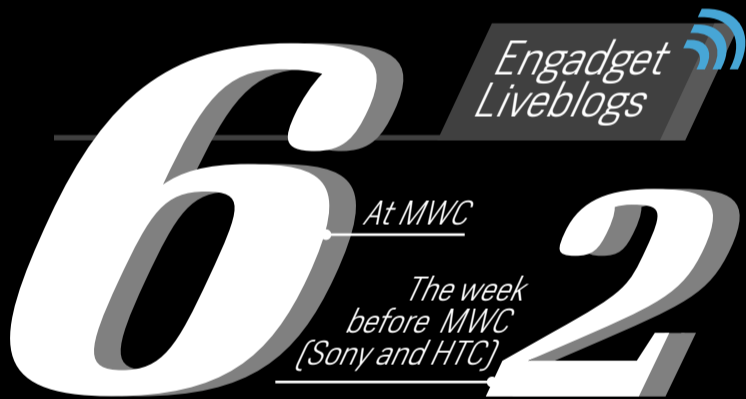
MWC 2013 by the Numbers

The memory of CES was still fresh in our minds when we made our way to Barcelona's MWC last week, so we couldn't help but draw a comparison between these two juggernauts, along with a few other details.

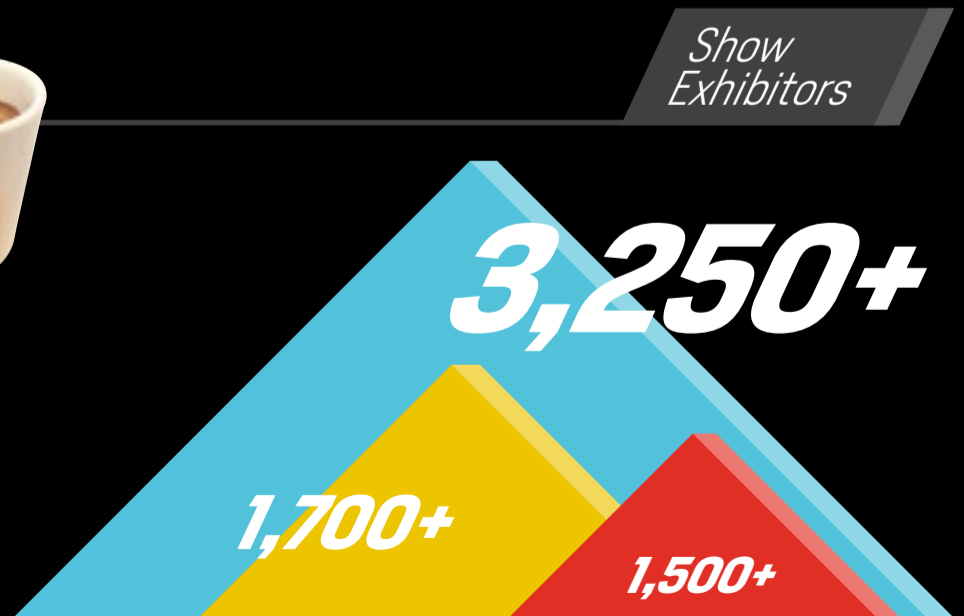
■ CES 2013 ■ MWC 2013 ■ MWC 2012 *Show Attendees*



Show Floor Square Footage



Show Exhibitors



MWC in Euros



Price for the Nokia Lumia 720:
€249
[about \$330]

Price for the Nokia 105:
€15
[about \$20]



Price for 3 cups of coffee on the show floor:
€6 [about \$7.86]





Swimming with Spacemen: Training for Spacewalks at NASA's Giant Pool

By Lee Hutchinson
Ars Technica

Astronauts need to take a dip before going into space, training for hours on end in a massive pool complete with full-size replicas of the International Space Station's components. That, you probably knew, but there's a good chance you'll learn a few things you didn't in this in-depth piece from *Ars Technica's* Lee Hutchinson, who observed the training at the so-called Neutral Buoyancy Laboratory firsthand and chronicled it with exhaustive detail, from the construction of the spacesuits tailored to each astronaut to the commercial uses for the lab that keep it occupied (and funded) when NASA isn't training for spacewalks.

PHOTOGRAPH COURTESY OF NASA

Omens

By Ross Andersen, *Aeon*

A big article for some big ideas, this piece by Ross Andersen for *Aeon* is partly a profile of Oxford philosopher Nick Bostrom, and partly a look at how things could go horribly wrong for humanity in the future. That includes one thing that has attracted Bostrom's attention as of late: an AI that's even just marginally more intelligent than us.

How an 83-Year-Old Inventor Beat the High Cost of 3D Printing

By Harry McCracken, *Time*

The rapid growth of 3D printers has brought with it plenty of interesting stories, from controversial uses of the devices to business success stories. *Time's* Harry McCracken adds a somewhat surprising one here — that of an 83-year-old inventor who devised a cheaper way to produce the “ink” necessary for a 3D printer, and took home a \$40,000 prize for it.

My 'Augmediated' Life

By Steve Mann, *IEEE Spectrum*

Steve Mann has been working on wearable computers for decades now, but he's found himself garnering more attention as of late due to Google's entry into the field. Here, Mann reflects back on those 35 years and details what he describes as “mixed feelings” about recent developments from Google and others.

America's Research Adviser: Science's Go-To Guy

By Eugenie Samuel Reich, *Nature*

While 77-year-old Norman Augustine is far from a household name, as the title of this *Nature* article suggests, he's considerably more well-known in the scientific community. That relatively new role predictably comes after quite a career, which included stints in both government and the private sector but (more surprisingly) no actual work in science itself.





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Let's Go Places



  #LetsGoPlaces And celebrate when we get there.

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Let's
Go
Places

FIREFOX OS, REPEATING THE MISTAKES OF OTHERS



EDITORIAL

DISTRO
03.08.13

FORUM

BY TERRENCE O'BRIEN

I feel bad for Mozilla, I really do. Competitors and the march of time are closing in quicker than it can raise its defenses. Her crown jewel, Firefox, is feeling the squeeze as Chrome encroaches on its hard-won territory and mobile offensives have proven largely fruitless. This leaves Mozilla in an awkward position: that of out-of-touch industry stalwart. Being late to the mobile game and Apple's reluctance to open up iOS to third-party browsers has left the company boxed in. (Developers can create browsers for iOS so long as they use the same rendering engine as Safari — a dealbreaker for the Gecko-based Firefox.)

Mozilla has responded by borrowing a page from the Google (Chrome)book: build an operating system that is essentially nothing more than a browser. Firefox OS is yet another mobile platform built entirely on HTML5 that treats websites as apps. In fact, websites are the “apps” — there is no such thing as native code. And while there are legitimate ar-

guments for such a model, I've yet to see it convincingly executed. We've caught glimpses of Mozilla's smartphone offspring before, but Mobile World Congress 2013 was really the proper coming out party. Finally we've been given a chance to touch it, see it in action and peek at the hardware it'll be running on. Unfortunately, at this cotillion, Mozilla failed to make a good case for anyone to court its debutante.

Let's start with the basic premise of Firefox OS. Like Chrome OS, there's little more here than a web browser running on top of Linux. But, unlike Mountain View's product, Mozilla has focused exclusively on mobile sites that are rarely as fast, stable or functional as their desktop counterparts. Ultimately the web-as-app approach doesn't work particularly well when you're trying to deliver a rich and smooth experience, especially on mobile. As Facebook has discovered, there are serious performance issues with HTML5. Mark Zuckerberg even went so far as to say that relying on it for mobile apps was one of the “biggest mistakes” the company has ever made. It doesn't help matters





Firefox OS currently graces low-end handsets, like the ZTE Open.

when you're trying to render that inefficient code on extremely low-end hardware, like the sub-1GHz single-core chip inside the ZTE Open.

The issues are only exacerbated when faced with limited bandwidth. The first batch of Firefox phones won't be terribly different from the original iPhone in functionality, though they will have significantly faster data connections. That landmark device launched without support for third-party apps, as you might recall, and Steve Jobs famously told developers they could start creating applications months before the phone officially went

on sale, because they were simply mobile websites. According to his biography, Jobs fought tooth and nail against having native applications on the iPhone, but eventually he came around because the experience provided by web apps was, at best, subpar. Granted, it relied on Cingular's painful EDGE network, but things are only marginally better on 3G or 4G as web apps have become more complex.

American consumers may be more demanding than those in the emerging markets that Mozilla is targeting, but the wireless infrastructure in South Asia and Africa is nowhere near as robust as it is



The web-as-app approach doesn't work particularly well when you're trying to deliver a rich and smooth experience, especially on mobile.

in the Western world. This poses significant problems for the fledgling OS since it relies on constant connectivity to deliver information. Sure, some services can cache data locally for offline use, but that's a feature of HTML5 that has yet to be widely embraced by devs. Mozilla thankfully has Nokia offering some support for the disconnected with its maps, but most "apps" (and Mozilla's insistence on calling them that is frustrating) will require an internet connection to function.

As we mentioned, it is possible for HTML5 apps to be downloaded and installed locally. Nokia's mapping solution is one of the confirmed examples. However, many of the apps offered are not "packaged" (Mozilla's terminology) and installable. The vast majority of the tens of thousands referenced by Mozilla's CEO Gary Kovacs during their big event at Mobile World Congress are "hosted." In other words, they're web apps — which Mozilla is using to pad its marketplace. (This is almost exactly what you're treated to when exploring the Chrome Web Store.)

The "packaged" versions of the apps

are, essentially, just websites zipped up in an archive. This carries its own set of issues. As previously noted, HTML5 is widely perceived as suffering from performance issues when compared to native apps. While some have claimed this is because of poorly constructed code, and should not be laid at the feet of the standard, it appears that many devs struggle to produce efficient products using it. And if said developers continue to struggle with HTML5, it may be tough to convince them to embrace it the way they have native code. The evolutionary take on HTML may make it simple to create cross-platform programs, but the differences in rendering engines and the layer of abstraction itself make it difficult to optimize performance for all of them. And while Mozilla has created hooks for apps to get deeper access to the hardware, it remains difficult to implement many of the more robust features users have come to expect from applications using HTML5.

Sparse coverage and slow speeds will pose significant usability issues for consumers in developing countries, but perhaps an even bigger stumbling block



will be price. While we don't know how much some of these phones will cost, the moderately specced Geeksphone Peak is expected to hit retail for around €200. Lower-end Android devices can be had for less than €100 at this point without a subsidy, such as the Galaxy Y and the Optimus L3 (both of which retail for around £50 or €60, through Carphone Warehouse). More important though, is the total cost of ownership. A device that relies so heavily on the web apps will inevitably suck down a significant amount of data. Sure, it'll be far

less than if you were hooked up to Spotify and Netflix all day, but it will likely be more than if your applications were installed locally. And in many of these nations, any data plan (not to mention one with a large data cap) is prohibitively expensive for much of the population. For example, in India, the median annual per capita purchasing power parity (PPP) is \$3,608 according to the International Monetary Fund. For those that don't know, PPP is a way of measuring the relative value of currencies, accounting for things like cost of living.



Price also becomes an issue with the Firefox hardware, as total cost of ownership will be a chief concern in emerging markets.




If you had to live on \$3,500 a year, I doubt a smartphone data plan would be high on your list of must-haves.

Mozilla's Kovacs shared a stage at some point with his counterparts at Ooredoo (formerly Qtel) and Bharti Airtel — two operators that could find themselves carrying Firefox OS devices. But, while Dr. Nasser Marafih and Manoj Kohli spent significant time talking about the importance of increasing wireless broadband penetration during the shared keynote, they also harped on the importance of using available bandwidth efficiently. That does mean freeing up particular frequencies for 3G and 4G use, but it also means WiFi offloading and effectively managing data consumption on the device side. Nokia's Xpress Browser and Opera Mini do this through extensive use of compression that relies on a middleman server operated by those companies. It's not unthinkable that Firefox OS could use a similar technique on its "apps" but we've heard nothing about it or the creation of the necessary infrastructure from Mozilla. And if the phone is going to literally be nothing more than a portal to the web, then it's going to be a tough sell for those that have to subsist on a very strict data diet.

The unfortunate truth is that Firefox OS just doesn't offer anything that consumers in developed markets want. Nor anything those in emerging markets need. Mozilla can tell us "the web is *the* ecosystem" or encourage us to "blaze your

The unfortunate truth is that Firefox OS just doesn't offer anything that consumers in developed markets want. Nor anything those in emerging markets need.

own path," but a budget Android handset does all the same things and more. During their shared keynote Kohli turned to Stephen Elop and told him he'd like to see \$30 smartphones. If Firefox OS has any chance of succeeding, it will have to deliver a rock-solid browsing experience at prices near that and figure out a way to efficiently manage data consumption. Most importantly, it will need to learn the same lesson Apple and Facebook have — HTML5 "apps" just don't cut it. 

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



TABLETS OFFER A NEW CHOICE FOR VOICE



DISTRO
03.08.13

FORUM

SWITCHED
ON

BY ROSS RUBIN

THE TERM “PHABLET” HAS ALWAYS BEEN, at best, a relative descriptor. It kicked in with the release of the original Galaxy Note even though the voice-enabled Dell Streak had beaten that product to market. And while the portmanteau raises the question of whether there is any meaningful difference between a phone and tablet other than size, all it means is “a big phone.” ¶ Up until recently, and barring the use of Bluetooth headsets, the constraints defining the upper practical limit of a phone included the ability to fit into a pocket and be held against the side of an (adult) head to facilitate a voice call. At Mobile World Congress in Barcelona, two companies smashed through at least the first of those criteria. Twisting the name of the PadFone, which extended the screen of a handset to that of a 10-inch tablet by use of a touchscreen shell enclosure, ASUS introduced the FonePad.




Unlike its anagrammatic predecessor, the 7-inch FonePad is one indivisible device that will compete with a host of 7-inch tablets from Amazon, Samsung, Android tablet newcomer HP and its parent's earlier effort, the Google Nexus 7. However, while its screen size may be the same, the FonePad will include voice functionality, allowing anyone brave enough of heart and large enough of head to use it as they would a phone.

At seven inches, the FonePad out-sizes the 6.1-inch Ascend Mate introduced by Huawei at CES. That phone, in turn, displaced phone-size bragging

rights from Samsung, which apparently is eager to reclaim the title. The purveyor of the Galaxy Note introduced the Galaxy Note 8.0. The closest competitor in terms of size to Apple's iPad mini, the newest Samsung offering stands to become the largest tablet to include voice capability. This provides a new twist on the definition of a "phablet," one that springs from the tablet side rather than the phone side.

Surely, just as the market for 5.5-inch handsets has been a relatively small part of the phone market, we will likely see few people doing the cellular equivalent of carrying a boombox on their shoulders. The answer to the question of why a company would put voice capability into a tablet so large is the same as to why you would put a Netflix app on a phone. It may not be ideal in terms of an optimal scenario, but if it's the one device at hand, why should one limit the functionality? This is particularly true as cellular chips become cheaper to integrate and headsets and speakerphones can always improve the ergonomics of placing voice calls.

If nothing else, the presence of an 8-inch tablet that can make voice calls makes a 5.5-inch phone that can do the same seem a lot more reasonable. And with LG apparently ready to put webOS on its televisions, we may be on the brink of the dubious era of the "phelevision." 

We will likely see few people doing the cellular equivalent of carrying a boombox on their shoulders.



THE DARK SIDE OF GOOGLE GLASS



DISTRO
03.08.13

FORUM

THIS IS THE
MODEM WORLD

BY JOSHUA FRUHLINGER

I WANT TO BE EXCITED about Google Glass — I really do. I saw *Robocop* as a kid and dreamed that, one day, I too could walk around with an HUD that would feed me information on call, receive messages and record the world around me. ¶ But now that years have passed and I've witnessed humanity worship the smartphone, make prevalent voice-controlled navigation and perfect self-mounted, POV digital video cameras, I'm not so sure Google Glass is going to be good for us as a society. There is a dark side to what appears to be a wonderful coming together of complementary technology, and I'm here to poop this party.

At least as it's currently described, Google Glass will allow us to pay attention to the world while still being connected. But I'm gonna ask: Have we become so addicted to our information — social networking, news, email, gaming, entertainment — that we've

become dangerous? I honestly don't know, but on my daily drive home in Los Angeles, I see at least three people a day checking text messages when they should be driving.

Meanwhile, we've become rude: people check messages in the middle



of conversations, get up from dinner tables to take calls and hold their smartphones on their laps to respond to emails below the tablecloth. We've become jerks.

Google Glass proposes that we multi-task — see a new message while still looking our friends in the eye, get map data while still watching the road and capture moments while still enjoying them without a camera between us and the action.

Some of these things are great. Others not so much.

Do we really want to walk around with HUDs in our eyes? Have we accepted our distractedness to the point that we think it's OK to check email in the corner of our vision while we pretend to pay attention? Maybe we're evolving, ultimately capable of doing both. But not yet. In the proposed world of Google Glass, for all we know,

our friends could be reading the news the entire time we thought they were hearing our whines for support.

Glass' UI is a mix of finger gestures on the frame along with voice commands. Let's consider this for a moment. Imagine a room full of Glass Explorers reciting commands, rubbing their rims and trying to interact all while attempting to get information off the network.

Imagine you're having a deep conversation with a friend, only to realize that he has been recording you the whole time. Will we be comfortable with this? This isn't a privacy issue, really — we're over that — it's a matter of trust.

And let's be honest: What does Glass do that my smartphone doesn't do already?

And let's be honest again: Were I offered a test of the device tomorrow, I'd jump at the chance. I'd wear it all the



The Future's
so bright,
Google's
gotta wear
shades.

“Were I offered a test of the device tomorrow, I’d jump at the chance. I’d wear it all the time. I’d annoy my friends. I’d love it and pet it. But I can’t help wondering if we’re ready.”

time. I’d annoy my friends. I’d record everything. I’d love it and pet it. But I can’t help wondering if we’re ready.

I finish with some predictions for our Glass future:

1. A fantastic new genre of first-person video. People will capture everything and we’ll see it all. Some will be amazing, most of it will be unbearable and even hard to watch, if not completely boring. Either way, we’ll spend a lot more time living one another’s memories, bad and good.
2. Theft. These things are expensive, and you can bet we’ll hear about more than one poor soul being mugged by opportunists looking for the telltale Glass glow adorning Explorers’ eyes.
3. A new breed of hugely personal social networking, “Sent from my Glass,” like Twitter and Vine wrapped into a frenzy.
4. GlassCons. Picture it: an entire hotel ballroom filled with Glass enthusiasts sitting next to one another yet choosing to communicate via their HUDs. Run. Run away.
5. Early car accidents and people walking into poles. We may think that having the HUD available in the corner of our eyes all the time, as opposed to the distracting smartphone — or even GPS — screen, is better. But we’ll see a rash of accidents caused by people paying attention to their Glass, making adjustments or trying to execute a command while they should be paying attention to other cars, pedestrians, poles and children. Legislation will follow and interfaces will be improved, dropping voice command in lieu of bio-feedback technology invented in North Korea that they give to us as a peace offering. 



LG OPTIMUS G PRO



Does the
Optimus G Pro
have the super-sized
chops to compete
with the likes of the
Galaxy Note II?
By Brad Molen

The large-phone craze is rocking the world like a hurricane, and LG is no stranger to this trend: within the last year, the Korean manufacturer has launched two big-screened smartphones as Optimus Vus (three if you count the LG Intuition on Verizon) to mediocre fanfare worldwide. Given the growing competition in the category — most notably from its rival Samsung with the Galaxy Note series — it was inevitable that a stronger campaign, as well as a leader to drive it, was necessary.

This is where the LG Optimus G Pro comes in,



taking advantage of a 5.5-inch, 1080p True HD-IPS + LCD panel while pulling in several design and feature cues from its smaller (yet elder) siblings, the Optimus G and Nexus 4. As if the display wasn't enough, LG tops it off with one of the world's first Snapdragon 600 quad-core processors, 2GB RAM and a 13-megapixel rear camera with all the trimmings. It may not be LG's current flagship, per se, but the laundry list of features indicates to us that it's sure acting the part, at the very least. Should its reputation be as large as its screen, or is the Optimus G Pro using that extra size to compensate for something? Follow along as we explore the inner and outer beauty of LG's large-on-life smartphone.

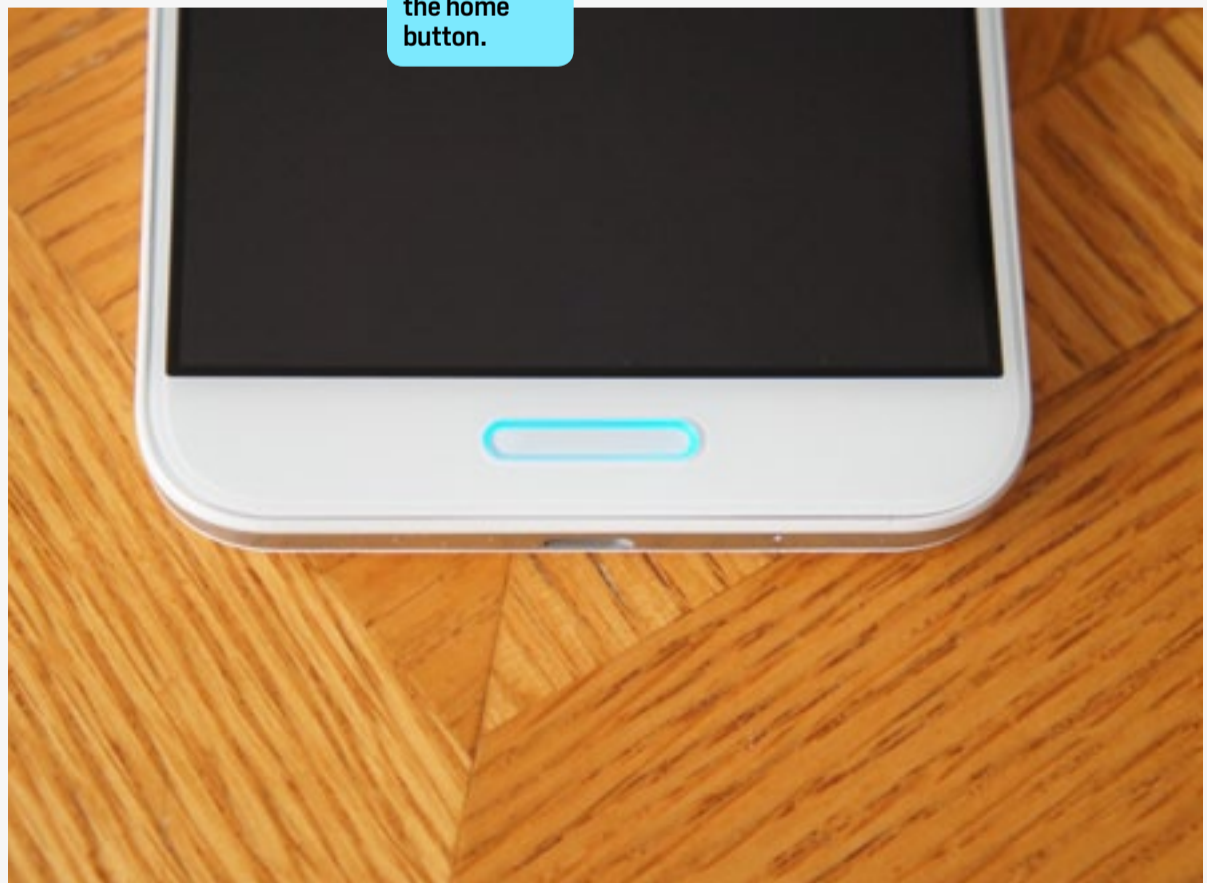
HARDWARE

Even though it bears the name of the Optimus G, LG actually considers the Optimus G Pro to be part of a different design lineup. Whereas the former is focused on premium design (with buzzwords like precision, delicacy and sophistication), the latter puts a greater emphasis on high-performance design; you'll be hard-pressed to find fancier componen-

try in a smartphone. Ergonomics — not style — is the name of the design game this time around, as the handset features a comfortable and friendly shape, with round corners and soft edges.

We're going to play the role of mind reader for a minute and predict that, on first blush, you're not actually looking at the ergonomics of the phone. It's much more likely that you're instead thinking that you've seen this device before. It's inevitable that any 5.5-inch device that LG puts out would automatically draw comparisons between it and the Samsung Galaxy Note II. If you quickly glance at both side by side, the two smartphones look pretty similar to each other on the front and back, but they're actually quite different in plenty of other areas. At 150.2 x 76.1 x 9.4mm (5.91 x 3 x 0.37 inches), the G Pro is shorter and nar-

Notifications glow from underneath the home button.



The Optimus G Pro is narrower and easier to hold than the Note II.

rower than its Samsungian rival, which measures 151.1 x 80.5 x 9.4mm (5.95 x 3.16 x 0.37 inches). This is mainly because the bezel is much smaller all the way around the device. LG's model is also lighter at 6.06 ounces (172g) versus the Note II's 6.35 ounces (180g).

Even though both phones are 9.4mm thick, they achieve that mark with differ-

ent designs. The Note II offers a sloped edge and slightly curved back to match its pebble-like, "inspired by nature" design, which means there isn't much room to rest your fingers; the G Pro's back, on the other hand, is flat almost all the way to the sides with rounded corners that meet up with the phone's edges more abruptly. This makes the sides of the phone straighter than the Note II, and it's much more comfortable to hold because our stretched-out fingers have a solid place to grip onto the phone. We doubt it will be much of a difference if you have small hands and a general aversion to holding large phones, but

The backside of the handset is a bit too slippery.



one-handed use is at least easier on the G Pro than it is on the Note II.

Though it boasts a better fit and feel than the Note II, the G Pro isn't perfect: its back is too slippery for our liking, which means we had to rely solely on those edges to ensure that we had a tight grip on the phone. Aside from that, however, we have no qualms with the device's build quality or durability; sure, the G Pro doesn't have the same premium feel as the Optimus G, but the frame and back cover are comprised of solid plastics that don't give an aura of cheapness. There's no flexing or creaks on any part of the chassis, and we don't get quite as nervous about dropping it as we would with the Optimus G or Nexus 4.

The back is just as beautiful to behold as the Optimus G and Nexus 4, and that's mostly because the G Pro utilizes the same checkerboard-like design cues from the two previous phones. One major improvement over those two, however, is the fact that the back is not made of glass. It may not offer the same kind of premium feel for this reason, but it's much more likely to withstand a drop or two. An external speaker grille, LED flash and 13-megapixel camera surrounded with brushed metal line the

The LED notification light glows underneath the home button, which is a clever touch.

top end of the back, with U+ LTE and LG logos sitting beneath. Remove the back cover and you'll come face to face with a 3,140mAh removable battery, micro-SIM slot and a place to rest your microSD card. Additionally, this is also where you'll find contacts for NFC.

Turning the phone around to the front, you'll see the earpiece nestled along the top edge next to the sensors and a 2.1-megapixel front-facing camera. However, the most interesting part is on the opposite end of the display: the LED notification light cleverly sits under the home button, its soft glow surrounding the button itself. (For a little bit of enjoyment, pay close attention to the light when booting up the phone — nearly every color of the rainbow will show up as you wait for the G Pro to start.) Unfortunately, this was the only part of the home button we loved, since it was a too skinny and flush with the frame, which made it a little difficult to press. The back and menu soft keys flank the home button on the left and right, respectively.

We like what LG has done on the sides of the G Pro. It's designed the phone to offer all of the buttons, ports and customizable bits that we use on a regular basis, and it did so without making the outside of the G Pro look like a scattered mess. A chrome stripe races down the left and right edges until it widens at the top and bottom to cover the entire depth of the phone. The top of the phone features a 3.5mm



LG OPTIMUS G PRO	
DIMENSIONS	150.2 X 76.1 X 9.4MM (5.91 X 3 X 0.37 INCHES)
WEIGHT	6.06 OZ. (172G)
SCREEN SIZE	5.5 INCHES (5.46 INCHES USABLE SPACE)
SCREEN RESOLUTION	1,920 X 1,080 (401 PPI)
SCREEN TYPE	TRUE HD-IPS + LCD, RGB
BATTERY	LI-PO 3,140MAH (COMES WITH SPARE)
INTERNAL STORAGE	32GB (29GB AVAILABLE)
EXTERNAL STORAGE	MICROSDXC, UP TO 64GB
REAR CAMERA	13.2MP, AF, LED
FRONT-FACING CAM	2.1MP
VIDEO CAPTURE	1080P, 30 FPS (FRONT AND BACK)
NFC	YES
RADIOS	LTE: 850 / 2100 (BANDS 1 AND 5), HSPA/UMTS: 900 / 2100MHZ, GSM / GPRS: 850 / 900 / 1800 / 1900MHZ, CDMA1800
GPU	ADRENO 320
RAM	2GB
ENTERTAINMENT	T-DMB, DLNA, MIRACAST, SLIMPORT
WIFI	DUAL-BAND, 802.11A/AC/B/G/N, WIFI DIRECT
WIRELESS CHARGING	N/A
OPERATING SYSTEM	ANDROID 4.1.2, OPTIMUS UI

headphone jack, an IR blaster, mic and retractable T-DMB antenna (which is used for Korea's live TV services). The left side is home to the volume rocker and the QButton, which is a handy shortcut key that we'll discuss later in the review. Over to the right side is the power button. On the bottom, you'll find the micro-USB charging port that's also used for SlimPort.

DISPLAY

In the space of just three months, 1080p displays have evolved from a non-existent smartphone feature to the primary indicator of a phone's flagship status. Luckily, the Optimus G Pro offers such a screen, which LG bills as True HD-IPS + LCD. Frankly, we've never seen a 1080p smartphone panel we didn't like, and the G Pro's non-PenTile, 5.46-inch rendition is no exception — especially when viewed next to the Note II's 5.55-inch, 720p display. (As an aside, both phones use the same panel size, but LG packs more unused pixels around the border to make the viewable screen space slightly smaller.) Crunching the numbers, the phone's pixel density (401 ppi) is lower than that of the HTC One (468 ppi) and the Droid DNA (440 ppi), but the difference be-



The G Pro display features incredibly natural colors and great viewing angles, but it's a bit difficult to see in sunlight.

tween the two is not quite so cut-and-dry as the numbers would indicate.

Viewing angles? The G Pro's got them... a lot of them. IPS panels are known for excelling in this arena, and the Pro is now the official poster child for that screen tech. If watching movies or reading books from extreme angles is your thing (or you just like it when friends or strangers start peeking at what you're watching), it definitely won't disappoint. The only display with superior angles is the S-LCD3 on the Droid DNA, and it only beats out the Pro by an extremely slight margin. The screen takes a hit in direct sunlight, however, as we had to bump the brightness up to at least 80 percent in order to see anything clearly.

Moving on to color saturation. We viewed the Pro side by side with the Note II and Droid DNA, and the Pro easily featured the most natural colors of the trio; the DNA was typically under-saturated, while the AMOLED panel on the Note II unsurprisingly was on the opposite end of the spectrum.

Now that 1080p is becoming com-

monplace in the high-end smartphone market, is there really any wow factor involved with the G Pro's display? Absolutely. Seeing such rich, crisp text and smooth lines on this large of a screen is pretty close to awe-striking. It may not be packing as many pixels per inch as the DNA, but it sure comes close enough to make very little difference for our eyes — you're not going to see a single pixel on either screen, after all. They're both gorgeous, and this one just happens to take advantage of a larger display.

CAMERA

As HTC noted recently, megapixel count isn't everything — it is, however, a very welcome feature as long as you have solid enough firmware and components to back it up. We believe that LG has accomplished this very thing with the 13-megapixel rear camera found on the G Pro, which has an f/2.4 aperture, 3.92mm focal length, AF and LED flash. As for the front, you can expect a 2.1-megapixel module with 4.6mm focal length.

Before we dive into performance, it's worth mentioning that the G Pro has most of the tweakable settings and features we love to play with when grabbing good shots. From the customizable left sidebar you can fiddle with intelligent auto, HDR, panorama, white balance, voice shutter mode, ISO, scenes and focus modes. A dedicated macro mode was nowhere to be found, but most close-ups turn out totally fine on normal mode, so we won't dwell too



much on the absence of this feature.

Even though the G Pro doesn't come with a built-in shutter key, there are three alternative options happy to take its place: the QButton and each end of the volume rocker. The only bummer about this is that you can't partially press any of the keys to lock in focus, a feature that LG has added into the Pro's virtual shutter button. (Locking in exposure still appears to be absent.)

If we were to do a teardown of the G Pro, we'd say it's entirely likely that we would find the same camera module as the original Optimus G. By looking at the results, however, it's clear that LG's

The camera delivers amazing detail, though white balance is a bit on the cold side.

been working hard at the software side over the past few months. Most shots benefited from a crisp focus and were extremely detailed; we were impressed by how far we were able to zoom in on objects without much degradation of quality or an increase in noise. However, if we may be a little nitpicky (and let's face it;

Crisp focus and great detail can be seen in the shots.



we're nitpicky a lot), many of the pictures we took appeared a little too cold primarily because the default auto white balance is on the blue side.

We were also impressed by how much light the G Pro was able to capture in dark rooms and outside in dimly lit neighborhoods — and not just that; we were pleasantly surprised that our images were accompanied by relatively little noise. The LED flash works well, providing our subjects with plenty of light, yet it's not so bright that it washes out everything in sight.

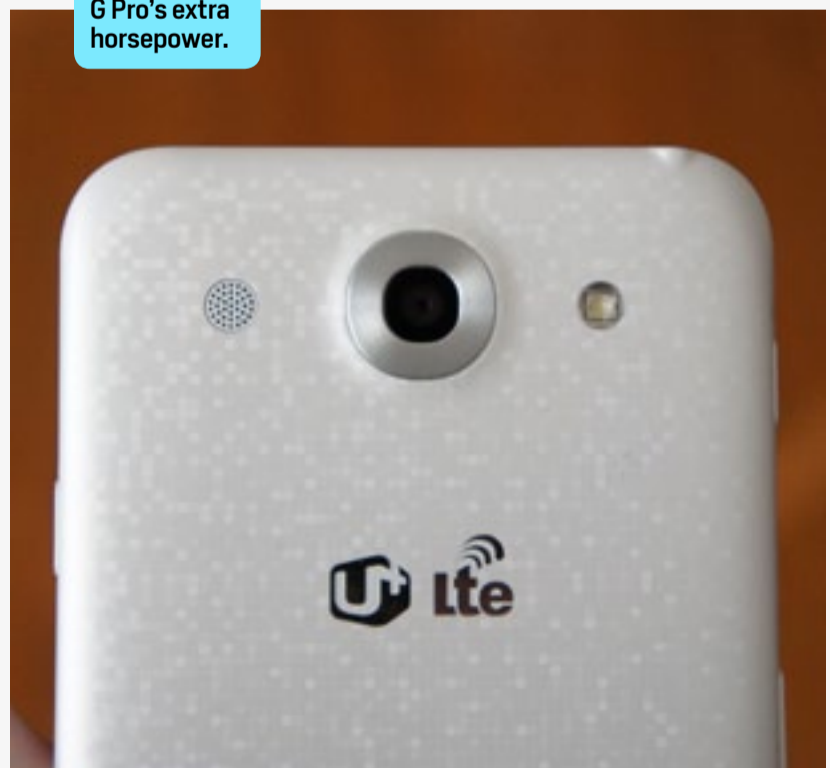
In addition to the regular panorama mode, the G Pro has something called VR Panorama. Think Photo Sphere for Android 4.2: you can take a series of pictures in any direction and VR will stitch them together to form a 3D-like picture that lets you see much more than just one simple shot can capture. When this reviewer attempted to take images of La Sagrada Familia in Barcelona, it quickly became evident that no

standard image would be able to get the entire thing in just one take; stitch several together, however, and it becomes a completely different story. It's a great feature in theory, but unfortunately it all too often failed at its mission — stitching was blatantly obvious in nearly every single attempt we made.

The camcorder functionality is essentially the same on both sides, which means you get 1080p video recording at 30 fps both coming and going. The best news, though, is that the experience is perfectly smooth with little to no choppy motion whatsoever, and the amount of detail that goes into each video is quite intricate. Audio is very clear and loud, but background noises factored into the final product more than we expected.

Along with new generations of processors come all sorts of new features and ideas to take advantage of the extra horsepower, and the G Pro's camera of-

Dual-camera recording taps into the G Pro's extra horsepower.



The Optimus G Pro's dual-camera recording capability is a lot of fun and works surprisingly well, even if most people don't find much need for it.



fers a clever one: dual-camera recording. It gives you the power to produce videos from the rear-facing and front-facing cameras *simultaneously*, with the selfie cam displayed as a pop-up screen. You can move and resize the window, and even switch views so that the rear-facing viewpoint is in the foreground instead. This could come in handy if you want to interview someone and you want to record your reactions and follow-up questions on video (think CNN-style). Even though this was the feature's first implementation, we couldn't find any bugs, lag or frame skips throughout the entire process. Everything was just as smooth as any of our videos that are recorded normally, though it's important to note that max resolution is 720p.

Speaking of nice software touches that enhance your overall experience, the G Pro allows you to zoom in on videos as they're being played back. This applies to all kinds of videos, whether or not they were actually taken on the device itself.

SOFTWARE

Goodbye, UI 3.0. Hello, Optimus UI. The name change in LG's signature user interface accompanies an upgrade to Jelly Bean (Android 4.1.2) and a heavy dose of bloatware that's specific to LG's U+ network in South Korea, the carrier on which our review unit is being sold. Not counting the standard suite of Android apps, there are no less than 35 apps pre-loaded on the phone, a few of which

LG's multi-screen feature brings unique functionality, but no third-party support.

can't be disabled or uninstalled.

Outside of the carrier-specific programs, LG is also placing a heavy emphasis on its Q-branded services. For instance, QSlide is LG's take on Multi





Window, one of our favorite Note II features. To begin, it's all about multi-tasking. QSlide gives you the opportunity to have two windows open at the same time, while a third app (or the front page, depending on your preference) is allowed to linger in the background. Each window can be resized and even made transparent, giving you the ability to see the app while making changes to the one below it at the same time. QSlide also takes up space in the notification bar, which is dif-

ferent from the Note II's use of a special sidebar on the main screen.

The concern we have with QSlide so far is the glaring lack of app support. This may change as the G Pro (and the Optimus G, which also includes the feature) gains popularity, but seven available apps simply won't cut it — especially now that Samsung is quickly adding more third-party support to Multi Window. We'd also love to be able to open more than two apps at the same time. We have a hard time believing the Snapdragon 600 isn't powerful enough to support it.

QRemote makes use of the built-in IR sensor, turning your phone into a remote control for your home theater system. And we were happy with the results; the app lists support for nearly every major and minor manufacturer we could think of, and within a matter of a few seconds we had it calibrated to work on our Hitachi HDTV and LG Blu-ray player, each interface separated only by tabs on the top of the app. It's not a perfect replacement to their dedicated remotes, but most of the necessary navigation buttons and menus are there, and it's pretty convenient when you're lying down and that darn remote is just barely out of reach.

If you were a fan of BlackBerry's old convenience key, QButton will be of particular interest to you. While the purpose of the QButton is to give you fast access to any of LG's Q services, you can actually use it as a shortcut to *any* app you



choose — and it even doubles as a camera shutter key, if you prefer. We love it, but there's always room for improvement: we'd really like to see both a short-press and long-press option to give you two shortcuts on the same key.

There are plenty of other apps at your disposal, such as QTranslator, SmartTag (NFC tags), Video Editor and Video Wiz, AhnLab V3 Mobile 2.0 (antivirus), SmartWorld (LG's app store) and SmartShare (DLNA). Lastly, LG has thrown in a service called Safety Care, which takes the concept of Find my Phone and expands it. The service can send messages to a pre-determined emergency contact when the phone hasn't been used in a given amount of time, when you're making an emergency call or when you make a call (again, to predetermined contacts). Each of these messages shows your location, so your friends and family can find you as soon as possible if you're in a bad situation.

PERFORMANCE AND BATTERY LIFE

Just four months ago LG launched the Optimus G, which was the first device featuring Qualcomm's Fusion 3 chipset. The company didn't waste any time following it up with another first: the Optimus G Pro is the inaugural device to launch with Snapdragon's next-gen 600 chipset on board, which features a 1.7GHz quad-core CPU, Adreno 320 GPU and 2GB RAM to keep everything moving along speedily. Any time a new generation of wafers comes out, we nat-

urally expect to see a hefty increase in our device's performance as a result.

Looking back at the S4 Pro's debut last fall, it was difficult for us to comprehend how anything could be faster or better than what we already had. We knew it was inevitable that Moore's law would continue along in its usual fashion this year, and we're witnesses to its effect mere months after the APQ8064's introduction. The G Pro is the fastest smartphone we've ever used, though we have a feeling that it won't hold that title for very long — 2013 will also be the year of Snapdragon 800, Exynos octo-core and Tegra 4, after all (our first benchmarks blow away anything we've seen so far), so the war is just beginning. Since we're talking about the here and now, however, let's give the phone the credit it's due — we threw plenty of processor-intensive tasks at the G Pro, but it remained unfazed. Websites loaded flawlessly, with no lag or tiling effects. Games also made good use of the Adreno 320 GPU inside, as we saw a lot of details in popular titles that we'd never seen on a smartphone before.

The G Pro's battery life is pre-

The Optimus G Pro comes with a second battery in the box, but one still gets you through a full day.



BENCHMARK	LG OPTIMUS G PRO	LG OPTIMUS G	SAMSUNG GALAXY NOTE II
QUADRANT 2.0	12,435	7,628	6,819
VELLAMO 2.0	2,254	1,710	1,814
ANTUTU 3.1	19,300	N/A	17,874
SUNSPIDER 0.9.1 (MS)	904	1,312	1,075
GLBENCHMARK EGYPT 2.5 HD OFFSCREEN (FPS)	27	31	17
CF-BENCH	20,019	14,398	15,244

SUNSPIDER: LOWER SCORES ARE BETTER

dictable, but that's a good thing – a 3,140mAh cell is supposed to be good, and it is. And that's not the best part; our sample unit came with a second battery of equal size. This alone may be enough to win the hearts of power users and international travelers. But how well does a single battery do on one charge? If you judge by our battery endurance test, which consists of running a high-def video on endless loop, it's rather average, at just over seven and a half hours. Real-life use, though, was much more solid: we took a day to tour Barcelona, taking hundreds of pictures, doing a respectable amount of emailing and other work-related activities, getting involved in social media and battling dead zones as we walked around the city. The G Pro got through 14 hours before it died. This means that between the two batteries, you theoretically should only have to charge up once every other day, if not less frequently.

Phone calls? Yeah, we made our fair share of those on Vodafone Spain's 2100MHz 3G network, and our experience was great. The voice on the other end of the line was always loud and clear, and the noise cancellation filtered out the busy Mobile World Congress convention center so our friends couldn't even tell we were around other people. The external speakerphone was amazingly loud for calls, which was a pretty sharp contrast to the quieter speaker used for music and videos (this is an area in which the Note II beats out the G Pro soundly). With a decent pair of headphones, however, it's the opposite result: plenty of custom EQ settings and a surprisingly solid Dolby Mobile mode, with the help of a powerful audio driver, ensure that you have the best possible sound for multimedia playback.

We also conducted speed tests on 3G and averaged around 8 Mbps down and 3 Mbps up; of course, since our unit (the F240L) is optimized for use on LG's U+





The 3,140mAh battery lasts well over seven hours.

network in South Korea, we have no doubt that we're not getting the best speeds possible in Europe. While we're on the subject of compatible radios, let's go into more detail: this particular unit has dual-band Korean LTE (850 / 2100MHz), CDMA1800, dual-band HSPA+ / UMTS (900 / 2100MHz) and quad-band GSM / GPRS (850 / 900 / 1800 / 1900MHz). Even though Americans will want to wait for a variant that comes with the appropriate LTE radios, we popped our AT&T SIM

in and found ourselves enjoying limited 3G speeds on occasion — our unit's top speed was just shy of 3 Mbps down and 2 Mbps up. This means there's at least one US HSPA+ band left unaccounted for. We're still waiting for official word from LG.

The G Pro offers both aGPS and GLONASS support, and in our navigation tests, the positioning was always accurate within just a few feet and we were able to find our way around Bar-

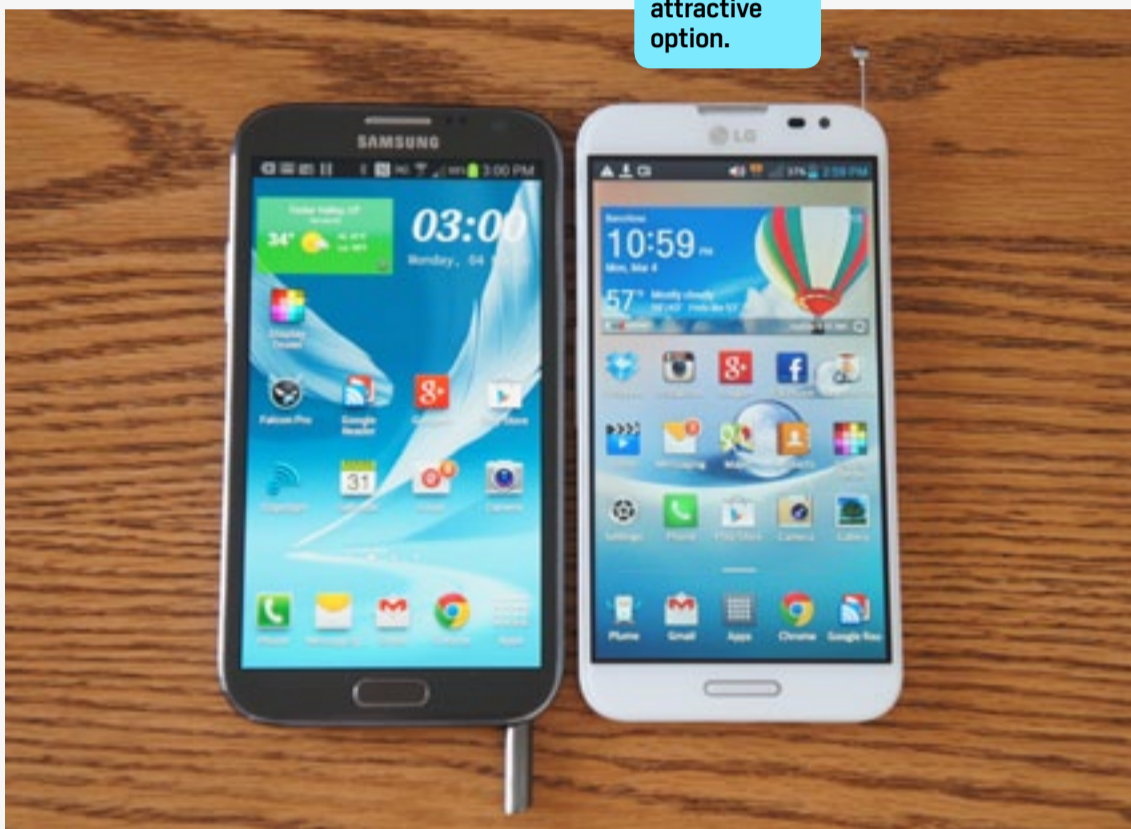


celona pretty easily. Connectivity-wise, the phone also features Bluetooth 4.0, NFC, dual-band 802.11a/ac/b/g/n, SlimPort and WiFi Direct.

WRAP-UP

LG has been on a roll. In the last four months we've been treated to the Optimus G and Nexus

Performance and design make for an attractive option.



4, both flagship devices that have left us quite impressed. Fortunately the momentum continues to build for the Korean manufacturer as it launches the Optimus G Pro. With a higher-res screen, stronger performance and a solid design, the handset might be even more desirable than the Galaxy Note II. It'd be nice to see some stylus support, and we'll also have

to wait a while for non-Korean variants to encircle the globe, but otherwise the G Pro succeeds as a compelling device for anyone interested in getting a phone larger than five inches. **D**

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

BOTTOMLINE

LG OPTIMUS G PRO

968,000 WON (\$897)



PROS

- Incredibly zippy processor
- 1080p display is gorgeous
- Solid build quality and design
- Good battery life, comes with a spare

CONS

- Some may lament lack of stylus
- Limited UMTS and LTE frequencies

BOTTOMLINE

With a beautiful display, super-fast processor and other top-of-the-line features, the Optimus G Pro is a rock-solid Note II competitor sans the stylus.



(Part Four)



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



TIME'S UP. I've now had a full month to call the BlackBerry Z10 my very own and use it as my everyday device. I've had the chance to use it in every likely scenario, including a nine-day trip to Spain for Mobile World Congress. Now comes

the moment of truth: have I become a BlackBerry convert? Is the Z10 my new daily driver?

Unfortunately, it's not. But before the BlackBerry fan base breaks out the torches and forms mobs, this isn't a denunciation of the phone or its OS. Quite the opposite, in fact. I decided to pursue this experiment for a few reasons: it's the best way to learn a brand-new operating system, I genuinely am interested in how well it handles regular, day-to-day use and a month gives me plenty of time to form a solid idea of

The Z10 and its Battery Charger Bundle with a built-in cable for charging your device along with a very useful extra battery.



the platform's potential and future. Is it possible to have a great deal of admiration for a phone while simultaneously rejecting it as my daily driver? Yes. Follow along as I sum up the highlights of BB10: what works, what doesn't and what simply needs a little nudge or two.

WHAT WORKS FOR ME

Gestures: BB10's gestures are natural and intuitive. In the first week of my trial, I had become so accustomed to BB10's gesture-based UI that I started trying to wake Android devices by swiping up on the screen. Most gestures on BlackBerry 10 are easy

and they give the platform a fair amount of uniqueness that you can't find on iOS or Android.

Active Frames: BlackBerry's multi-tasking performance is among the best (if not the best) I've used on any phone, as opening any running application is almost always an instant-





BlackBerry's always-accessible Peek, Hub and various other toolbars help towards creating a unique and useful experience.

neous transition — even with graphics-heavy games. I also have a love / hate relationship with the Active Frames UI; quick access to my recent apps is nice, but having it take the form of a “home page” without any ability to customize it can be frustrating.

BlackBerry Peek: To be frank, my favorite notification method implemented on any mobile OS is the status bar on Android, mainly because it's easily accessible and navigable the vast majority of the time (it gets hidden in certain apps). That said, BlackBerry Peek is also a refreshing departure from standard notification systems; swipe up to “peek” at how many notifications

you have, and swipe to the right if you want to view them. They're also easy to ignore if you so desire.

BlackBerry Hub: Although it's not perfect, Hub is the best implementation of a universal inbox I've used so far. Since it's built directly into the OS and has integrated nearly all of my preferred methods of communication, I can catch up on emails, texts and tweet mentions without exiting to different apps.

Emails: I enjoy the email experience on BB10... for the most part. I love having the option to lump my messages all together in a universal inbox or tackle them one account at a time. It handles attachments incredibly easily, HTML5 looks great and mail gets pushed to the inbox right away



(I often receive emails on the Z10 before they arrive on my Mac).

I also appreciate that a conversation view is offered. But there's one critical flaw that I hope can be tweaked: even though I can go into a specific thread, each response in that thread is presented as an individual email, and there's no way to navigate through the entire conversation without first backing out to the thread list and then going back into the next response. iOS is structured in a similar way, but it offers navigation arrows on the top-right corner to let you quickly move through the entire thread.

The Keyboard: This is BlackBerry's bread and butter, and the OS doesn't disappoint here — at least, when it comes to performance. It's the best stock keyboard I've ever used. However, the inline word prediction feature, while really cool in theory, failed to increase my typing speed. I switched to the in-column view, in which you can choose from three words on the top of the keyboard, and was much happier.

Flash Player: In full disclosure, I'm not an avid user of Flash, but I do prefer at least having the option to use it when I need it. I'm happy that it can be manually turned on or off at any time, thus giving users actual choice. This is a solid competitive advantage for BlackBerry, even though I can't envision many people switching to a different OS just for Flash support.

Sideloading Android Apps: Runtime for BlackBerry came through for me

on a daily basis because it allowed me to use several Android apps to fill gaping holes in BB World (case in point: Flipboard). Don't worry; native apps will eventually come in to take care of that problem. The problem is, relying on Android ports as a workaround to support your ecosystem is not an ideal long-term solution. Sure, it may encourage a few more devs to think about writing apps for the platform, but it's not going to magically change the industry. Most users won't know or care to sideload apps, so BlackBerry has to work hard to make sure those users don't have to in order to get the best possible experience.

Updates: Before the first month was over, BlackBerry issued a significant update promising to improve power management for better battery life, low-light camera performance and third-party app performance. Given the horrible battery life I've experienced, I'm excited to give it a try; unfortunately, the update didn't arrive in enough time for me to give it a thorough test, so I'll have to report back later. However, a quick look at various BB forums indicates that it does a much better job at retaining a charge.

WHAT NEEDS SOME WORK

BlackBerry World: I'm not going to condemn a nascent ecosystem for its app selection. No market blossoms in the space of one month, and the reality is BlackBerry has actually done a fairly good job of making sure the right pieces were in place for BB10's launch — at least, it's done better



than any other first-edition platform. Most users (especially those on the enterprise / corporate side) will likely be satisfied with what's available in BB World, unless they absolutely need Netflix or Instagram.

There are a few areas of World itself that could use some improvement. It should check for (and install) updates automatically — or at least make it an option, if not mandated. More filters are needed without diving deep into subcategories and other seldom-used lists. Lastly, with Android ports comprising 40 percent of World's app selection, each one should be specifically listed as such — especially when they're paid apps.

Data Monitoring: This needs the most work, since I still haven't found any way to monitor my data usage at all. I sorely missed this feature in Spain, because I had a pre-paid data cap and didn't want to run

BlackBerry World may not be the best app ecosystem out there, but it's still in its fledgling stages and we're hoping to see improvement.



out in the middle of an important event. If BlackBerry doesn't come up with a solution, a third party needs to step up.

Maps: The native maps solution on BB10 is my least favorite of the major platforms. It's way too basic altogether, shunning important features like transit directions, walking options, offline maps, distance between two points, a bird's eye or Street View feature, more POIs and Zagat- / Yelp-style reviews. I preferred the Nokia Here web app; this speaks volumes to Here's impressive capabilities, but I shouldn't have to use it as a replacement to a platform's native maps app.

Using Web Apps: BlackBerry is using web apps as alternatives to a few native apps, and I hope this is only a short-term solution while the company cooks up other options. There are two examples of this practice that especially need attention: the Facebook app, which takes you into

the browser for a large number of its services, and YouTube, which is just a shortcut to its home page. These options are better than nothing, but they fall far short when it comes to the user experience.

Tweakable Settings: I like choice. If something doesn't work for me, it's nice to have the ability to




tweak it so it does my bidding. Sadly, BB10 lacks a lot of these customizable settings in many core apps, such as the camera, music and video players, maps and more. This could be a symptom of being a first-edition OS, where many minor features end up on the cutting-room floor as the dev team focuses on getting the major stuff right, so hopefully these smaller things will be addressed in the next update.

CONCLUSION

While the Z10 won't be my daily driver, I can answer the questions I raised at the beginning of my experiment: does it fit my daily workflow? How does it hold up against its rivals? And does BlackBerry have a future? First, workflow: I was able to accomplish almost all of my daily work routine — even when I was in Spain for nine days — but a large chunk of it was only made possible by sideloading Android apps and finding other workarounds. Basically, I had to make a lot of compromises and do a lot of research in order to get it to function the way I needed, and many tasks became more time-intensive than they would have been on other platforms. I'm happy that these methods helped me get through the month unscathed, but ease of use, accessibility and speed are crucial to me.

Second, how does it hold up against its rivals? There are plenty of good qualities in BB10, but BlackBerry needs a hook — in other words, iOS and Android users won't hop out of an ecosystem they're comfortable with unless there's a very

clear reason to do so. The new and improved BlackBerry is the best first-edition OS I've ever used, but the true competitive advantages are few and far between: solid enterprise / BYOD support (areas in which iOS and Android are quickly catching up) and the BlackBerry Hub. BB10's gesture-based UI and built-in Flash Player get honorable mentions, but I can't see very many people making the jump on those features alone.

Again, this isn't a condemnation of the OS. After 30 days, I've discovered that I like the Z10 and the BlackBerry 10 OS a lot more than I had anticipated, and I believe it will be an ideal platform for a large number of power users, heavy communicators and corporate hotshots. It's just not the most ideal option for me right now. And as every major OS has done over time, it will evolve, add missing features and iron out the wrinkles (BlackBerry has already pushed out its first update, so it's off to a solid start). Which takes me to my final question: does BlackBerry have enough time to keep blossoming? The only way you can drive to your destination is to look forward, not at the car in the lane next to you; I believe BlackBerry is going in the right direction now, but it can't sit idly by and watch its competitors speed ahead again. 

You can follow Brad on Twitter, where he is documenting many of his thoughts and observations on BlackBerry 10.

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



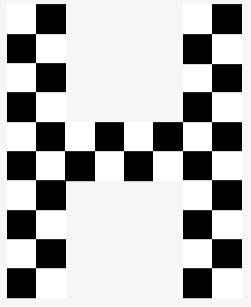
The Racing Line:

EXPLORING NASCAR'S TECHNOLOGICAL DICHOTOMY



With a massive crash and the subsequent PR debacle shedding unwelcome light on NASCAR's approach to the internet, a picture of an organization split between the future of media and the history of racing has emerged
By Tim Stevens





His car was sent spinning skyward. Two tires, an engine and a cloud of other components found their way through the safety fence, injuring 28 spectators who were sitting trackside. When all was still, Kyle Larson's blue and white #32 Chevrolet Camaro was nearly ripped in half. This incident, which took place ahead of this year's Daytona 500, plus NASCAR's seemingly knee-jerk actions to try and remove user-submitted footage of the crash from YouTube, painted for many the picture of a sport woefully ignorant of the times.

The truth, however, is rather different. The V8-powered machines that circle endlessly, fruitlessly on-track are built with a flagrant disregard for, and indeed a stubborn reluctance toward, modern technology. However, the organizing body that governs those cars and will host nearly 40 events spread over 10 months this year is anything but oblivious. In many ways NASCAR is the most technologically progressive motorsport body on the planet.

To support such an improbable statement as that, it's important to think of NASCAR not as a single body, but as more of a family of services all surrounding the seemingly very straightforward task of goin' racin'. Indeed, NASCAR at its core is still very much a family affair — even if its origins are somewhat unsavory. The very early “stock cars” were just that, production sedans lightened and modified to make them faster. The sport, though, wasn't chasing checkered flags. It was being chased by the law.

Stock car racing as we now know it famously grew out of the Prohibition days, with bootleggers hauling moonshine up the fast, twisty roads that typify the Appalachians.



Prohibition was repealed in 1933, but that didn't stop the moonshiners from having their fun, running from lawmen that now wanted to tax their still-crafted wares. At the same time, a somewhat safer, but infinitely more legal form of racing was happening down on Daytona Beach. Drivers of similarly souped-up cars lapped a 4-mile course that ran one way down the beach and looped back up the A1A.

For moonshiners who were sick of running from the law or who wanted a less nefarious way of showing off their

***STOCK CAR RACING AS
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FAMOUSLY GREW OUT
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skills, it was the perfect opportunity — even if the organization often left a bit to be desired. Each year, the town was losing more money trying to host a racing event that was poorly officiated, haphazardly scored and supported only by dismal ticket sales. Fans would flock to the city by the thousands, but few bothered to buy tickets to watch the race since there was any number of suitable vantage points to be found.

In 1938, Bill France Sr. took over running the race at Daytona and gradually turned it into a success, despite a five-year hiatus during WWII. France

quickly gained a reputation as a trustworthy businessman, a well-liked alternative to the shady organizers who would frequently take off with the purse before the race was run. In 1948, France took the next step and formed the National Association for Stock Car Auto Racing (NASCAR). The rest, as they say, is history, but through the years one thing has remained the same: the France family. Brian France, current chairman and CEO of NASCAR, is Bill France Sr.'s grandson.

The organizational body follows a similar tree-like structure, overseeing three major (and progressively more competitive) American racing series: Camping World Trucks, Na-



QUESTION:

“If you could add any piece of technology to NASCAR for the 2013 season, what would it be?”



SCOTT MILLER
EXECUTIVE VP OF
COMPETITION AT
MICHAEL WALTRIP
RACING

TRACTION CONTROL
“Not necessarily for Daytona, but for our season in general, I’d probably have to go with traction control.”

tionwide and, at the top, the Sprint Cup. There are separate sanctioned stock car series in Mexico, Canada and Europe, plus regional series on the eastern and western coasts of the United States. Finally, for those who prefer road courses, there’s the Grand-Am series, which itself campaigns four real-world racing series (plus a fifth, virtual one, the iRacing.com Online Sports Car Series) and next year will grow to consume the American Le Mans Series.

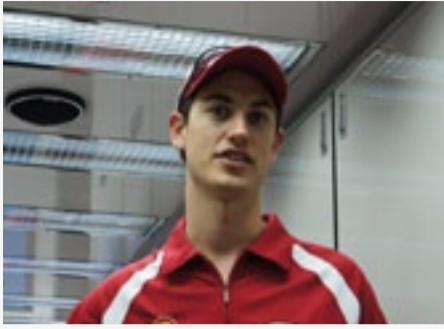
NASCAR racing is, then, big business, and that’s not the half of it. For each of the 43 drivers that took the green flag at the 2013 running of the Daytona 500, hundreds of other souls played a part in getting them onto the track, ranging from the folks who clean the shops back in Wilkes County, N.C., to the guys and gals who handle the frantic wheel changes in the pit stops. (Most of whom, by the way, are scouted out of college sports programs for their strength, speed and reflexes.)

However, there’s a new breed of crew member at the track, often sporting bespectacled faces and distinctly English accents. They’re engineers, and a surprising number have made the transition to NASCAR from what is considered to be the pinnacle of motorsport technology: the international Formula One series.

“Formula One has always been based off of engineering,” Kenny Wallace, a longtime NASCAR personality and current driver of the #29 RAB Racing Toyota, told us. “This is still a new world for us, but now it’s here for real. Twenty years ago it was ‘Hey, I got an engineer.’ ‘Oh, what’s he do?’ ‘He tells ya what time you ran.’ Now it’s here for real... It’s so real now, that if you don’t have this, you’re behind.”

Indeed, on race mornings you’ll see engineers frantically wielding a variety of tools, but the humble laptop (and, on some more progressive teams, Microsoft’s Surface tablet) has become a recent addition thanks to the introduction of electronic fuel injection (EFI) to the cars in 2012. EFI replaces clunky, complicated carburetors, the sort that hasn’t been seen in production cars in the United States for 20 years. (Similarly, leaded fuel was banned from US





JOEY LOGANO

DRIVER OF #22
FORD FUSION

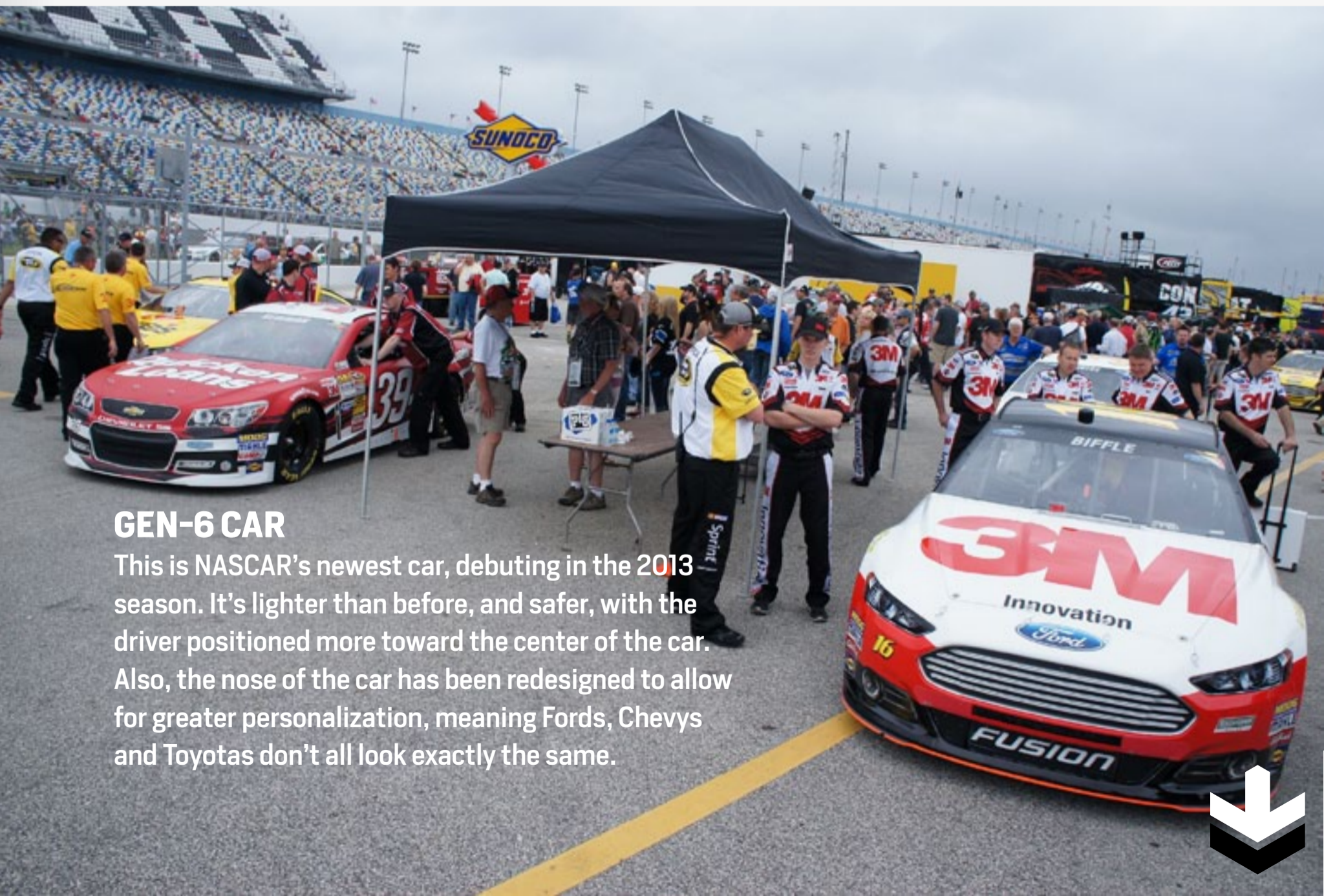
*FI-STYLE ACTIVE
AERODYNAMICS*

“Our cars are not as sensitive as theirs [Formula 1], but we can use all the help we can get.”

streets in 1995 — but NASCAR ran it until 2007.)

It’s the “E” in EFI that’s most important. Before, a complicated, but purely mechanical series of needles, springs and bowls dribbled gasoline into the engine. Now, a 32-bit Freescale microprocessor more precisely calculates fuel flow, a system made ready for racing by the boffins at McLaren. (Yes, F1 fans, that McLaren.) Since its introduction last season, mandated for use in every single car in the pit lane, the engine control unit (ECU) hasn’t suffered a single failure.

This change has, for the first time, allowed teams to gather a very limited amount of telemetry on race weekends. Telemetry is, basically, the science of getting accurate data from the car. In Formula One or Le Mans or many other top racing series, there are hundreds of data sources feeding back information to the pits in real-time, enabling data wizards huddled over laptops to know everything from fuel levels to brake temperatures instantly. In NASCAR, this sort of data is



GEN-6 CAR

This is NASCAR’s newest car, debuting in the 2013 season. It’s lighter than before, and safer, with the driver positioned more toward the center of the car. Also, the nose of the car has been redesigned to allow for greater personalization, meaning Fords, Chevys and Toyotas don’t all look exactly the same.



***PRIOR TO A RACE,
YOU'LL COMMONLY SEE
ENGINEERS STANDING
THERE LOOKING
INTENTLY (SOMETIMES
CONFUSEDLY) AT LAPTOPS
SITTING ON ROOFTOPS
AS V8 ENGINES RUMBLE
AWAY IN THE GARAGE,
SLOWLY COMING UP TO
TEMPERATURE.***

banned — except when it's not.

Teams are allowed to participate in private test days at non-sanctioned tracks (those NASCAR does not compete at). In these sessions, anything goes. Engineers can slap as many widgets, sensors and other bits of prototype hardware on their machines as they like.

“We don't get the opportunity to do that all the time. We'll do it four or five times a year, but we don't have enough to support it on a week-in and week-out basis,” Scott Miller, executive VP of competition at Michael Waltrip Racing, said.

This sort of data acquisition can exponentially raise the cost of motorsports, something NASCAR teams are keenly aware of. Miller estimates the budget of a top NASCAR team is somewhere between one-tenth to one-fifth that of a top Formula One

THE CLAW

This is the slang term for the template that they lower down onto cars to ensure that they fit within NASCAR's defined boundaries. Each point must make contact with the car to ensure it is the exact, precise shape. Any deviation will send the car back to the garage.





SCOTT SPEED
DRIVER OF THE #95
FORD FUSION

MORE CAMERAS

“A technology that lets you see more of the driver’s view — more camera angles, more ability to see what’s going on inside the car. It’d be cool for the fans and it’d be cool for us to be able to go back and watch it after the race.”

team, where costs can exceed \$400 million annually to make winged, swoopy and entirely bespoke cars go incredibly fast. That drastically lower cost, combined with the incredible popularity of the sport, means there’s a huge amount of money to be made racing these cars that are charmingly still called “stock.”

Real-time telemetry at every event has the potential to drastically cut into those profits, both thanks to the expensive hardware required to gather data and the flotilla of engineers required to make sense of it all. Still, in our conversations with many teams, that’s a Pandora’s box they are eager to open. Steve Wickham is VP of chassis operations at Toyota Racing Development USA. He has a strong background in Formula One (and in souping up his kids’ scooters to make them the envy of their friends), but he came over to NASCAR for a new challenge.

“What we’re allowed is very limited on race weekends,” Wickham said. “Telemetry is another evil for [NASCAR], but it’s going to come soon.”

ROOM OF DOOM

This is another, more scientific measurement of the shape of the car. Here, lasers scan the car’s body and the position of the wheels, creating a millimeter-perfect measurement of every surface.





The Freescale and McLaren EFI system does provide a very simple feed of data, but teams have to physically tether a laptop to a car to access it. That, it must be said, is rather hard to do while the car is hustling around the track at 200-plus miles per hour, so data acquisition occurs only before and after the race. Prior to a race, you'll commonly see engineers standing there looking intently (sometimes confusedly)

at laptops sitting on rooftops as V8 engines rumble away in the garage, slowly coming up to temperature.

When the race begins, the laptops are put away and the cars effectively become black boxes.

"Once we start the race, we're locked down. We're all stopwatches and tire pressures," Darian Grubb, crew chief of Denny Hamlin's #11 Toyota, told us.

It's the drivers that provide the best insight into what's happening under the hood thanks to an array of old-school, analog gauges scattered across the dashboard. If any needles start sweeping in a wayward direction, it's up to the driver to spot it and call it out over the radio to his or her crew — while at top speed in a pack of 40 other cars.

But there's another source of information that virtually every team on the pit wall deploys before the race, beamed

RADIOS

Radios are used extensively so that drivers can talk to both crew chiefs on the pit wall and spotters, positioned with a high vantage point of the race. Radio communications are strictly between driver and crew — driver-to-driver communications are banned — and NASCAR mandates they be non-encrypted.

GYRO CAMS

NASCAR has recently introduced a camera that rotates to maintain a perspective parallel to the horizon, showing just how steep the banking is. These cameras were first used in motorcycle racing, to show how far riders leaned their bikes over.



**STEVE NELSON**DIRECTOR OF MARKET-
ING, FREESCALE**SAFETY IMPROVEMENTS**

"The next thing I'd like to see, and I think [the recent crash] highlighted it; let's talk about safety."

WHILE THE SUPPOSEDLY STOCK CARS RUN BY NASCAR ARE, IN EVERY WAY, VASTLY CRUDE AND UNSOPHISTICATED COMPARED EVEN TO A MODERN ECONOMY CAR, THE WAY NASCAR RACES ARE PRESENTED TO THE WORLD OUTPACES ANY OTHER FORM OF MOTORSPORT.

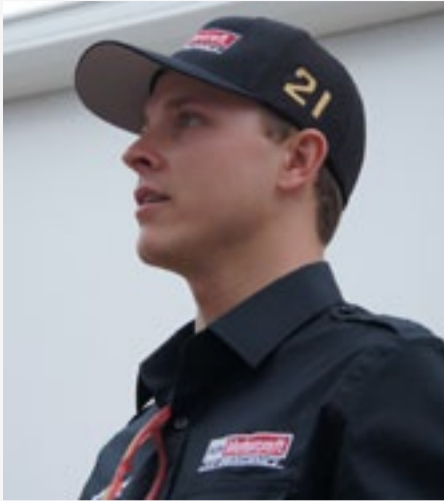
down from a geosynchronous orbit onto receiving dishes connected to sophisticated decryption systems all tethered to high-resolution flat-panel displays. If that all sounds fancy, it is — but it isn't particularly novel. It's satellite TV.

Early Sunday morning, hours before the green flag started this year's Daytona 500, the dedicated mechanics were out and about in the pit lane. While some crouched over steel wheels, dutifully gluing yellow lug nuts into place, others were tinkering to get digital tuners set up. These tuners feed video to as many as six separate TVs in the teams' pit complexes, some down at ground level for the crew to watch and other, smaller sets positioned on top where the big bosses perch themselves. During the race, most spend their time watching two things: one screen showing positions and lap times, and a second screen showing the current NASCAR broadcast. Yes, they have to sit through the commercials.

Primarily, they're keeping an eye on what's happening in the race. On a 2.5-mile track, you can only see a very small sliver of the action from the pit lane. The pack of cars blast by once every minute or so like a freight train and then quickly stream out of sight, with stragglers roaring by feebly a few seconds later. Only the team's spotters, standing way up top of the circuit, have an unobstructed view of the action.

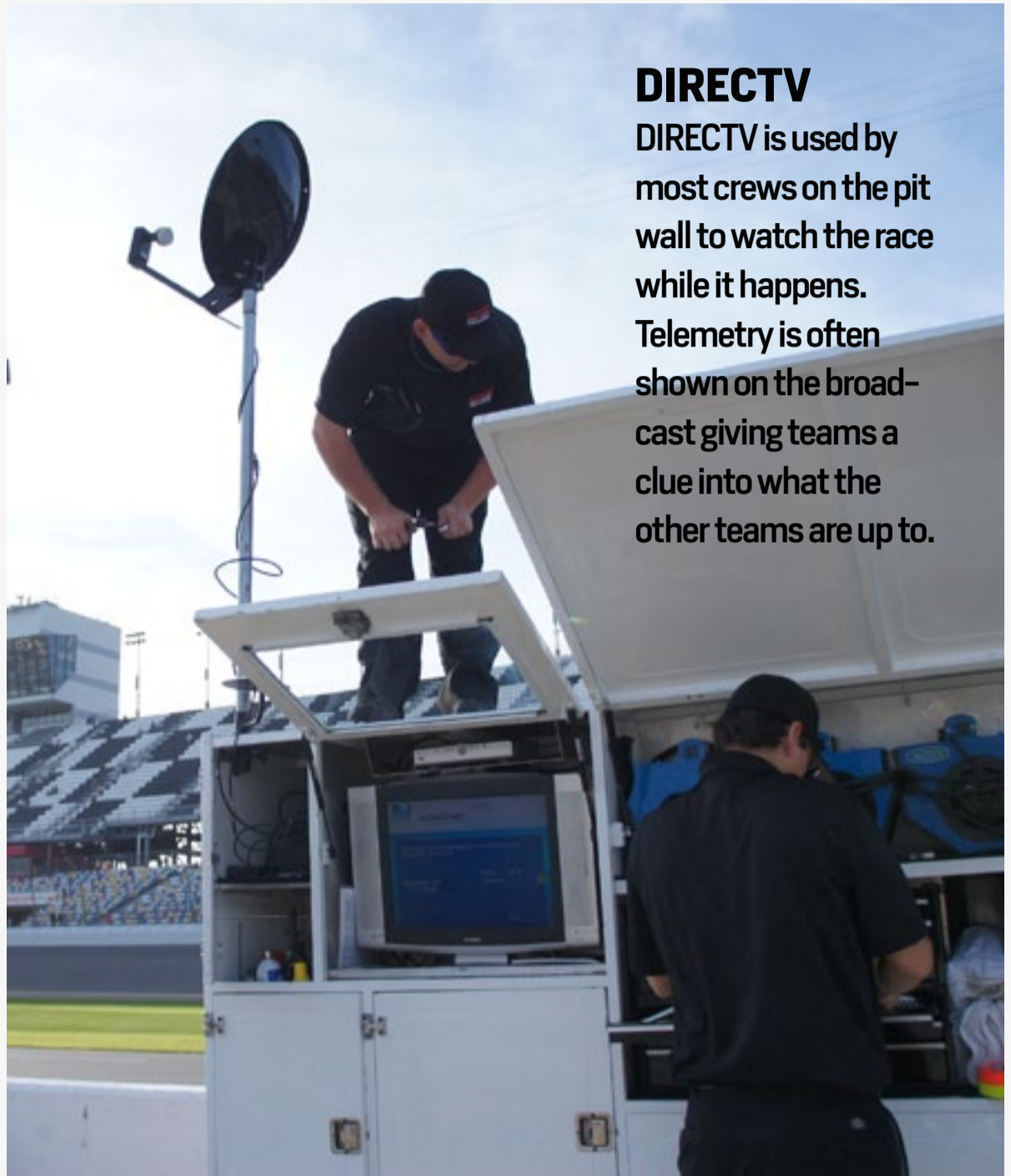
Spotters are acting as the all-seeing eye for the drivers, radioing down constantly to tell them when they have a lane into which they can merge. In the pits, meanwhile, crew members watch to see what they can learn from the





TREVOR BAYNE
 DRIVER OF THE #21
 FORD FUSION
*A KINETIC ENERGY
 RECOVERY SYSTEM
 (KERS, LIKE IN F1)*
 "I'd love to have that
 push-to-pass button."

FANVISION
 A sort of live-streaming
 PMP for use while track-
 side. A small LCD displays
 footage from a variety
 of selectable vantage
 points, while a head-
 phone jack also allows for
 listening in on driver radio
 communications and
 even the chatter of
 NASCAR officials.



DIRECTV
 DIRECTV is used by
 most crews on the pit
 wall to watch the race
 while it happens.
 Telemetry is often
 shown on the broad-
 cast giving teams a
 clue into what the
 other teams are up to.

competition. Teams have to wait until after the race to download telemetry from their own cars, but that stuff is being sent to the race broadcaster in real-time, creating on-screen displays of things like engine RPM plus brake and throttle position.

In other words, viewers at home know every bit as much as the crew chiefs in the pit lane and, if those viewers pay \$25 to add real-time data to NASCAR's mobile apps, fans can even get real-time lapping data and radio chatter from their favorite drivers. This is where things get truly interesting. This is where the low-tech action on the track ends and the high-tech job of consuming that action begins.

While the supposedly stock cars run by NASCAR are, in every way, vastly crude and unsophisticated compared



TRACK TIMING WIRES

Wires embedded in the surface of the track work in conjunction with transponders mounted to the floor of the vehicles, measuring the precise instant the car crosses the line.

even to a modern economy car, the way NASCAR races are presented to the world outpaces any other form of motorsport. For example, NASCAR made the switch over to high-definition broadcasts way back in 2005, beating Formula One by six years, and became the first motorsport to use HD in-car cameras two years later. A typical stock car race makes great use of all those pixels, too, filling the screen with data-rich overlays.

This year's new toy is the Gyro Cam, mounted in the center of the car, inside the cockpit. As the car climbs the banking on an oval turn, the camera rotates to stay level. Admittedly NASCAR isn't the first to use this — MotoGP used a similar trick last season to show just how far over professional motorcycle racers lean over in the turns —



but here it certainly gives another way to appreciate the pitch of these tracks.

If that's not enough, NASCAR has your second-screen experience covered too. The NASCAR Mobile '13 app for iOS and Android gives you news and video highlights for free, but pay \$24.99 and you'll get live timing data streamed to your tablet, plus radio chatter and in-car camera angles. Then there's the NASCAR RaceView Mobile '13 app, which, for \$39.99 per season, gives you a 3D look at the race as it happens from any angle — so long as you don't mind PS2-era graphics. And, if you actually go to the race, you can use a handheld device from a company called FanVision to get in-car views from any of about a dozen cars plus radio chatter and enough timing data to satisfy an army of gearhead statisticians.

While other global forms of motorsport have similar offerings, no single body brings them together as well as NASCAR, something Scott Speed, driver of the #95 Ford (and former F1 pilot), elevates to a level of national pride.

"It's an American sport. It's America," Speed said. "Everything we do that's media-related is better. Our sport has a better show, no question; it's infinitely more entertaining [than F1]... That's our country. That's what we're good at."

And there's more to come. At Qualcomm's star-studded CES event, we got a glimpse into an even brighter second-screen future, with multiple camera angles, selectable from a smart TV, and alternative views of the action pushed directly to a tablet.

NASCAR, then, has the second-screen experience covered more comprehensively than any other motorsport, but Marc Jenkins, NASCAR's vice president of digital media, made it very clear this is all designed to complement, and not replace, the on-air presentation provided by broadcast partners like Fox.

"Our primary goal is driving engagement around the sport and broadcast ratings," Jenkins said. "That's key for us, and that's why you'll see the free versions of the apps are very robust."

And then there's the company's social presence. After



TESFA LEE

FRONT TIRE CARRIER
FOR TREVOR BAYNE

*LIGHTER WHEELS
AND MORE CAMERAS
IN THE PITS*

"Carbon fiber wheels would be something, wouldn't they? More pit-crew cameras would be great, too."





BRYAN ORTIZ

NASCAR K&N PRO
SERIES EAST DRIVER

*REAL-TIME DATA
ACQUISITION*

“It would give some-
thing more challenging
to the crew.”

***HOW IS IT THAT SUCH A
SOCIALY SAVVY MEDIA
ORGANIZATION COULD
HAVE SUCH A SEEMINGLY
HAM-FISTED RESPONSE
TO THE CRASH AT
THE END OF THE
PRE-DAYTONA 500
NATIONWIDE RACE?***

barely a year on YouTube, NASCAR’s channel has already topped 15 million views. It’s about to cross the million-follower threshold on Twitter and, thanks to keen use of images and galleries showing winners in their glory and losers in their agony, it’s tallied 3.3 million likes. That’s on a Facebook page containing photos dated all the way back to the founding meeting hosted by Bill France Sr. in 1947.

That kind of social success doesn’t come by accident, which begs the question: How is it that such a socially savvy media organization could have such a seemingly ham-fisted response to the crash at the end of the pre-Daytona 500 Nationwide race? After Larson’s car speared through the fence, injuring 28 spectators, eyewitness footage hit YouTube within the hour showing a horrifying scene with people screaming and a tire lying on now-empty seats.

Soon after it gained the attention of the blogosphere, the video was gone, pulled from YouTube for supposed copyright violations. As we’re all too well aware, it’s im-

possible to really remove anything from the internet once it’s been posted. Copies of the footage spread just as quickly as accusations that NASCAR was trying to control the story, and by the time Chief Marketing Officer Steve Phelps issued a statement, it was too late.

“The fan video of the wreck on the final lap of today’s NASCAR Nationwide Series race was blocked on YouTube out of respect for those injured in today’s accident. Information on the status of those fans was unclear and the decision was made to err on the side of cau-

tion with this very serious incident.”

By not providing that statement immediately, or by not just letting the video stay up, NASCAR came off looking



like a stodgy, old-school bully that thought it could silence the internet. We asked Jenkins (whose department handled the request to get the footage pulled) why the company wasn't more transparent:

“It really was a fluid situation, meaning that there'd just been a tragedy on track. We saw a video that looked gruesome and we really weren't sure what happened, and we made the decision to block it out of respect... Each [situation] is distinct and, as much as we try to game plan, each one has its intricacies.”

This, then, gets us back to square one: family. NASCAR is a sport founded and run by the France family. It's contested by drivers, many of whom bring their children to the track with them every weekend. Those good folks in the stands are treated as members of the same big clan. In its own way, by requesting to have that footage pulled, NASCAR was trying too hard to protect its extended family. It seems to be over-protective of the family budget, too, with draconian regula-

INCIDENT DATA RECORDER (IDR)

This is the “black box” crash recorder that NASCAR has been mandating in its cars for over a decade. When a crash occurs, the device records the maximum G loads and directions, helping the organizing body learn more about each incident.

tions designed to keep cars simple, ostensibly preventing teams from excitedly spending themselves into the kind of financial crisis that Formula One has suffered of late.

But all the digital, second-screen showmanship in the world can't make up for a motorsport powered by decades-old technology. By being so resistive to change, by locking teams and drivers into an unwaveringly stoic and unquestionably dated racing formula, NASCAR risks losing its relevance to the modern racing world. In 2012, television ratings continued to slide. In the crucial 18- to





ENGINE CONTROL UNIT

This system, powered by a 32-bit Freescale processor, controls the engine, regulating fuel flow and monitoring things like temperature, RPM and driver throttle position.



34-year-old market, the kinds of viewers most excited about modern tech, viewership was down 25 percent, and ticket revenue is down sharply overall.



Can a form of motorsport that's entering retirement age change its course? Can it become more relevant to younger viewers who only recognize Danica Patrick from her terrible TV commercials while still supporting the older fans who grew up watching Junior Johnson figure out drafting? Can it take the technology and sophistication of the presentation and bring that to the racing itself? All that remains to be seen, but it's clearly time to call in all the cousins and sit down for a serious talk. With any luck, the hip, tablet-toting branch of the family tree can help the rest of the clan get with the times, and soon. **D**

Tim Stevens is Editor-in-chief at Engadget, a lifelong gamer, a wanna-be racer, and a born Vermonter.



Let's Go Places



  #LetsGoPlaces Places you never imagined.

Concept car shown. ©2013 Toyota Motor Sales, U.S.A., Inc.



**Let's
Go
Places**

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03.08.13

VISUALIZED

**SPACEX
CRS-2**



PHOTOGRAPH BY BEN COOPER / SPACEX



ESOC

DISTRO
03.08.13

VISUALIZED

SPACEX
CRS-2



SpaceX has taken up the slack for NASA since the demise of the shuttle program in 2011 by handling cargo transport duties to and from the ISS. Comprised of the Falcon 9 launch vehicle and the Dragon capsule, the CRS-2 resupply services mission launched successfully on March 1st carrying 1,200 lbs. of critical supplies destined for the orbital laboratory. If all goes as planned, Dragon will splash down in the Pacific Ocean after a three-week stay on the space station, loaded with up to 2,300 lbs. of scientific research materials, experiments and hardware.



PHOTOGRAPH BY BEN COOPER / SPACEX



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ESC

Q&A

The **WIRE TO THE EAR**
BLOGGER and **MUSICIAN** talks
about planet communicators
and Lego-colored Skylabs

OLIVER CHESLER



What gadget do you depend on most?

My iPhone is the planet communicator and friend in my pocket from the moment I wake until I sleep at night.

Which do you look back upon most fondly?

My TRS-80 Color Computer. I used to log in to local BBSs at 300 baud, load games off cassette and print to my Epson RX-80 dot matrix printer.

Which company does the most to push the industry?

Google is amazing. They are connecting us to everything else. Soon they will drive me around.

What is your operating system of choice?

I work in Mac OS X. Eventually I suspect it will go touch and run iOS apps or something like that.

What are your favorite gadget names?

There is a modular synthesizer module called "MATHS." How badass is that?

What are your least favorite?

iPad. Slate, Glass or Window all would have been cooler!

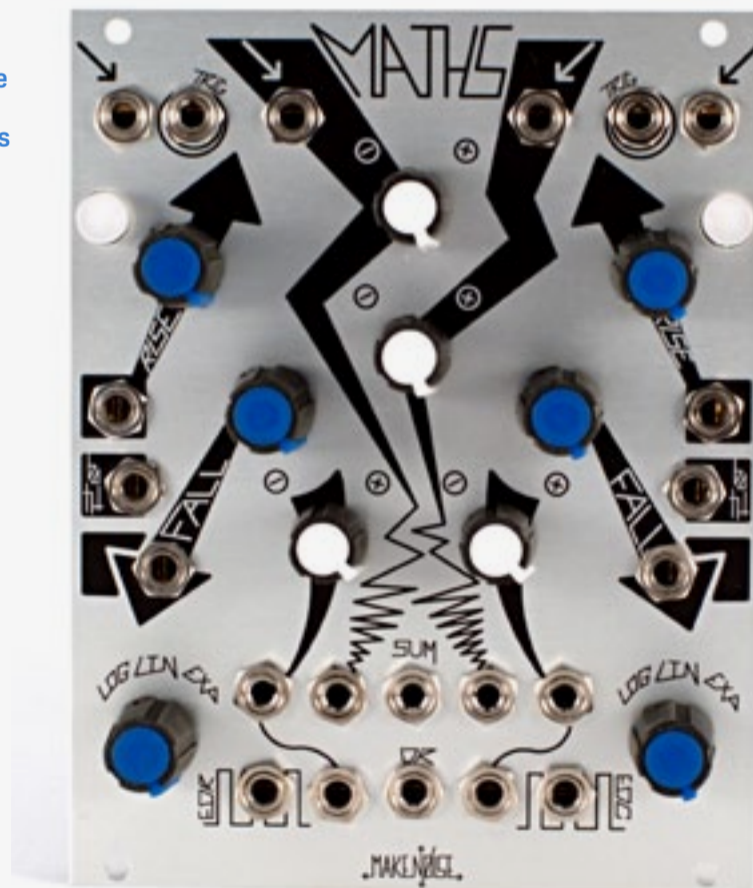
Which app do you depend on most?

On OS X, it's Ableton Live because I make my art with it. Nothing is more important than music to me. On iOS, it's my TomTom app with Traffic. I live in NYC and that thing steers me around traffic every single day. It adds time to my life. How valuable is that?

What traits do you most deplore in a smartphone?

Siri sucks.

The MATHS synth module from Make Noise Co. is all about sculpting signals and sounds.



“My iPhone is the planet communicator and friend in my pocket from the moment I wake until I sleep at night.”



“The Buchla Skylab. It’s colored like the Legos I owned as a child and makes fantastic noise. At \$14K, no child can afford one. Now that’s a gadget!”

Which do you most admire?

I can record the world with it and rebroadcast what I find.

What is your idea of the perfect device?

Something that helps you succeed and makes your life easier.

What is your earliest gadget memory?

I received a hand-me-down Magnavox Odyssey 2 video game system. I loved *UFO* and *KC Munchkin*.

What technological advancement do you most admire?

The internet. I almost can’t believe it didn’t exist when I was a child.

Which do you most despise?

Pre-roll video advertising.

What fault are you most tolerant of in a gadget?

Heat. I kinda like a hot lap or pocket.

Which are you most intolerant of?

Data plan tiered pricing.

When has your smartphone been of the most help?

Avoiding traffic (see TomTom answer above).

What device do you covet most?

The Buchla Skylab. It’s colored like the Legos I owned as a child and makes fantastic noise. At \$14,000, no child can afford one. Now that’s a gadget!

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

I’d like a refresh of the graphic interface design. Windows phones look cooler than iOS at this point.

What does being connected mean to you?

It means I’m never alone.

When are you least likely to reply to an email?

When I’m drunk. I’ve learned that lesson the hard way.

When did you last disconnect?

1994. 

In 1978, Magnavox released a next-gen console for their popular Odyssey series, the Magnavox Odyssey 2.



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

COLCASAC JACK BAUER SHOULDER BAG

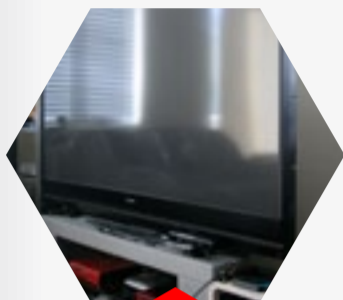
I was a ColcaSac fan before, but now I'm bordering on being an evangelist. After picking up a couple of cases for my wife's gear, I was able to test out something a little larger — the Jack Bauer shoulder bag. Yeah, shoulder bags come a dime a dozen these days, but ColcaSac does an outstanding job of differentiating itself. It's all about the exterior materials as well as the craftsmanship.

The entire thing is composed of un-dyed hemp canvas, which — if you haven't seen it — is quite the looker. You'll catch plenty of

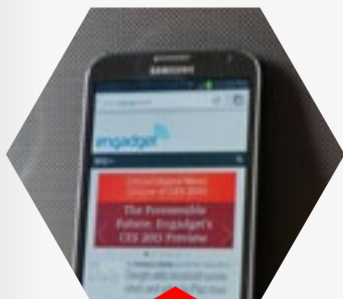
eyes with it hung around your person, but not in the “please steal me” kind of way. It's as soft and flexible as a bag could be, making it quite capable of doubling as a pillow (while empty) on a long flight. I found the compartments to be just large enough; any more, and you'd probably lose things. At 15.5 inches wide and 11 inches tall, it's quite capable of carrying around your average laptop and / or tablet, and while aesthetics are obviously a matter of perception, I've fallen quite seriously for the design.

At \$125, it won't fall under anyone's definition of “cheap,” but considering that it's hand-made in Utah and backed by some pretty outstanding people, I'd trust it to last longer than any mass-market bag costing nearly as much.

— Darren Murph



Mitsubishi
WD-82740
3D TV



Samsung
Galaxy
Note II on
Rogers



MITSUBISHI WD-82740 3D TV

They say nothing good ever happens after 2 AM. That's the first thought that immediately popped in my head after I hit the "Place order" button in the wee hours of the morning for an 82-inch TV. I still remember the phone call I got from a relative who was kind enough to receive my "mystery package" while I was at work: "Okay, the guy's opening the truck. He's bringing something out. Uh, is that a pallet jack? Oh ... my ... god, that's a huge box! What the heck is that?" That would be a Mitsubishi WD-82740 3D TV.

See, while randomly browsing electronics one evening, I stumbled across Mitsubishi's 82-inchers. My initial reaction at 12 AM? "What idiot would get an 82-inch TV?"

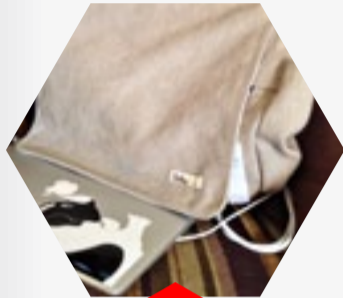
By 2 AM, though, the whole thing started to seem like a good idea. In short, I am now the idiot with an 82-inch TV. Let's just say I had to spend a few hours completely rearranging my living room just to fit this thing in. It's kinda like having Shaquille O'Neal meditat-

ing on my TV stand.

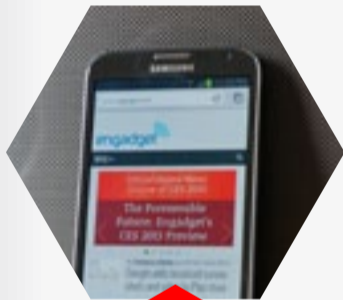
The good news is that picture quality — including black levels and viewing angles — are much improved over my old 63-inch Samsung DLP TV, which particularly struggled in daylight. Calibrate this sucker right and the colors pop when you're playing games or watching high-def movies. In the rare instance I want to risk a splitting headache, I might go ahead and watch some 3D content, too. (I must say: animated 3D movies look especially nice.)

One area of disappointment is the piddly sound quality from the stock speakers, which is trumped by my old Samsung set. Also, the model I got only has digital audio out, so I couldn't immediately connect it with my old analog stereo receiver. Chip and lamp issues are always a concern with DLP TVs, too, and I'm particularly worried about potentially running into the dreaded "blinking green light of death." Overall, though, I've been quite happy with the WD-82740's picture quality. Yes, people still tell me I'm certifiably insane, but give me my La-Z-Boy, a good video game and this TV, and I'm one crazy — but happy — camper.

— Jason Hidalgo



**ColcaSac
Jack Bauer
Shoulder
Bag**



**Samsung
Galaxy
Note II on
Rogers**



SAMSUNG GALAXY NOTE II ON ROGERS

If you saw my IRL for the Galaxy S III, you'll remember that I griped about its 4.8-inch screen being too big. You'd think, then, that the 5.5-inch Galaxy Note II would be a calamity in my hands. While there are still a few issues, my experience with this extra-large phone has been surprisingly positive — so much so that it's changed my attitude toward the supersized phone category.

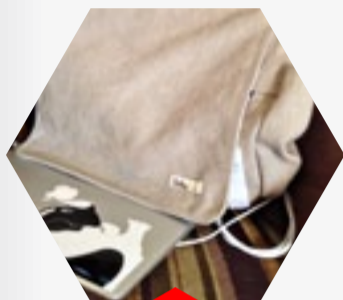
The Note II overcomes many of the limitations of its smaller cousin, in part because of that gargantuan size. Although there are settings for one-handed use, there's no pretending this is a regular phone. A different pixel arrangement eliminates the fuzzy look of PenTile from the Galaxy

S III's display, and having both a quad-core Exynos chip and LTE in one device doesn't hurt, either. Not to mention, the battery seemingly lasts forever. Even with constant abuse from someone

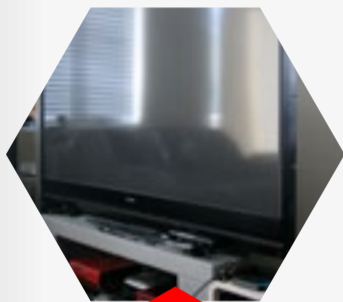
who virtually lives on Instagram and Twitter, the Note II easily lasted more than a full day of use and could sometimes go for two. I still prefer stock Android (and usually the Nexus line), but I'd pick Samsung's flagship in a heartbeat if I needed an absolute workhorse.

If there's one overarching flaw, it's that the phone is still something of a mutt with a few lackluster features inherited from earlier devices. While the S Pen is more useful than with the original Galaxy Note, the implementation is still uninspiring enough that it feels like a solution in search of a problem: I don't need to draw shortcuts or peek at photos with a stylus, thank you very much. Samsung's TouchWiz interface hasn't changed much outside of these pen-specific tricks. Likewise, the camera is virtually unchanged from the Galaxy S III, which works wonders in bright scenes but flounders in low light, especially compared to the iPhone 5 and Lumia 920. If the Galaxy Note is truly a leader, it shouldn't feel like it's relying on warmed-over Galaxy S parts, however good those parts may be.

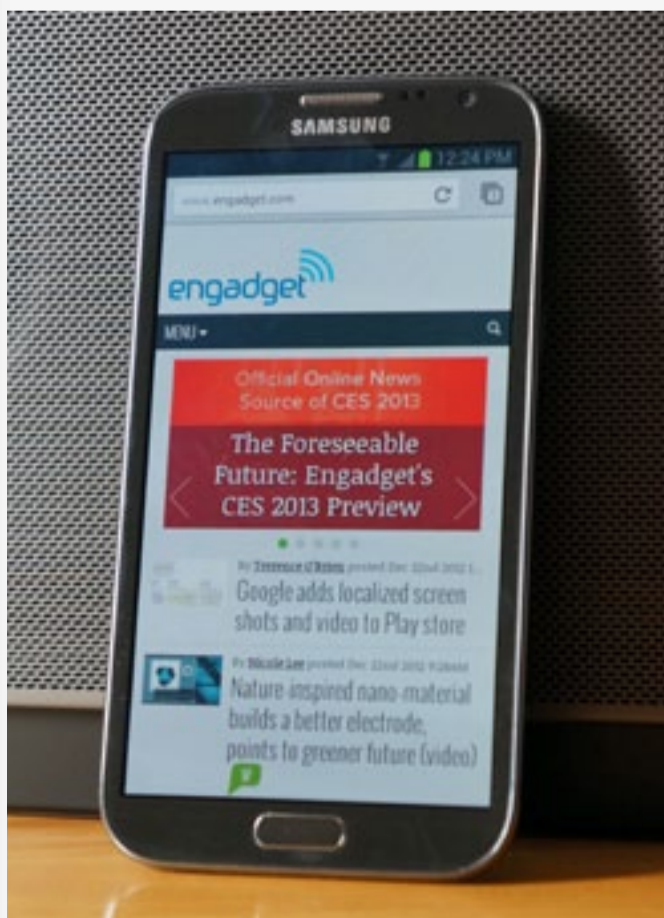
— Jon Fingas



ColcaSac
Jack Bauer
Shoulder
Bag



Mitsubishi
WD-82740
3D TV



The week that was in 140 characters or less

TweetDeck Die Hard, Unlocking Congress and SimCity Woes

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REHASHED

@daveweigel

You'll have to take Old Tweetdeck out of my cold, dead, carpal tunnel'd hands.

@garywhitta

Yay, I'm in a queue to play a single-player game!
#SimCity

@fredprhino

microsoft fined \$733M. Price of a monopoly.

@phonewisdom

Did any senators or reps support the phone unlock exemption before it was cool?

@rjcc

the only thing I can't figure out about the SimCity launch day server issues is how anyone is surprised.

THE STRIP

BY SEAN PRYOR

THE REC ROOM



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TIME
MACHINES

WHAT IS THIS? ◆
TOUCH TO FIND OUT



PHOTOGRAPHS COURTESY OF AP / HEINZ DUCKLAU (AEROCAR)
PHOTOGRAPH COURTESY OF WWW.TERRAFUGIA.COM (TERRAFUGIA)



THE AEROCAR

**MODERN
EQUIVALENT:**
Terrafugia Transition



>> The flying car became a reality in 1949 when aircraft designer Moulton Taylor completed his first prototype. He promoted his "Aerocar" on TV and at auto shows, eventually raising enough cash to federally certify it as an airplane *and* a roadworthy vehicle. Taylor built four pre-production models of this convertible flyer, which included a rear propeller and wings that folded up to be towed behind the car. Its top air-cruising speed was 100MPH and it sold for \$25,000, but lack of funding kept it from final production.



The Aerocar as it converts from flying machine to motorcar.



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